

AGENDA

REGULAR MEETING OF COUNCIL

Monday, October 7, 2019

7:00 p.m.

Council Chamber, Municipal Hall

355 West Queens Road,

North Vancouver, BC

Council Members:

Mayor Mike Little

Councillor Jordan Back

Councillor Mathew Bond

Councillor Megan Curren

Councillor Betty Forbes

Councillor Jim Hanson

Councillor Lisa Muri



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REGULAR MEETING OF COUNCIL

7:00 p.m.
Monday, October 7, 2019
Council Chamber, Municipal Hall,
355 West Queens Road, North Vancouver

AGENDA

BROADCAST OF MEETING

- Online at <http://app.dnv.org/councillive/>

CLOSED PUBLIC HEARING ITEMS NOT AVAILABLE FOR DISCUSSION

- Bylaw 8262 – OCP Amendment 1923 Purcell Way
- Bylaw 8263 – Rezoning 1923, 1935, 1947 and 1959 Purcell Way

1. ADOPTION OF THE AGENDA

1.1. October 7, 2019 Regular Meeting Agenda

Recommendation:

THAT the agenda for the October 7, 2019 Regular Meeting of Council for the District of North Vancouver is adopted as circulated, including the addition of any items listed in the agenda addendum.

2. PUBLIC INPUT

(limit of three minutes per speaker to a maximum of thirty minutes total)

3. PROCLAMATIONS

4. RECOGNITIONS

4.1 Introduction of New RCMP Officer In Charge, Superintendent Ghalib Bhayani

5. DELEGATIONS

5.1 HUB North Shore

Re: 2019 Goals Presentation

p. 11-20

Application Form

Attachment 1: PowerPoint Presentation

6. ADOPTION OF MINUTES

7. RELEASE OF CLOSED MEETING DECISIONS

8. COUNCIL WORKSHOP REPORT

9. REPORTS FROM COUNCIL OR STAFF

With the consent of Council, any member may request an item be added to the Consent Agenda to be approved without debate.

If a member of the public signs up to speak to an item, it shall be excluded from the Consent Agenda.

Recommendation:

THAT items _____ are included in the Consent Agenda and are approved without debate.

9.1. Development Variance Permit 29.19 – 3225 Mahon Avenue **p. 23-34**
File No. 08.3060.20/029.19

Staff Report: Development Planning Assistant, September 10, 2019
Attachment 1: Development Variance Permit 29.19

Recommendation:

THAT Development Variance Permit 29.19, to allow an existing guardrail on a garage roof at 3225 Mahon Avenue to remain, is ISSUED.

9.2. Community Wildfire Protection Plan Update **p. 35-204**
File No. 13.6780/Infrastructure General/File

Staff Report: Community Forester and Section Manager – Environmental Sustainability (Operations), September 26, 2019
Attachment 1: Draft Community Wildfire Protection Plan Update
Attachment 2: UBCM: March 11, 2019 Approval Agreement & Terms of Conditions of Funding Letter.
Attachment 3: Presentation

Recommendation:

THAT the Community Wildfire Protection Plan (CWPP) Update as attached to the September 26, 2019 joint report of the Community Forester and Section Manager – Environmental Sustainability (Operations) entitled Community Wildfire Protection Plan Update is APPROVED.

9.3. Bylaws 8359, 8360, 8361 and 8362: Introduction of Bylaw Amendments for a Revised Coach House Program **p. 205-280**
File No. 13.6480.30/

Staff Report: Community Planner, September 27, 2019
Attachment 1: Housing Continuum
Attachment 2: Coach House Public Engagement Summary
Attachment 3: Bylaw 8359
Attachment 4: Red-line version of OCP Amendment Bylaw 8359

Attachment 5: Bylaw 8360
Attachment 6: Red-line version of Zoning Bylaw Amendments
Attachment 7: Bylaw 8362
Attachment 8: Bylaw 8361
Attachment 9: Proposed amendments to Non-Statutory Public Consultation for Development Applications Policy

Recommendation:

THAT “District of North Vancouver Official Community Plan Bylaw 7900, 2011, Amendment Bylaw 8359, 2019 (Amendment 37)” is given FIRST Reading;

AND THAT “District of North Vancouver Rezoning Bylaw 1382 (Bylaw 8360)” is given FIRST Reading;

AND THAT “Fees & Charges Bylaw 6481, 1992 Amendment Bylaw 8362, 2019 (Amendment 61)” is given FIRST, SECOND and THIRD Reading;

AND THAT “Bylaw Notice Enforcement Bylaw 7458, 2004 Amendment Bylaw 8361, 2019 (Amendment 41)” is given FIRST, SECOND and THIRD Reading;

AND THAT in accordance with Section 477 of the *Local Government Act*, Council has considered Bylaw 8359 in conjunction with its Financial Plan and applicable Waste Management Plans;

AND THAT, in relation to Bylaw 8397, additional consultation pursuant to Section 475 and Section 476 of the *Local Government Act*, is not required beyond that already undertaken;

AND THAT the revised Non-Statutory Public Consultation Policy for Development Applications as attached to the September 27, 2019 report of the Community Planner entitled Introduction of Bylaw Amendments for a Revised Coach House Program is APPROVED, subject to adoption of the above bylaws;

AND THAT Bylaw 8359 and Bylaw 8360 are referred to a Public Hearing.

9.4. Bylaws 8340, 8341, 8343 and 8346: Non-Medical Retail Cannabis Bylaw and Policy Amendments

p. 281-316

File No. 13.6440.50/000.000

Staff Report: Community Planner, September 25, 2019
Attachment 1: Bylaw 8340
Attachment 2: Bylaw 8343
Attachment 3: Bylaw 8341
Attachment 4: Bylaw 8346
Attachment 5: Proposed Non-Medical Retail Cannabis Policy
Attachment 6: Red-lined Proposed Non-Medical Retail Cannabis Policy
Attachment 7: Proposed Non-Statutory Public Consultation for Development Applications Policy
Attachment 8: Red-lined Proposed Non-Statutory Public Consultation for Development Applications Policy

Recommendation:

THAT "District of North Vancouver Rezoning Bylaw 1379, (Bylaw 8340)" is given FIRST Reading;

AND THAT "Business Licence Bylaw 4567, 1974 Amendment Bylaw 8341, 2019 (Amendment 50)" is given FIRST Reading;

AND THAT "District of North Vancouver Fees and Charges Bylaw 6481, 1992, Amendment Bylaw 8343, 2019 (Amendment 59)" is given FIRST, SECOND, and THIRD Readings;

AND THAT "Bylaw Notice Enforcement Bylaw 7458, 2004, Amendment Bylaw 8346, 2019 (Amendment 40)" is given FIRST, SECOND, and THIRD Readings;

AND THAT "District of North Vancouver Rezoning Bylaw, 1379 (Bylaw 8340)" is referred to a Public Hearing;

AND THAT pursuant to Section 59 (2)(b) of the *Community Charter*, "Business Licence Bylaw 8341, 2019 (Amendment 50)" is referred to a Public Meeting to provide an opportunity for persons who consider they are affected by the bylaw to make representations to Council;

AND THAT pursuant to Sections 59 (2)(a) and (3) of the *Community Charter*, Council direct staff to give notice of its intention to hold a Public Meeting as follows:

1. The notice shall state the following:
 - a. the time and date of the Public Meeting;
 - b. the place of the Public Meeting;
 - c. in general terms the purpose of the bylaw; and
 - d. the place and the times and dates when copies of bylaw may be inspected.
2. The notice shall be published in at least 2 consecutive issues of a newspaper, the last publication to appear not less than 3 days and not more than 10 days before the Public Meeting.

AND THAT the revised Non-Medical Retail Cannabis Policy as attached to the September 25, 2019 report of the Community Planner entitled Non-Medical Retail Cannabis Bylaw and Policy Amendments is APPROVED;

AND THAT the revised Non-Statutory Public Consultation Policy for Development Applications as attached to the September 25, 2019 report of the Community Planner entitled Non-Medical Retail Cannabis Bylaw and Policy Amendments is APPROVED.

9.5. District-Owned Single Family Rental Housing Policy

p. 317-322

File No. 08.3164.00/000.000

Staff Report: Manager, Real Estate and Properties, September 30, 2019
Attachment 1: District-Owned Single Family Rental Housing Policy

Recommendation:

THAT the District-Owned Single Family Rental Housing Policy is APPROVED.

9.6. UBCM Community Emergency Preparedness Fund - Structural Flood Mitigation Application for Funding for Kilmer Creek Relocation p. 323-324
File No. 11.5225.01/017.000

Staff Report: Section Manager – Engineering, Planning and Design,
September 3, 2019

Recommendation:

THAT the application for grant funding through the UBCM Community Emergency Preparedness Fund - Structural Flood Mitigation for relocation and culvert upgrades related to Kilmer Creek is supported.

10. REPORTS

10.1. Mayor

10.2. Chief Administrative Officer

10.3. Councillors

10.4. Metro Vancouver Committee Appointees

10.4.1. Industrial Lands Strategy Task Force – Councillor Back

10.4.2. Housing Committee – Councillor Bond

10.4.3. Aboriginal Relations Committee – Councillor Hanson

10.4.4. Board – Councillor Muri

10.4.5. Regional Parks Committee – Councillor Muri

10.4.6. Liquid Waste Committee – Mayor Little

10.4.7. Mayors Committee – Mayor Little

10.4.8. Mayors Council - TransLink – Mayor Little

10.4.9. Performance & Audit Committee – Mayor Little

10.4.10. Zero Waste Committee – Mayor Little

11. ANY OTHER BUSINESS

12. ADJOURNMENT

Recommendation:

THAT the October 7, 2019 Regular Meeting of Council for the District of North Vancouver is adjourned.

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DELEGATIONS

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Delegation to Council Request Form

District of North Vancouver
Clerk's Department
 355 West Queens Rd, North Vancouver, BC V7N 4N5

Questions about this form: Phone: 604-990-2311
 Form submission: Submit to address above or Fax: 604.984.9637

COMPLETION: To ensure legibility, please complete (type) online then print. Sign the printed copy and submit to the department and address indicated above.

Delegations have five minutes to make their presentation. Questions from Council may follow.

Name of group wishing to appear before Council: HUB North Shore

Title of Presentation: HUB North Shore 2019 Goals Presentation

Name of person(s) to make presentation: Jay Jardine, Don Piercy

Purpose of Presentation:

☐ Information only

☐ Requesting a letter of support

☒ Other (provide details below)

Please describe:

Provide an update on HUB North Shore activities and priorities

Attach a copy of the presentation to this form.

Contact person (if different than above): Jay Jardine

Daytime telephone number: 604 374 6215

Email address: jayjardine@gmail.com

Will you be providing supporting documentation? ☒ Yes ☐ No

If yes:

☐ Handout ☐ DVD

☒ PowerPoint presentation

Note: All supporting documentation must be provided 12 days prior to your appearance date. This form and any background material provided will be published in the public agenda.

Presentation requirements:

☒ Laptop ☐ Tripod for posterboard

☒ Multimedia projector ☐ Flipchart

☐ Overhead projector

Arrangements can be made, upon request, for you to familiarize yourself with the Council Chamber equipment on or before your presentation date.

Delegation to Council Request Form

Rules for Delegations:

1. Delegations must submit a Delegation to Council Request Form to the Municipal Clerk. Submission of a request does not constitute approval nor guarantee a date. The request must first be reviewed by the Clerk.
2. The Clerk will review the request and, if approved, arrange a mutually agreeable date with you. You will receive a signed and approved copy of your request form as confirmation.
3. A maximum of two delegations will be permitted at any Regular Meeting of Council.
4. Delegations must represent an organized group, society, institution, corporation, etc. Individuals may not appear as delegations.
5. Delegations are scheduled on a first-come, first-served basis, subject to direction from the Mayor, Council, or Chief Administrative Officer.
6. The Mayor or Chief Administrative Officer may reject a delegation request if it regards an offensive subject, has already been substantially presented to council in one form or another, deals with a pending matter following the close of a public hearing, or is, or has been, dealt with in a public participation process.
7. Supporting submissions for the delegation should be provided to the Clerk by noon 12 days preceding the scheduled appearance.
8. Delegations will be allowed a maximum of five minutes to make their presentation.
9. Any questions to delegations by members of Council will seek only to clarify a material aspect of a delegate's presentation.
10. Persons invited to speak at the Council meeting may not speak disrespectfully of any other person or use any rude or offensive language or make a statement or allegation which impugns the character of any person.
11. Please note the District does not provide grants or donations through the delegation process.
12. Delegation requests that are non-jurisdictional or of a financial nature may not be accepted.

Helpful Suggestions:

- have a purpose
- get right to your point and make it
- be concise
- be prepared
- state your request, if any
- do not expect an immediate response to a request
- multiple-person presentations are still five minutes maximum
- be courteous, polite, and respectful
- it is a presentation, not a debate
- the Council Clerk may ask for any relevant notes (if not handed out or published in the agenda) to assist with the accuracy of our minutes

I understand and agree to these rules for delegations

Jay Jardine

7/10/2019

Name of Delegate or Representative of Group

Date

Signature

For Office Use Only

Approved by:

Municipal Clerk

Deputy Municipal Clerk



Appearance date:

Receipt emailed on:

October 7, 2019
July 11, 2019

Rejected by:

Mayor

CAO

Applicant informed on:

Applicant informed by:

The personal information collected on this form is done so pursuant to the Community Charter and/or the Local Government Act and in accordance with the Freedom of Information and Protection of Privacy Act. The personal information collected herein will be used only for the purpose of processing this application or request and for no other purpose unless its release is authorized by its owner, the information is part of a record series commonly available to the public, or is compelled by a Court or an agent duly authorized under another Act. Further information may be obtained by speaking with The District of North Vancouver's Manager of Administrative Services at 604-990-2207 or at 355 W Queens Road, North Vancouver.

HUB Cycling Our Mission:

To get more people
cycling, more often.



www.bikehub.ca



HUB Cycling

- HUB Cycling is a charitable non-profit organization, established in 1998
- We make cycling better through education, action and events
- HUB's Priorities:
 - Un-Gap the Map
 - Accelerate investment in cycling infrastructure & facilities to connect the region
 - Amend the *Motor Vehicle Act* to a *Road Safety Act* focusing on all users (pedestrians, cyclist and vehicles)
 - Changes to ICBC driver training with BEST and BCCC

www.bikehub.ca



HUB North Shore Committee

- Community events:
 - Bike to Work Week Celebration stations
 - Blueridge Good Neighbour day
 - Parkgate Community day
- Provide input on local projects:
 - Lower Lynn interchanges design
 - East 29th safety improvements
 - West 15th way-finding signage
 - Lynn Valley road underpass design
 - West Queens & Highlands bike lane pilots

www.bikehub.ca



Why do we need more people cycling, more often?

- Environment:
 - Reduce transportation-related emissions as part of the CEEP
 - Address the climate crisis and Climate Emergency declaration
 - Cycling infrastructure has a smaller footprint than roadways designed for motor vehicles
- Health and Safety:
 - Encourages an active lifestyle for all ages
 - Reduces crash severity and exposure
 - Reduces noise stressors in urban areas
- Congestion:
 - Trips made by cycling in lieu of motor vehicles can relieve overcrowded roadways

www.bikehub.ca



How do we get more people cycling?

REGULAR
CYCLIST

25%

INTERESTED BUT
CONCERNED

41%

NOT INTERESTED
IN CYCLING

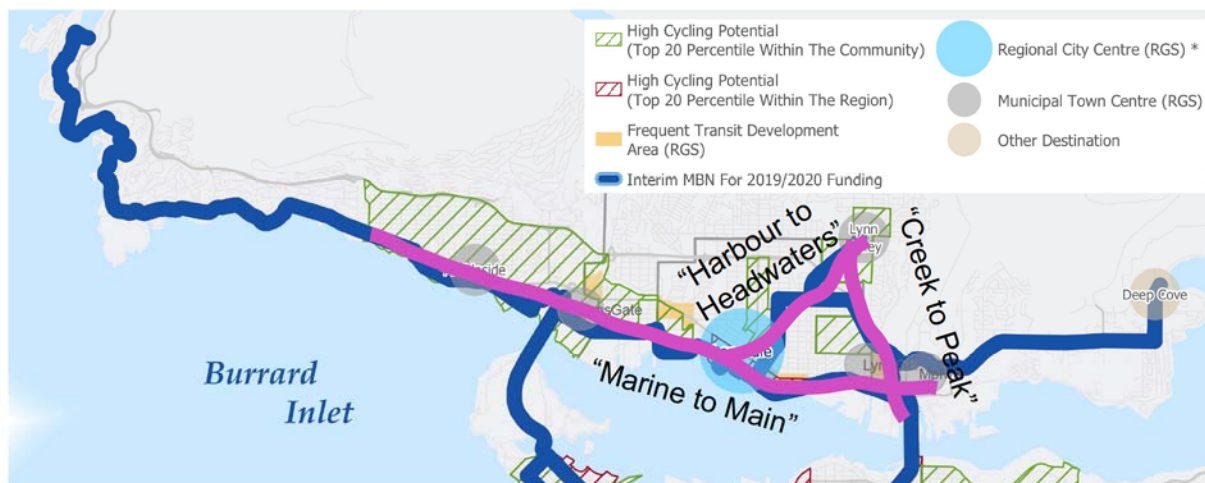
34%

- Attracting "Interested but Concerned" people will require Safe Bike Infrastructure
- Studies on people's willingness to cycle show that "Heavy/Fast Traffic" and "Risk of Injury" are the primary deterrents
- Safe, convenient bike infrastructure attracts more existing trips to cycling and accommodates the next generation of travellers

www.bikehub.ca



HUB's 3 Top Priority Safe Bikeways



Link where people Live with where they Work, Shop & Play.

Conceptual Bikeways (pink lines) overlap with TransLink's Major Bike Network corridors (blue lines)

www.bikehub.ca



What is a Safe Bikeway?



Protected on-road bike lane



Cycle-only pathways



Low-speed, low traffic residential streets

HUB's Recommendations

- Request inclusion of a prioritized list of key bikeways as part of the Bike Master Plan updates
- Create a implementation plan leveraging outside funding for Active Transportation

Supplemental Slides

- Why these 3 bikeways?
- HUB's Long Term Vision
- Why not use the Spirit Trail?
- Route Safety vs Preference
- Active Transportation Funding sources

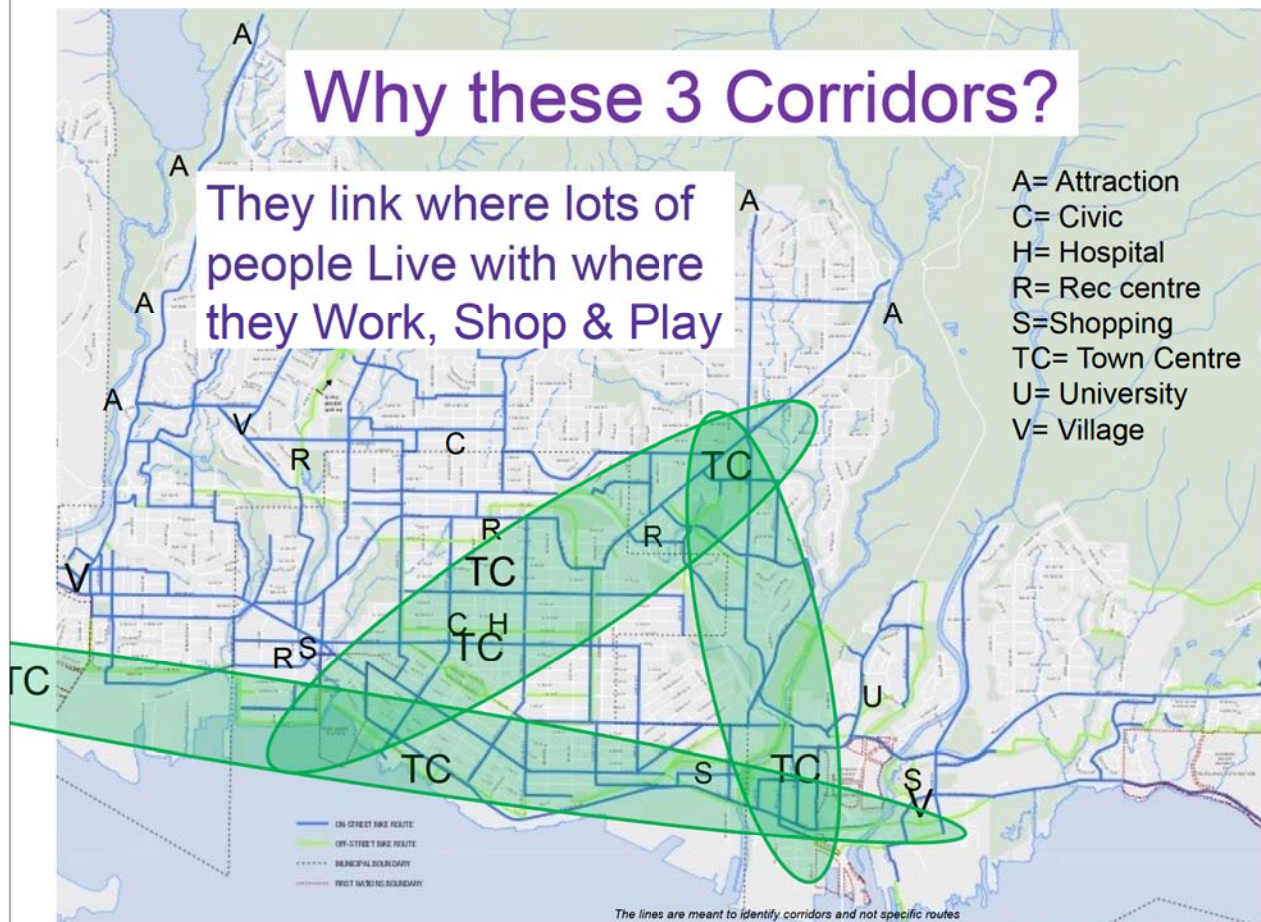
www.bikehub.ca



Why these 3 Corridors?

They link where lots of people Live with where they Work, Shop & Play

A= Attraction
C= Civic
H= Hospital
R= Rec centre
S= Shopping
TC= Town Centre
U= University
V= Village



Long Term Goal



A Network of Safe Bikeways connecting where people Live with where they Work, Shop & Play, both on and off the North Shore.

www.bikehub.ca



Long Term Goal - central section details



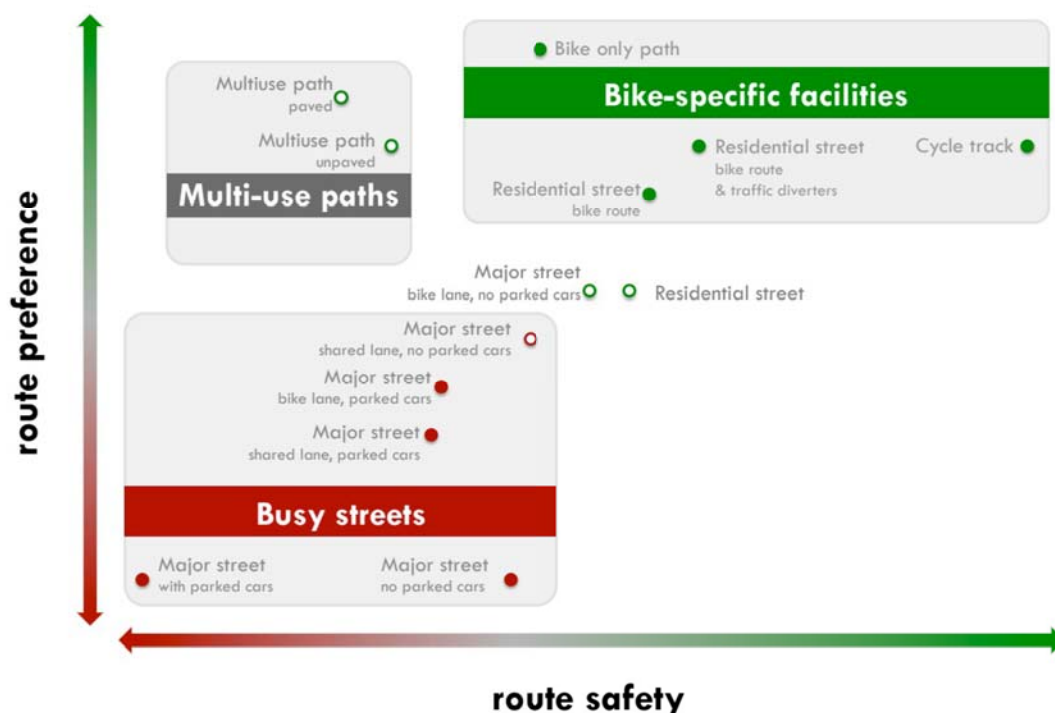
Why not just use Spirit Trail?

- **Recreational, Multi-User Path.**
 - It hosts a large number of pedestrians, dogs-on-leash and other hazards.
 - People don't appreciate cyclists hurrying close by on the shared pathway.
- **It is not very direct.**
 - People cycling for transport want the shortest, safe route to their destination. Transportation Bikeways are like arterial roads.
 - Spirit trail wanders along, taking a more scenic route.
- **Does not connect to most major destinations.**

www.bikehub.ca



Route Preference vs Safety



From "What route types best motivate cycling?" By Kay Teschke, UBC.
www.bikehub.ca





BIKE INFRASTRUCTURE FUNDING (2019-2020)

FEDERAL PROGRAMS



MUNICIPAL GREEN FUND (Aug 2019)



GREEN INFRASTRUCTURE FUND

PROVINCIAL PROGRAMS



BIKE BC PROGRAM (Feb 2020)



ROAD IMPROVEMENT PROGRAM



COMMUNITY WORKS FUND

REGIONAL PROGRAMS



Co-funds, operates, maintains, and administers various greenways and trails



Vision Zero Seed Grants



MRNB Program [Fall 2019]

Class 1 (AAA): 75% cost-sharing + in Urban Centres/ FTDA's or MBN
Class 2 (Comfortable for most): 50% cost sharing + located in areas of high cycling potential.

BICCS Program [Fall 2019]

Class 1 (AAA): 75% cost-sharing + along FTN or MBN
Class 2 (Comfortable for most): 50% cost-sharing

WITT Program [Fall 2019]

Pedestrian facility upgrades that promote integration of walking and cycling with transit.

Acronyms

FTN= Frequent Transit Network, MBN= Major Bike Network, BICCS= Bicycle Infrastructure Capital Cost Sharing
WITT= Walking Infrastructure To Transit, MRNB= Major Road Network and Bike, FTDA= Frequent Transit Development Area

REPORTS

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AGENDA INFORMATION	
<input checked="" type="checkbox"/> Regular Meeting	Date: <u>Sept 30, 2019</u>
<input type="checkbox"/> Other:	Date: _____



The District of North Vancouver REPORT TO COUNCIL

September 10, 2019
File: 08.3060.20/029.19

AUTHOR: Daniel Broderick, Development Planning Assistant

SUBJECT: DEVELOPMENT VARIANCE PERMIT 29.19 - 3225 Mahon Avenue

RECOMMENDATION:

THAT Development Variance Permit 29.19 (Attachment 1) to allow an existing guardrail on a garage roof at 3225 Mahon Avenue to remain, is issued.

REASON FOR REPORT:

The roof deck built over an existing garage requires a height variance to the Zoning Bylaw that requires Council's approval.

SUMMARY:

The applicant constructed a roof deck over their garage in 2017. The required guardrail for the roof deck results in a height variance.

The guardrail has been installed without the necessary permits. DVP29.19 is to allow the roof deck guardrail to remain.

BACKGROUND:

Purpose:

To allow the existing guardrail on the garage roof to remain, which permits the garage roof to be used as a deck.



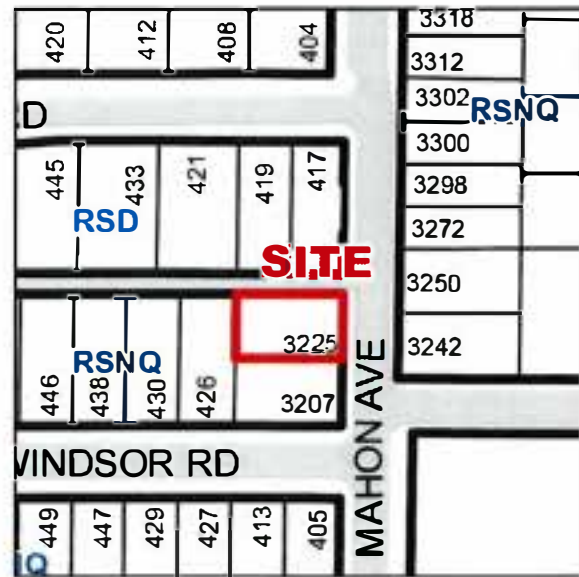
Site and Surrounding Area:

The subject site has an approximate area of 550 m² (5,935 sq. ft.) and is currently occupied by a single-family home with an attached garage.

The site and surrounding lots to the south, east, and west are zoned Single-family Residential Norwood Queens Zone (RSNQ) as seen in the following context map and air photo. The lots to the north are zoned Single-family Residential Delbrook Zone (RSD). The property is not designated in any Development Permit Areas.



Air Photo



Context Map

The applicant previously commenced work without permits on a garage and building addition in 2016 that was later accommodated through a building permit issued in 2017. This building permit allowed the conversion of the existing carport into an enclosed garage and a main floor addition connecting the existing house to the garage. The Building Permit drawings include upper floor windows overlooking the garage. Patio doors were subsequently installed in these window locations, allowing access from the upper level of the house to the garage roof. The use of the garage roof as a deck was not indicated as part of the 2017 Building Permit.

The BC Building Code requires a guardrail of not less than 1.07 m (3.5 ft.) on any walking surface more than 1.8 m (5.9 ft.) above grade. The roof deck guardrail required to use the space as a deck puts the garage over the maximum height permitted in the RSNQ zone.

Board of Variance Process:

The applicant previously applied to the Board of Variance to allow the guardrail variance. The variance was considered at the October 18, 2018 meeting, where it was denied on the basis that hardship was not clearly demonstrated. The applicant subsequently appealed the decision and the Board of Variance considered the proposal a second time on April 18, 2019 where it was denied on the basis that the variance was not minor and that hardship was not clearly demonstrated.

PROPOSAL:

The guardrail installed to allow use of the roof of the existing garage as a deck exceeds the permitted height for a parking structure in the RSNQ zone and requires a height variance. If DVP29.19 is issued, the guardrail and roof deck will be permitted to remain and no further work will be required. If DVP29.19 is denied, staff will request that the owner bring the house into compliance with the Zoning Bylaw. Enforcement action would commence if the property remained in non-compliance.

ANALYSIS:Zoning Bylaw Compliance:

The constructed guardrail requires the following variance:

Regulation	Required/ Permitted	New Work	Variance
Garage Roof Height	3.66 m (12 ft.)	4.16 m (13.66 ft.)	0.51 m (1.66 ft.)

Variances:

The District's Zoning Bylaw permits a maximum height of 3.66 m (12 ft.) for a garage with a flat roof in the RSNQ Zone. The addition of the guardrail results in a garage roof height of 4.16 m (13.66 ft.) and requires a variance of 0.51 m (1.66 ft.). Without the guardrail, the garage height would comply with the Zoning Bylaw.

If the deck were situated above living space rather than a parking structure no variance would be required, as the maximum height permitted would be the same as the principal building.



Photo of existing deck with installed guardrail

The privacy impact of the roof deck is moderated to the north and west as there is a lane to the north and a neighbouring parking structure to the west of the deck. In additions, the garage is set back approximately 10.97 m (36 ft.) from the south property line.

Photo of existing deck overlooking neighbouring garage, rear lane, and landscape screening:

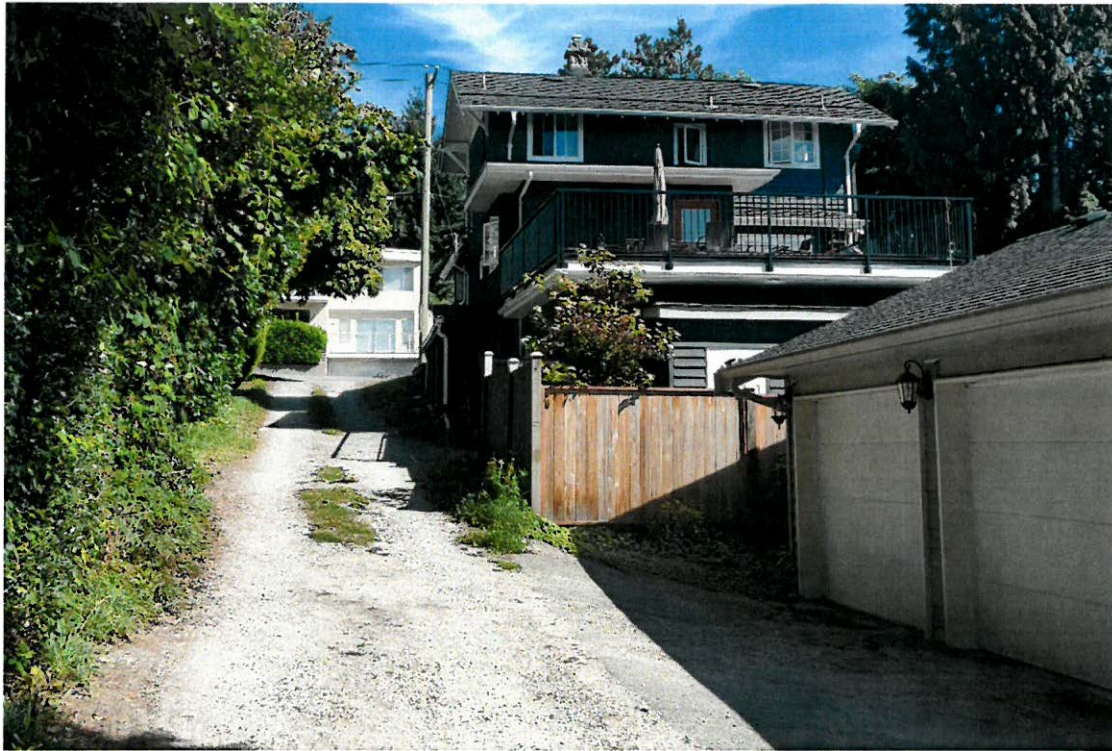
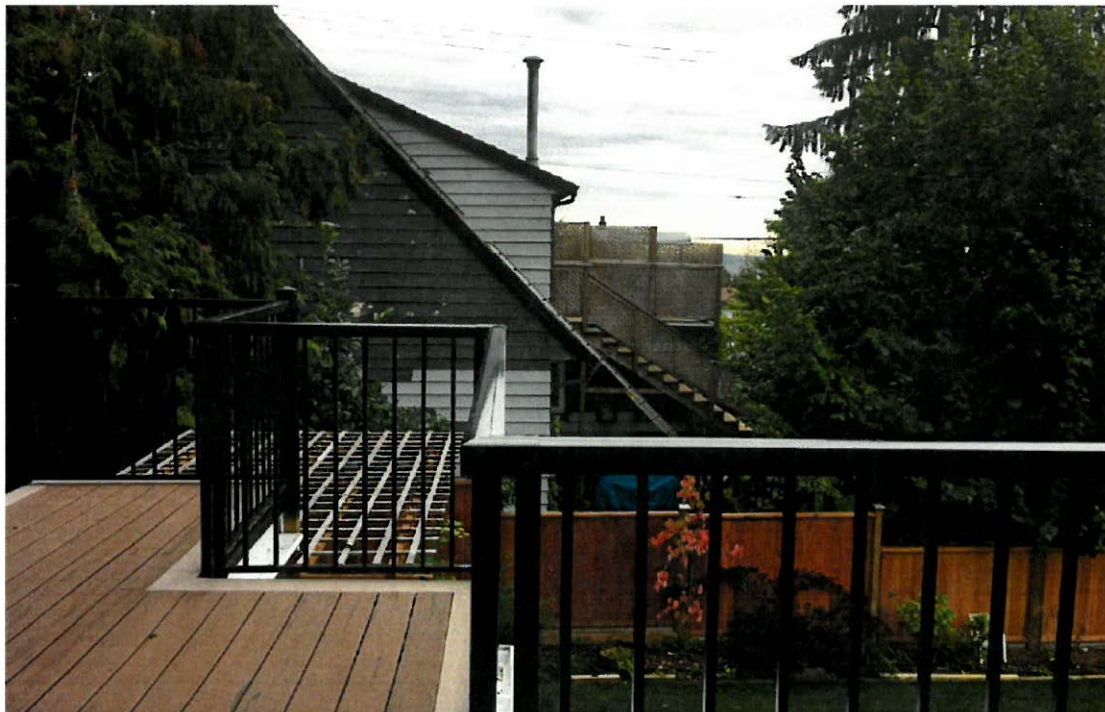
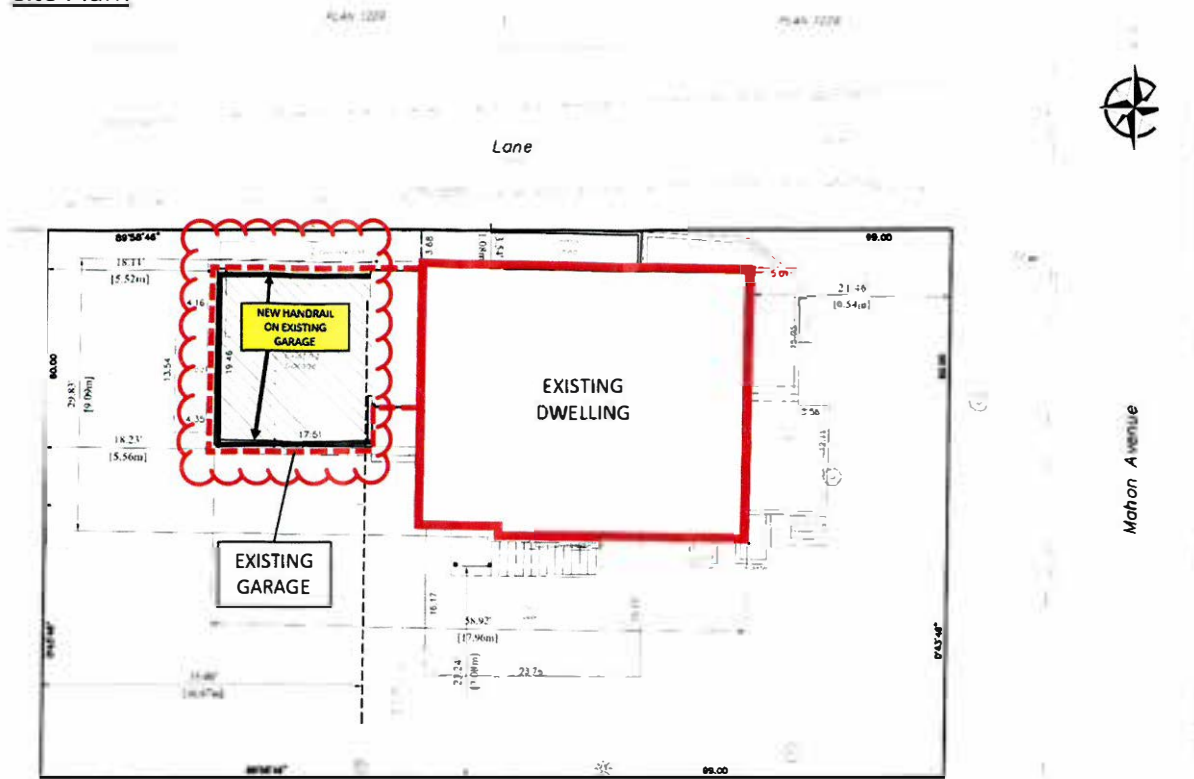


Photo looking south from existing roof deck:



Site Plan:



Context photo showing proposed roof deck:



PUBLIC INPUT:

A notification letter was sent to adjacent neighbours to inform them of the application.

One response was received, which indicated opposition to the requested variance. The response noted a concern regarding loss of privacy which contributes to a loss of enjoyment of the adjacent property. Concern was expressed that the work completed had been done without the necessary permits.

The applicant has indicated that the proposed deck is significantly set back from affected neighbouring properties, reducing potential impacts on neighbours. The applicant has also indicated that efforts have been made to reduce impact of the deck through tree planting for natural screening. One new tree has been planted along the south property line where trees had previously been removed.

Statutory notification advising that Council will be considering whether to issue Development Variance Permit 29.19 will be sent to the adjacent property owners. Response to the notification will be provided to Council prior to consideration of this application.

CONCLUSION:

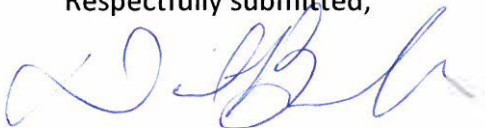
This application is to permit an existing guardrail on a garage.

OPTIONS:

The following options are available for Council's consideration:

1. Issue Development Variance Permit 29.19 (Attachment 1) to allow an existing guardrail on a garage roof at 3225 Mahon Avenue to remain (staff recommendation); or
2. Deny Development Variance Permit 29.19.

Respectfully submitted,



Daniel Broderick
Planning Assistant

Attach

1. Development Variance Permit 29.19

REVIEWED WITH:					
<input type="checkbox"/> Sustainable Community Dev.	_____	<input type="checkbox"/> Clerk's Office	_____	External Agencies:	
<input type="checkbox"/> Development Services	_____	<input type="checkbox"/> Communications	_____	<input type="checkbox"/> Library Board	_____
<input type="checkbox"/> Utilities	_____	<input type="checkbox"/> Finance	_____	<input type="checkbox"/> NS Health	_____
<input type="checkbox"/> Engineering Operations	_____	<input type="checkbox"/> Fire Services	_____	<input type="checkbox"/> RCMP	_____
<input type="checkbox"/> Parks	_____	<input type="checkbox"/> ITS	_____	<input type="checkbox"/> NVRC	_____
<input type="checkbox"/> Environment	_____	<input type="checkbox"/> Solicitor	_____	<input type="checkbox"/> Museum & Arch.	_____
<input type="checkbox"/> Facilities	_____	<input type="checkbox"/> GIS	_____	<input type="checkbox"/> Other:	_____
<input type="checkbox"/> Human Resources	_____	<input type="checkbox"/> Real Estate	_____		

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THE CORPORATION OF THE DISTRICT OF NORTH VANCOUVER

DEVELOPMENT VARIANCE PERMIT 29.19

This Development Variance Permit 29.19 is hereby issued by the Council for The Corporation of the District of North Vancouver to the registered owner(s) to accommodate a garage roof deck guardrail at the property located at 3225 Mahon Avenue, legally described as Lot A, Except Part In Explanatory Plan 6339, Block 2, South East 1/4 of District Lot 617, Plan 1229 (PID: 014-851-571), subject to the following terms and conditions:

- A. The following Zoning Bylaw regulations are varied under Part 14, Division 9, Subsection 498 (1) of the Local Government Act:
1. Maximum parking structure roof height is increased from 3.66 metres (12 feet) to 4.16 metres (13.66 feet);
 2. The relaxation above applies only to the garage guardrail as illustrated in the attached drawings DVP 29.19-1 to 3.

Mayor

Municipal Clerk

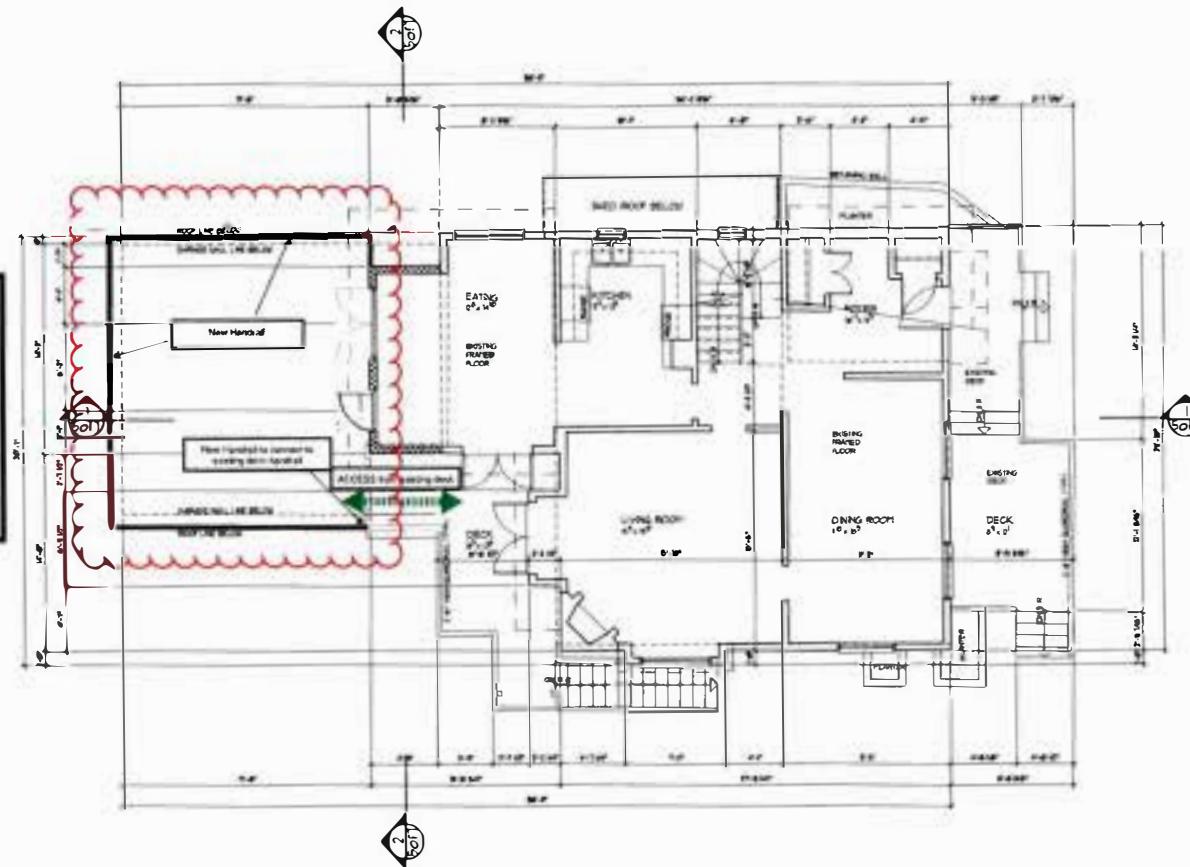
Dated this ____ day of _____

**PROPOSED
ADDITION OF
HANDRAIL**

**3225 MAHON
AVENUE
NORTH
VANCOUVER**

MAIN FLOOR

**permit application:
September 2018**



MAIN FLOOR PLAN

CONTRACTOR'S NOTE: ALL PARTS OF THIS DRAWING ARE TO BE CONSIDERED AS PARTS OF THE SAME AND NO PART SHALL BE USED WITHOUT THE OTHERS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CORRECTNESS OF THE INFORMATION AND SHALL BE RESPONSIBLE FOR THE CORRECTNESS OF THE INFORMATION.

PROJECT:
PROPOSED ADDITION
3225 MAHON AVENUE
NORTH VANCOUVER, BC

SHEET TITLE:
MAIN FLOOR PLAN

SCALE: 1/8" = 1'-0" (AS SHOWN)
PROJECT NO.: [blank] **DATE:** [blank]

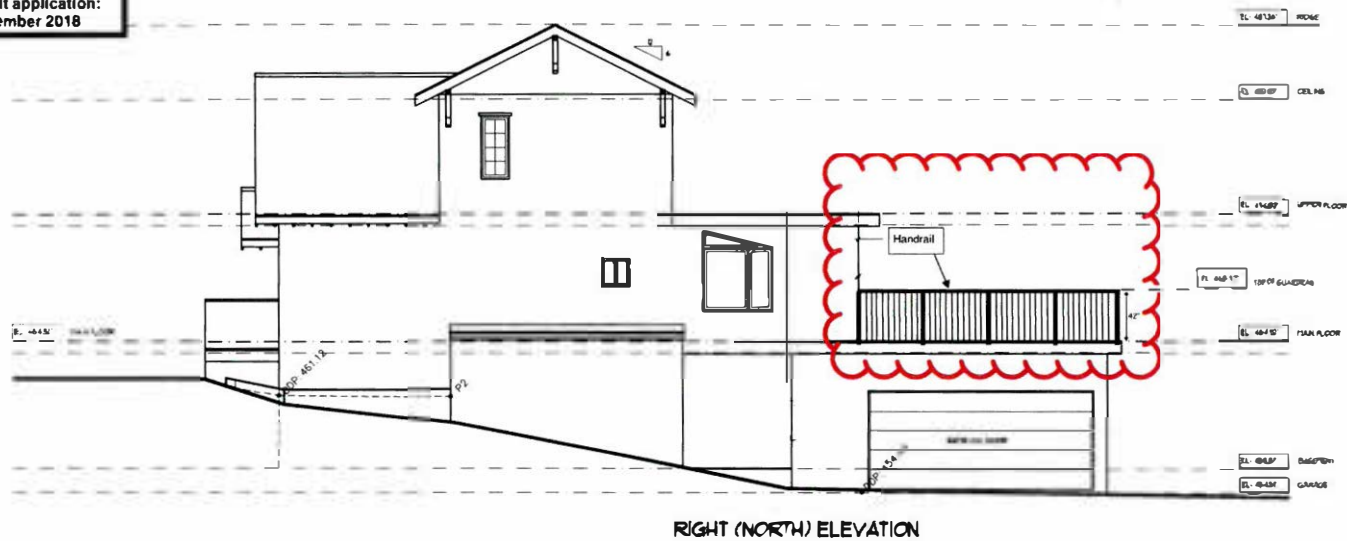
DVP 29.19-1

**PROPOSED
ADDITION OF
HANDRAIL**

**3225 MAHON
AVENUE
NORTH
VANCOUVER**

**RIGHT & LEFT
ELEVATIONS**

permit application:
September 2018



**PROPOSED ADDITION
3225 MAHON AVENUE
NORTH VANCOUVER, BC**

LEFT & RIGHT ELEVATIONS

DVP 29.19-2

**PROPOSED
ADDITION OF
HANDRAIL**

**3225 MAHON
AVENUE
NORTH
VANCOUVER**

**FRONT & REAR
ELEVATIONS**

**permit application:
September 2018**



FRONT (EAST) ELEVATION



REAR (WEST) ELEVATION

**PROPOSED ADDITION
3225 MAHON AVENUE
NORTH VANCOUVER, BC**

FRONT & REAR ELEVATIONS

**PROJECT NO. 1/4 = 1/4" = 1/4" SCALE
DRAWING NO.**

DVP 29.19-3

COUNCIL AGENDA/INFORMATION			
<input type="checkbox"/> In Camera	Date:	Item #	
<input checked="" type="checkbox"/> Regular	Date: <u>Oct 7, 2019</u>	Item #	
<input type="checkbox"/> Agenda Addendum	Date:	Item#	
<input type="checkbox"/> Info Package			
<input type="checkbox"/> Council Workshop	DM#	Date:	Mailbox:



The District of North Vancouver REPORT TO COUNCIL

September 26, 2019

File: 13.6780/Infrastructure General/File

AUTHOR: Guy Exley - Community Forester
Richard Boase - Section Manager - Environmental Sustainability (Operations)

SUBJECT: Community Wildfire Protection Plan Update

RECOMMENDATION:

THAT Council approve the draft Community Wildfire Protection Plan (CWPP) Update (Attachment 1);

REASON FOR REPORT:

To present and formally obtain Council's input on the draft CWPP Update for finalization.

BACKGROUND:

The CWPP Update was prepared by BA Blackwell & Associates in consultation with multiple stakeholders and key staff in the Parks, Communications, Fire Services, Engineering, Environmental Sustainability and Planning departments. The plan contains an assessment of fuel types and assets exposed to wildfire hazard across the District, and a set of recommendations aimed at reducing wildfire risk to people, infrastructure and the environment, with the focus on areas along the wildland-urban interface (WUI) zone. The Wildfire Risk Management System (WRMS) was used to identify areas of high hazard fuels associated with values at risk within the District. A total of 52 strategic recommendations have been proposed and summarised in Table 1 within the *Executive Summary/Summary of CWPP Recommendations* section at the beginning of the plan. Approximately 164 hectares (ha) of high hazard fuel types have been identified and the areas detailed in Section 5.1.1 *Proposed Treatment Units*, page 63, Table 15 and Map 11 *Proposed and Past Treatments* page 69 for locations.

The CWPP Update meets the current requirements of the Provincial CWPP Template and the current spatial data and wildfire threat assessment worksheet standards. This project is supported by the Strategic Wildfire Prevention Initiative (SWPI) and funded by UBCM. The updated plan will provide the future framework to continue to build on community wildfire resiliency.

ANALYSIS:

The District is committed to applying best practices in fire management. The CWPP Template is a standard designed to assist local governments and First Nations in the preparation of a plan that will determine the level of, and steps to manage, wildfire risk primarily within their administrative boundary. The template is organized into the following major sections that are to be completed:

- *Section 1 Introduction:* introduces the purpose of a CWPP and the CWPP planning process
- *Section 2 Local Area Description:* defines the Area of Interest (AOI) for the CWPP; provides a description of the community (or communities) within the AOI; summarizes current community engagement, and; identifies linkages to other plans that provide valuable information to reduce the threat of wildfires
- *Section 3 Values at Risk:* introduces the extent to which wildfire has the potential to impact values within a community
- *Section 4 Wildfire Threat:* describes the process that was undertaken to identify and summarize the fuel hazard and other factors that contribute to the wildfire threat around a community
- *Section 5 Risk Management and Mitigation Factors:* outlines the strategies the community can put into practice to reduce the risk and the impact of a wildfire in four subsections:
 - i. *5.1 Fuel Management:* identifies and prioritises fuel management treatments
 - ii. *5.2 FireSmart Planning and Activities:* summarises the current level of FireSmart implementation and identifies priority areas for future FireSmart activities
 - iii. *5.3 Community Communication and Education:* describes the key steps required to build engagement and support within the community for the CWPP. This includes education and outreach and local community prevention program
 - iv. *5.4 Other Preventative Measures:* identifies local actions and strategies that reduce the threat of wildfires
- *Section 6 Wildfire Response Resources:* provides a high level overview of the resources that are available to local governments in the case of a wildfire.

The project included the following components:

1. Meeting with stakeholders.
2. A review of relevant documents.

3. Full compliance with the 2017 UBCM SWPI CWPP update guidelines and meet current standards for spatial data, and Wildfire Threat Assessment worksheets.
4. Formulate a draft copy of the CWPP (1x hard copy plus an electronic copy) to be reviewed by the District, SWPI and stakeholders.
5. Presentation of the final draft to Council for approval.

The Update complies with the CWPP Template including stakeholder consultation and the final draft copy is ready for Council consideration.

Summary of CWPP Recommendations:

This CWPP Update will provide the District of North Vancouver (DNV) with a framework that can be used to review and assess areas of identified moderate and high fire risk within the DNV. Additionally, the information contained in this report should help to guide the development of emergency plans, emergency response, evacuation plans, communication and education programs (including FireSmart), bylaw development in areas of fire risk, and the management of potentially hazardous forest lands adjacent to the community.

Since the development of the last CWPP in 2007, the District of North Vancouver has implemented all the recommendations from the CWPP, with the exception of one (Recommendation 25). The most notable actions include implementation of the following:

- Establishment of a Wildfire Development Permit Area, that requires new buildings to comply with FireSmart, National Fire Protection Association (NFPA), and District-developed standards for non-flammable building envelope materials;
- Forest Silviculture Prescription development for approximately 72.4ha and fuel treatment on approximately 57ha of land surrounding the community;
- Provision of specialized training to local fire department and DNV staff for Interface Fire Response; and
- Development of a forest health strategy to address issues associated with dwarf mistletoe infected western hemlock.

Wildfire management requires a multi-faceted approach for greatest efficacy and risk reduction outcomes. A total of 52 strategic recommendations are summarized in Table 1 below. In addition, these recommendations are included and more thoroughly discussed in their appropriate sections within the document. Ultimately, the recommendations within this plan should be considered a toolbox of options to help reduce the wildfire threat to the community. There is not one course of action or combination of actions that provides the answer to the challenge of wildfire risk in communities; the DNV must further prioritize based on resources, strengths, constraints, and availability of funding, regularly updating priorities and its course of action, as variables and circumstances change through time.

Table 1. Summary of CWPP Update Recommendations.

Document Section 2: Local Area Description		
This section defines the Area of Interest (AOI) and describes the community of North Vancouver within the AOI. It also summarizes the current community engagement in wildfire prevention and mitigation and identifies linkages to other plans and policies with relevance to wildfire planning.		
Item	Page No.	Recommendation/Next Steps
1	10	Review the Official Community Plan (OCP), Section 4.2 – Parkland Standards and Acquisition and associated documents (e.g., Parks and Open Space Strategic Plan, 2012) and consider strategic parkland acquisition and parks maintenance through a wildfire risk lens, including consideration for long-term maintenance costs and access.
2	12	Review the OCP Schedule B Bylaw 7671 and Wildfire Hazard DPA Guidelines section to include language regarding management of non-compliant hedging and other vegetation in proximity to homes after the post-development inspection.
3	12	Review the OCP and Wildfire Hazard DPA Guidelines section and set a procedure for establishing and updating fire testing standards to ensure alternative and novel non-flammable exterior building materials are pre-approved.
4	13	Review and update the fire testing standards and materials section of the Wildfire Hazard DPA Guidelines to identify and define a list of approved building materials and review and update the approved materials list on a bi-annual basis or as new proposals come forward from builders.
5	14	Review the Solid Waste Removal Bylaw 7631 to include language specific to green waste, not just garbage, under the prohibitions section to ensure that there is a legally enforceable bylaw to prevent flammable materials to accumulate, collect or to remain on the property.
6	15	Create incentives and/or targeted education and outreach to promote FireSmart renovations of exterior elements of existing buildings within the Wildfire Hazard DPA.
7	17	Update the DNV Invasive Plant Management Strategy, 2015 to target monitoring and resources to areas with known invasive species occurrences in forested areas. Continue addressing invasive species management during fuel treatment implementation in order to improve forest resilience and promote ecological restoration of degraded sites.
Document Section 3: Values at Risk		
The section describes the extent to which wildfire has the potential to impact the values at risk (VAR) within the District of North Vancouver AOI. VAR or the human and natural resources that may be impacted by wildfire include human life and property, critical infrastructure, high environmental and cultural values, and other resource values. VAR also include hazardous values that pose a safety hazard.		
8	22	Lobby the Provincial government or local Medical Health Officer(s) to develop a strategy for communities to draw upon when they are exposed to smoke from wildfire for extended periods of time. This strategy may include smoke exposure risk assessments, exposure reduction measures, and a decision-key for when to evacuate a community due to wildfire smoke.
9	23	The use of fire-resistant construction materials, building design and landscaping should be considered for all critical infrastructure within the District boundaries when completing upgrades or establishing new infrastructure. Additionally, vegetation setbacks around critical infrastructure should be compliant with FireSmart guidelines.
10	23	It is recommended that formal FireSmart assessments (by a Qualified Professional) be completed of critical infrastructure such as the fire halls, emergency operations centre, water infrastructure, and others as identified in this CWPP (Table 3) and by the District.
11	23	The District should work with Metro Vancouver to develop a back-up water delivery plan, to be enacted in the event of an emergency. Annual testing of this plan is recommended.

Document Section 5: Risk Management and Mitigation Factors Recommendations		
This section details the reduction initiatives to reduce wildfire threat to the community.		
12	62	Proceed with detailed assessment, prescription development, and treatment of hazardous units identified and prioritized in this CWPP.
13	70	Treatment monitoring to be completed by a qualified professional to schedule next set of maintenance activities (5 – 10 years out). This can be completed with a CWPP update, as it was for this document, or as a stand-alone exercise.
14	78	The DNV should consider applying for a FireSmart demonstration grant through the CRI program. This type of fuel treatment can display the practices and principles of FireSmart activities to the public in the form of demonstration treatments.
15	79	Review the DP process to assess the outcomes of DP applications and long-term compliance with DP recommendations on an ongoing basis to facilitate improvements to the process.
16	79	Develop a landscaping standard which lists flammable non-compliant vegetation and landscaping materials, non-flammable drought and pest resistant alternatives, and tips on landscape design to reduce maintenance, watering requirements, avoid wildlife attractants, and reduce wildfire hazard.
17	79	Engage the development/building community (may include developers, builders, landscapers, and architects) in any amendments to the DP process. This can be accomplished through workshops/informational sessions and/or information packages to increase awareness of wildfire risk and to educate and inform regarding the DP process and expectations. This initiative should be a collaborative effort between the three North Shore communities to ensure similar standards apply across the North Shore area.
18	81	Continue to maintain trained Local FireSmart Representatives (LFRs) on staff to assist and engage various neighbourhoods in complying with FireSmart principles at both the neighbourhood and individual home-level.
19	83	The DNV should apply for funding from the UBCM CRI Program to develop a local FireSmart rebate program. This will allow homeowners to access partial rebates for FireSmart activities on their properties, if rated as high or extreme risk in a FireSmart home and property assessment.
20	84	This report and associated maps should be made publicly available through webpage, social media, and public FireSmart meetings.
21	85	Complete or schedule periodic updates of the CWPP to gauge progress and update the threat assessment (hazard mapping) for changes in fuels, forest health, land planning, stand structure or changes to infrastructure in the interface. The frequency of updates is highly dependent upon major changes which would impact the DNV's wildfire threat assessment or the rate at which wildfire risk reduction efforts are implemented. An evaluation of major changes (including funding program changes that may lead to new opportunities) and the potential need for a CWPP update should be initiated every 5 - 7 years.
22	85	Develop a social media strategy and ensure that its full power is leveraged to communicate fire bans, high or extreme Fire Danger days, wildfire prevention initiatives and programs, easily implementable FireSmart activities, updates on current fires and associated air quality, road closures, and other real-time information in an accurate and timely manner. It is recommended that communications are coordinated via weekly fire calls.
23	85	Promote FireSmart approaches for wildfire risk reduction to DNV residents through Town Hall meetings, workshops and/or presentations. Workshops should target priority neighbourhoods, and a FireSmart display set should be developed that can be transferred between community centres and libraries. Aim to conduct the engagement/promotion campaign prior and during the fire season. Continue supplying FireSmart materials to homeowners in the interface during these engagement campaigns. This initiative can be part of a North Shore-wide effort.

Document Section 5: Risk Management and Mitigation Factors Recommendations		
24	85	Engage in regular education initiatives targeting residential properties within the Wildfire Hazard DPA, including but not limited to door-to-door distribution of FireSmart door hangers.
25	85	Use the planned Maplewood Fire and Rescue Centre (within the Wildfire Hazard DPA) to demonstrate the use of flame proof/fire resistant building materials and FireSmart landscaping with interpretive low flammable landscaping and environmental enhancement areas open to the public. Interpretive/education materials may be provided onsite and/or on the District website.
26	85	Work towards FireSmart community recognition, at the neighbourhood level and facilitate uptake into the FireSmart Canada Community Recognition Program (FSCCRP). This will help reduce fire risk and aid in further funding applications.
27	85	Facilitate the FSCCRP uptake within the DNV and enhance its applications by including the following: 1) inviting BCWS crews to participate in and support the annual FireSmart events set up by participating neighbourhoods. 2) Encourage individual homeowner participants to complete the self-administered FireSmart home assessment tool. 3) Include within the FireSmart Canada Community Assessment Report the standard recommendation that participating neighbourhoods hold a home hazard assessment workshop as one of their FireSmart events.
28	86	Promote the use of the FireSmart Home Partners Program offered by the Partners in Protection Association, which facilitates voluntary FireSmart assessments on private property. Use the opportunity to educate the home or business owner about the hazards which exist on their property and provide easy improvements to reduce their risk.
29	86	Encourage schools to adopt and deploy existing school education programs to engage youth in wildfire management and risk reduction. There is emergency preparedness curriculum available provincially, which includes preparedness for a variety of natural hazards, including wildfire (Master of Disaster). Other options/value-added activities include consulting with Association of BC Forest Professionals (ABCFP) and British Columbia Wildfire Service (BCWS) (Fraser Fire Zone), as well as local fire department and FireSmart representatives to facilitate and recruit volunteer teachers and experts to help with curriculum development to be delivered in elementary and secondary schools (field trips, guest speakers, etc.).
30	86	The North Shore Emergency Management should coordinate and facilitate engagement with all key stakeholders (BCWS, BC Parks, recreational groups/representatives, DNV staff, industrial operators, City of North Vancouver, District of West Vancouver representatives, Metro Vancouver staff, and local First Nations) to formalize an Interface Steering Committee. The purpose of the steering committee would be to identify wildfire related issues in the area and to develop collaborative solutions to minimize wildfire risks.
31	86	Work towards educating homeowners within fire limits areas (i.e., outside of the road accessible fire service area). This is particularly applicable to boat access only residents. It is common, especially in the case of second homeowners/vacation owners, for them to be unaware of the lack of fire services in their area (in the event they call 911).
32	86	Given the historically high proportion of preventable human-caused fire ignitions and the high public and recreational usage of parks, trails and green spaces in the District and the backcountry beyond, the DNV should develop public education focused on increasing awareness of open burning restrictions and/or good wildfire prevention practices. Public information or signage could be posted at busy parks and trailheads and/or posted on the District's website in the form of seasonal notices.
33	87	Work with industrial operators such as BC Hydro and Fortis BC to ensure that high risk activities, such as grubbing/brushing and right-of-way mowing work do not occur during high fire danger times to reduce chance of ignitions as per the Wildfire Act.

34	87	Work with industrial operators (i.e., BC Hydro) to ensure that rights-of-way do not contain fine fuel accumulations (< 7.5 cm, easily cured) and significant regeneration of conifer vegetation prior to and during the fire season and are maintained in a low hazard state (to serve as fuel breaks).
Document Section 6: Wildfire Response Resources Recommendations		
This section details how firefighting efforts and effectiveness can be affected by access to secondary power sources, water pressure and supply, and existing local government contingency plans. In the event of a wildfire emergency situation and loss of power, the majority of critical infrastructure in the DNV has secondary power sources. However, should a wide-scale outage occur, known vulnerabilities to secondary power sources include mechanical failure and potential fuel shortages. The DNV has also identified issues with water pressure within particular areas that have fire hydrant service, and there are known limitations to water supply for firefighting in areas not supplied by the District water systems and consequently without hydrant service.		
35	91	Conduct an assessment of diesel supply for backup generators (scenario-based - e.g. assuming bridges are blocked/inaccessible). This recommendation relates to Required Action 2.2. in the DNV's Climate Change Strategy: invest in backup power equipment for critical functions and develop a fueling strategy.
36	91	Consider purchasing a tender or tank to provide additional on-site water storage for fire suppression use in the Woodlands area and the Baden Powell trail.
37	91	Consider installing an alarm system to warn of de-pressurization of water lines.
38	92	Consider a variety of approaches to improve District water availability and ensure domestic water needs are not compromised in an emergency event that requires sustained use of large quantities of water (i.e., from concurrent structural and wildland firefighting events).
39	92	All new development outside existing District water systems should have a water system which meets or exceeds minimum standards of NFPA 1142, Standard on Water Supplies for Suburban and Rural Fire Fighting. The fire department should review the water supply to ensure it provides sufficient placement, flow, and reliability for suppression needs and that secondary power is available in the event of power outages.
40	93	Restrict public access into work zones in the event of wildfire suppression activities in the Mt. Seymour Parkway/Seymour area to ensure public safety and reduce the risk of entrapment.
41	94	Devise trails or corridors with a minimum 3-4 m width, that are suitable for ATV use in remote or limited access areas (i.e., surrounding the Deep Cove and Seymour areas) in the event of an emergency.
42	94	Acquire an ATV or off-road vehicle (i.e., Polaris side by side) and equip with fire suppression equipment. This vehicle can be used for rapid access in remote or limited access areas within the District boundaries.
43	94	Develop an evacuation strategy for the area served by Indian River Drive.
44	94	Complete and participate in regular testing of, and updates to, the evacuation plan.
45	94	Develop a community wildfire pre-planning brochure to be shared with key DNV, Metro Vancouver and NSEM staff, that addresses the following: 1) locations of staging areas; 2) identifies water reservoirs, communications requirements (i.e., radio frequencies), minimum resource requirements for structure protection in the event of an interface fire, and values at risk; and 3) maps of the area of interest. Collaborate with the District of West Vancouver to ensure similar information is provided.
46	95	Develop a Total Access Plan for the DNV to map and inventory trail and road network in natural areas for suppression planning, identify areas with insufficient access and to aid in strategic planning. Georeferenced maps with ground-truthed locations of potential optimal firebreaks should be developed as part of the Total Access Plan and shared with fire suppression personnel and BCWS to support emergency response in the event of a wildfire. The plan should be updated every five years, or more regularly, as needed to incorporate additions and/or changes.

Document Section 6: Wildfire Response Resources Recommendations		
47	95	Include a qualified professional with experience in operational wildland/interface fire suppression in the planning and strategic siting of future trails and parks.
48	95	The DNVFRS should continue working with BCWS to maintain an annual structural and interface training program. It is recommended the DNVFRS engage in yearly practical wildland fire training with BCWS that covers at a minimum: pump, hose, hydrant, air tanker awareness, and employment of SPUs. Interface training should include completion of a joint wildfire simulation exercise and safety training specific to wildland fire and risks inherent with natural areas.
49	96	Ensure that the DNVFRS maintains the capability to effectively suppress wildland fires, through wildfire-specific training sessions. Ensure all DNVFRS members continue to have SPP-WFF 1 at a minimum. Consider expanding the training program to maintain a high level of member education and training specific to interface and wildland fires. The Office of the Fire Commissioner (OFC) also offers SPP-115 (formerly S-115) to train structural firefighters on the use of wildfire pumps and hose, and fire service hose and hydrants in the application of structural protection units (SPUs); consider training all members to this standard.; the DNVFRS should continue the practice of staying up to date on wildfire training opportunities, and to train members in this capacity, as training resources/budgets allow.
50	98	Work with local distributors and homeowners within the District. The objective is to improve education of homeowners and remove some barriers to FireSmart action. Local distributors can include: hardware stores, garden centers, and aggregate providers
51	98	Expand on existing programs which serve to remove barriers to action for homeowners by providing methods for them to cheaply and easily dispose of wood waste removed from their property. The current yard trimmings bin collection and North Shore Transfer Station for-fee tipping may be expanded to include scheduled community chipping opportunities, or yard waste dumpsters available by month in neighbourhoods. Programs should be available during times of greatest resident activity (likely spring and fall). Consider making community chipping programs available to interested strata properties.
52	98	Complete a vulnerability assessment of all critical infrastructure, secondary power sources, and fuel availability. Review current capability of secondary power sources, identify vulnerabilities, and prioritize needs, in the case of prolonged or extensive power outages. Upgrade or realign resources, as prioritized.

Timing/Approval Process:

After receiving Council approval, the CWPP Update will be used to inform the budget process for allocation of resources through relevant programs.

Concurrence:

The following DNV departments and external stakeholders have reviewed and concur with the report; DNV Parks, Fire & Rescue Services, Planning, Permits & Bylaws, Finance, Engineering and North Shore Emergency Management.

Financial Impacts:

The District received UBCM funding (Attachment 2) for a sum of \$21,821.25 or 75% of the total CWPP update costs of \$29,095. The District share is \$7,274.

A 2020 Community Resiliency Investment Program application is being submitted by DNVFRS for the October 18, 2019 funding intake deadline that includes community FireSmart initiatives and Fuel Management Prescription Development for 59.1ha of the

164ha of high risk areas identified within the CWPP Update. The total 100% grant request is \$132,270.

The projected costs for the Operational Fuel (vegetation management) Treatment at the current \$23,000 per/ha, based on recent average fuel management costs, is \$1,359,000 for the 59.1ha located on District lands. Based on the current CRI 2020 grant funding, there is up to/exceeding \$150,000 available for the purpose of FireSmart initiatives and Fuel Treatment Operations in high risk communities per year.

The remaining 105ha of High Risk Areas identified are partially or wholly located on lands other than municipal i.e. Metro Vancouver, BC Hydro, Crown and Federal Lands. Therefore, collaborative funding and costs sharing opportunities is anticipated. The projected costs for the Fuel Management Prescription development, at approximately \$300 per/ha (2019), is \$31,500 and Operational Fuel (vegetation management) Treatment, at \$23,000 per/ha, is \$2,415,000. Projected costs to the District are minimal and considered primarily in-kind such as support of CRI applications submitted to UBCM and other funding opportunities.

Liability/Risk:

The CWPP Update reduces liability by demonstrating an ongoing work plan toward wildfire risk reduction.

Social Policy Implications:

Understanding, communicating and managing wildfire risk is integrated with community values of recreation, environmental protection, public safety and sustainability.

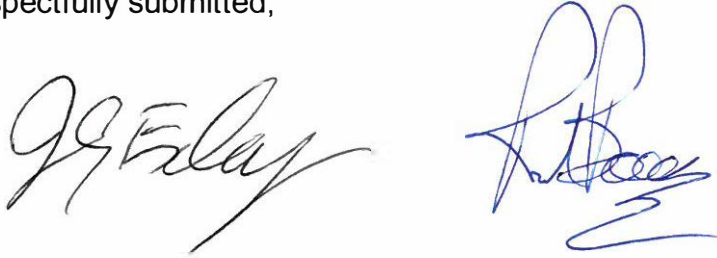
Environmental Impact:

The previously completed operational fuel (vegetation) treatment projects under the 2007 CWPP have reduced the wildfire risk reduction in the District's forests. These projects have also demonstrated the collateral restoration benefits of creating healthier and more resilient forest ecosystems. We continue to learn and make improvements to the restoration and replanting aspects of the fuel treatment work. The CWPP Update has identified a further 164 ha where vegetation management prescriptions and fuel treatments are recommended.

Conclusion:

The DNV wildfire protection program has been very successful to date. We have demonstrated that we can reduce wildfire risk and enhance the interface forest simultaneously. We have also been very successful with our grant funding which has reduced the cost directly attributable to the DNV. The DNV has a demonstrated capacity to continue to build resilience in our forests that protect people, infrastructure, environmental and recreational assets from wildfire hazard. The CWPP Update will provide the future framework to provide a continued regional leadership role in the assessment, mitigation and preparation of wildland-urban interface wildfire response planning.

Respectfully submitted,



Guy Exley - Community Forester

Richard Boase – Section Manager - Environmental Sustainability (Operations)

Attachments:

1. Draft Community Wildfire Protection Plan Update
2. UBCM: March 11, 2019 Approval Agreement & Terms of Conditions of Funding Letter

REVIEWED WITH:		
<input type="checkbox"/> Sustainable Community Dev.	<input type="checkbox"/> Clerk's Office	External Agencies:
<input type="checkbox"/> Development Services	<input type="checkbox"/> Communications	<input type="checkbox"/> Library Board
<input type="checkbox"/> Utilities	<input type="checkbox"/> Finance	<input type="checkbox"/> NS Health
<input type="checkbox"/> Engineering Operations	<input type="checkbox"/> Fire Services	<input type="checkbox"/> RCMP
<input type="checkbox"/> Parks	<input type="checkbox"/> ITS	<input type="checkbox"/> NVRC
<input type="checkbox"/> Environment	<input type="checkbox"/> Solicitor	<input type="checkbox"/> Museum & Arch.
<input type="checkbox"/> Facilities	<input type="checkbox"/> GIS	<input type="checkbox"/> Other:
<input type="checkbox"/> Human Resources	<input type="checkbox"/> Real Estate	

District of North Vancouver Community Wildfire Protection Plan Update

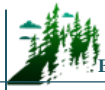


Submitted by:

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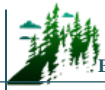
ACKNOWLEDGEMENTS

The authors would like to thank the following District of North Vancouver staff: Guy Exley (Community Forester); Julie Pavey (Section Manager, Environmental Sustainability); Susan Rogers (Parks Manager); Communications staff Catherine Haboly (District Spokesperson) and Stephanie Smiley (Coordinator); Carolyn Drugge (Section Manager, Infrastructure Planning, Natural Hazards); Shaun Carroll (Manager, Utilities); Joanne Slazyk (Senior Project Engineer); Wayne Maskall (Section Manager Natural Parkland); Richard Boase (Environmental Protection Officer); and Brian Hutchinson (Fire Chief) and Haida Fortier (Assistant Chief) of District of North Vancouver Fire Rescue Services. The authors would also like to thank the following members of North Shore Emergency Management: Fiona Dercole (Director) and John Chapman (Emergency Planning Officer). These individuals invested substantial time in meetings, answering questions, and reviewing, and commenting on the contents of this document.

In addition, the authors would like to thank staff from the BC Wildfire Service, including: Tony Botica (Wildfire Prevention Officer), Jessica Duncan (Prevention Specialist) and Orin Caddy (Forest Protection Technician); staff from Metro Vancouver Watershed Environmental Management, Mike Neale (Watershed Protection Officer), as well as BC Parks (Sea to Sky). The input provided by Greg Riley of BC Hydro (Distribution) is also appreciated.

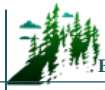
The authors extend their appreciation to the Squamish, Tsleil-Waututh, and Musqueam First Nations.

This report would not be possible without the Strategic Wildfire Prevention Initiative (SWPI) Program and funding from the Union of British Columbia Municipalities (UBCM).



REGISTERED PROFESSIONAL SIGN AND SEAL

DRAFT



EXECUTIVE SUMMARY/ SUMMARY OF CWPP RECOMMENDATIONS

The Community Wildfire Protection Plan (CWPP) process was created in British Columbia (BC) as a response to the devastating 2003 wildfire in Kelowna. As an integral part of the Strategic Wildfire Prevention Initiative (SWPI), managed and funded through the Strategic Wildfire Prevention Working Group, CWPPs aim to develop strategic recommendations to assist in improving safety and to reduce the risk of damage to property from wildfires.

This CWPP Update will provide the District of North Vancouver (DNV) with a framework that can be used to review and assess areas of identified moderate and high fire risk within the DNV. Additionally, the information contained in this report should help to guide the development of emergency plans, emergency response, evacuation plans, communication and education programs (including FireSmart), bylaw development in areas of fire risk, and the management of potentially hazardous forest lands adjacent to the community.

Since the development of the last CWPP in 2007, the District of North Vancouver has implemented all the recommendations from the CWPP, with the exception of one (Recommendation 25). The most notable actions include implementation of the following¹:

- Establishment of a Wildfire Development Permit Area, that requires new buildings to comply with FireSmart, National Fire Protection Association (NFPA), and District-developed standards for non-flammable building envelope materials (Recommendations 10 and 11);
- Prescription development for approximately 72.4 ha and fuel treatment on approximately 57 ha of land surrounding the community (Recommendations 27-29);
- Provision of specialized training to local fire department and DNV staff for Interface Fire Response (Recommendation 26); and
- Development of a forest health strategy to address issues associated with dwarf mistletoe infected western hemlock (Recommendation 32).

Wildfire management requires a multi-faceted approach for greatest efficacy and risk reduction outcomes. A total of 52 strategic recommendations are summarized in Table 1 below. In addition, these recommendations are included and more thoroughly discussed in their appropriate sections within the document. Ultimately, the recommendations within this plan should be considered a toolbox of options to help reduce the wildfire threat to the community. There is not one course of action or combination of actions that provides the answer to the challenge of wildfire risk in communities; the DNV must further prioritize based on resources, strengths, constraints, and availability of funding, regularly updating priorities and its course of action, as variables and circumstances change through time.

¹ A full enumeration of recommendations from the 2007 CWPP can be found in Appendix L – Summary of 2007 Community Wildfire Protection Plan Recommendations.

**Table 1. Summary of CWPP Recommendations by Document Section.**

Document Section 2: Local Area Description (2.5.3: Local Government/First Nations Policies and Recommendations)				
Item	Page No.	Priority	Recommendation/Next Steps	Funding Source
Objective: Review and amend the current District of North Vancouver regulatory framework to incorporate wildfire mitigation and preparedness considerations.				
1	10	Moderate	Review the Official Community Plan (OCP), Section 4.2 – Parkland Standards and Acquisition and associated documents (e.g., Parks and Open Space Strategic Plan, 2012) and consider strategic parkland acquisition and parks maintenance through a wildfire risk lens, including consideration for long-term maintenance costs and access.	Eligible for UBCM Community Resiliency Investment (CRI) Program Funding ²
2	12	High	Review the OCP Schedule B Bylaw 7671 and Wildfire Hazard DPA Guidelines section to include language regarding management of non-compliant hedging and other vegetation in proximity to homes after the post-development inspection has been signed-off by a Qualified Professional (QP). ³	Local government funding/UBCM CRI Program Funding
3	12	High	Review the OCP Schedule B Bylaw 7671 and Wildfire Hazard DPA Guidelines section and set a procedure for establishing and updating fire testing standards to ensure alternative and novel non-flammable exterior building materials are pre-approved in a timely manner for use in the WUI. ³	Local government funding/UBCM CRI Program Funding
4	13	High	Review and update the fire testing standards and materials section of the Wildfire Hazard DPA Guidelines to identify and define a list of approved building materials and review and update the approved materials list on a bi-annual basis or as new proposals come forward from builders. These materials should be reviewed by a recognized expert in the building material field, with consideration for recent and applicable research findings prior to granting approval for use in the WUI. ³	Local government funding

² UBCM Community Resiliency Investment (CRI) Program. Refer to Section 5.1 and the Union of BC Municipality's website (<https://www.ubcm.ca/EN/main/funding/lgps/community-resiliency-investment.html>) for further information.

³ Additional recommendations (15-17) related to the Wildfire Hazard DPA are provided in Section 5.2.2).



Document Section 2: Local Area Description (2.5.3: Local Government/First Nations Policies and Recommendations)				
Item	Page No.	Priority	Recommendation/Next Steps	Funding Source
5	14	Moderate	Review the Solid Waste Removal Bylaw 7631 to include language specific to green waste, not just garbage, under the prohibitions section to ensure that there is a legally enforceable bylaw to prevent flammable materials to accumulate, collect or to remain on the property unless securely contained.	Local government funding
6	15	Moderate	Create incentives and/or targeted education and outreach to promote FireSmart renovations of exterior elements of existing buildings within the Wildfire Hazard DPA, recognizing that the Wildfire Hazard DPA and the Construction Bylaw pertain only to new construction and do not address the vulnerability of existing older homes. See recommendation 19 for strategy suggestion and funding opportunities.	Local government funding
7	17	Low	Update the DNV Invasive Plant Management Strategy, 2015 to target monitoring and resources to areas with known invasive species occurrences in the wildland urban interface, where new forests are being established or where stand conversion has occurred. Continue addressing invasive species management during fuel treatment implementation in the DNV wildland urban interface, in order to improve forest resilience and promote ecological restoration of degraded sites.	Local government funding
Document Section 3: Values at Risk				
Item	Page No.	Priority	Recommendation/Next Steps	Funding Source
Objective: Protect critical infrastructure and mitigate post wildfire impacts				
8	22	Low	The North Shore Emergency Management (NSEM) in collaboration with the three North Shore communities should lobby the Provincial government or local Medical Health Officer(s) to develop a strategy for communities to draw upon when they are exposed to smoke from wildfire for extended periods of time. This strategy may include smoke exposure risk assessments, exposure reduction measures, and a decision-key for when to evacuate a community due to wildfire smoke.	Local government funding/ North Shore Emergency Management Funding



Document Section 3: Values at Risk				
Item	Page No.	Priority	Recommendation/Next Steps	Funding Source
9	23	Moderate	The use of fire-resistant construction materials, building design and landscaping should be considered for all critical infrastructure within the District boundaries when completing upgrades or establishing new infrastructure. Additionally, vegetation setbacks around critical infrastructure should be compliant with FireSmart guidelines.	Local government funding
10	23	High	It is recommended that formal FireSmart assessments (by a Qualified Professional) be completed of critical infrastructure such as the fire halls, emergency operations centre, water infrastructure, and others as identified in this CWPP (Table 3) and by the District.	Local government funding (Local FireSmart Representatives)
11	23	Moderate	The District should work with Metro Vancouver to develop a back-up water delivery plan, to be enacted in the event of an emergency. Annual testing of this plan is recommended.	Local government funding
Document Section 5: Risk Management and Mitigation Factors Recommendations				
Item	Page No.	Priority	Recommendation/Next Steps	Funding Source
Objective: Reduce Wildfire Threat through Fuel Management				
12	62	High	Proceed with detailed assessment, prescription development, and treatment of hazardous units identified and prioritized in this CWPP.	UBCM CRI Program Funding/Local Government Funding
13	70	Moderate	Treatment monitoring to be completed by a qualified professional to schedule next set of maintenance activities (5 – 10 years out). This can be completed with a CWPP update, as it was for this document, or as a stand-alone exercise.	UBCM CRI Program Funding/Local Government Funding
Document Section 5: Risk Management and Mitigation Factors Recommendations				
Item	Page No.	Priority	Recommendation/Next Steps	Funding Source
Objective: Reduce Wildfire Hazard on Private Land				
14	78	Low	The DNV should consider applying for a FireSmart demonstration grant through the CRI program. This type of fuel treatment can display the practices and principles of FireSmart activities to the public in the form of demonstration treatments.	UBCM CRI Program Funding/Local Government Funding
15	79	High	Review the DP process to assess the outcomes of DP applications and long-term compliance with DP recommendations on an ongoing basis to facilitate improvements to the process.	Local Government Funding (annual/bi-annual basis)



Document Section 5: Risk Management and Mitigation Factors Recommendations				
Item	Page No.	Priority	Recommendation/Next Steps	Funding Source
16	79	Moderate	Develop a landscaping standard which lists flammable non-compliant vegetation and landscaping materials, non-flammable drought and pest resistant alternatives, and tips on landscape design to reduce maintenance, watering requirements, avoid wildlife attractants, and reduce wildfire hazard. Consider making it publicly available for residents and homeowners outside of the DP area (can be provided at issue of building permit and made available at the DNV Office or other strategic locations).	Local Government Funding
17	79	Low	Engage the development/building community (may include developers, builders, landscapers, and architects) in any amendments to the DP process. This can be accomplished through workshops/informational sessions and/or information packages to increase awareness of wildfire risk and to educate and inform regarding the DP process and expectations. This initiative should be a collaborative effort between the three North Shore communities to ensure similar standards apply across the North Shore area.	Local Government Funding
18	81	Moderate	Continue to maintain trained Local FireSmart Representatives (LFRs) on staff to assist and engage various neighbourhoods in complying with FireSmart principles at both the neighbourhood and individual home-level.	Local Government Funding
Document Section 5: Risk Management and Mitigation Factors Recommendations				
Item	Page No.	Priority	Recommendation/Next Steps	Funding Source
19	83	High	The DNV should apply for funding from the UBCM CRI Program to develop a local FireSmart rebate program. This will allow homeowners to access partial rebates for FireSmart activities on their properties, if rated as high or extreme risk in a FireSmart home and property assessment. The rebate program is described in detail in Appendix 2 of the CRI Program 2020 FireSmart Community Funding and Supports – Program & Application Guide ⁴ and must adhere to the goals of FireSmart, as outlined in Section 5.2.1.	Local Government Funding

⁴ UBCM, 2019. Retrieved online at: <https://www.ubcm.ca/assets/Funding~Programs/LGPS/CRI/cr-2020-program-guide.pdf>



Document Section 5: Risk Management and Mitigation Factors Recommendations				
Item	Page No.	Priority	Recommendation/Next Steps	Funding Source
Objective: Increase Public Wildfire Awareness				
20	84	High	This report and associated maps should be made publicly available through webpage, social media, and public FireSmart meetings.	Local Government Funding
21	84	Moderate	Complete or schedule periodic updates of the CWPP to gauge progress and update the threat assessment (hazard mapping) for changes in fuels, forest health, land planning, stand structure or changes to infrastructure in the interface. The frequency of updates is highly dependent upon major changes which would impact the DNV's wildfire threat assessment or the rate at which wildfire risk reduction efforts are implemented. An evaluation of major changes (including funding program changes that may lead to new opportunities) and the potential need for a CWPP update should be initiated every 5 - 7 years.	UBCM CRI Program funding (two eligibility tiers: \$25,000 or \$150,000; eligibility is based on local wildfire risk rating)/ local government funding to supplement
22	85	Moderate	Develop a social media strategy and ensure that its full power is leveraged to communicate fire bans, high or extreme Fire Danger days, wildfire prevention initiatives and programs, easily implementable FireSmart activities, updates on current fires and associated air quality, road closures, and other real-time information in an accurate and timely manner. It is recommended that communications are coordinated via weekly fire calls. ⁵ This may be combined with incentive programs such as neighbourhood or community chipping days (see recommendation #51).	Local Government Funding
23	85	High	Promote FireSmart approaches for wildfire risk reduction to DNV residents through Town Hall meetings, workshops and/or presentations. Workshops should target priority neighbourhoods, and a FireSmart display set should be developed than can be transferred between community centres and libraries. Aim to conduct the engagement/promotion campaign prior and during the fire season. Continue supplying FireSmart materials to homeowners in the interface during these engagement campaigns. This initiative can be part of a North Shore-wide effort.	UBCM CRI Program Funding/Local Government Funding

⁵ Appendix K has general communication and social media information.



Document Section 5: Risk Management and Mitigation Factors Recommendations				
Item	Page No.	Priority	Recommendation/Next Steps	Funding Source
24	85	Moderate	Engage in regular education initiatives targeting residential properties within the Wildfire Hazard DPA, including but not limited to door-to-door distribution of FireSmart door hangers.	UBCM CRI Program Funding/Local Government Funding
25	85	High	Use the planned Maplewood Fire and Rescue Centre (within the Wildfire Hazard DPA) to demonstrate the use of flame proof/fire resistant building materials and FireSmart landscaping with interpretive low flammable landscaping and environmental enhancement areas open to the public. Interpretive/education materials may be provided onsite and/or on the District website.	Local Government Funding
26	85	Moderate	Work towards FireSmart community recognition, at the neighbourhood level and facilitate uptake into the FireSmart Canada Community Recognition Program (FSCCRP). This will help reduce fire risk and aid in further funding applications.	FireSmart Grant
27	85	Moderate	Facilitate the FSCCRP uptake within the DNV and enhance its applications by including the following: 1) inviting BCWS crews to participate in and support the annual FireSmart events set up by participating neighbourhoods. 2) Encourage individual homeowner participants to complete the self-administered FireSmart home assessment tool. 3) Include within the FireSmart Canada Community Assessment Report the standard recommendation that participating neighbourhoods hold a home hazard assessment workshop as one of their FireSmart events.	UBCM CRI Program Funding/Local Government Funding
28	86	Low	Promote the use of the FireSmart Home Partners Program offered by the Partners in Protection Association, which facilitates voluntary FireSmart assessments on private property. Use the opportunity to educate the home or business owner about the hazards which exist on their property and provide easy improvements to reduce their risk.	Local Government Funding



Document Section 5: Risk Management and Mitigation Factors Recommendations				
Item	Page No.	Priority	Recommendation/Next Steps	Funding Source
29	86	Low	Encourage schools to adopt and deploy existing school education programs to engage youth in wildfire management and risk reduction. There is emergency preparedness curriculum available provincially, which includes preparedness for a variety of natural hazards, including wildfire (Master of Disaster). Other options/value-added activities include consulting with Association of BC Forest Professionals (ABCFP) and British Columbia Wildfire Service (BCWS) (Fraser Fire Zone), as well as local fire department and FireSmart representatives to facilitate and recruit volunteer teachers and experts to help with curriculum development to be delivered in elementary and secondary schools (field trips, guest speakers, etc.).	Local Government Funding
30	86	High	The North Shore Emergency Management should coordinate and facilitate engagement with all key stakeholders (BCWS, BC Parks, recreational groups/representatives, DNV staff, industrial operators, City of North Vancouver, District of West Vancouver representatives, Metro Vancouver staff, and local First Nations) to formalize an Interface Steering Committee. The purpose of the steering committee would be to identify wildfire related issues in the area and to develop collaborative solutions to minimize wildfire risks.	Local Government Funding
31	86	Moderate	Work towards educating homeowners within fire limits areas (i.e., outside of the road accessible fire service area). This is particularly applicable to boat access only residents. It is common, especially in the case of second homeowners/vacation owners, for them to be unaware of the lack of fire services in their area (in the event they call 911).	Local Government Funding



Document Section 5: Risk Management and Mitigation Factors Recommendations				
Item	Page No.	Priority	Recommendation/Next Steps	Funding Source
32	86	High	Given the historically high proportion of preventable human-caused fire ignitions (see Section 2.3) and the high public and recreational usage of parks, trails and green spaces in the District and the backcountry beyond, the DNV should develop public education focused on increasing awareness of open burning restrictions and/or good wildfire prevention practices. This could include information on how ignitions can occur (including the range of human-related activities that can create a spark or heat source sufficient to ignite a wildfire), how easily they can occur and how they can be prevented. Public information or signage could be posted at busy parks and trailheads and/or posted on the District's website in the form of seasonal notices (similar to summer parking and access notices posted for popular destinations).	Local Government Funding
Objective: Reduce Wildfire Risk from Industrial Sources				
33	87	Moderate	Work with industrial operators such as BC Hydro and Fortis BC to ensure that high risk activities, such as grubbing/brushing and right-of-way mowing work do not occur during high fire danger times to reduce chance of ignitions as per the <i>Wildfire Act</i> . It is recommended that communications are coordinated via weekly fire calls.	Local Government Funding
34	87	High	Work with industrial operators (i.e., BC Hydro) to ensure that rights-of-way do not contain fine fuel accumulations (< 7.5 cm, easily cured) and significant regeneration of conifer vegetation prior to and during the fire season and are maintained in a low hazard state (to serve as fuel breaks).	Local Government Funding
Document Section 6: Wildfire Response Resources Recommendations				
Item	Page No.	Priority	Recommendation/Next Steps	Funding Source
Objective: Improve Water Availability for Emergency Response				
35	91	Moderate	Conduct an assessment of diesel supply for backup generators (scenario-based - e.g. assuming bridges are blocked/inaccessible). This recommendation relates to Required Action 2.2. in the DNV's Climate Change Strategy: invest in backup power equipment for critical functions and develop a fueling strategy.	Local Government Funding



Document Section 6: Wildfire Response Resources Recommendations				
Item	Page No.	Priority	Recommendation/Next Steps	Funding Source
36	91	High	Consider purchasing a tender or tank to provide additional on-site water storage for fire suppression use in the Woodlands area and the Baden Powell trail.	Local Government Funding
37	91	Moderate	Consider installing an alarm system to warn of depressurization of water lines. This recommendation relates to Required Action 1.2. in the DNV's Climate Change Strategy (Develop and implement additional technological tools to assist in situational awareness and emergency response communication).	Local Government Funding
38	92	High	Consider a variety of approaches to improve District water availability and ensure domestic water needs are not compromised in an emergency event that requires sustained use of large quantities of water (i.e., from concurrent structural and wildland firefighting events).	Local Government Funding
39	92	High	All new development outside existing District water systems should have a water system which meets or exceeds minimum standards of NFPA 1142, <i>Standard on Water Supplies for Suburban and Rural Fire Fighting</i> . The fire department should review the water supply to ensure it provides sufficient placement, flow, and reliability for suppression needs and that secondary power is available in the event of power outages.	Local Government Funding
Objective: Improve Access/Egress to Enhance Emergency Preparedness and Include Wildfire Considerations when Trail Planning				
40	93	Low	Restrict public access into work zones in the event of wildfire suppression activities in the Mt. Seymour Parkway/Seymour area to ensure public safety and reduce the risk of entrapment ⁶ .	Local Government Funding
41	94	Moderate	Devise trails or corridors with a minimum 3-4 m width, that are suitable for ATV use in remote or limited access areas (i.e., surrounding the Deep Cove and Seymour areas) in the event of an emergency.	Local Government Funding
42	94	Moderate	Acquire an ATV or off-road vehicle (i.e., Polaris side by side) and equip with fire suppression equipment. This vehicle can be used for rapid access in remote or limited access areas within the District boundaries.	Local Government Funding

⁶ Fire entrapment is a life-threatening situation that occurs when individuals are threatened by a sudden change in fire conditions and are unable to utilize escape routes to access safety zones.



Document Section 6: Wildfire Response Resources Recommendations				
Item	Page No.	Priority	Recommendation/Next Steps	Funding Source
43	94	Moderate	Develop an evacuation strategy for the area served by Indian River Drive.	Local Government Funding
44	94	Moderate	Complete and participate in regular testing of, and updates to, the evacuation plan.	Local Government Funding
45	94	Moderate	Develop a community wildfire pre-planning brochure to be shared with key DNV, Metro Vancouver and NSEM staff, that addresses the following: 1) locations of staging areas; 2) identifies water reservoirs, communications requirements (i.e., radio frequencies), minimum resource requirements for structure protection in the event of an interface fire, and values at risk; and 3) maps of the area of interest. Collaborate with the District of West Vancouver to ensure similar information is provided.	Local Government Funding
46	95	Low	Develop a Total Access Plan for the DNV to map and inventory trail and road network in natural areas for suppression planning, identify areas with insufficient access and to aid in strategic planning. Georeferenced maps with ground-truthed locations of potential optimal firebreaks should be developed as part of the Total Access Plan and shared with fire suppression personnel and BCWS to support emergency response in the event of a wildfire. The plan should be updated every five years, or more regularly, as needed to incorporate additions and/or changes.	Local Government Funding
47	95	Moderate	Include a qualified professional with experience in operational wildland/interface fire suppression in the planning and strategic siting of future trails and parks.	Local Government Funding
Objective: Enhance Wildfire Equipment and Training				
48	96	High	The DNVFRS should continue working with BCWS to maintain an annual structural and interface training program. It is recommended the DNVFRS engage in yearly practical wildland fire training with BCWS that covers at a minimum: pump, hose, hydrant, air tanker awareness, and employment of SPUs. Interface training should include completion of a joint wildfire simulation exercise and safety training specific to wildland fire and risks inherent with natural areas.	UBCM CRI Program Funding/Local Government Funding

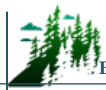


Document Section 6: Wildfire Response Resources Recommendations				
Item	Page No.	Priority	Recommendation/Next Steps	Funding Source
Objective: Enhance Wildfire Equipment and Training				
49	96	High	Ensure that the DNVFRS maintains the capability to effectively suppress wildland fires, through wildfire-specific training sessions. Ensure all DNVFRS members continue to have SPP-WFF 1 at a minimum. Consider expanding the training program to maintain a high level of member education and training specific to interface and wildland fires. The Office of the Fire Commissioner (OFC) also offers SPP-115 (formerly S-115) to train structural firefighters on the use of wildfire pumps and hose, and fire service hose and hydrants in the application of structural protection units (SPUs); consider training all members to this standard.; the DNVFRS should continue the practice of staying up to date on wildfire training opportunities, and to train members in this capacity, as training resources/budgets allow.	UBCM CRI Program Funding/Local Government Funding
Objective: Encourage FireSmart Initiatives				
50	98	Low	Work with local distributors and homeowners within the District. The objective is to improve education of homeowners and remove some barriers to FireSmart action. Local distributors can include: hardware stores, garden centers, and aggregate providers	Local Government Funding
51	98	Moderate	Expand on existing programs which serve to remove barriers to action for homeowners by providing methods for them to cheaply and easily dispose of wood waste removed from their property. The current yard trimmings bin collection and North Shore Transfer Station for-fee tipping may be expanded to include scheduled community chipping opportunities, or yard waste dumpsters available by month in neighbourhoods. Programs should be available during times of greatest resident activity (likely spring and fall). Consider making community chipping programs available to interested strata properties.	UBCM CRI Program Funding/Local Government Funding
Objective: Enhance Protection of Municipal Infrastructure from Wildfire				
52	98	Moderate	Complete a vulnerability assessment of all critical infrastructure, secondary power sources, and fuel availability. Review current capability of secondary power sources, identify vulnerabilities, and prioritize needs, in the case of prolonged or extensive power outages. Upgrade or realign resources, as prioritized.	Local Government Funding



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COMMONLY USED ACRONYMS

BCWS	British Columbia Wildfire Service
BEC	Biogeoclimatic Ecosystem Classification
BMP	Best Management Practices
CDC	B.C. Conservation Data Centre
CFFDRS	Canadian Forest Fire Danger Rating System
CRI	Community Resiliency Investment Program
CWPP	Community Wildfire Protection Plan
DNV	District of North Vancouver
DNVFRS	District of North Vancouver Fire and Rescue Services
DP	Development Permit
DPA	Development Permit Area
FBP	Fire Behaviour Prediction System
FESBC	Forest Enhancement Society of British Columbia
FMP	Fire Management Plan
FSCCRP	FireSmart Canada Community Recognition Program
HIZ	Home Ignition Zone
MVRD	Metro Vancouver Regional District
MFLNRORD	Ministry of Forests, Lands, Natural Resource Operations, and Rural Development
NRD	Natural Resource District
NFPA	National Fire Protection Association
NSEMO	North Shore Emergency Management Office
NSEOC	North Shore Emergency Operations Centre
NSR	North Shore Rescue
OCP	Official Community Plan
OFC	Office of the Fire Commissioner
POSSP	Parks and Open Space Strategic Plan
PSTA	Provincial Strategic Threat Analysis
PTU	Proposed Treatment Unit
QP	Qualified Professional
SPU	Structural Protection Unit
SWPI	Strategic Wildfire Prevention Initiative
TSA	Timber Supply Area
UBCM	Union of British Columbian Municipalities
WUI	Wildland Urban Interface

SECTION 1: INTRODUCTION

The District of North Vancouver (DNV) staff have recognized wildfire mitigation and planning to be a foundational component of emergency planning and preparedness. In 2017, B.A. Blackwell and Associates Ltd. was retained to assist the DNV in developing an update to the previous 2007 Community Wildfire Protection Plan which was titled *District of North Vancouver Community Wildfire Protection Plan*, hereinafter referred to as the 2007 CWPP. This CWPP Update document revisits the 2007 CWPP with a focus on integrating the updated Provincial Strategic Threat Analysis (PSTA), BC Wildfire Service (BCWS) fuel type mapping, and the updated and improved wildfire threat analysis methodology. Furthermore, DNV staff recognized that there have been significant changes since 2007 which have had a direct impact on wildfire mitigation activities and programs. The aforementioned changes include: significant growth and development in the last decade; implementation of bylaws regarding building regulation, parks and green spaces and development services; and changes in fuels surrounding the community.

Although forest fires are both inevitable and essential to the health of forested ecosystems, the 2003, 2004, 2009, 2010, 2015, 2017 and 2018 wildfire seasons resulted in significant economic, social and environmental losses in BC. The 2018 fire season impacted various regions of the province, leading to 66 evacuation orders and approximately 1,355,000 hectares burned, surpassing the 2017 fire season.⁷ The final suppression costs for the 2018 fire season are estimated at over \$615 million.⁷ Other recent wildfire disasters—like those experienced in Slave Lake, Alberta (2011), Washington State (2014 and 2015), Fort McMurray, Alberta (2016) and BC and California (2017-2018) demonstrate the vulnerability of communities and the potential toll of wildfires on families, neighbourhoods and the economy of entire regions. These events, along with critical lessons learned and important advances in knowledge and loss prevention programs, have spurred the need for greater consideration and due diligence with respect to fire risk in the wildland urban interface⁸ (WUI).

1.1 PURPOSE

The purpose of this CWPP Update is to identify and update the wildfire risks within and surrounding the DNV, to describe the potential consequences of a wildfire impacting the area, and to examine options and strategies to reduce wildfire risk to the community. This CWPP Update provides a reassessment of the level of risk with respect to changes in the area that have occurred recently, giving the DNV a more current and accurate understanding of the threats to human life, property and critical infrastructure faced by the community from wildfires. The goal of this CWPP, in addition to defining the threats, is to identify measures necessary to mitigate these threats and outline a plan of action for implementing these measures. Specifically, this CWPP Update is intended to serve as a framework to inform the

⁷ BC Wildfire Service. Wildfire Season Summary. Available online at: <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-history/wildfire-season-summary>

⁸ Wildland/urban interface is defined as the presence of structures in locations in which conditions result in the potential for their ignition from flames and firebrands/embers of a wildland fire (National Fire Protection Association). See Appendix D for a more detailed discussion.

implementation of specific actions and strategies that will serve to: 1) reduce the likelihood of wildfire entering the community, 2) reduce the impacts and losses to property and critical infrastructure if a wildfire were to occur, and 3) reduce the negative economic and social impacts of wildfire to the community.

1.2 CWPP PLANNING PROCESS

This CWPP Update is a review and synthesis of the background information and current data related to the area of interest (AOI) which represents the DNV municipal boundary. The CWPP process consists of four general phases:

- 1) **Consultation involving key local government representatives, structural and wildfire specialists, and stakeholders.** Consultation and information sharing occurred at various stages of the CWPP development and ensured linkages with relevant existing land use plans, legislation, and policy currently in place.
- 2) **Identification of the values at risk and assessment of the local wildfire threat.** Wildfire threat assessment takes into consideration natural fire regime and ecology, Provincial Strategic Threat Analysis (2017), ground truthing, fuel type verification, completion of WUI Threat Forms and GIS wildfire threat analyses.
- 3) **Developing a risk mitigation strategy.** This phase provides a guide for the DNV to implement mitigation and risk reduction activities. The risk mitigation strategy accounts for prioritization of fuel treatments, FireSmart activities, and wildfire response recommendations that will reduce wildfire risk locally.
- 4) **Building a community engagement and education strategy.** This phase includes presentation of the CWPP Update to the Board or Council, the formation of a Wildfire Working Group as well as comprehensive consultation with First Nations, government and non-governmental agencies. This CWPP Update provides recommendations for ongoing community education and engagement to support successful implementation of the CWPP.

1.2.1 Consultation

Broad engagement with local government, provincial government landowner representatives, stakeholders and First Nations played a key role in developing this CWPP update.

The first step in the consultation process was to assemble key players in the 'Wildfire Working Group'. This group comprised key internal DNV staff, including but not limited to the District of North Vancouver Fire and Rescue Services (DNVFRS), Environment, Infrastructure Planning, Natural Hazards, Parks, Communications, Utilities, Engineering and representatives from North Shore Emergency Management (NSEM). Non-DNV staff participating in the Wildfire Working Group also included a Distribution representative from BC Hydro. A total of three Wildfire Working Group meetings were held. The objectives of these meetings were to obtain information about wildfire risk mitigation initiatives currently in place or that had been completed, existing plans, policies, and current resources; to identify

areas of concern and DNV vulnerabilities; and, finally, to determine priorities and potential mitigation strategies. Members of the Wildfire Working Group were consulted on an ongoing basis throughout plan development and were integral in providing Plan review and approval.

BCWS representatives from the Coastal Fire Centre and Fraser Zone were consulted as follows: 1) at the onset of the project planning phase and 2) throughout the CWPP update development process, both via the submission of Fuel Type Change Rationales and questionnaire regarding concerns and priorities of BCWS with respect to wildfire and emergency planning in the DNV; and 3) to provide review and revision of draft document upon plan completion.

Information sharing took place with the following First Nations groups: Halalt, Kwikwetlem, Lake Cowichan, Lyackson, Shxw'ow'hamel, Skawahlook, Soowahlie, Squamish, Sto:lo, Stz'uminus, and Tsleil-Waututh Nations; the Cowichan and Penelakut tribes; and the Musqueam and Seabird Island Bands, as identified through the Consultative Areas Database, and in consultation with MFLNRORD and the DNV. The Nations, Bands and Tribes were consulted during the development of the CWPP with regards to locations of existing or potential cultural values at risk requiring protection consideration. Information sharing consisted of an initial phone call, and subsequent distribution of a referral letter and information package (i.e., maps, an explanation of the CWPP, and a CWPP draft document). The First Nations were provided the Plan for review and feedback.

Additional stakeholders were consulted to identify synergies, opportunities for collaboration, and ensure linkages with adjacent and overlapping planning. These stakeholders included Metro Vancouver, BC Parks, BC Hydro and the Canada Mortgage and Housing Corporation. Combined, these various consultation and engagement opportunities have generated a shared understanding of the CWPP objectives and expected outcomes among local government, stakeholders, residents, and land managers.

1.2.2 Identification of Values at Risk and Local Wildfire Threat Assessment

The risks associated with wildfire must be clearly identified and understood before a CWPP can define strategies or actions to mitigate risks. The identified values at risk are described in Section 3. Wildfire threat in the DNV was assessed through a combination of the following approaches:

- Natural fire regime and ecology (Section 4.1);
- Provincial Strategic Threat Analysis (Section 4.2); and
- Local wildfire threat analysis (Section 4.3).

The relationship between wildfire hazard, threat and risk can be demonstrated in the following example. If a fire (the hazard) ignites and spreads towards a community, the wildfire can become a threat to life and property, with an associated risk of loss, where:

$$\text{Wildfire risk} = \text{Probability} \times \text{Consequence}$$

and:

- Wildfire risk is defined as the potential losses incurred to human life, property and critical infrastructure within a community in the event of a wildfire;
- Probability is the likelihood of fire occurring in an area and is related to the susceptibility of an area to fire (e.g., fuel type, climate, probability of ignition); and
- Consequences refer to the repercussions associated with fire occurrence in a given area (i.e., higher consequences are associated with densely populated areas, or areas of high biodiversity, etc.).

1.2.3 Development of a Risk Management Strategy

An effective risk management strategy was developed considering a full range of activities relating to the following:

- Fuel management;
- FireSmart planning and activities;
- Community communication and education;
- Other prevention measures;
- Structure protection and planning (i.e., FireSmart activities);
- Emergency response and preparedness;
- Evacuation and access; and
- Planning and development.

1.2.4 Building Community Engagement and Education Strategy

Engaging the community from local government staff and officials, to key stakeholders and residents in wildfire protection planning activities is key to ensuring successful implementation. A community engagement and education strategy is described in Section 5.3.

A presentation to the DNV Board will aim to ensure high level approval and support for this CWPP.

SECTION 2: LOCAL AREA DESCRIPTION

This section defines the Area of Interest (AOI) and describes the community of North Vancouver within the AOI. It also summarizes the current community engagement in wildfire prevention and mitigation and identifies linkages to other plans and policies with relevance to wildfire planning.

2.1 AREA OF INTEREST

The District of North Vancouver, situated on the north shore of the Burrard Inlet at the foothills of the Coastal Mountain Range, stretches from Indian Arm in the east to the Capilano River Canyon in the west. The District has a total land area of 160.76 square km (2016 Census). Within its boundaries there is a mix of residential, commercial, heavy industrial, and waterfront properties as well as a large area of wildland including three river canyons (Capilano River, Lynn Creek and Seymour River). Parkland makes

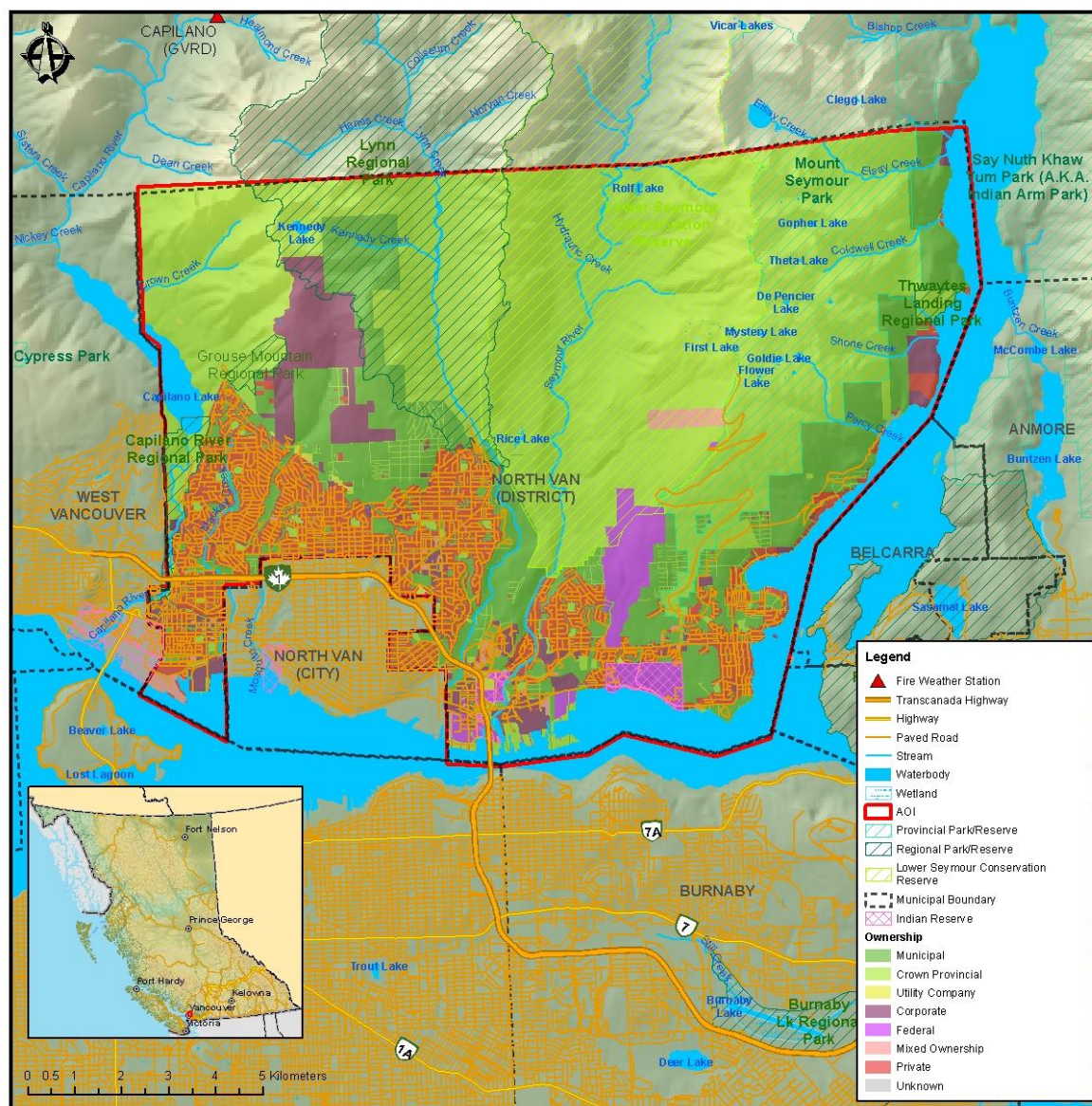
up approximately 19 per cent of the District, including such features as Grouse Mountain, Lynn Headwaters Regional Park, and Mount Seymour Provincial Park.

North Vancouver's dramatic topography is one of its defining characteristics. Rugged shorelines, steep terrain, numerous creeks and watercourses, and spectacular views provide an extremely attractive setting of international renown. North Vancouver is an exceedingly popular destination year-round for outdoor recreation in many forms including hiking, skiing, snowshoeing, and mountain biking.

The AOI for the CWPP is illustrated below in Map 1. The AOI includes the municipal boundary, which encompasses all developed areas and the wildland urban interface (with a minimum density of six structures per square kilometer), within DNV jurisdiction. The current AOI is bounded in the east by Indian Arm, to the south by the City of North Vancouver and Burrard Inlet, and in the west by the Capilano River. The AOI is approximately 17,764 ha in size. A breakdown of the AOI's land ownership is provided in Table 2.

Table 2. Summary of AOI by land ownership.

Land Ownership	Hectares
Corporate	901
Crown Provincial	11,551
Federal	454
Mixed Ownership	151
Municipal	2,949
Private	1,730
Unknown	1
Utility Company	28
Total	17,764



Map 1. Area of Interest (AOI).

2.2 COMMUNITY DESCRIPTION

The District of North Vancouver is one of 21-member municipalities that make up Metro Vancouver, formerly the Greater Vancouver Regional District. The DNV along with the City of North Vancouver, the District of West Vancouver and Lions Bay make up the Metro Vancouver sub-region known as the North Shore.⁹ In addition to the 21 municipalities, Metro Vancouver contains one Treaty Nation (Tsawwassen First Nation) and an electoral area. The four North Shore municipalities are provided shared services

⁹ District of North Vancouver. Official Community Plan. 2018

such as roads and utilities, and partnerships exist for recreation and emergency planning services. At the District level, services provided include land use planning, fire protection services, water treatment, waste water collections, and bylaw development and enforcement. The DNV in its entirety has a population of 85,395 and covers approximately 161 km².¹⁰

The DNV has been inhabited by the Coast Salish Aboriginal Peoples from time immemorial. The Tsleil-Waututh, Squamish and Musqueam Nations are among the Coast Salish Nations that historically occupied the land, some of whom continue to live within the AOI today. The AOI encompasses two Indian Reserves: Burrard Inlet No.3 and Seymour Creek No.2, which pertain to the Tsleil-Waututh and Squamish Nation, respectively. The AOI is topographically diverse, with areas ranging from sea level to approximately 1,450 m in elevation. This topographical variability is exhibited by the presence of low-lying areas, rolling hills and mountainous terrain. The AOI comprises multiple lakes and streams, including Capilano Lake. The entire eastern and southern extent of the AOI is bounded by Indian Arm and Burrard Inlet, respectively.

The DNV economy historically was driven by the forest industry (logging and milling), shipping, and shipbuilding. Although the port and its industries remain of importance to the local economy, in recent decades the economic focus has shifted to light industry and manufacturing, retail and wholesale trade, a wide range of private and public service industries, construction, information and cultural industries, tourism, and residential development.

Fire protection within the AOI is the responsibility of the DNVFRS. A shared services agreement (automatic aid) exists between this department and the North Vancouver City Fire Department and West Vancouver Fire Rescue. The DNVFRS has a standing agreement in place with the BCWS and Metro Vancouver Watershed Protection. In the event of an interface fire or wildfire, BCWS aid is requested; however, BCWS may task Metro Vancouver Watershed Protection to action the fire on their behalf.

Highway 1, which runs east-west and bisects the District is the primary access/egress route within the District. Arterial roads such as Marine Drive, Capilano Road, Lonsdale Avenue, Lynn Valley Road and Mount Seymour Parkway provide access to and from developments located in interface areas within the District. In the event of a wildfire, the eastern portion of the District of North Vancouver, specifically Deep Cove and developed areas surrounding Indian River Drive, have limited emergency egress routes. This narrow and forested corridor is an area of particular concern not only with respect to limited emergency egress, but also due to lack of an alternate evacuation route. This limits the ability of fire crews to respond to fires and safely evacuate residents. Indian Arm communities that are accessible only by boat are also of significant concern with respect to evacuation and access for first responders.

¹⁰ Statistics Canada. 2016 Census. North Vancouver, District Municipality [Census Subdivision], British Columbia.

2.3 PAST WILDFIRES, EVACUATIONS AND IMPACTS

BCWS Coastal Fire Zone staff communicated that the majority of past wildfire activity within the AOI was human-caused and ignitions are primarily due to poor recreation practices (both boat and road access recreation areas). BCWS staff reported that fires within the northern portion of the AOI (managed by Metro Vancouver) are generally responded to by the Metro Vancouver Regional District (MVRD) Watershed Protection Team, which is an initial attack team trained to respond to wildland fires. The BCWS has a response agreement in place with the MVRD, that ensures immediate and efficient deployment of resource, as needed.

Based on the BCWS historical wildfire dataset, the largest fire to burn within the District AOI occurred in 1924, with an estimated area of 252 ha. In 2018, multiple small fires occurred within and around the DNV AOI, with the most notable one being the Whyte Lake fire in West Vancouver, which burned for more than one week and covered an estimated 3 ha perimeter. This fire burned in difficult terrain, caused trail closures on the Baden Powell and Black Mountain trails and led to both visual distractions and smoke conditions along the Sea-to-Sky Highway. Another fire, sighted early into the fire season, on May 14, 2018, near Lions Bay (Tunnel Bluffs), burned approximately 1 ha and was similarly difficult to fight due to mountainous/steep terrain. The Tunnel Bluffs fire caused two hikers to become stranded above the fire line, who required rescue via helicopter. These two fires, in combination with the 2017 and 2018 local and Province-wide wildfires, have alerted the DNV, Metro Vancouver Watershed Protection and member North Shore municipalities to the potential for large, catastrophic wildfires occurring within and surrounding the present AOI.

The BCWS historical ignition dataset demonstrates that the proportion of human-caused fires within the DNV AOI is greater than that of the province as a whole. This ignition data shows that within the District AOI, approximately 60% of ignitions since 1950 have been human-caused versus 40% in the province of BC.¹¹ This statistic may be explained by the lower proportion and occurrence of lightning strikes in the Metro Vancouver area relative to other areas in the province. Additionally, high recreational use within many parts of the AOI may also contribute to this statistic. See Section 5.3 for a recommendation related to increasing public awareness of wildfire ignitions and prevention.

2.4 CURRENT COMMUNITY ENGAGEMENT

There is widespread recognition and awareness, from both District staff and the community, of the threat posed to the community by wildfire, and support for hazard mitigation activities. There has been significant community engagement in FireSmart initiatives to this point. FireSmart materials and door hangers are distributed by the DNV door to door to residents and links to FireSmart Canada resources and fire regulation related bylaws are provided on the DNV website. Recommendations for further education and communication initiatives that may be undertaken by the District are provided in Section 5.3. Furthermore, the fire department is consulted during community development planning, through the wildfire hazard development permitting process. Several bylaws that relate to wildfire have been

¹¹ BCWS, 2018

adopted by the District. These include the *Fire Bylaw (No. 7481)* that addresses burning compliance and prohibits the accumulation of combustible materials on properties that create a fire hazard, and the *Solid Waste Removal Bylaw (No. 7631)* that authorizes the District to control and manage against dumping activities. Both the *Smoking Regulation Bylaw (No. 7792)* and the *Park Regulation Bylaw (No. 8310)* control the use of fire in the District and in District parks. The District has an established wildfire hazard development permit area that addresses new development in the wildland urban interface, and sets standards based on FireSmart principles for building material use, landscaping and appropriate setbacks from forested areas. Future initiatives should focus engagement efforts during times of high public uptake (during or post wildfire season) in order to maximize the resources available for community engagement.

2.5 LINKAGES TO OTHER PLANS AND POLICIES

Following is a summary of District and Regional policies and guidelines that relate to strategic wildfire management, wildfire threat reduction, operational fuel treatments and emergency planning.

2.5.1 Local Authority Emergency Plan

Emergency preparedness and response is managed jointly by the District of North Vancouver and its two neighbour municipalities, the City of North Vancouver and District of West Vancouver, as part of a comprehensive North Shore Emergency Operations Plan that serves the three communities.¹² The plan was developed to optimize the response, resources and planning for major emergencies that may occur within the District and its North Shore member municipalities. The plan outlines the Department Operations Centre (DOC) and Emergency Operations Centre (EOC) functions and activation, Incident Command Post (ICP) functions, guidelines for emergency response (communications, personnel identification, documentation, etc.), and hazard-specific roles and procedures. The hazard-specific roles and procedures for wildland interface fires list the possible major effects of such an event, the potential actions that may be required to address these effects, the associated actions of the DOC, EOC, and any resources that could aid in response. Emergency response is coordinated using the BC Emergency Management System (BCEMS) Site and Site Support Standard, with designated DOC and EOC locations and Incident Command (IC) for site level response. A Provincial Emergency Operations Centre (PREOC) and a Provincial Emergency Coordination Centre (PECC) may also be established if the emergency is large in scale.

2.5.2 Affiliated CWPPs

A CWPP for the District of West Vancouver is being developed concurrently by the same consultant, ensuring consistency in recommendations and synergies within proposed future fuel treatment works.

¹² North Shore Fire Services – Major Emergency Operations Plan, 2018.

2.5.3 Local Government/First Nation Policies and Recommendations

The intent of this section is to review all relevant local government plans, policies and bylaws and identify sections within that are relevant to the CWPP Update. This review included Greater Vancouver Regional District (hereinafter referred to as Metro Vancouver) bylaws, however, no recommendations were provided for any Metro Vancouver bylaws as they are not within the scope of this CWPP Update. The following municipal bylaws, strategies and policies are relevant to wildfire planning in the District of North Vancouver AOI.

Bylaw No. 7900, 2011: District of North Vancouver Official Community Plan

The District of North Vancouver Official Community Plan (OCP) is a general statement of the objectives and policies of the local government, while providing the DNV with a long-range framework to guide, monitor and evaluate future land uses and development throughout the area. The following sections contain objectives and policies which are directly relevant to wildfire risk reduction, emergency response, and community resilience post-disaster as described below. The DNV Council is set to initiate a review of the 2011 OCP in 2019.

2011 DNV OCP Section 4.2: Parkland Standards and Acquisition

This section covers the policies and objectives surrounding parkland acquisition and ways to manage these areas more effectively. It notes that the DNV should consider the purchase or dedication of additional natural parkland through the Parks Acquisition Strategy where these lands provide important trail linkages, ecological functions, waterfront access, protect natural hazardous lands or offer unique educational, cultural or recreational opportunities.

RECOMMENDATION #1: Review the OCP, Section 4.2 – Parkland Standards and Acquisition and associated documents (e.g., Parks and Open Space Strategic Plan, 2012) and consider strategic parkland acquisition and parks maintenance through a wildfire risk lens, including consideration for long-term maintenance costs and access. Consider amendments where needed, including the following: 1) require the use of a Qualified Professional (QP) in review, assessment, and siting of parks and park access prior to acceptance; and 2) ensure that bylaws provide the DNV authority to request modification (either fuels, access, or siting) based upon QP recommendation and prior to acceptance to ensure that the park is received in, and able to be maintained in, an acceptable range of risk.

2011 DNV OCP Section 5.5: Roads Network and Goods Movement

This section summarizes the District's objectives surrounding the movement of goods and people, while also improving safety and minimizing impacts to local neighbourhoods. It mentions the facilitation of emergency vehicle access across the road networks, as this will aid in more efficient response times and improved overall access. Following this, the DNV should explore the possibilities around new east-west road network linkages to reduce trip length and ensure alternate access when one is blocked.

2011 DNV OCP Section 6.4: Personal and Public Safety

The objective of this section is to create safe and caring communities. Several policies stated in this section relate to effective and collaborative emergency response including wildfire response in the

District and on the North Shore. Fire halls need to be located strategically to deliver effective service and contribute to the fabric of the community, while a fire service policy should be created to define appropriate service levels. The DNV should ensure that effective and coordinated services supporting personal safety including policing, emergency aid, fire safety, disaster response, and support services are in place across the District as demonstrated by their continued relationship with North Shore Emergency Management (NSEM) in jointly preparing emergency response planning and the North Shore Emergency Operations Centre (NSEOC).

2011 DNV OCP Section 6.5: Heritage and Archaeological Resources

This section of the OCP outlines the District's commitment to identify and protect heritage and archaeological sites and recognize the history and contributions of First Nations to the North Vancouver area. This is particularly relevant in the case that the DNV undertakes fuel management projects where there is potential to damage archaeological values. See Section 3.3.2 of this 2017 CWPP Update document for more details on the *Heritage Conservation Act* and how to ensure that archaeological values are protected prior to and during operational projects, through the use of desk-top and field value identification and First Nations consultation.

2011 DNV OCP Section 9.1: Biodiversity Policies

This objective of this section is to protect the ecological integrity of the ecosystem by reducing threats such as habitat fragmentation and invasive species. Policies within this section include supporting the protection and enhancement of biodiversity through implementation of environmental development permit areas and guidelines and encouraging and facilitating the protection of rare, endangered and vulnerable species and ecosystems through habitat management, enhancement and restoration. Also mentioned is the need to develop and implement an integrated invasive species management strategy, with partners, to reduce the spread of invasive species throughout the DNV. The governance tools the District has implemented to uphold biodiversity goals include Environmental Protection Bylaw 6515, and the Streamside Protection and Natural Environment Development Permit Areas (DPA) in Schedule B of the OCP. These policies and associated strategies and bylaws are particularly relevant to fuel management projects.

2011 DNV OCP Section 9.2: Urban Forest and Soil Systems

The objective of this section is to protect the forested character and enhance the health of the trees and soils within the DNV. The retention and protection of old growth trees in urban and upland areas is promoted, while the general management of upland forested areas for future generations is also promoted. Policy 4 states that the urban forest interface must be managed to improve the species mix and mitigate risk of disease or natural hazards such as wildfire and windthrow. The Forest Resilience Strategy for the DNV, prepared by B.A. Blackwell and Associates Ltd. (2019), is a companion document to this CWPP Update, and will detail improving forest resiliency to the threat of wildfire. This section of the OCP, related policy and the associated Forest Resilience Strategy are relevant to future fuel treatment planning.

2011 DNV OCP Section 9.4: Natural Hazards Policies

The objective of this section is to reduce and mitigate the risk associated with natural hazards within the DNV. All three policies are relevant to wildfire mitigation:

1. Develop and implement natural hazard development permit areas in relation to landslide, flood, debris flow and forest interface wildfire risks.
2. Facilitate mitigation measure to reduce risks of flooding and watershed related debris flow(s)/flood(s) and forest interface wildfire.
3. Continue to develop information and communications systems to advance the natural hazard management system.

2011 DNV OCP Section 10.4: Climate Change Adaptation

The objective of this section is to proactively adapt to climate change and to reduce greenhouse gas emissions. It states that the DNV must consider climate change implications in environmental management efforts to conserve biodiversity and enhance forest health. Policy 1 notes that the DNV should work with the North Shore Emergency Management and other service organizations to prepare for and respond to emergencies created by extreme weather events which can be attributed to climate change. The impact of climate change on wildfire is discussed in greater detail in Section 4.1.3 and must be considered in emergency response preparation.

2011 DNV OCP Schedule B – Development Permit Areas

Part 4 Section 1: Wildfire Hazard

The *Wildfire Hazard DPA* and corresponding Development Approval Information are established to:

1. Ensure that development within the Wildfire Hazard DPA is managed in a way that:
 - a) minimizes the risk to property and people from wildfire hazards;
 - b) promotes activities to reduce wildfire hazards while still addressing environmental issues;
 - c) minimizes the risk of fire to the District's forests;
2. Proactively manage conditions affecting potential fire behavior, thereby increasing the probability of successful fire suppression and containment, and thereby minimizing adverse impacts;
3. Conserve the visual and ecological assets of the forest for the benefit of present and future generations; and
4. Reduce the risk of post-fire landslides, debris flows and erosion.

RECOMMENDATION #2: Review the OCP Schedule B Bylaw 7671 and Wildfire Hazard DPA Guidelines section to include language regarding management of non-compliant hedging and other vegetation in proximity to homes after the post-development inspection has been signed-off by a QP.

RECOMMENDATION #3: Review the OCP Schedule B Bylaw 7671 and Wildfire Hazard DPA Guidelines section and set a procedure for establishing and updating fire testing standards to ensure alternative and novel non-flammable exterior building materials are pre-approved in a timely manner for use in the WUI.

RECOMMENDATION #4: Review and update the fire testing standards and materials section of the Wildfire Hazard DPA Guidelines to identify and define a list of approved building materials and review and update the approved materials list on a bi-annual basis or as new proposals come forward from builders. These materials should be reviewed by a recognized expert in the building material field, with consideration for recent and applicable research findings prior to granting approval for use in the WUI.

Part 4 Section 3: Slope Hazard

The *Slope Hazards DPA* and corresponding Development Approval Information Area addresses ways to reduce risk to people and property, minimize impacts to areas below steep slopes, reduce overall slope hazard and encourage ongoing maintenance and professional design of structures in these areas. These identified slope hazard areas have relevance to fuel treatments, that must be prescribed with consideration given to slope stability. These areas also have relevance to fire suppression response as structures on steep slopes are vulnerable to increased fire behaviour potential and should be the immediate focus of initial attack; while recognizing the greater suppression difficulty and firefighter safety issues related to steep slopes.

DNV Bylaw No. 7481, 2004: Fire Bylaw

Within this bylaw are many policies, definitions and objectives that pertain to building codes, public duties and obligations, emergency response, burning regulations and all other fire related activities. This bylaw covers many relevant and crucial points that aid in the creation of a community wildfire protection plan. Below is a list of each relevant section:

- Part 1: Fire Chief and Fire Department
- Part 2: Permitting
- Part 3: Fire Protection Equipment
- Part 4: Reference Requirements
- Part 5: Regulations
- Part 6: Safety and Egress
- Part 7: Assistance Response
- Part 8: Inspections
- Part 9: Enforcement
- Part 10 & 11: Ticketing and Cost Recovery

DNV Bylaw No. 7016, 1988: Inspection and Testing of Fire Protection Equipment Bylaw

This bylaw states that all fire protection equipment or fire suppression systems required to be serviced under the BC Fire Code must ensure that the inspection or test is performed by a Fire Protection Technician and ensure that it is recorded, tagged or labeled with the appropriate date. Although this bylaw primarily pertains to structural fire-fighting equipment, the provision for protecting water supplies for fire protection is directly related to wildland fire-fighting.

DNV Bylaw No. 8145, 2017: Development Servicing Bylaw

This bylaw covers the utilities and infrastructure within the DNV such as water, sewage, roadways and general development. Subsection 2.5, Fire Flows, defines the requirements for developments to be able

to supply appropriate amounts of water in case of a fire, and outlines these flow rates in Table 2.5a. This bylaw also covers fire lines, fire metering, fire hydrant placement and other fire safety systems such as sprinklers, alarms and lights.

DNV Bylaw No. 7619, 2006: North Shore Disaster Bylaw

This bylaw provides the framework that authorizes the three North Shore Municipalities to implement and establish any disaster response or recovery measure as deemed necessary based on needs of the three municipalities. This includes the establishment of the North Shore Emergency Operations Centre (NSEOC). The three North Shore municipalities have identical Disaster Bylaws which stipulate that they will work together for the greatest good using all available resources.

DNV Bylaw No. 7304, 2002: Emergency Plan Bylaw

This bylaw defines who will be a member of the North Shore Emergency Planning and Operations group and identifies the role in disaster training programs and the review and revision of the North Shore Disaster Plan as required. The bylaw also defines at the municipal level who is involved in the emergency operations group and their roles and responsibilities in controlling an emergency or disaster. Section four of the bylaw defines the powers to declare a state of emergency and or the means in which the Emergency or Disaster plan can be implemented.

DNV Bylaw No. 7631, 2004: Solid Waste Removal Bylaw

This bylaw summarizes the policies and objectives for the removal of solid waste throughout the DNV. It states that no person shall cause, allow or permit any garbage to collect, accumulate or remain on property, unless contained within a specified solid waste container. The accumulation of such debris can impair emergency access or egress, as well as increase the amount of combustible material on said premises. Effective solid waste management policies are integral to avoiding illegal dumping of debris from pruning or thinning operations which can become a significant fire hazard.

RECOMMENDATION #5: Review the Solid Waste Removal Bylaw 7631 to include language specific to green waste, not just garbage, under the prohibitions section to ensure that there is a legally enforceable bylaw to prevent flammable materials to accumulate, collect or to remain on the property unless securely contained.

DNV Bylaw No. 2279, 1957: Waterworks Regulation Bylaw

This bylaw summarizes the use of water services throughout the DNV. Section 16, Fire Services, states that when a fire-service connection is installed on any premises, said connection must be sealed until needed for fire-related reasons. Once the seal is broken due to a fire related incident, it must be re-sealed shortly after to prevent the use or consumption of water for any other purpose besides fire. This bylaw also states that only authorized personnel may open or use a fire hydrant if needed.

DNV Bylaw No. 8271, 2017: Construction Bylaw

This bylaw overviews the administration and enforcement of BC Building Code requirements and regulates general construction throughout the DNV. The sole purpose of this bylaw is to provide a limited

and interim spot-checking function for reasons of health, safety and protection of persons, property, and the environment. It mentions the installation of fire places, spark arrestors, fire alarms and fire sprinklers, along with proper firestopping and firewalls when building new developments. It continues on to describe these in more detail; outlining fire limit areas as outlined in Schedule C within this bylaw.

RECOMMENDATION #6: Create incentives and/or targeted education and outreach to promote FireSmart renovations of exterior elements of existing buildings within the Wildfire Hazard DPA (homes constructed prior to the establishment of the DPA in 2012), recognizing that the Wildfire Hazard DPA and the Construction Bylaw pertain only to new construction and do not address the vulnerability of existing older homes. Incentives should target roof replacements as a first priority, followed by replacement of exterior siding and decking with flame-proof/fire resistant materials (to be defined as per recommendations 3 and 4) to increase the resiliency of homes and neighbourhoods in the WUI. These incentives may include granting rebates for roof replacement. Education can be broadened (beyond vegetation management) to include information on available, approved materials and associated costs. See recommendation 20 for strategy suggestion and funding opportunities.

DNV Bylaw No. 8310, 2018: Parks Regulation Bylaw

This bylaw states that no person shall light a fire without a valid permit within any park, excluding the use of cooking devices such as barbecues as long as the fire hazard rating is low. Additionally, no person shall discard or place upon the ground or on any other vegetation any lighted or extinguished match, cigar, cigarette or other burning substance.

DNV Bylaw No. 7456, 2004: Fireworks Regulation Bylaw

This bylaw outlines the rules regarding the possession, acquisition and discharge of fireworks within the DNV. It overviews means of applying for a permit, the sale and distribution of fireworks and the penalties associated with failing to comply with this bylaw.

2.5.4 Higher Level Plans and Relevant Legislation

District of North Vancouver Climate Change Adaptation Strategy 2017

The Climate Change Adaptation Strategy aims to support climate change initiatives and long-term adaptation planning, while incorporating these throughout all District activities and into policy documents. Not only does this help provide an opportunity to enhance the District's adaptive capacity and resiliency, but it can also reduce the long-term costs and impacts associated with climate change.

This document outlines four main types of climatic change: 1) temperature; 2) precipitation; 3) extreme weather; and 4) sea level rise. The goals of this strategy are to build upon District activities currently taking place that can help prepare the corporation and community for climate change, while being able to identify new initiatives that could help strengthen the already occurring adaptation efforts. Lastly, the strategy outlines the need to bring in a range of staff and community members together to collaborate on a strategy that addresses the multidisciplinary challenges posed by climate change.

A number of Required Action (RA) objectives are relevant to community wildfire protection planning, including the following:

- RA 1.2 – *Develop and implement additional technological tools to assist in situational awareness and emergency response communication during and after an emergency.* Current systems in use include remote monitoring and control of pump stations, and GPS tracking of municipal vehicles. The DNV also has access to the Rapid Notify emergency notification system.
- RA 2.1 – *Identify critical functions that are vulnerable to power outages and develop priority response and power restoration protocols.* This action is intended to address energy needs for critical infrastructure and functions that are vulnerable to power outages and develop priority response and power restoration protocols.
- RA 2.2 – *Invest in backup power equipment for critical functions and develop a fueling strategy.* Alternatives for power generation must be provided for vulnerable systems and systems with existing backup generation must be analyzed and reprioritized.
- RA 3.2 – *Update the Community Wildfire Protection Plan and implement recommendations to reduce wildfire risk and strengthen the capacity to respond.* This recommendation is largely being addressed by this CWPP Update to the 2007 CWPP, and a companion document, the Forest Resilience Strategy for the DNV, prepared by B.A. Blackwell and Associates Ltd. (2019).
- RA 5.1 – *Proactively manage all District-owned forested areas to increase forest resilience, health, and structure and reduce other natural hazards.* The District’s fuel management work is ecosystem based and designed to be sensitive to riparian and wetland areas, with the goals of restoring natural biodiversity and replacing invasive species. Additional proactive work is required (including beyond the WUI) to increase forest resilience, health and structure while reducing other natural hazards.

District of North Vancouver Parks and Open Space Strategic Plan (POSSP) 2012

This document provides a comprehensive strategy for the maintenance, development and renewal of the parks, trails and open spaces throughout the District of North Vancouver over the next 10 years. It identifies park and recreational needs, trends and gaps, while also listing recommendations to address those needs. The document provides an analysis of existing park inventory, and identifies the possibility for new facilities, future capital projects, the current operational pressure points and service levels, as well as the opportunities and deficiencies in the present parks system.

High-use recreational parks and trails can be beneficial when high-use times provide increased early detection and reporting for fires. Alternatively, these areas can also potentially be locations of increased ignitions in the interface (high-use areas). For trails in particular, depending upon the width, clearance and surfacing, they can provide points of access for suppression efforts, serve as surface fire fuel breaks, and act as control lines for suppression efforts if a fire is nearby.

District of North Vancouver Invasive Plant Management Strategy 2015

This strategy aims to build upon a number of currently ongoing management initiatives, while providing a framework and policies for strategic management of invasive plants in the DNV to meet five primary goals:

1. Educate and communicate why invasive plants are a problem;
2. Prevent new invasive plants from establishing and spreading;
3. Detect where invasive plants are growing early and accurately;
4. Control invasive plants safely and effectively; and
5. Restore natural habitat affected by invasive plants.

The document continues to list the highest priority recommendations in order to meet the goals and objectives laid out within.

RECOMMENDATION #7: Update the DNV Invasive Plant Management Strategy, 2015 to target monitoring and resources to areas with known invasive species occurrences in the wildland urban interface, where new forests are being established or where stand conversion has occurred. Continue addressing invasive species management during fuel treatment implementation in the DNV wildland urban interface, in order to improve forest resilience and promote ecological restoration of degraded sites.

Urban Forest Climate Adaptation Framework for Metro Vancouver 2017¹³

This document provides a comprehensive framework for building urban forest resilience and addressing climate change requirements at a regional level, through the following steps:

1. Risk identification within regional and urban forests;
2. Assessment of urban forest vulnerabilities to issues such as forest health, pests, invasive species, and wildfire;
3. Development of guidelines to build resilience (i.e., through species selection, management techniques, soil and planting infrastructure and water management guidelines); and
4. Development of a 144 species selection decision support tool.

The framework is complemented by a *Design Guidebook*¹⁴ and a tree species selection database¹⁵, which considers urban forest climate change adaptation requirements and provides best management practices for landscape and development design. Additionally, the guidebook serves as a reference guide for Metro Vancouver member municipalities in support of landscape design for existing and new

¹³ Diamond Head Consulting. 2017. Urban Forest Climate Adaptation Framework for Metro Vancouver. Tree Species Selection, Planting and Management

¹⁴ Diamond Head Consulting. 2017. Design Guidebook – Maximizing Climate Adaptation Benefits with Trees

¹⁵ Diamond Head Consulting. 2017. Urban Forest Climate Adaptation – Tree Species Selection Database. Available online at: <http://www.metrovancouver.org/services/regional-planning/conserving-connecting/resources/Pages/default.aspx>

developments. This framework has relevance to fuel treatment planning, particularly if re-planting or species conversion treatments are prescribed.

Metro Vancouver 2040 Shaping Our Future, 2017¹⁶

This document outlines a Regional vision and strategy for sustainable growth within all member municipalities. The document identifies the importance of environmental protection and climate change impact (Goal 3), and provides the following four strategies to guide high-level management decisions within Metro Vancouver:

Strategy 3.1: Protect conservation and recreation lands;

Strategy 3.2: Protect and enhance natural features and connectivity;

Strategy 3.3: Encourage land use and transportation infrastructure that reduce energy consumption and greenhouse gas emissions, and improve air quality; and

Strategy 3.4: Encourage land use and transportation infrastructure that improve the ability to withstand climate change impacts and natural hazard risks (wildfire, earthquakes, flooding, mudslides, etc.).

Sensitive Ecosystem Inventory for Metro Vancouver and Abbotsford, 2010-2012¹⁷

This technical report outlines the methodology and results of a Sensitive Ecosystem Inventory (SEI) to generate a standardized ecological mapping layer for the Region. This SEI contains ecosystems that are ‘Sensitive Ecosystems’ (i.e., wetlands and old forest), and ‘Modified Ecosystems’ (human modified but with significant ecological and biological value). Several class and subclasses within each ecosystem type are assigned and delineated in the inventory. This inventory is an important resource to support land and environmental decisions and is relevant in the context of fuel treatment planning. A considerable portion of the AOI is classified as ‘Sensitive Ecosystems’ (i.e., wetlands and old forest) or ‘Modified Ecosystems’ (human modified but with significant ecological and biological value). Several classes and subclasses within each ecosystem type are assigned and delineated in the inventory.

2.5.5 Ministry or Industry Plans

Reviewing and incorporating other important forest management planning initiatives into the CWPP planning process is a critical step in ensuring a proactive and effective wildfire mitigation approach.

The South Coast Response Fire Management Plan (FMP)¹⁸ was developed for the Sea to Sky Natural Resource District (NRD), the Sunshine Coast NRD, and the Chilliwack NRD. The FMP was reviewed to identify any regional fire management planning objectives and their interpretation in the context of management considerations for the District AOI. The 2018 South Coast FMP identifies values at risk and prioritizes broad categories of values as ‘themes’ for response planning through the Resource Strategic Wildfire Allocation Protocol (RSWAP). The South Coast FMP briefly speaks to the concept of wildfire

¹⁶ Metro Vancouver. Regional Growth Strategy. Adopted 2011 and updated to 2017.

¹⁷ <http://www.metrovancouver.org/services/regional-planning/PlanningPublications/SEITechnicalReport.pdf>.

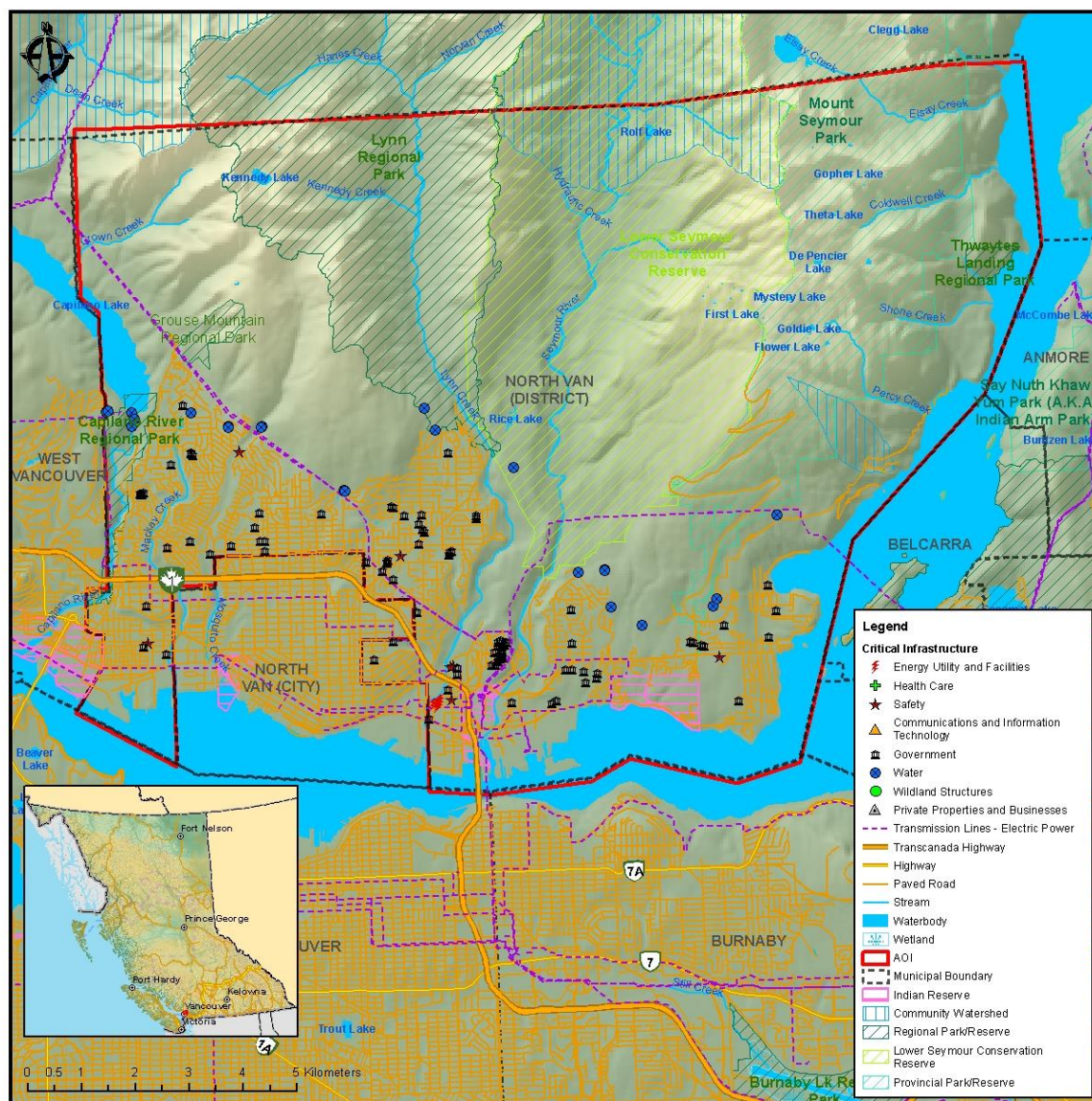
¹⁸ South Coast Fire Management Plan. 2018. (Internal government document)



prevention engineering within the region, which includes fuel management such as locally identified fuel breaks, proposed treatment areas, or demonstration and operational treatment areas. In order to reduce local fire threat and to build defensible space around critical infrastructure and/or residential neighbourhoods, this CWPP identifies various fuel treatment opportunities (Section 5.1.1).

SECTION 3: VALUES AT RISK

The following is a description of the extent to which wildfire has the potential to impact the values at risk (VAR) within the District of North Vancouver AOI. VAR or the human and natural resources that may be impacted by wildfire include human life and property, critical infrastructure, high environmental and cultural values, and other resource values. VAR also include hazardous values that pose a safety hazard. Key identified VAR are illustrated below in Map 2.



Map 2. Values at Risk within the AOI.

3.1 HUMAN LIFE AND SAFETY

One of the primary goals of the BCWS is to support emergency response and provide efficient wildfire management on behalf of the BC government. BCWS aims to protect life and values at risk, while ensuring the maintenance and enhancing the sustainability, health and resilience of BC ecosystems.¹⁹

¹⁹ BC Provincial Coordination Plan for Wildland Urban Interface Fires. 2016. Retrieved online at: https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/provincial-emergency-planning/bc-provincial-coord-plan-for-wuifire_revised_july_2016.pdf

Human life and safety are the first priority in the event of a wildfire. A key consideration is the evacuation of at-risk areas and safe egress. Evacuation can be complicated by the dynamic nature of wildfire, which can move quickly. Evacuation takes time and safe egress routes can be compromised by wildfire causing limited visibility, or by traffic congestion and/or accidents.

The population distribution (both people and structures) within the AOI is important in determining the wildfire risk and identifying mitigation activities. The population of the DNV has slightly increased in recent years. It was last measured at 85,935 residents in 2016, up 1.8% from 2011.²⁰ This compares to 5.6% growth in the province of British Columbia during the same years. According to the 2016 Census there are 32,624 private dwellings in the DNV, approximately 1,508 of which are occupied on a part-time basis. The aforementioned figures are calculated using the 2016 Census population statistics from the District of North Vancouver.

The District of North Vancouver is a major destination for outdoor recreation in the Lower Mainland, including hiking, mountain biking, kayaking and paddle boarding. These activities can occur year-round, but are especially popular during the fire season (April – October). Several parks throughout the AOI experience high-use throughout the year: Lynn Canyon Park, Grouse Mountain and Capilano River Regional Parks, Cates Park, Deep Cove Park, Panorama Park, Myrtle Park, Bridgman Park, Princess Park and Mosquito Creek Park. Additionally, the seasonal increase in population due to tourism within the AOI also raises concern with regards to potential evacuation in the event of a wildfire. Furthermore, the Trans-Canada Highway acts as a main travel hub for commuters, tourists and recreationalists who are either heading up the Sea-to Sky Corridor or south/east to other Metro Vancouver municipalities, which may lead to additional pressures on emergency management resources, in the event of an evacuation.

Knowledge of and access to updated structure locations within an area is a critical step in efficient and successful emergency response planning and the development of mitigation strategies and recommendations. Field visits to the AOI and access to recent orthophotography and spatial data from the District has enabled the development of an updated structures dataset that accounts for new development in the interface.

Smoke exposure is another important consideration when assessing the risks of wildfire to human life and safety. An increase in the number, extent and duration of wildfires due to climate change is anticipated to impact air quality in the Lower Fraser Valley and add to air pollution in the Metro Vancouver region, in addition to increased ground-level ozone²¹. Wildfire smoke contains many substances that can be harmful to human health, including particulate matter, carbon monoxide, volatile organic compounds, and toxic gases.²² Those with pre-existing health conditions and firefighters are particularly at risk.

²⁰ Statistics Canada. 2016 Census.

²¹ Metro Vancouver. 2018. Climate 2050 Discussion Paper

²² Wildfire Smoke and Your Health. US Forest Service. Retrieved from https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5318238.pdf

RECOMMENDATION #8: The North Shore Emergency Management (NSEM) in collaboration with the three North Shore communities should lobby the Provincial government or local Medical Health Officer(s) to develop a strategy for communities to draw upon when they are exposed to smoke from wildfire for extended periods of time. This strategy may include smoke exposure risk assessments, exposure reduction measures, and a decision-key for when to evacuate a community due to wildfire smoke.

3.2 CRITICAL INFRASTRUCTURE

Protection of critical infrastructure during a wildfire event is an important consideration for emergency response effectiveness, ensuring that coordinated evacuation can occur if necessary, and that essential services can be maintained and/or restored quickly in the case of an emergency. Critical infrastructure includes emergency and medical services, electrical and gas services, transportation, water, social services, and communications infrastructure. Table 3 provides an inventory of critical infrastructure identified by District staff and during field visits, while Map 2 provides a visual depiction of the critical infrastructure within the AOI.

The District of North Vancouver Fire and Rescue Services (DNVFRS), the Emergency Operations Centre (EOC) located in the North Shore Emergency Management Office, and Lions Gate Hospital are critical to emergency response services in the community. However, in the event of a localized emergency within the District, adjacent municipalities with health care and emergency response facilities may also be able to provide rapid emergency response (DNVFRS has automatic aid agreements in place with other Fire Services, jurisdictions and agencies). These facilities provide the foundation for incident command and response during a large fire event and therefore must be prepared to deal with large and complex situations.

Protection of critical infrastructure is an essential wildfire preparedness function. Survival and continued functionality of these facilities not only support the community during an emergency, but also determine to a great degree, the extent and cost of wildfire recovery and economic and public disruption during post wildfire reconstruction. Critical infrastructure provides important services that may be required during a wildfire event or may require additional considerations or protection. As outlined in Section 5.2, FireSmart principles are important when reducing wildfire risk to critical infrastructure and are reflected in the outlined recommendations. During field visits, it was observed that the District's critical infrastructure (e.g., fire hall, ambulance station, water pump stations, etc.) is in various levels of compliance with FireSmart principles. While some structures may be relatively FireSmart with respect to landscaping within the immediate FireSmart priority zones, many are located adjacent to forest lands. Formal FireSmart assessments of critical infrastructure along with vegetation management have been completed by the District for select critical infrastructure (i.e., water towers and fire hall #3).



RECOMMENDATION #9: The use of fire-resistant construction materials, building design and landscaping should be considered for all critical infrastructure within the District boundaries when completing upgrades or establishing new infrastructure. Additionally, vegetation setbacks around critical infrastructure should be compliant with FireSmart guidelines.

RECOMMENDATION #10: It is recommended that formal FireSmart assessments (by a Qualified Professional) be completed of critical infrastructure such as the fire halls, emergency operations centre, water infrastructure, and others as identified in this CWPP (Table 3) and by the District.

3.2.1 Electrical Power

Electrical service for the DNV is received through a network of wood pole and underground distribution infrastructure supplied by BC Hydro which runs in the east-west direction through the eastern portion of the District and towards the Capilano Watershed in the western portion of the District. Neighbourhoods with small, street-side wooden poles connecting homes are particularly vulnerable to fire. It is recommended that utility right-of-way best management practices (BMP) such as, regular brushing and clearing of woody debris and shrubs be employed to help reduce fire risk, utility pole damage and subsequent outages.

A large fire has the potential to impact this service by causing a disruption in network distribution through direct or indirect means. For example, heat from the flames or fallen trees associated with a fire event may cause power outages. Consideration must be given to protecting this critical service and providing power back up at key facilities to ensure that the emergency response functions are reliable. Metro Vancouver and District owned pump stations that rely on electricity to distribute water and maintain hydrant pressure for suppression activities are of particular concern.

RECOMMENDATION #11: The District should work with Metro Vancouver to develop a back-up water delivery plan, to be enacted in the event of an emergency. Annual testing of this plan is recommended.

Secondary power sources are important to reduce critical infrastructure vulnerability in the event of an emergency which can cut power for days, or even weeks. Secondary power is available for some critical infrastructure (RCMP Detachment, District Hall, Fire Halls, and the Emergency Operating Centre) via emergency backup generators. These generators are powered by either diesel, natural gas, or propane. Vulnerabilities for secondary power sources include mechanical failure, potentially insufficient power sources should a wide-scale outage occur, and fuel shortage in the event of very long outages or if a fire prevents access to the site. Refer to Section 6.1.2 for discussion and recommendations related to backup power and water availability for fire suppression.

3.2.2 Communications, Pipelines and Municipal Buildings

The DNV is serviced by one hospital (Lions Gate Hospital), and multiple municipal buildings. There is a network of FortisBC distribution pipelines that supplies the DNV with natural gas. A map of the FortisBC natural gas distribution system for the DNV is not available to external companies. As such, it is not

possible to identify specific areas that may be vulnerable to wildfire. However, a publicly available service area map²³ of British Columbia indicates that an intermediate natural gas transmission transects the AOI. The FortisBC company website states that employees will consult with local authorities and BCWS in the event of a wildfire. A full inventory of critical infrastructure for communications, pipelines and municipal buildings with locations is presented in Table 3, below.

Table 3. Critical Infrastructure Identified in 2018 field visits.

Critical Infrastructure Type	Location
Animal Welfare Shelter	2580 Capilano Rd
Seymour Youth Centre	2425 Mount Seymour
Deep Cove Cultural Centre	4360 Gallant Ave
Lynn Valley Kids Club Preschool	3361 Mountain Highway
Hendry Hall	815 11th St
Parkgate Community Centre	3625 Banff Ct
DNV Fire Hall #1	1110 Lynn Valley Rd
DNV Fire Hall #2	480 Mountain Highway
DNV Fire Hall #3	550 Montroyal Blvd
DNV Fire Hall #4	3891 Mt Seymour Pkwy
DNV Fire Hall #5	1221 15th St W
Fire Training Centre	900 St Denis Ave
Mollie Nye House	940 Lynn Valley Rd
Capilano Library	3045 Highland Blvd
Parkgate Library	3675 Banff Ct
Lynn Valley Library	1277 Lynn Valley Rd
DNV Municipal Hall	355 W Queens Rd
DNV Museum of Archives	3203 Institute Rd
DNV Operations Centre	1370 Crown St
Lynn Valley Community Recreation Centre	3590 Mountain Hwy
Delbrook Community Recreation Centre	851 W Queens Rd
Karen Magnussen Community Recreation Centre	2300 Kirkstone Rd
North Vancouver Tennis Centre	280 Lloyd Ave
Seylynn Community Recreation Centre	625 Mountain Hwy
Ron Andrews Community Recreation Centre	931 Lytton St
Capilano University	2055 Purcell Way
Kenneth Gordon Maplewood School	420 Seymour River Pl
Brockton School	3467 Duval Rd

²³ <https://www.fortisbc.com/About/ServiceAreas/Pages/default.aspx>



Critical Infrastructure Type	Location
Sherwood Park Elementary School	4085 Dollar Rd
Upper Lynn Elementary School	1540 Coleman St
Seymour Heights Elementary School	2640 Carnation St
Braemar Elementary School	3600 Mahon Ave
Blueridge Elementary School	2650 Bronte Dr
Dorothy Lynas Elementary School	4000 Inlet Crescent
Carisbrooke Elementary School	510 Carisbrooke Rd E
Cousteau French International School	3657 Fromme Rd
Saint Pius X Elementary School	1150 Mt Seymour Rd
Cove Cliff Elementary School	1818 Banbury Rd
Canyon Heights Elementary School	4501 Highland Blvd
Lions Gate Christian Academy	919 Tollcross Road
Vancouver Waldorf School	2725 St Christophers Rd
Seycove Secondary School	1204 Caledonia Ave
Ross Road Elementary School	2875 Bushnell Pl
Montroyal Elementary School	5310 Sonora Dr
Cleveland Elementary School	1255 Eldon Rd
Brooksbank Elementary School	980 13th St E
Capilano Elementary School	1230 20th St W
Argyle Secondary School	1131 Frederick Rd
Handsworth Secondary School	1044 Edgewood Rd
Boundary Elementary School	750 26th Street East
Andre-Piolat School	380 W Kings Rd
Eastview Elementary School	1801 Mountain Hwy
Highlands Elementary School	3150 Colwood Dr
Norgate Elementary School	1295 Sowden St
Mountainside Secondary School	3365 Mahon Ave
Lynn Valley Elementary School	3207 Institute Rd
Windsor Secondary School	931 Broadview Dr
Lynnmour Elementary School	800 Forsman Ave

3.2.3 Water and Sewage

The District of North Vancouver receives all its domestic supply from the Greater Vancouver Water District (GVWD). Water is sourced from two reservoirs, the Capilano and Seymour Reservoirs via the Seymour-Capilano Filtration Plant.²⁴ The GVWD and the DNV have adopted a multi-barrier approach to

²⁴ DNV Water and Sewer Services. Available online at: <https://www.dnv.org/drinking-water-quality>

reducing the risk of water borne infections, which includes: watershed protection, water treatment, distribution system maintenance and water quality monitoring. A detailed account of water availability for wildfire suppression is provided in Section 6.1.2, while Table 4 below outlines the locations of DNV reservoirs and wastewater plants.

The DNV has two separated sewer drainage systems: storm and sanitary. The storm water sewer drains into local waterways, eventually flowing into Burrard Inlet.²⁴ The sanitary sewer drains into the Lions Gate Wastewater Plant for processing.²⁴

Table 4. Critical Infrastructure Identified in 2018 CWPP field visits (water and sewage infrastructure).

Critical Infrastructure Type	Location
Cleveland Dam (Capilano Lake Reservoir)	End of Capilano Park East Service Rd
Seymour Dam (Seymour Lake Reservoir)	End of Seymour Falls Dam Rd
Seymour-Capilano Water Treatment Plant	4400 Lillooet Rd
Lions Gate Wastewater Plant (outside of AOI)	101 Bridge Rd, West Vancouver
Greater Vancouver Water District	4400 Lillooet Rd
Blueridge Booster Pump Station	Hyannis Drive/Hyannis Point
Braemar Reservoirs (2)	Braemar Rd E
Capilano Chlorination House	End of Capilano Park East Service Rd
Capilano Reservoir	End of Capilano Park East Service Rd
Capilano Pump Station	4500 Capilano Park Road
Glenmore Pump Station	Glenmore Dr
Glenmore Reservoir	Glenmore Dr
Hyannis Pump Station	Hyannis Dr/ Larkhall Cres
Hyannis Reservoirs (2)	North of Blairview Ave
Marion (Lynn Valley) Pump Station	4395 Rice Lake Rd
Mountain Highway Reservoirs (2)	4757-4753 Mountain Highway
Northlands Pump Station	Northlands Golf Course
Prospect Road Reservoirs (2)	North end of Prospect Rd
Ramsey Pump Station	McNair Dr/Armour Ct
Ramsey Road Reservoir	McNair Dr/Armour Ct
Sarita Pump Station	5140 Sarita Avenue
Sarita Reservoir	5140 Sarita Avenue
Skyline Pump Station	4901 Chalet Pl
Skyline Reservoirs (2)	4901 Chalet Pl

Critical Infrastructure Type	Location
Woodlands Reservoir	Indian River Cres/Frames Pl
Woodlands Sunshine Pump Station	Indian River Cres

3.3 HIGH ENVIRONMENTAL AND CULTURAL VALUES

The following section identifies high environmental and cultural values and where they are located. Environmental, cultural and recreational values are high throughout the AOI. A more detailed account of environmental and biodiversity aspects of this region is presented in Section 3.3.3.

3.3.1 Drinking Water Supply Area and Community Watersheds

As outlined above, the DNV receives its potable water from the Greater Vancouver Water District reservoirs. Protection from contamination for these valuable water sources is ensured through the following avenues: 1) restricted access to watersheds; 2) restoration of disturbed areas and deactivation of watershed roads that are no longer in use; 3) management of watershed via minimal intervention (i.e., in the event infrastructure is required); and 4) cooperative management with adjoining municipalities to preserve water quality.²⁵

District staff did not express immediate concerns related to water availability from the Greater Vancouver Water District distribution system. Each year since 2001 the DNV has produced a comprehensive drinking water quality report which includes information regarding bacteriological quality, physical parameters, chemical parameters and operator training and certification. This report is then submitted to Vancouver Coastal Health's Medical Health Officer for review.

The AOI overlaps the Capilano, Seymour and Sunshine community watersheds. The first two are located in the northern portions of the AOI, while the latter is located northwest of the communities of North Woodlands and Sunshine. Due to their status as community watersheds, special management considerations are required within and adjacent to their perimeter to maintain timing of flow and the volume and quality of the water source.

Six watersheds exist within the DNV AOI. From west to east, these include the Capilano River, Mackay Creek, Mosquito Creek, Lynn Creek, Seymour River, and Coldwell Creek. As stated above, portions of the Capilano, Seymour, and Coldwell Creek (Sunshine) watersheds are designated as community watersheds and have therefore been assigned additional protection under the *Forest & Range Practices Act* (FRPA). All of these watersheds feed into residential and urban areas prior to entering Burrard Inlet, where forest cover is only maintained directly adjacent to the stream or river channel. Within the Metro Vancouver watersheds (Capilano and Seymour) there are considerable old growth stands, otherwise, forest stands within the watersheds consist of primarily second growth stands of western hemlock, amabilis fir, Sitka spruce, Douglas-fir, and western redcedar at lower elevations, with predominantly old growth yellow-

²⁵ Metro Vancouver Drinking Water Management Plan 2011. Available online at: <http://www.metrovancouver.org/services/water/WaterPublications/DWMP-2011.pdf>

cedar and mountain hemlock at higher elevations. Black cottonwood, red alder, and bigleaf maple are deciduous tree species present within these watersheds, typically only at lower elevations. Species diversity decreases with increase in elevation within the watersheds and stands become dominated by mountain hemlock and amabilis fir, a smaller component of yellow-cedar and a shrub understorey. Stand density and species composition varies depending on the disturbance history (type and extent) and the local environmental factors (soil moisture and nutrient regimes, topography). Disturbances within the AOI that influence the above factors consist of both human-related and natural disturbances such as insect and disease outbreaks, wildfire, windthrow, landslides, and timber harvesting.

In conjunction with this CWPP Update, a Post-Wildfire Rehabilitation Plan (Blackwell, 2019) was developed to address the impacts to water quality and slope stability, including the elevated risks from landslide and debris flows following a wildfire event on DNV lands. The aforementioned plan sets out a strategy for short-term emergency stabilization and long-term rehabilitation of burned areas and protection of key watershed values.

3.3.2 Cultural and Recreational Values

The Coast Salish are the main First Nations group whose territory overlaps the DNV. Within this group, a total of 15 First Nations with aboriginal interests were identified in the AOI using the BC Consultative Areas Database. These include the following mainland-based First Nations: Kwikwetlem Nation, Squamish Nation, Musqueam Indian Band, Tsleil-Waututh Nation, Sto:lo Nation and Sto:lo Tribal Council, Soowahlie First Nation, Shxw'ow'hamel First Nation, Skawahlook First Nation, and Seabird Island Band, and the following Vancouver Island based First Nations: Halalt First Nation, Stz'uminus First Nation, Cowichan Tribes, Lake Cowichan First Nation, Lyackson First Nation, and Penelakut Tribe.

Archaeological sites and remains in BC that pre-date 1846 are protected from disturbance, intentional and inadvertent, by the *Heritage Conservation Act* (HCA), which applies on both private and public lands. Sites that are of an unknown age that have a likely probability of dating prior to 1846 (i.e., lithic scatters) as well as Aboriginal pictographs, petroglyphs, and burials (which are likely not as old but are still considered to have historical or archaeological value) are also protected. Under the HCA, protected sites may not be damaged, altered or moved in any way without a permit. It is a best practice that cultural heritage resources such as culturally modified tree (CMT) sites be inventoried and considered in both operational and strategic planning.

Due to site sensitivity, the locations of archaeological sites may not be made publicly available. However, data provided by the MFLNRORD Archaeology Branch confirms that numerous sites exist in the AOI. Prior to stand modification for fire hazard reduction, and depending on treatment location, preliminary reconnaissance surveys may be undertaken to ensure that cultural heritage features are not inadvertently damaged or destroyed.

Pile burning and the use of machinery have the potential to damage artifacts that may be buried in the upper soil horizons. Above ground archaeological resources may include features such as CMTs, which could be damaged or accidentally harvested during fire hazard reduction activities. Fuel treatment

activities should include consultation with all identified First Nations at the site level and with sufficient time for review and input regarding their rights and interests prior to prescription finalization or implementation.

Recreational and tourist values in the District are significant. Several top ranked tourist attractions and heavily visited sites and trails are located in the AOI including: Grouse Mountain Resorts, Capilano Suspension Bridge, Lynn Canyon Park, Lynn Headwaters Regional Park, Quarry Rock, the Baden Powell trail, Mount Seymour Provincial Park, and Maplewood Farm among others. In addition to hiking trails, the DNV has extensive renowned and well-used mountain bike trail networks, particularly on Fromme and Seymour mountains. Consequently, the District serves as a busy recreational area and access hub to backcountry areas beyond. Considerations for raising awareness of wildfire prevention among the public and backcountry user groups (i.e., mountain bikers, hikers, trail runners, dog walkers and others) are discussed in Section 5.3.

3.3.3 High Environmental Values

The Conservation Data Centre (CDC), which is part of the Environmental Stewardship Division of the Ministry of Environment and Climate Change Strategy, is the repository for information related to plants, animals and ecosystems at risk in BC. To identify species and ecosystems at risk within the AOI, the CDC database was referenced. Two classes of data are kept by the CDC: non-sensitive occurrences for which all information is available (species or ecosystems at risk and location); and masked, or sensitive, occurrences where only generalized location information is available.

There are three occurrences of Red-listed species and one occurrence of Blue-listed species (Table 5). Additionally, the AOI overlaps with one masked occurrence. Through consultation with the CDC and a biologist or qualified professional, all site level operational plans must determine if these occurrences will be impacted by fuel management or other wildfire mitigation activities. All future fuel treatment activities or those associated with recommendations made in this plan should consider the presence of, and impact upon, potentially affected species. Additionally, all site level operational plans should consult the most recent data available to ensure that any new occurrences or relevant masked occurrences are known and considered in the operational plan to mitigate any potential impacts on species at risk. The BC Species & Ecosystems Explorer, which allows combined searches for species and ecological communities, should also be consulted at the prescription phase. Due to potential limitations of existing databases, consultation with a QP with local knowledge may also be recommended at the prescription phase.

Table 5. Publicly available occurrences of Red and Blue-listed species recorded within the AOI.

Common Name	Scientific Name	Category	BC List	Habitat Type
Pacific Water Shrew	<i>Sorex bendirii</i>	Vertebrate Animal	Red	Terrestrial: Forest Needleleaf; Riparian: Old Growth
Small-Spored Rock Moss	<i>Andreaea sinuosa</i>	Nonvascular Plant	Red	Terrestrial: Rock Outcrop

Common Name	Scientific Name	Category	BC List	Habitat Type
Northern Red-legged Frog	<i>Rana aurora</i>	Vertebrate Animal	Blue	Terrestrial: Forest Needleleaf; Riverine: Creek
Poor Pocket Moss	<i>Fissidens pauperculus</i>	Nonvascular Plant	Red	Terrestrial: Silt Outcrop

3.4 OTHER RESOURCE VALUES

There are multiple resource values associated with the land base in the AOI, including recreation and tourism, wildlife habitat, drinking water supplies, and many others.

The Fraser Timber Supply Area (TSA) does not encompass the DNV, as it is an urbanized region in which no primary forestry activities occur. As such, higher level planning documents associated with the TSA do not apply and fuel reduction treatments will not have an effect on the timber harvesting land base.

3.5 HAZARDOUS VALUES

Hazardous values are defined as values that pose a safety hazard to emergency responders. Generally, the DNV does not have a significant number of industrial sites or facilities that can be considered hazardous values at risk. A comprehensive list of hazardous values within the AOI is included in Table 6.

The management and treatment of fuels in proximity to hazardous infrastructure is critical in order to reduce the risks associated with both structural fire and wildfire. Specifically, best management practices recommended for management of hazardous values include: 1) incorporating FireSmart planning and setback requirements for all infrastructure in this category; and 2) maintaining emergency fuel/propane emergency shut off procedures to be enacted immediately and efficiently in the event of an approaching wildfire or ember shower.

Table 6. Hazardous Infrastructure Identified in CWPP field visits.

Critical/Hazardous Infrastructure Name	Location
North Shore Transfer Station	30 Riverside Dr West
Waste Control Services Recycling & Shredding Depot	1493 Dominion St
Neptune Bulk Terminals	1001 Low Level Rd
North Vancouver Sulfur Terminal	1995 West 1 st St
North Shore Wastewater Treatment Plant	Pemberton Ave and West 1 st St (under construction)

SECTION 4: WILDFIRE THREAT AND RISK

This section summarizes the factors that contribute to and were assessed in the determination of wildfire threat around the community. These factors include the natural fire regime and ecology, the Provincial Strategic Threat Analysis, and the local wildfire risk analysis completed for the AOI.

4.1 FIRE REGIME, FIRE DANGER DAYS AND CLIMATE CHANGE

The ecological context of wildfire and the role of fire in the local ecosystem under historical conditions is an important basis for understanding the current conditions and the potential implications of future conditions on wildfire threat to the community. Historical conditions may be altered by the interruption of the natural fire cycle (i.e., due to fire exclusion, forest health issues, human development) and/or climate change.

4.1.1 Fire Regime

Ecological Context and Forest Structure

The Biogeoclimatic Ecosystem Classification (BEC) system describes zones by vegetation, soils, and climate. Map 3 outlines the BEC zones found within the AOI. Regional subzones are derived from relative precipitation and temperature. Subzones may be further divided into variants based upon climatic variation and the resulting changes in the vegetative communities; variants are generally slightly drier, wetter, snowier, warmer, or colder than the climate of the regional subzone.²⁶ The following section is synthesized from information found on MFLRNORD's Research Branch BECWeb.²⁶

BEC zones have been used to classify the Province into five Natural Disturbance Types (NDTs). NDTs have influenced the vegetation dynamics and ecological functions and pathways that determine many of the characteristics of our natural systems. The physical and temporal patterns, structural complexity, vegetation communities, and other resultant attributes should be used to help design fuel treatments, and where possible, to help ensure that treatments are ecologically and socially acceptable²⁷.

The DNV AOI is characterized by the following BEC subzones in order of highest to lowest occurrence within the AOI:

Coastal Western Hemlock Dry Maritime Subzone (CWHdm) – NDT 2

The CWHdm is the dominant BEC subzone, comprising 55% of the District AOI (Table 7) at lower to mid elevations (0-650 m). The CWHdm is characterized by relatively mild winters and warm, dry summers. Moisture deficiencies occur uncommonly on zonal sites. These ecosystems support Douglas-fir, western redcedar, and western hemlock forest stands. The CWHdm is classified as a Natural Disturbance Type 2 – forest ecosystems with infrequent stand initiating events where fires are often of moderate size (20 to 1000 ha) with a mean return interval of fire of approximately 200 years.²⁷ Many of these fires occur after periods of extended drought and produce a forested landscape characterized by extensive areas of mature forest with intermixed patches of younger forests.²⁷ Although the fire frequency is not high and fires are generally not large, pre-planning and preparation are essential to reduce the negative impacts of a wildfire.

²⁶ <https://www.for.gov.bc.ca/HRE/becweb/resources/classificationreports/subzones/index.html>

²⁷ Province of British Columbia, 1995. Biodiversity Guidebook, s.l.: s.n.

Coastal Western Hemlock Very Wet Maritime Subzone Montane Variant (CWHvm2) – NDT 1

The CWHvm2 is the second most common BEC subzone in the AOI, representing approximately 21% of the District AOI, occupying the elevation sites above CWHvm1 within the AOI. In southern BC it occurs at elevations of approximately 650 to 1000 m²⁸. The climate of the CWHvm2 is wet and humid, with cool short summers and cool winters with substantial snowfall²⁸. Western hemlock, amabilis fir, yellow cedar and mountain hemlock are common tree species in these ecosystems. The CWHvm2 is classified as NDT 1 – forest ecosystems with rare stand-initiating events. These are forest ecosystems that experience relatively small disturbances in terms of spatial extent. They have historically resulted in uneven-aged, heterogeneous stand structures from rare and small disturbances caused by fire, wind and/or landslides. The CWH ecosystems in this NDT experience a mean disturbance interval of 250 years.²⁷

Coastal Western Hemlock Very Wet Maritime Subzone Submontane Variant (CWHvm1) – NDT 1

The CWHvm1 represents approximately 18% of the AOI (Table 7) at lower to mid elevations (0-650 m) above the CWHdm. The CWHvm1 is characterized by wet and humid climate with relatively mild and warm winters and cool summers. This BEC subzone and variant receive a high level of precipitation, though variability exists and is highly dependent on topography. These ecosystems support western hemlock, amabilis fir and to a lesser extent, western red cedar forest stands. The CWHvm1 has a similar NDT as the CWHvm2.

Mountain Hemlock Moist Maritime Subzone Windward Variant (MHmm1) – NDT 1

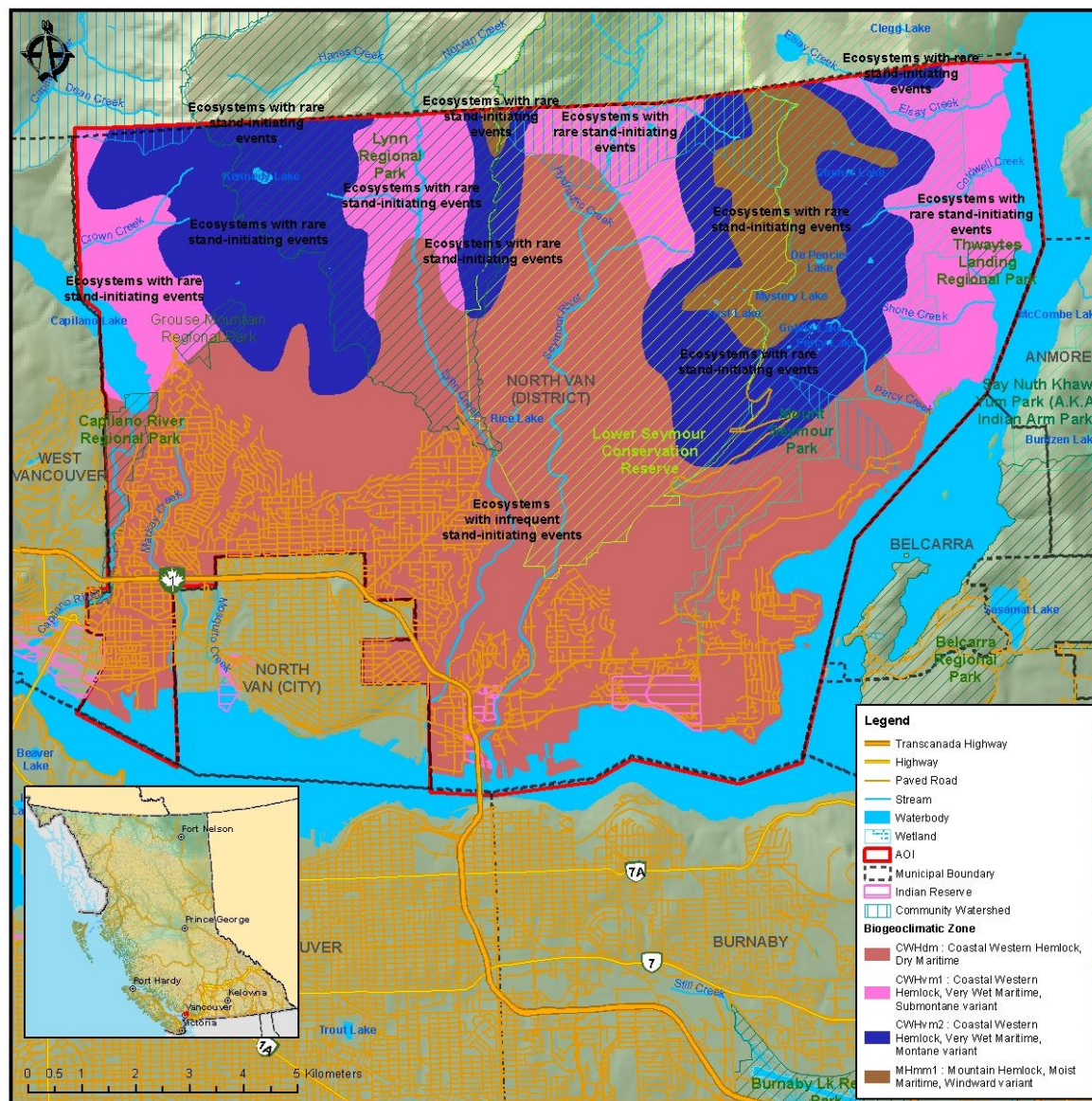
The MHmm1 makes up a small proportion (approximately 6%) of the DNV AOI (Table 7) and occupies the highest elevation sites within the AOI at approximately 800-1350 m, above the CWHvm2. The MHmm1 is characterized by a wet climate with cold, wet winters and cool, moist summers. This BEC subzone and variant receives a high level of precipitation, typically in the form of snow, and snowpacks can persist well into the summer months. These ecosystems support stands of mountain hemlock, amabilis fir and to a lesser extent, yellow-cedar. The MHmm1 is classified as NDT 1, similar to the CWHvm2 and CWHvm1. The MH ecosystems in this NDT experience a mean disturbance interval of 350 years.²⁷

Table 7. BEC zones and natural disturbance types found within the AOI.

Biogeoclimatic Zone	Natural Disturbance Type	Area (ha)	Percent (%)
CWHdm: Coastal Western Hemlock, Dry Maritime	NDT 2	9,746	55%
CWHvm1: Coastal Western Hemlock, Very Wet Maritime, Submontane variant	NDT 1	3,275	18%
CWHvm2: Coastal Western Hemlock, Very Wet Maritime, Montane variant	NDT 1	3,751	21%

²⁸ Green and Klinka, 1994.

Biogeoclimatic Zone	Natural Disturbance Type	Area (ha)	Percent (%)
MHmm1: Mountain Hemlock, Moist Maritime, Windward variant	NDT 1	991	6%
TOTAL		17,764	100%



Map 3. Biogeoclimatic Zones within the AOI.

Forest Health Issues

Several forest health issues were identified during field assessments in the DNV AOI. Invasive species commonly occur in many of the parks and protected areas in the municipality, with some areas having low to no forest cover due to invasive species competition during stand establishment or development. The occurrence of species such as English holly and English ivy were noted in low-disturbance interface forest stands within 200 m from the nearest road or establishment. The removal of invasive species should occur concurrently with fuel treatments to ensure cost efficiencies. Site monitoring should occur post-treatment to evaluate treatment efficacy and assess further mitigation requirements. English holly treatment may be in the form of manual removal, with small plants being pulled to remove the roots and large plants cut at the root collar to suppress the growth of future sprouts. English ivy mitigation can occur via manual pruning or pulling of the plant at the root and removal of resulting plant material from the site, avoiding cuttings, as those can sprout. Areas treated for English ivy removal should be mulched or covered in chips produced during the fuel treatment, and frequently monitored and managed post-treatment.

Impacts of hemlock dwarf mistletoe were noted throughout most second-growth western hemlock leading stands (particularly prevalent in Lynn Headwaters Regional Park and near Mount Fromme). Dwarf mistletoe causes stem and branch swelling, with research showing that hemlock mistletoe results in significant reductions in radial growth, annual volume and height increment in mature hemlock trees²⁹ and increased susceptibility to other disturbances such as windthrow. Highly infected stems and limbs represent a hazard from both a fuel management and public safety perspective. In order to increase forest resilience within the DNV, it is recommended that second-growth hemlock leading stands within 300 m of interface development or critical infrastructure be assessed and targeted for restoration treatments. Given the potential for windthrow and increased surface fuel loading resulting from hemlock dwarf mistletoe, it is imperative that the DNV consider strategies to reduce the hazard associated with these types of stands. Strategies could include implementing patchy gap openings, where hemlock dwarf mistletoe infected trees are targeted for removal, followed by low-density planting of other site-appropriate species. Post-treatment planting will help ensure that the natural hemlock infill process is delayed or mitigated. Example areas of previous small-scale restoration projects that showcase the aforementioned approaches are located northeast of the intersection between Mountain Highway and the Baden Powell Trail on Mount Fromme (i.e., north of the Upper Lynn and Braemar neighbourhoods).

The Coast Forest Health Overview outlines forest health issues present within the Fraser TSA.³⁰ This overview and forest health strategy (2015-2017) outlines several forest health issues that are most prevalent within the timber supply area. Of particular concern, due to the severity or extent of outbreaks, are the Douglas-fir beetle, Swiss needle cast and Douglas-fir needle cast, root diseases (primarily laminated root disease and *Armillaria* spp.), drought, and windthrow. Outbreaks of western

²⁹ Thomson, Alan & B. Smith, R & Alfaro, Rene. (2011). Growth patterns in immature and mature western hemlock stands infected with dwarf mistletoe. *Canadian Journal of Forest Research*. 14. 518-522. 10.1139/x84-096.

³⁰ 2015-17 Coastal Timber Supply Areas Forest Health Overview. 2015.

hemlock looper and western spruce budworm were a concern in the past, however, occurrences of these pests have declined in recent years.

Spatial data available through DataBC³¹ indicates one instance of Douglas-fir beetle (2013, low severity infection of 7.8 ha) adjacent to the Seymour River. Two flooding damage instances of high and moderate severity (3 ha in 2013 and 2015, respectively) were also noted. Flood damage can result in high levels of windthrow due to the destabilization of infected trees' root systems. One instance of windthrow was noted in Cates Park in 2007 (9 ha). Mortality and reduced vigour of western redcedar was also noted during field assessments of the AOI. These forest health factors have implications for the fire behaviour potential, level of surface fuel accumulation in affected stands, as well as access and working conditions for fire fighters in the event of wildfire.

Human Development and Natural Events

Since the establishment of communities in the AOI, there have been numerous anthropogenic and natural changes that have occurred on the landscape. Most land cover change in the AOI in recent years can be described as residential and commercial development. This process entails land clearing and road building. Abiotic and biotic natural events have typically occurred at small geographic scales. The overall implication of human development is an increase in human ignition potential with a decrease in hazardous fuels cover as land clearing for human development generally increases the non-fuel and O-1a/b fuel types.

The following is a list of notable changes observed within the AOI and a description of associated implications regarding wildfire behaviour.

- Residential and industrial land development has occurred in the AOI since the mid-19th century, following settlement by early pioneers engaging in resource-based activities. Over the past 50 years, new residential development has expanded from the existing neighborhoods of Lynn Valley, Lonsdale, Deep Cove, Norgate, Capilano Highlands, and Edgemont Village³². This has resulted in an increased wildland-urban interface in particular areas (Section 5.2.3) and an increase in fire suppression in ecosystems that had a historic fire interval of 200-350 years. Population growth is expected to continue and the DNV's favourable climate, high recreational and landscape values, and proximity to Vancouver make it a desirable place to live and work or retire.
- Front-country and backcountry use of trails within the DNV has increased in recent years, with one study citing a 6-fold increase in use of the North Vancouver mountain biking trails since

³¹ https://catalogue.data.gov.bc.ca/pt_BR/dataset/pest-infestation-polygons (current as of September, 2017)

³² North Vancouver Museum and Archives, North Van History Highlights. Accessed from <https://nvma.ca/education/history/#toggle-id-40>

2006.³³ Increased recreational use of forested areas has implications for human caused ignitions, particularly when these activities are undertaken during the dry summer months. Backcountry activities have the added complication of being areas with poor access for suppression efforts.

- Since the 2007 CWPP, fuel treatments have been undertaken in approximately 51 ha within the DNV AOI. These treatments have reduced fine and medium surface fuel loading and laddering potential adjacent to values at risk. Further monitoring and management of these areas will be required in the future in order to maintain the reduced fire threat and fire behaviour potential.

4.1.2 Fire Weather Rating

The Canadian Forestry Service developed the Canadian Forest Fire Danger Rating System (CFFDRS) to assess fire danger and potential fire behaviour. Fire Danger Classes provide a relative index of the ease of ignition and the difficulty of suppression. A network of fire weather stations is maintained during the fire season by MFLNRORD and the recorded data are used to determine fire danger, represented by Fire Danger Classes, on forestlands within a community. The information can be obtained from the BCWS and is most commonly utilized by municipalities and regional districts to monitor fire weather, restrict high risk activities when appropriate, and to determine hazard ratings associated with bans and closures.

The BC *Wildfire Act* [BC 2004] and *Wildfire Regulation* [BC Reg. 38/2005] specify responsibilities and obligations with respect to fire use, prevention, control and rehabilitation, and restrict high risk activities based on these classes. Fire Danger Classes are defined as follows:

- **Class 1 (Very Low):** Fires are likely to be self-extinguishing and new ignitions are unlikely. Any existing fires are limited to smoldering in deep, drier layers.
- **Class 2 (Low):** Creeping or gentle surface fires. Ground crews easily contain fires with pumps and hand tools.
- **Class 3 (Moderate):** Moderate to vigorous surface fires with intermittent crown involvement. They are challenging for ground crews to handle; heavy equipment (bulldozers, tanker trucks, and aircraft) are often required to contain these fires.
- **Class 4 (High):** High-intensity fires with partial to full crown involvement. Head fire conditions are beyond the ability of ground crews; air attack with retardant is required to effectively attack the fire's head.
- **Class 5 (Extreme):** Fires with fast spreading, high-intensity crown fire. These fires are very difficult to control. Suppression actions are limited to flanks, with only indirect actions possible against the fire's head.

It is important for the development of appropriate prevention programs that the average exposure to periods of high fire danger is determined. 'High fire danger' is considered as Danger Class ratings of 4

³³ "Regional economic impact study shows major growth of mountain bike tourism in Sea to Sky Corridor". Independent Sports News. Accessed from <http://www.independentsportsnews.com/2018/06/21/regional-economic-impact-study-shows-major-growth-mountain-bike-tourism-sea-sky-corridor/>

(High) and 5 (Extreme). Danger class days were summarized to provide an indication of the fire weather in the AOI. Considering fire danger varies from year to year, historical weather data can provide information on the number and distribution of days when the AOI is typically subject to high fire danger conditions, which is useful information in assessing fire risk.

Figure 1 displays the average frequency of Fire Danger Class days between the months of April and October. The data summarized comes from the Capilano weather station (daily data for the years 2002 – 2018). According to Figure 1, the months with the highest average number of ‘high’ fire danger class days are July and August. Historically, ‘high’ fire danger days also occur in June and September. The average number of ‘extreme’ fire danger class days is highest in July, August, and September. July historically has the highest number of days in the ‘extreme’ class when compared to June and September and August has the highest number of ‘high’ danger class days.

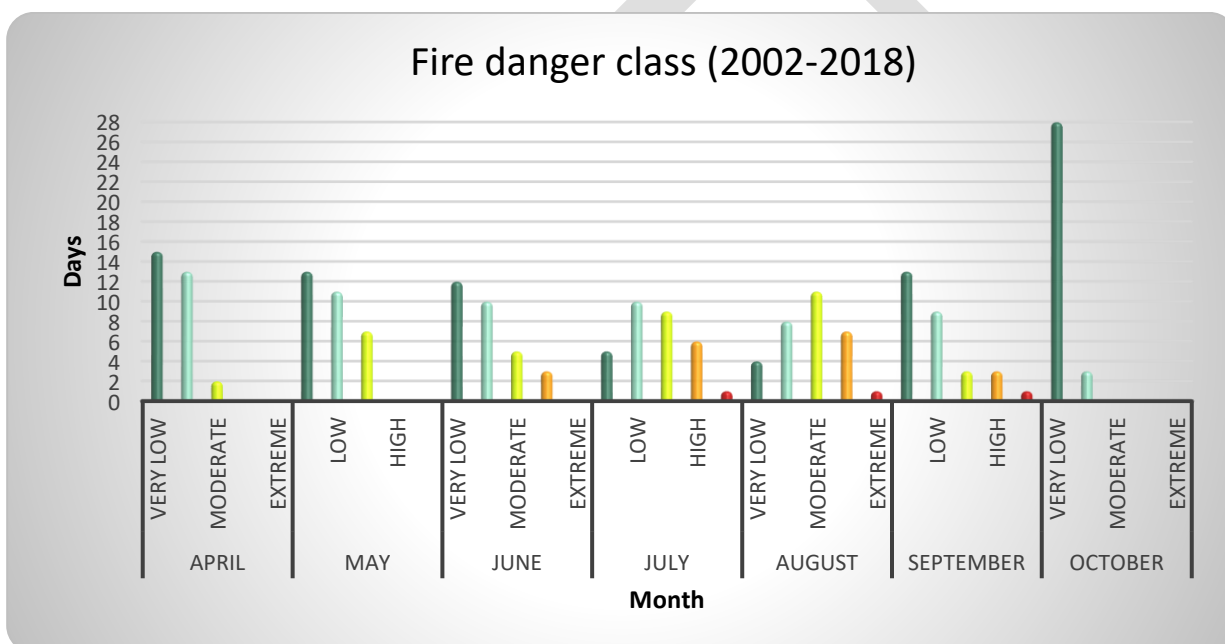


Figure 1. Average number of danger class days for the Capilano weather station. Summary of fire weather data for the years 2002 - 2018.

4.1.3 Climate Change

Climate change is a serious and complex aspect to consider in wildfire management planning. Warming of the climate system is unequivocal, and since the 1950s, each of the last three decades has been successively warmer at the Earth’s surface than any preceding decade since 1850. The period from 1983 to 2012 was likely the warmest 30-year period of the last 1400 years in the Northern Hemisphere.³⁴

³⁴ Intergovernmental Panel on Climate Change. (2014) Climate change 2014: Synthesis report, summary for policymakers. 32p.

Numerous studies outline the nature of these impacts on wildland fire across Canada, and globally. Although there are uncertainties regarding the extent of the impacts of climate change on wildfire, it is clear that the frequency, intensity, severity, duration and timing of wildfire and other natural disturbances is expected to be altered significantly with the changing climate.³⁵ Despite the uncertainties, trends within the data are visible. As reported in the DNV's 2017 *Climate Change Adaptation Strategy*³⁶, temperatures in the DNV have increased by approximately 1.2°C since 1980. Wildfire emerged as a top threat to the DNV in the aforementioned strategy which details the following climatic changes projected for the 2050s relative to a 1980s baseline:

- Increase in average annual temperatures by approximately 2.9 °C;
- Increase in average number of hot summer days (above 30 °C) from 2 to 13 days per year;
- Increase in the temperature of extreme hot days, expected to happen once every 20 years (with a 5% chance of occurring any year), from 33 °C to 38 °C;
- Decrease in annual summer precipitation by 18%, and increase in maximum number of consecutive dry days per year from 19 to 23 days on average;
- Decrease in snowpacks by an average of 89% with rates of decline projected to vary from approximately 100% near sea level to less than 30% at higher elevations (the tops of Grouse and Seymour mountains); and
- Decrease in number of days with ice (68%) and a 63% decrease in the number of days with frost, which could lead to an increase in pests and invasive species.

Climate change projections modelled by the Pacific Climate Impacts Consortium are outlined in the *Climate Summary for South Coast Region*³⁷. Similar trends are projected to the 2050s from a 1961 to 1990 baseline. Projected changes for the South Coast region include a 1.7 °C increase in annual temperature, a 6% increase in annual precipitation, but with a 14% decline in precipitation during the summer, and a decrease in snowfall in winter (-24%) and spring (-54%).³⁸

An increased frequency of natural disturbance events is expected to occur as a result of climate change with coincident impacts to ecosystems. These include:

- Storm events, including catastrophic blowdown and damage to trees from snow and ice;
- Wildfire events and drought; and
- Increased winter precipitation may result in slope instability, mass wasting, increased peak flows (loss of forest cover from fire or other disturbance may increase the chance of mass wasting).

³⁵ Dale, V. et al. 2001.

³⁶ Climate Change Adaptation Strategy. Accessed from: <https://www.dnv.org/sites/default/files/edocs/climate-change-adaptation-strategy.pdf>

³⁷ Accessed from: https://www.pacificclimate.org/sites/default/files/publications/Climate_Summary-South_Coast.pdf

³⁸ All projected change values are the ensemble median - a mid-point value, chosen from a PCIC standard set of Global Climate Model (GCM) projections.

Insects and disease occurrence of spruce beetle and Swiss needle cast may increase; outbreaks of western hemlock looper may increase.³⁹ Other research regarding the intricacies of climate change and potential impacts on wildfire threats to Canadian forests has found that:

- Fuel moisture is highly sensitive to temperature change and projected precipitation increases will be insufficient to counteract the impacts of the projected increase in temperature. Results conclude that future conditions will include drier fuels and a higher frequency of extreme fire weather days.⁴⁰
- The future daily fire severity rating (a seasonally cumulative value) is expected to have higher peak levels and head fire intensity is expected to increase significantly in Western Canada. A bi-modal (spring-late summer) pattern of peak values may evolve to replace the historical late summer peak which is the current norm.⁴¹ The length of fire seasons is expected to increase and the increase will be most pronounced in the northern hemisphere, specifically at higher latitude northern regions. Fire season severity seems to be sensitive to increasing global temperatures; larger and more intense fires are expected and fire management will become more challenging.^{42, 43}
- More extreme precipitation events (increased intensity and magnitude of extreme rainfall) are expected, particularly in April, May and June, along with dry periods between major events (increased summer drought periods). Annual runoff is also expected to increase and the timing of peak flows are anticipated to occur earlier in the spring.⁴⁴
- Future climatic conditions may be more suitable for, or give competitive advantage to, new species of plants, including invasive species.

In summary, climate scientists expect that the warming global climate will trend towards wildfires that are increasingly larger, more intense and difficult to control. Furthermore, it is likely that these fires will be more threatening to WUI communities due to increased potential fire behaviour, fire season length, and fire severity. This trend is expected to be disproportionately felt in northern latitudes.⁴⁵

³⁹ MFLNRO, 2016.

⁴⁰ Flannigan, M.D et al. 2016.

⁴¹ deGroot, W. J. et al. 2013.

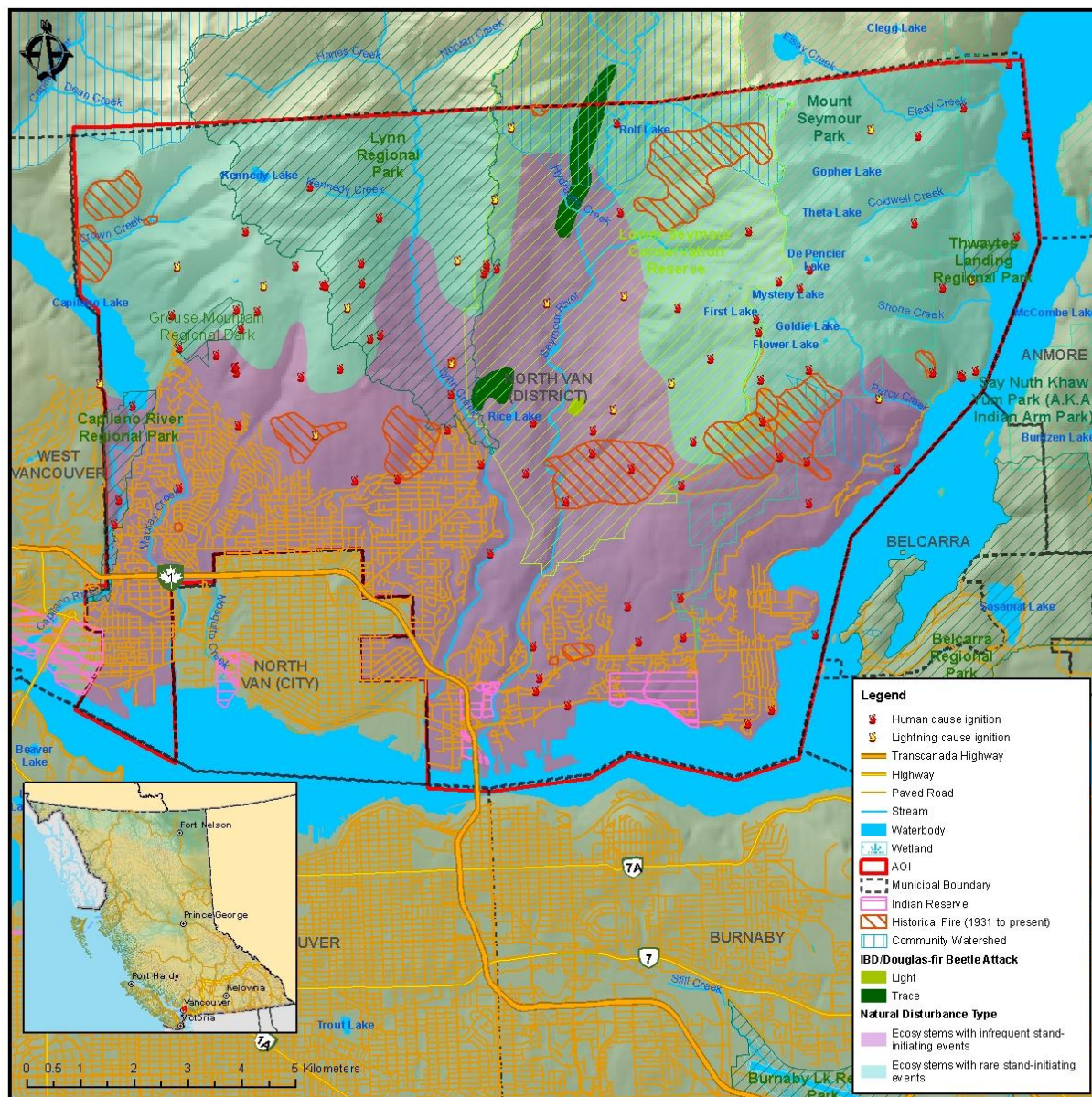
⁴² Flannigan, M.D et al. 2013.

⁴³ Jandt, R. 2013. Alaska Fire Science Consortium Research Brief 2013-3.

⁴⁴ British Columbia Agriculture & Food Climate Action Initiative, 2012.

⁴⁵ <https://pics.uvic.ca/sites/default/files/uploads/publications/Adapt-FraserMetroVan%20Crawford.pdf>

⁴⁵ All research noted was completed for Canada or globally, not for the AOI. Direct application of trends may not be appropriate, although general expectations for Canada were noted to be consistent across multiple studies.



Map 4. Fire Regime, Ecology and Climate Change.

4.2 PROVINCIAL STRATEGIC THREAT ANALYSIS

The Provincial Strategic Threat Analysis (PSTA) evaluates multiple data sets to provide a coarse (high-level) spatial representation of wildfire threats across BC. The information in this section is a synthesis of the BCWS' Provincial Strategic Threat Analysis 2017 Wildfire Threat Analysis Component.⁴⁶ Three inputs are combined to create the PSTA Wildfire Threat Analysis (WTA) Component:

- 1) **Historic fire density:** represents the ignition and fire spread potential based upon historic patterns and fire density weighted by fire size (larger fire perimeters were given a higher weight in order to reflect the greater cost and damage usually associated with larger fires) (see Map 5 below).
- 2) **Spotting impact:** represents the ability of embers or firebrands from a burning fire to be sent aloft and start new fires in advance of the firefront, or outside of the fire perimeter. Spotting is most often associated with high intensity crown fires in coniferous fuels and structure losses. For the WTA, the spotting analysis is based on estimating the threat to a given point on the landscape from the fuels surrounding it, up to a distance of 2 km. Spotting distances greater than 2 km are rare and unpredictable.
- 3) **Head fire intensity (HFI):** represents the intensity (kW/m) of the fire front, a measure of the energy output of the flaming front. HFI is directly related to flame length, fire spread rate and fuel consumption and a fire's leading edge. There is a strong correlation between HFI, suppression effort required and danger posed to suppression personnel. The HFI used in the WTA was developed using the 90th percentile fire weather index value.

The final wildfire threat analysis value was developed through an average weighting process of the aforementioned three layers: fire density 30%; HFI 60%; and spotting impact 10%. Water bodies were automatically given a value of (-1). The values were then separated into 10 classes (1 – 10) which represent increasing levels of overall fire threat (the higher the number, the greater the fire threat); threat class 7 is considered the threshold. Threat classes of 7 and higher are locations where the threat is severe enough to potentially cause catastrophic losses in any given fire season, when overlapping with values at risk. Classes were grouped into the following general threat class descriptions: low (1 – 3); moderate (4 – 6); high (7 – 8); and, extreme (9 – 10).

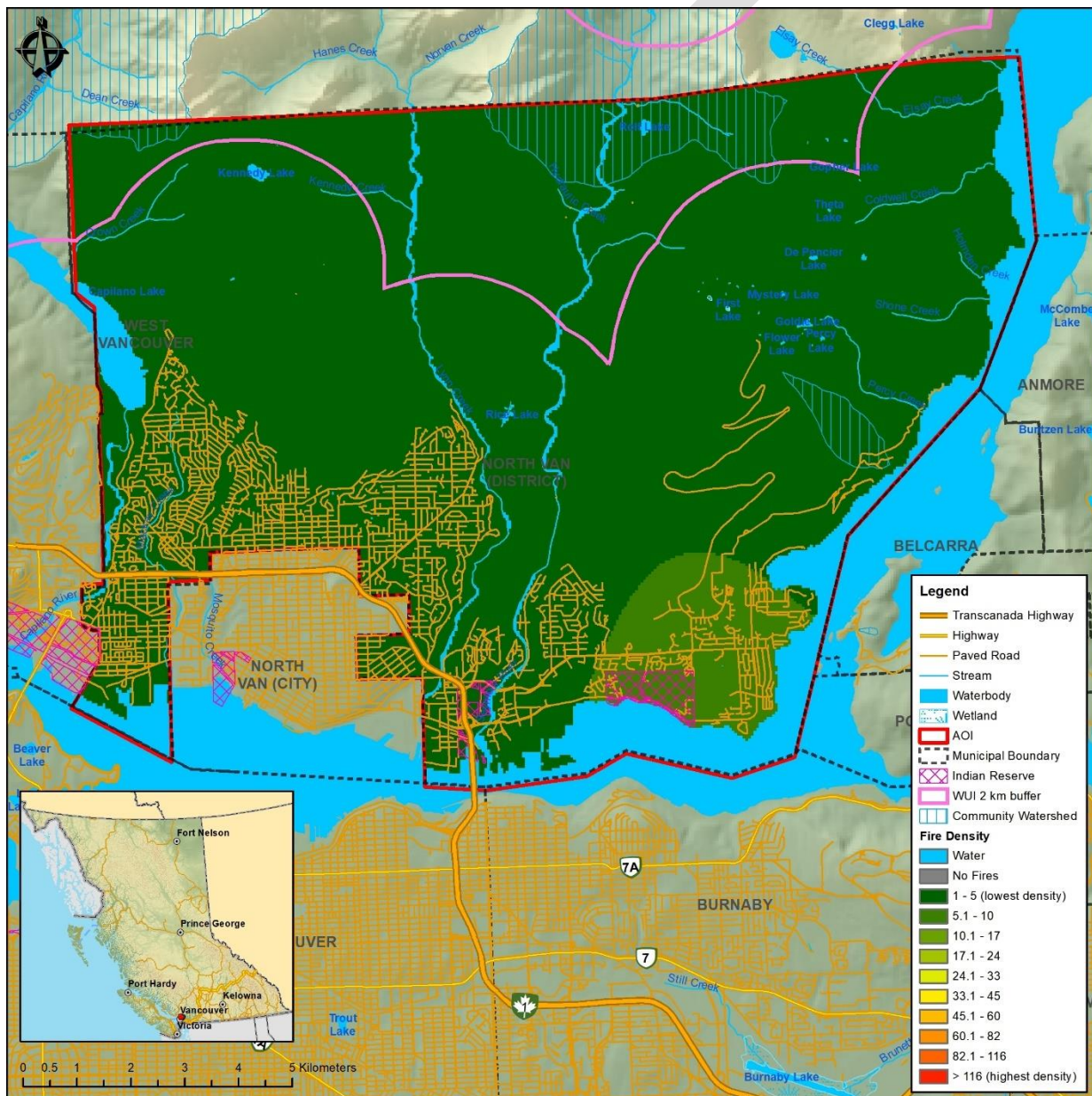
There are considerable limitations associated with the WTA Component based upon the accuracy of the source data and the modeling tools, the most notable being:

- Limited accuracy and variability of the fire history point data;
- Sensitivity to fuel type and the associated limitations of using fuel type approximations for fire behaviour modelling; and

⁴⁶ BC Wildfire Service. 2017. *Provincial Strategic Threat Analysis: 2017 Update*. Retrieved from: ftp://ftp.for.gov.bc.ca/HPR/external/publish/PSTA/Documents/Provincial%20Strategic%20Threat%20Analysis_2017%20Update.pdf.

- 90th percentile rating for HFI, which represents a near worst-case scenario which may be artificial in some circumstances.

The WTA serves to provide a provincial-level threat assessment for resource and land managers and local governments in order to complete landscape fire management planning and strategically plan efficient and effective wildfire risk reduction initiatives (i.e., placement or prioritization of fuel treatment areas, identification of values at risk, FireSmart planning, etc.). The WTA is then validated at the stand level in order to produce a finer, more accurate assessment of local threat.



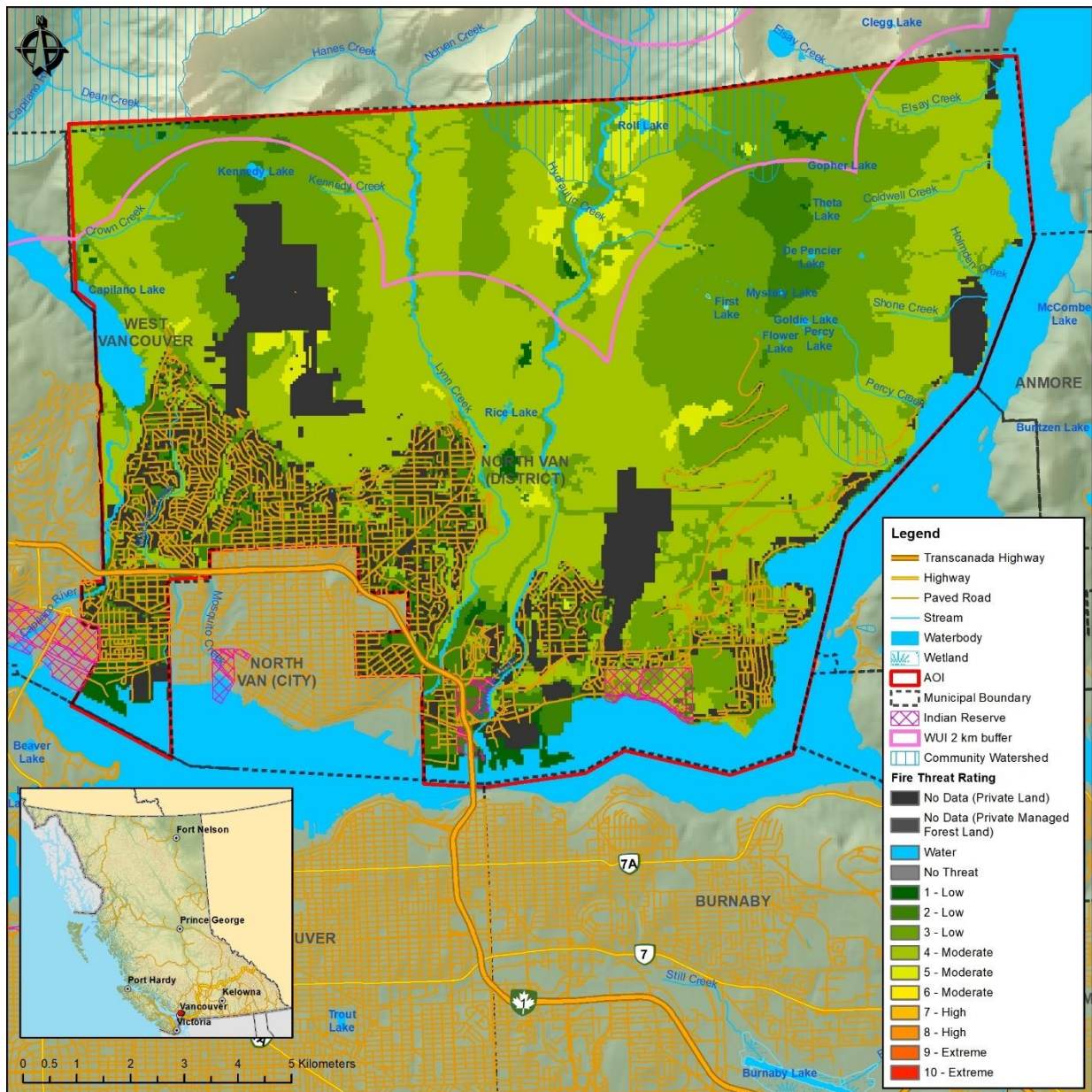
Map 5. Historical Fire Density.

4.2.1 PSTA Final Wildfire Threat Rating

Approximately 13 % of the AOI is categorized as either private land or private managed forest land and has no data for wildfire threat in the (PSTA). Low threat areas cover 41% of the AOI and water covers 9%. Approximately 38% of the AOI is categorized as having a moderate wildfire threat rating in the provincial Wildfire Threat Analysis (Table 8). According to the PSTA, the AOI does not contain high or extreme threat rating (Map 6).

Table 8. Overall PSTA Wildfire Threat Analysis for the AOI (rounded to the nearest hectare).

Threat Class	Area (ha)	Threat Class Description	Percent of AOI
-3	2,240	No Data (Private Land)	13%
-2	0	No Data (Private Managed Forest Land)	0%
-1	1,531	Water	9%
0	0	No Threat	0%
1	227	Low	41%
2	1,769		
3	5,218		
4	6,368		
5	411	Moderate	38%
6	0		
7	0		
8	0		
9	0	High	0%
10	0		
Total	17,764	-	100%



Map 6. Provincial Strategic Threat Rating.

4.2.2 Spotting Impact

Spotting impact is modelled by fuel type and distance class from a given fuel type. The layer estimates the threat of embers impacting a given point on the landscape from the fuel types surrounding it.

It has been found that, during extreme wildfire events, most home destruction has been a result of low-intensity surface fire flame exposures, usually ignited by embers in advance of the fire front. Firebrands can be transported long distances ahead of the wildfire, across fire guards and fuel breaks, and accumulate in densities that can exceed 600 embers per square meter. Combustible materials found



adjacent or near to values at risk can provide fire pathways allowing spot surface fires ignited by embers to spread and carry flames or smoldering fire into contact with structures.

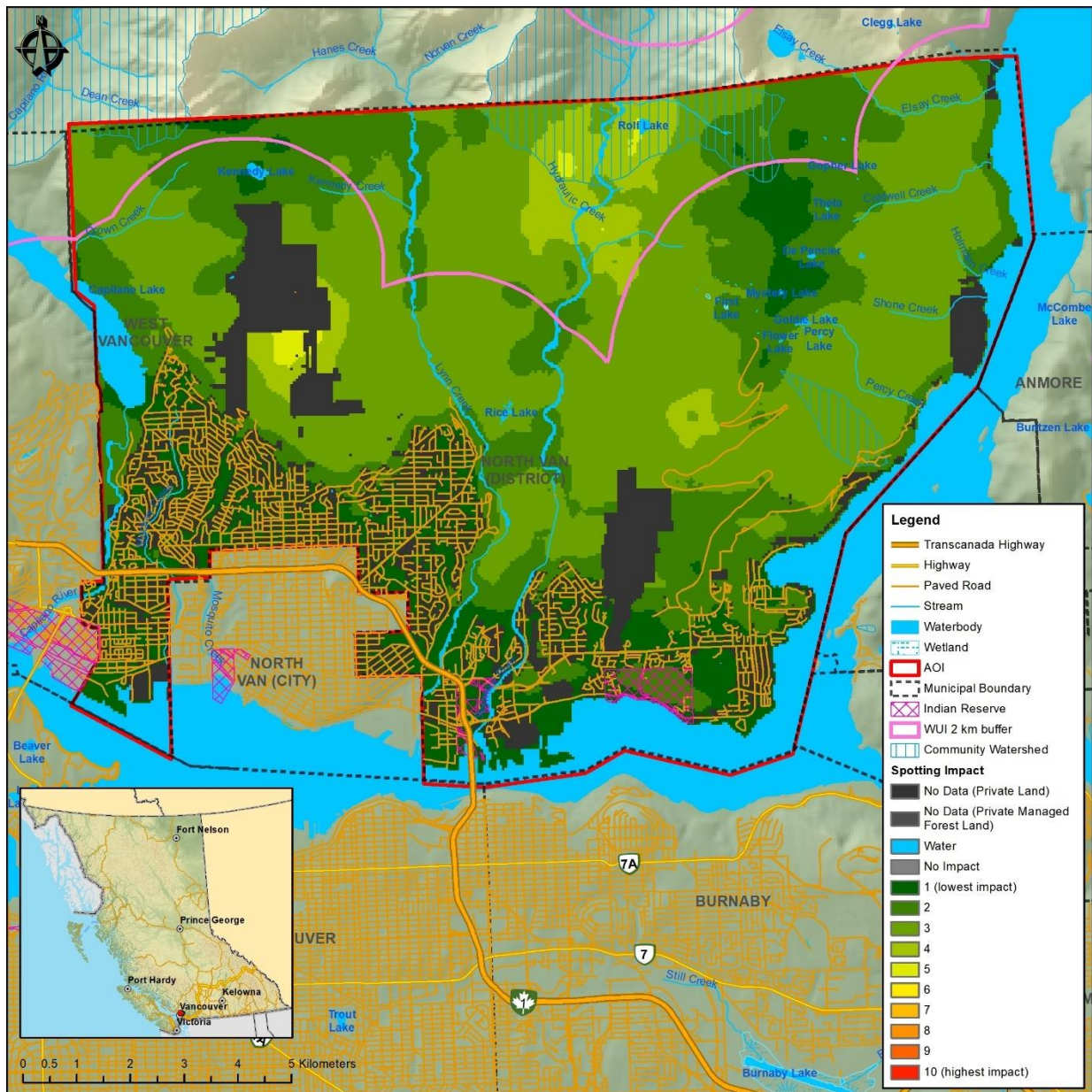
For example, an investigation of home destruction from the 2016 Fort McMurray, Alberta fire found that the vast majority of home ignitions in the interface (outer edges of urban neighbourhoods) were attributable to embers alighting on combustible material (home or adjacent areas).⁴⁷ Similarly, reports from the 2010 Fourmile Canyon fire outside Boulder, Colorado, found that only 17% of the 162 homes destroyed were attributed to crown fire.^{48,49} Instead of high intensity flames or radiant heat, the majority of homes ignited as a result of firebrands (or embers), which ignited the home directly or ignited lower-intensity surface fires adjacent to structures.⁴⁹ Post-fire studies have shown that it is uncommon for homes to be partially damaged by wildfire; survivability is based upon whether or not the structure, or area adjacent to the structure, ignites.

The AOI is generally low in terms of spotting impact, with isolated areas of moderate potential impact around Grouse Mountain Resort, Hydraulic Creek, and Rolf Lake and low-moderate impact to the west of Mount Seymour Road (Map 7).

⁴⁷ Westhaver, A. 2017. *Why some homes survived. Learning from the Fort McMurray wildland/urban interface fire disaster*. A report published by the Institute for Catastrophic Loss Reduction – ICLR research paper series – number 56. https://www.iclr.org/images/Westhaver_Fort_McMurray_Final_2017.pdf

⁴⁸ Calkin, D., J. Cohen, M. Finney, M. Thompson. 2014. *How risk management can prevent future wildfire disasters in the wildland-urban interface*. Proc Natl Acad Sci U.S.A. Jan 14; 111(2): 746-751. Accessed online 1 June, 2016 at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3896199/>.

⁴⁹ Graham, R., M. Finney, C. McHugh, J. Cohen, D. Calkin, R. Stratton, L. Bradshaw, N. Nikolov. 2012. Fourmile Canyon Fire Findings. Gen. Tech. Rep. RMRS-GTR-289. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 110 p.



Map 7. Spotting Impact within the AOI.

4.2.3 Head Fire Intensity

HFI is correlated with flame length and fire behaviour. The greater the fire intensity (kW/m), or HFI and fire intensity class, the more extreme the fire behaviour is likely to be and the more difficult the fire will likely be to suppress (Table 9 and Map 8).

In the AOI, generally speaking, the highest fire intensity class is 9, which represents a blowup or conflagration with extreme and aggressive fire behaviour (Table 9). Class 9 as well as class 6, representing highly vigorous surface fire with torching and/or continuous crown fire; and class 4,

representing vigorous surface fire with occasional torching, are quite uncommon in the AOI (<1% to 1% of the area, respectively). Classes 1 and 3 dominate throughout at 26% and 25% of the AOI area, respectively (Map 8). Class 3 is described as vigorous surface fire and classes 2 and 1 are described as moderate vigour surface fire and smouldering surface fire, respectively.

Table 9. Head Fire Intensity Classes and Associated Fire Behaviour.

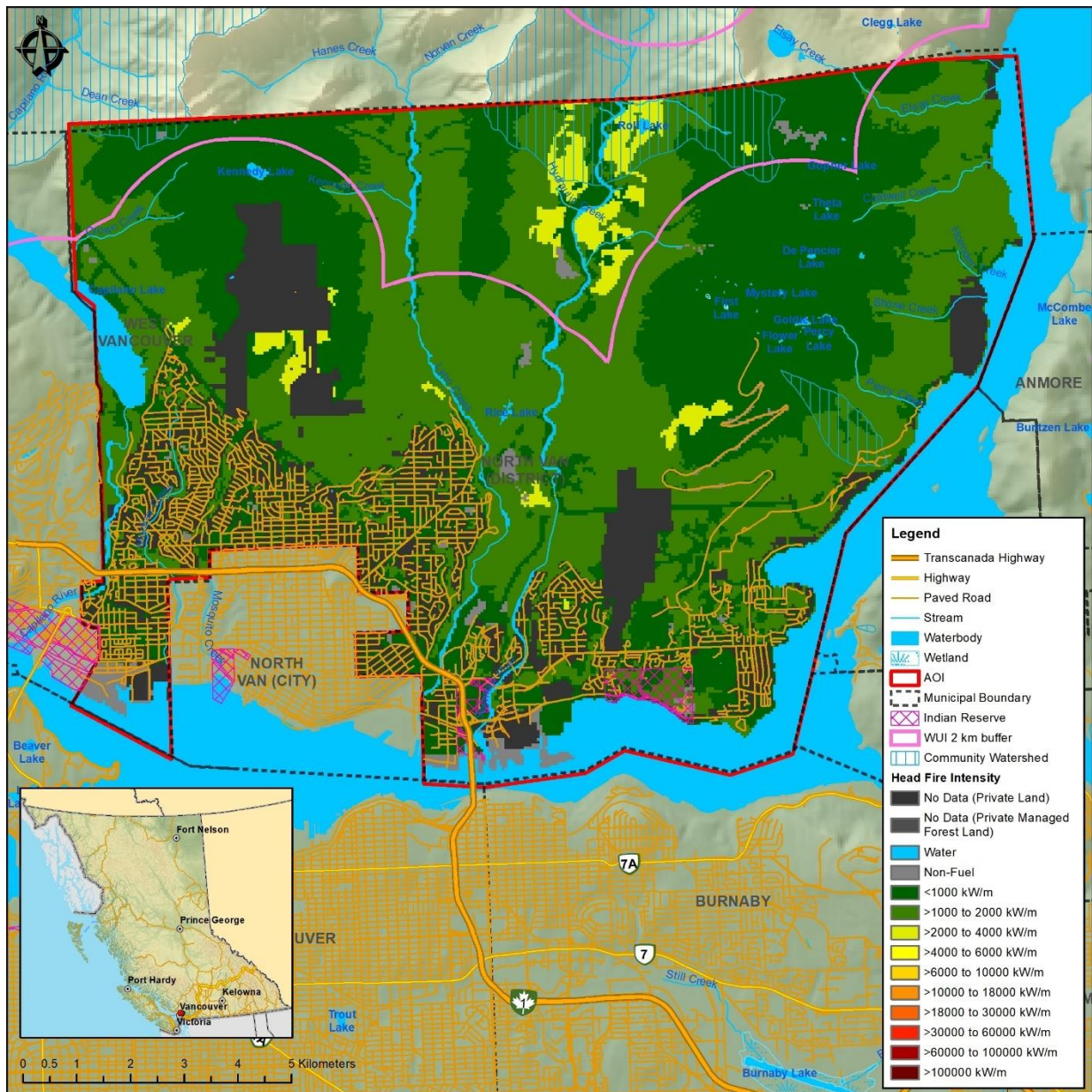
PSTA - HFI Class	Fire Intensity kW/m	Fire Intensity Class ⁵⁰	Percent of AOI	Flame Length (meters) ⁵¹	Likely Fire Behaviour ⁵²
1	0.01 – 1,000	2	39%	< 1.8	Smouldering surface fire
2	1,000.01 – 2,000	3	36%	1.8 to 2.5	Moderate vigour surface fire
3	2,000.01 – 4,000	4	2%	2.5-3.5	Vigorous surface fire
4	4,000.01 – 6,000	5	0%	3.5 to 4.2	Vigorous surface fire with occasional torching
5	6,000.01 – 10,000	5	<1%	4.2 to 5.3	Vigorous surface fire with intermittent crowning
6	10,000.01 – 18,000	6	0%	12.3 to 18.2	Highly vigorous surface fire with torching and/or continuous crown fire
7	18,000.01 – 30,000	6	<1%	18.2 to 25.6	Extremely vigorous surface fire and continuous crown fire
8	30,000.01 – 60,000	6	<1%	>25.6 ⁵³	Extremely vigorous surface fire and continuous crown fire, and aggressive fire behaviour
9	60,000.01 – 100,000	6	0%	>25.6	Blowup or conflagration, extreme and aggressive fire behaviour
10	≥ 100,000	6	<1%	>25.6	Blowup or conflagration, extreme and aggressive fire behaviour

⁵⁰ Head fire intensity should be classified by intensity class not fire rank. Fire rank is a visual description of conifer fires for air operations.

⁵¹ For calculating Flame Length, Bryam (1959) was used for surface fire (<10 000 kW/m) and Thomas (1963) was used for crown fire situations (>10 000 kW/m).

⁵² These characteristics will be different in open and closed forest fuel.

⁵³ With HFI over 30 000 kW/m the function of the equation are stretched beyond the expectation of the equation, fire is under the influence too many other factors.



Map 8. Head Fire Intensity within the AOI.

4.2.4 Fire History

Fire ignition and perimeter data are depicted in Map 4. Fire ignition data for the area is available for 1950-2017 and fire perimeter data from 1919-2017. Based on the fire ignition data, there have been 81 fire incidents within the AOI during that time period; 46 of which were human-caused and 35 of which were of miscellaneous/undetermined cause. Small and large historical wildfires have burned throughout the AOI, with a range in area from 2 ha to 252 ha. Based on the fire perimeter data, of the 18 fires that burned within the AOI, 17 were human-caused and one was lightning caused. All but one of these fires occurred between 1920 and 1941. The most recent fire occurred on the east side of Lynn Peak in

September 1967. This fire history demonstrates that the vast majority of fires in the AOI occurred due to humans and that the common fires and relatively large scales seen in the first half of the 20th century have not occurred since.

4.3 LOCAL WILDFIRE THREAT ASSESSMENT

WUI Threat Assessments were completed over six field days in February and March 2018, in conjunction with verification of fuel types. WUI Threat Assessments were completed in interface (i.e., abrupt change from forest to urban development) and intermix (i.e., where forest and structures are intermingled) areas of the AOI to support development of priority treatment areas, and in order to confidently ascribe threat to polygons which may not have been visited or plotted, but which have similar fuel, topographic, and proximity to structure characteristics to those that were visited.

Field assessment locations were prioritized based upon:

- PSTA WTA class – Field assessments were clustered in those areas with WTA classes of 5 or higher.
- Proximity to values at risk – Field assessments were clustered in the intermix and interface, as well as around critical infrastructure.
- Prevailing fire season winds – More field time was spent assessing areas upwind of values at risk.
- Slope position of value – More field time was spent assessing areas downslope of values at risk. Similarly, values at top of slope or upper third of the slope were identified as particularly vulnerable.
- Land ownership – Crown provincial and municipal land was the main focus of field assessments.
- Local knowledge – Areas identified as hazardous, potentially hazardous, with limited access/egress, or otherwise of particular concern due to vulnerability to wildfire, as communicated by local fire officials.
- Observations – Additional areas potentially not recognized prior to field work were visually identified as hazardous and assessed during the week.

A total of 41 WUI threat plots were completed and over 174 other field stops (i.e., qualitative notes, fuel type verification, and/or photograph documentation) were made across the AOI (see Appendix E for WUI threat plot locations).

4.3.1 Fuel Type Verification

The Canadian Forest Fire Behaviour Prediction (FBP) System outlines five major fuel groups and sixteen fuel types based on characteristic fire behaviour under defined conditions.⁵⁴ Fuel typing is recognized as a blend of art and science. Although a subjective process, the most appropriate fuel type was assigned

⁵⁴ Forestry Canada Fire Danger Group. 1992. Development and Structure of the Canadian Forest Fire Behavior Prediction System: Information Report ST-X-3.

based on research, experience, and practical knowledge; this system has been used within BC, with continual improvement and refinement, for 20 years.⁵⁵ It should be noted that there are significant limitations with the fuel typing system which should be recognized. Major limitations include: a fuel typing system designed to describe fuels which do not occur within the AOI, fuel types which cannot accurately capture the natural variability within a polygon, and limitations in the data used to create initial fuel types.⁵⁵ Details regarding fuel typing methodology and limitations are found in Appendix F. There are several implications of the aforementioned limitations, which include: fuel typing further from the developed areas of the study has a lower confidence, generally; and, fuel typing should be used as a starting point for more detailed assessments and as an indicator of overall wildfire threat, not as an operational, or site-level, assessment.

Table 10 summarizes the fuel types by general fire behaviour (crown fire and spotting potential) that exist within the DNV AOI. In general, the fuel type that may be considered hazardous in terms of fire behaviour and spotting potential in the AOI is the C-3 fuel type, particularly if there are large amounts of woody fuel accumulations or denser understory ingrowth. The C-5 fuel type has a moderate potential for active crown fire when wind-driven.⁵⁵ An M-1/2 fuel type can sometimes be considered hazardous, depending on the proportion of conifer stems within the forest stand; conifer fuels include those in the overstory as well as those in the understory. These fuel types were used to guide the threat assessment.

Forested ecosystems are dynamic and change over time: fuels accumulate, stands fill in with regeneration, and forest health outbreaks occur. Regular monitoring of fuel types and wildfire threat assessment should occur every 5 – 10 years to determine the need for threat assessment updates and the timing for their implementation.

⁵⁵ Perrakis, D.B., Eade G., and Hicks, D. 2018. Natural Resources Canada. Canadian Forest Service. *British Columbia Wildfire Fuel Typing and Fuel Type Layer Description* 2018 Version.

Table 10. Fuel Type Categories and Crown Fire Spot Potential. Only summaries of fuel types encountered within the AOI are provided (as such, other fuel types, i.e., C-1, C-2, C-4, C-6, C-7 and S-1/2/3 are not summarized below).

Fuel Type	FBP/CFDDRS Description	AOI Description	Wildfire Behaviour Under High Wildfire Danger Level	Fuel Type – Crown Fire/Spotting Potential
C-3	Mature jack or lodgepole pine	Fully stocked, late young forest (western red cedar, hemlock, and/or Douglas-fir), with crowns separated from the ground.	Surface and crown fire, low to very high fire intensity and rate of spread	High*
C-5	Red and white pine	Well-stocked mature forest, crowns separated from ground. Moderate understory herbs and shrubs. Often accompanied by dead woody fuel accumulations.	Moderate potential for active crown fire in wind-driven conditions. Under drought conditions, fuel consumption and fire intensity can be higher due to dead woody fuels	Low
M-1/2	Boreal mixed wood (leafless and green)	Moderately well-stocked mixed stand of conifers and deciduous species, low to moderate dead, down woody fuels.	Surface fire spread, torching of individual trees and intermittent crowning, (depending on slope and percent conifer)	<26% conifer (Very Low); 26-49% Conifer (Low); >50% Conifer (Moderate)
D-1/2	Aspen (leafless and green)	Deciduous dominated stands.	Always a surface fire, low to moderate rate of spread and fire intensity	Low
W	N/A	Water	N/A	N/A
N	N/A	Non-fuel: irrigated agricultural fields, golf courses, alpine areas void or nearly void of vegetation, urban or developed areas void or nearly void of forested vegetation.	N/A	N/A

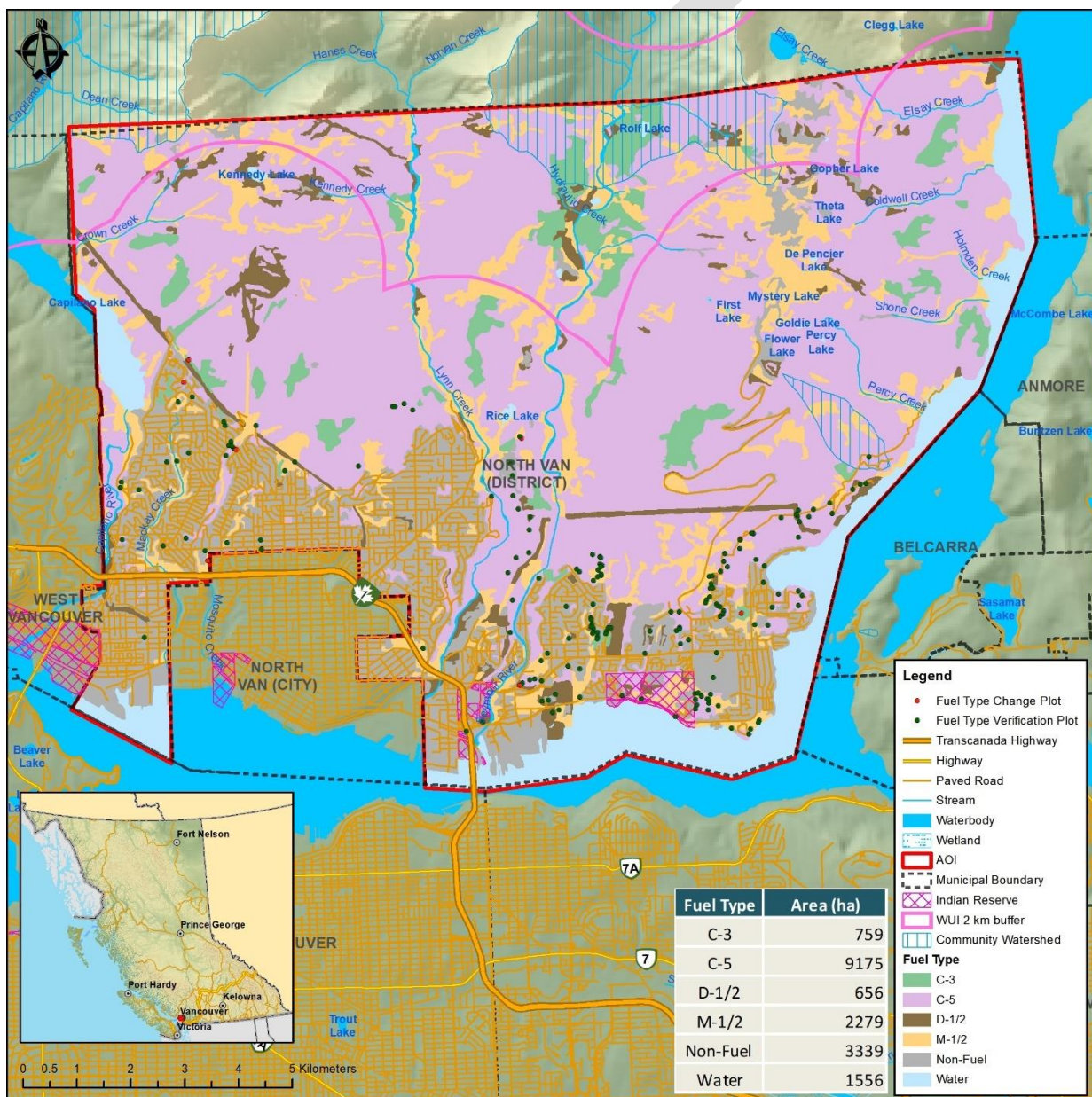
*C-3 fuel type is considered to have a high crown fire and spotting potential within the AOI due to the presence of moderate to high fuel loading (dead standing and partially or fully down woody material), and continuous conifer ladder fuels (i.e., western redcedar, Cw, and/or Douglas-fir, Fd).

During field visits, eight recurring patterns of fuel type errors were found in the provincial dataset. They were:

- C-5 fuel types being incorrectly identified by the PSTA as M-1/2;
- C-3 fuel types identified as D-1/2
- C-3 fuel types identified as M-1/2;

- D-1/2 fuel types identified as M-1/2;
- M-1/2 fuel types identified as C-5;
- C-3 fuel types identified as C-5;
- C-5 fuel types identified as D-1/2; and
- M-1/2 fuel types identified as D-1/2.

All fuel type updates were approved by BCWS, using stand and fuel descriptions and photo documentation for the review process (see Appendix A for submitted fuel type change rationales).



Map 9. Updated Fuel Type.

4.3.2 Proximity of Fuel to the Community

Fire hazard classification in the WUI is partly dictated by the proximity of the fuel to developed areas within a community. More specifically, fuels closest to the community are considered to pose a higher hazard in comparison to fuels that are located at greater distances from values at risk. As a result, it is recommended that the implementation of fuel treatments prioritizes fuels closest to structures and/or developed areas, in order to reduce hazard level adjacent to the community. Continuity of fuel treatment is an important consideration, which can be ensured by reducing fuels from the edge of the community outward. Special consideration must be given to treatment locations to ensure continuity, as discontinuous fuel treatments in the WUI can allow wildfire to intensify, resulting in a heightened risk to values. In order to classify fuel threat levels and prioritize fuel treatments, fuels immediately adjacent to the community are rated higher than those located further from developed areas. Table 11 describes the classes associated with proximity of fuels to the interface.

Table 11. Proximity to the Interface.

Proximity to the Interface	Descriptor*	Explanation
WUI 100	(0-100 m)	This Zone is always located adjacent to the value at risk. Treatment would modify the wildfire behaviour near or adjacent to the value. Treatment effectiveness would be increased when the value is FireSmart.
WUI 500	(101-500 m)	Treatment would affect wildfire behaviour approaching a value, as well as the wildfire's ability to impact the value with short- to medium- range spotting; should also provide suppression opportunities near a value.
WUI 2000	(501-2000 m)	Treatment would be effective in limiting long - range spotting but short- range spotting may fall short of the value and cause a new ignition that could affect a value.
	(>2 000 m)	This should form part of a landscape assessment and is generally not part of the zoning process. Treatment is relatively ineffective for threat mitigation to a value, unless used to form a part of a larger fuel break/treatment.

**Distances are based on spotting distances of high and moderate fuel type spotting potential and threshold to break crown fire potential (100m). These distances can be varied with appropriate rationale, to address areas with low or extreme fuel hazards.*

4.3.3 Fire Spread Patterns

Wind speed, wind direction, and fine fuel moisture condition influence wildfire trajectory and rate of spread. Wind plays a predominant role in fire behaviour and direction of fire spread and is summarized in the Wind Rose from the local representative Greater Vancouver Regional District (GVRD) weather station, Capilano.⁵⁶ A more representative MFLNRORD weather station (and associated Initial Spread Index reporting) was not available for the AOI. The wind rose data is compiled hourly and provides an estimate of prevailing wind directions and wind speed in the area of the weather station.

During the fire season (April – October) winds are predominantly from the northeast and to a lesser degree from the east with wind speeds of 0-5 km/hour the majority of the time and increasing 5-10

⁵⁶ Data provided by GVRD (Metro Vancouver).

km/hour. Winds occur from the northeast at speeds of 0-5 km/hour less than 20% of the time, and at speeds of 5-10 km/hour approximately 3% of the time. Winds from the east occur approximately 12% of the time (predominantly at speeds of 0-5 km/hour and up to 10 km/hour). Winds occur least frequently from the west (approximately 6% of the time), and from the southwest, southeast, north and south, in declining order (less than 5% of the time). The highest wind speeds (5 to 10 km/hour) tend to occur more frequently from the west and southwest during the fire season. Potential treatment areas were identified and prioritized with the predominant wind direction in mind; wildfire that occurs upwind of a value poses a more significant threat to that value than one which occurs downwind.

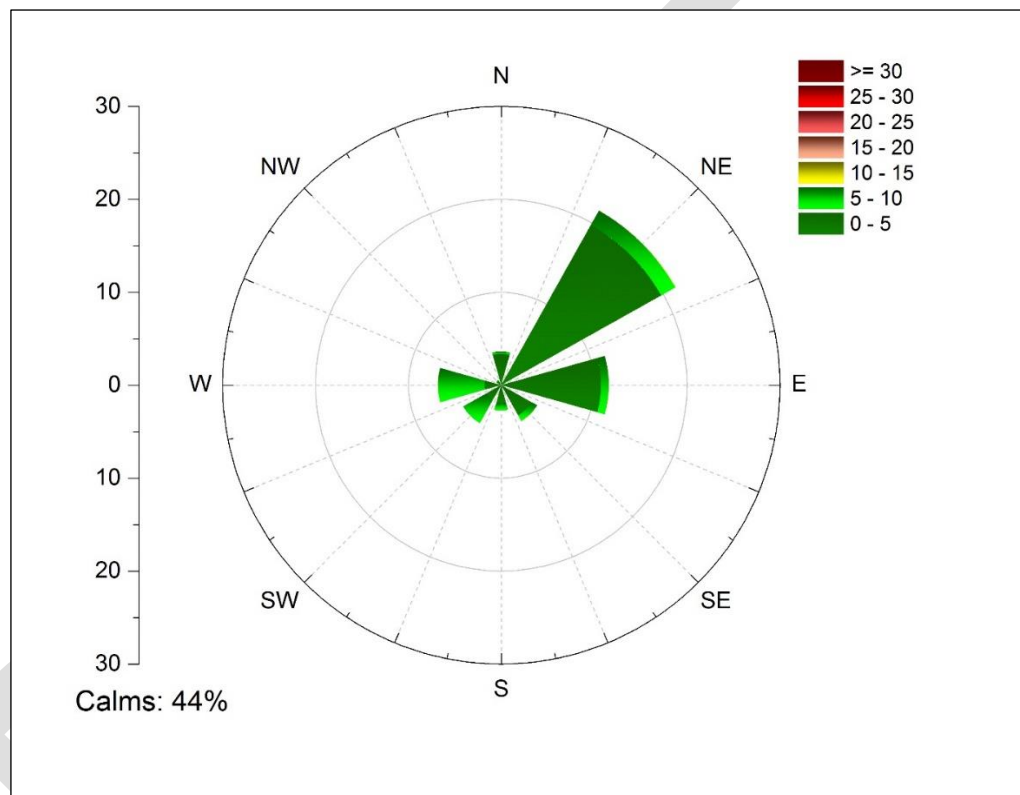


Figure 2. Wind rose for Capilano weather station based on hourly wind speed data during the fire season (April 1 – October 31) 2002-2018. Data courtesy of GVRD. The length of each bar represents the frequency of readings in percent and bar colour indicates the windspeed range.

4.3.4 Topography

Topography is an important environmental component that influences fire behaviour. Considerations include slope percentage (steepness) and slope position where slope percentage influences the fire's trajectory and rate of spread and slope position relates to the ability of a fire to gain momentum uphill. Other factors of topography that influence fire behaviour include aspect, elevation and land configuration.

Slope Class and Position

Slope steepness affects solar radiation intensity, fuel moisture (influenced by radiation intensity) and influences flame length and rate of spread of surface fires. Table 12 summarizes the fire behaviour implications for slope percentage (the steeper the slope the faster the spread). In addition, slope position affects temperature and relative humidity as summarized in Table 13. A value placed at the bottom of the slope is equivalent to a value on flat ground (see Table 12). A value on the upper 1/3 of the slope would be impacted by preheating and faster rates of spread (Table 13). Just under half of the AOI (41%) is on less than 20% slope and will likely not experience accelerated rates of spread due to slope class. Approximately 59% percent of the AOI is likely to experience an increased or high rate of spread. On the larger topographic scale, the DNV and its commercial, recreational, and residential developments would be considered to be at the bottom of the slope through to the upper slope in the higher elevation residential areas in the AOI.

Table 12. Slope Percentage and Fire Behaviour Implications.

Slope	Percent of AOI	Fire Behaviour Implications
<20%	41%	Very little flame and fuel interaction caused by slope, normal rate of spread.
21-30%	13%	Flame tilt begins to preheat fuel, increase rate of spread.
31-45%	14%	Flame tilt preheats fuel and begins to bathe flames into fuel, high rate of spread.
46-60%	10%	Flame tilt preheats fuel and bathes flames into fuel, very high rate of spread.
>60%	22%	Flame tilt preheats fuel and bathes flames into fuel well upslope, extreme rate of spread.

Table 13. Slope Position of Value and Fire Behaviour Implications.

Slope Position of Value	Fire Behaviour Implications
Bottom of Slope/ Valley Bottom	Impacted by normal rates of spread.
Mid Slope - Bench	Impacted by increased rates of spread. Position on a bench may reduce the preheating near the value. (Value is offset from the slope).
Mid slope – continuous	Impacted by fast rates of spread. No break in terrain features affected by preheating and flames bathing into the fuel ahead of the fire.
Upper 1/3 of slope	Impacted by extreme rates of spread. At risk to large continuous fire run, preheating and flames bathing into the fuel.

4.3.5 Local Wildfire Threat Classification

Using the verified and updated fuel types combined with field wildfire threat assessments, local wildfire threat for the AOI was updated. Using the 2016 methodology, there are two main components of the

threat rating system: the wildfire behaviour threat class (fuels, weather and topography sub-components) and the WUI threat class (structural sub-component).

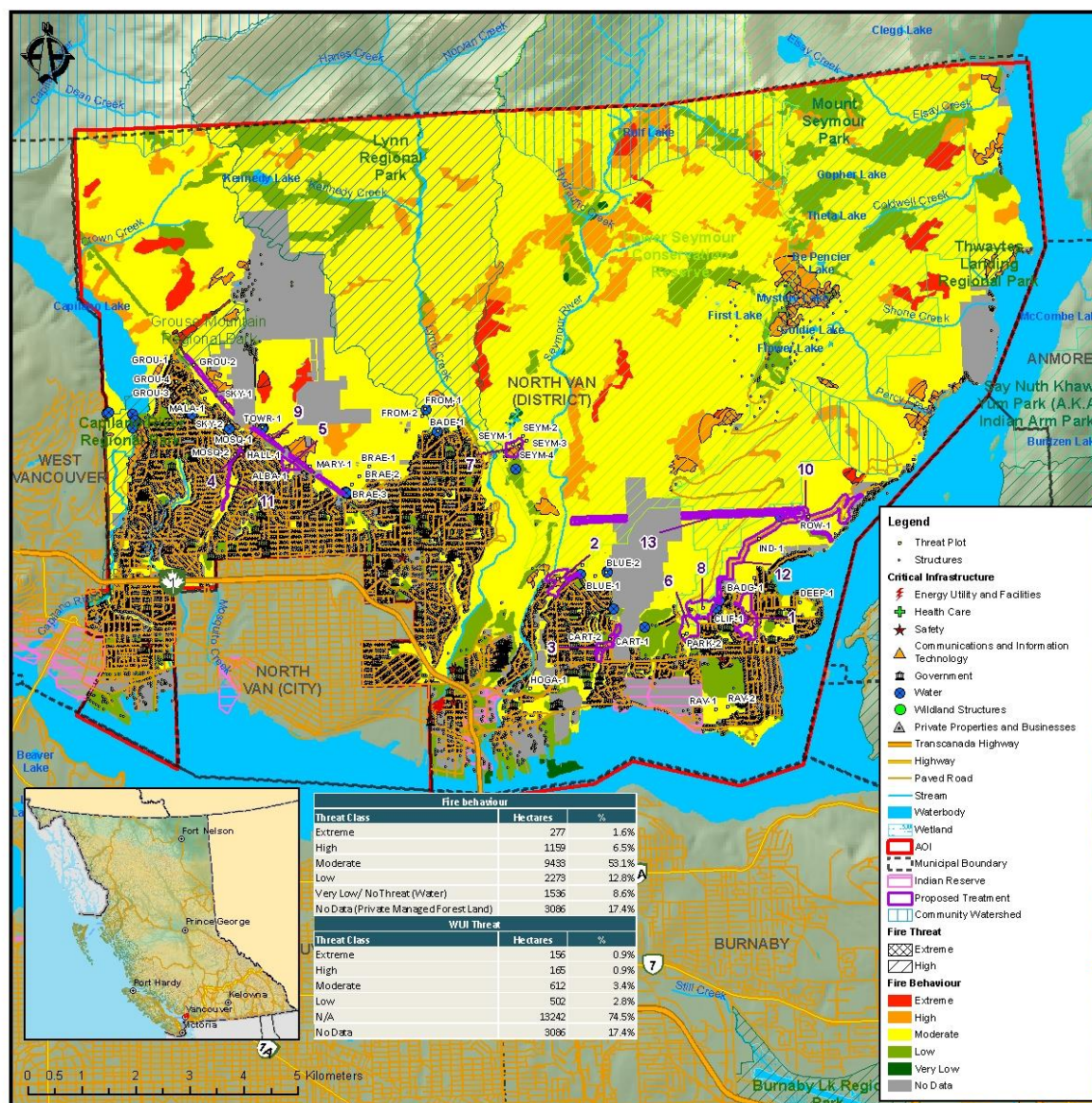
The result of the analysis shows that the AOI is composed of a mosaic of very low, low, moderate and high threat class stands with a minor component of extreme threat class. The variability in wildfire threat is dictated primarily by the level of natural and anthropogenic disturbances that have historically occurred and persist on the landbase. The AOI is 2% extreme threat class rating, 7% high, 53% moderate, 13% low and 9% very low/water (Table 14). The remaining 17% of the AOI is classified as private land and as such has not been allocated fire threat data. Assessment of fire threat on private land is not funded by the Strategic Wildfire Protection Initiative (SWPI) and is therefore outside the scope of this CWPP. Table 14 also indicates the differences between the original PSTA threat rating and this CWPP's corrected fire behaviour threat.

The areas that represent the highest wildfire behavior potential within the AOI are patchy areas of high and extreme threat class in the Lynn Headwaters Regional Park area, adjacent and north of residential properties along Skyline Drive and Montroyal Boulevard, along the western portions of Lower Seymour Conservation Reserve, northwest of properties in Sunshine Beach neighbourhood, and in the forested areas south and west of Grouse Mountain.

For detailed methodology on the local threat assessment and classification, please see Appendix G – WUI Threat Assessment Methodology.

Table 14. Fire behaviour threat summary for the AOI.

Wildfire Behaviour Threat Class	2017 PSTA Data	2017 CWPP
	Percent of AOI	Percent of AOI
Extreme	0%	2%
High	0%	6%
Moderate	38%	53%
Low	40%	13%
Very Low/ No Threat (Water)	9%	9%
No Data (Private Land))	13%	17%



Map 10. Local Fire Behaviour Threat Rating and WUI Threat Rating.

SECTION 5: RISK MANAGEMENT AND MITIGATION FACTORS

This section outlines a wildfire risk management and mitigation strategy that accounts for fuel types present within the community, local ecology, hazard, terrain factors, land ownership, and capacity of Local Government and First Nations. Wildfire risk mitigation is a complex approach that requires cooperation from applicable land managers/owners, which includes all level of governments (local, provincial, federal and First nations), and private landowners. The cooperative effort of the aforementioned parties is crucial in order to develop and proactively implement a wildfire risk mitigation

program. Development of a successful wildfire risk mitigation strategy is dependent on hazard identification within the community, which accounts for forest fuels, high risk activities, frequency and type of human use, and other important environmental factors. The resulting wildfire risk management and mitigation strategy aims to build more resilient communities and produces strategic recommendations or actionable items that can be categorized as follows:

1. Fuel management opportunities to reduce fire behaviour potential in the WUI;
2. Applications of FireSmart approaches to reduce fire risk and impacts within the community; and
3. Implementation of communication and education programs to inform and remind the public of the important role it plays in reducing fire occurrence and impacts within its community.

5.1 FUEL MANAGEMENT

Fuel management, also referred to as vegetation management or fuel treatment, is a key element of wildfire risk reduction. For the purpose of this discussion, fuel management generally refers to native vegetation/fuel modifications in forested areas greater than 30 m from homes and structures. The principles of fuel management are outlined in detail in Appendix H.

Fuel treatments have been completed on approximately 57 ha within the DNV AOI since the development of the 2007 CWPP. These fuel treatments have occurred primarily on DNV municipal land and a small portion of provincial Crown land and consisted of interface fuel treatments surrounding values at risk, such as water infrastructure and residential neighbourhoods. Treatments generally consisted of understorey thinning, pruning of ladder fuels, and removal of fine fuel, coarse woody debris, and invasive species. To complement the work completed to date and to further reduce the wildfire risk in the AOI, the objectives for fuel management are to:

- Reduce wildfire threat on private and public lands nearest to values at risk; and
- Reduce fire intensity, rate of spread, and ember/spot fire activity such that the probability of fire containment increases and the impacts on the forested landscape and the watershed are reduced (create more fire resilient landscapes).

Ideally, these objectives will enhance protection to homes and critical infrastructure. Caveats associated with this statement include: 1) wildfire behaviour will only be reduced if the fire burns in the same location as treatments occurred, and 2) protection of homes and critical infrastructure is highly dependent upon the vulnerability to ignition by embers (ignition potential) directly around the value at risk. In summary, fuel treatments alone should not be expected to protect a community from the effects of wildfire, namely structure loss.

Fuel treatments are designed to reduce the possibility of uncontrollable crown fire through the reduction of surface fuels, ladder fuels and crown fuels. However, the degree of fire behaviour reduction achieved by fuel management varies by ecosystem type, current fuel type, fire weather, slope and other variables and it is important to note that it does not stop wildfire.

Historically, funds from public sources, such as the Forest Enhancement Society of BC (FESBC) and the Union of British Columbia Municipalities (UBCM), were only eligible to be used on Crown lands and could not be used to treat private land. While this is still the case for the FESBC program, the new Community Resiliency Investment (CRI) Program (formerly SWPI) provides funding for selected FireSmart activities and planning on private land (subject to program requirements and limits).⁵⁷ It is important to recognize that almost a quarter of the AOI (9.7%) is located on private land, which increases some of the challenges encountered in mitigation of fuels on private lands. The best approach to mitigate fuels on private lands is to urge private landowners to comply with FireSmart guidelines (as described below in Section 5.2) and to conduct appropriate fuel modifications using their own resources (CRI program funding may be available). In general, when considering fuel management to reduce fire risk, the following steps should be followed:

- Carefully anticipate the likely wildfire scenarios to properly locate fuel modification areas;
- Acquire an understanding of local ecological, archaeological, and societal values of the site;
- Prescriptions should be developed by a qualified professional forester working within their field of competence;
- Public consultation should be conducted during the process to ensure community support;
- Potential treatment areas and draft prescriptions should be referred to First Nations with sufficient time for meaningful review and input;
- Treatment implementation should weigh the most financially and ecologically beneficial methods of fulfilling the prescription's goals;
- Treatment implementation should consider the possibility of invasive species spread during treatments and mitigation options should be considered;
- Pre- and post-treatment plots should be established to monitor treatment effectiveness; and
- A long-term maintenance program should be in place or developed to ensure that the fuel treatment is maintained in a functional state.

The fuel treatment opportunities identified in this document include the use of interface fuel breaks and primary fuel breaks as defined in Section 5.1.1, to reduce the wildfire potential around the AOI. Potential treatment activities include fuel removal, thinning, stand conversion, pruning, and chipping, or a combination of two or more of these activities. Stand conversion has been shown to be effective at reducing wildfire potential in mixed-wood or conifer dominated stands and is recommended as a BMP to encourage a higher deciduous component. This approach generally involves a thin-from-below to reduce ladder fuels and crown fuels continuity, targeting the removal of conifer species and the retention of broadleaf species.

⁵⁷ 2019 CRI FireSmart Community Funding & Supports – Program & Application Guide. Retrieved online at: <https://www.ubcm.ca/assets/Funding~Programs/LGPS/CRI/cri-2019-program-guide.pdf>

5.1.1 Proposed Treatment Units

Funding opportunities from UBCM have historically been limited to Crown provincial, Regional District, or municipal land under the SWPI Program. The UBCM SWPI funding stream (in place at the time this CWPP was developed) has transitioned, as of September 2018, into a new provincial program, the Community Resiliency Investment (CRI) Program, that will consider fire prevention activities on provincial Crown land and private land, in addition to local government and reserve land⁵⁸. Fire prevention activities on private land that may be funded under this program are related to FireSmart activities (including FireSmart planning and assessments, local rebate programs for completion of eligible FireSmart activities, and provision of off-site disposal of vegetation management debris), subject to program requirements. This does not preclude other current and future funding opportunities or potential industrial partnerships and changes to existing programs.

The potential treatment areas represent moderate or high fire hazard areas which are either close to values at risk (structures or infrastructure) or have been identified as landscape level fuel treatments and are located on provincial or municipal Crown land. It should be noted that the location of proposed treatment units on these land ownership types does not imply that high and extreme hazard areas do not exist on private land within the AOI. As stated in Section 5.1, mitigation approaches should also be pursued on private land where hazard exists, bearing in mind the different funding resources and objectives on these land types. Recommendation for treatment in areas of moderate fire hazard were limited to areas which would increase efficacy of, and/or create continuity between areas of low threat/no fuel areas). All polygons identified for potential treatment have been prioritized based on fire hazard, operational feasibility, estimated project cost, type and number of values at risk, common fire weather (wind direction), and expected efficacy of treatment. Although potential treatment areas have been ground-truthed during field work, additional refinement of the polygons will be required at the time of prescription development. Polygons will require detailed site-level assessment to stratify treatment areas (and areas of no treatment), identify values and constraints, and identify and engage all appropriate Provincial agencies, First Nations, and stakeholders.

Recommended potential treatment areas within the AOI are outlined in Table 15 and displayed in Map 11. These fuel treatment opportunities include the use of trailside treatments, interface fuel treatments (the treatment of both patches of fuels and linear interface fuel breaks), and primary fuel breaks, as defined below.

Fuel Treatment Types

The intent of establishing a fuel break (and associated treated patches) is to modify fire behaviour and create a fire suppression option that is part of a multi-barrier approach to reduce the risk to values (e.g.,

⁵⁸ This new funding program (up to \$50 million over three years) was initiated as per recommendations from the 2017 BC Flood and Wildfire Review Report by Abbott and Chapman (<https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/embc/bc-flood-and-wildfire-review-addressing-the-new-normal-21st-century-disaster-management-in-bc-web.pdf>). Program details are available on the UBCM's website: <https://www.ubcm.ca/EN/main/funding/lgps/community-resiliency-investment.html>

structures). A fuel break in and of itself, is unlikely to stop a fire under most conditions. The application of appropriate suppression tactics in a timely manner with sufficient resources, is essential for a fuel break to be effective. Lofting of embers (i.e., “spotting”) over and across a fuel break is a possibility (increasing with more volatile fuel types and fire weather) and has the potential to create spot fires beyond the fuel break that can expand in size and threaten values at risk, or land directly on or near structures and ignite them. To address spotting, fuels between the fuel break and the values at risk should be evaluated and treated to create conditions where extinguishment of spot fires is possible. FireSmart standards should also be applied to structures and associated vegetation and other fuel to reduce the risk of structures igniting. A multi-barrier approach that reduces the risk to values can include: establishing multiple fuel breaks (Interface Fuel Break and Primary Fuel Break), addressing fuels between the fuel break and structures (Interface Fuel Treatments), and applying FireSmart Standards to structures and the surrounding vegetation. Fuel breaks require periodic maintenance to retain their effectiveness.

Trailside Treatments

Trailside treatments are implemented to address hazardous fuels adjacent to publicly used trails, where ignition potential may be higher due to increased recreational use by hikers and both motorized and non-motorized off-road vehicles. The primary objective of these treatments is to reduce potential fire intensity and the probability of ignition, which is achieved through the creation of a defensible space surrounding these features. Potential strategies include reducing ladder and surface fuels, increasing crown base height of trees, and retaining fire-resistant tree species. Trailside treatments vary in size and are typically in the form of linear features which follow trail systems.

Interface Fuel Breaks

Fuel breaks on Crown Land immediately adjacent to private land and in close proximity to the wildland urban interface and/or intermix areas, are termed ‘interface fuel breaks’. These are designed to modify fire behaviour, create fire suppression options, and improve suppression outcomes. Interface fuel treatments are relatively small (approximately 100 metres wide) and when treated with appropriate fuel reduction measures, can break the crown fire threshold and reduce the risk of a crown fire reaching values at risk. Treatment widths can be varied to allow for alignment and to take advantage of natural and man-made fire resilient features that enhance effectiveness. Surface fire spread across the fuel treatment and spotting across the fuel treatment are both concerns and rely on suppression actions to be effective. In order to reduce potential fire intensity and spotting, fuel on private land between the interface fuel treatment and structures should be treated according to FireSmart vegetation management standards. Structures in interface areas should be constructed or retrofitted to FireSmart design standards.

Primary Fuel Break

Primary Fuel Breaks are located on Crown Land in strategic locations beyond the interface fuel treatments. Private land may be included in a primary fuel break so that the break represents a continuous fuel reduced area. Primary Fuel Breaks are designed to modify fire behaviour and create fire

suppression options that reduce the risk of a crown fire reaching a community and/or adjacent private lands. Primary Fuel Breaks may be located to completely surround a community or be strategically placed upwind of communities and perpendicular to fire season winds. Primary Fuel Breaks have sufficient width and appropriate fuel reduction measures to break the crown fire threshold and reduce fire intensity such that overstory fire moves to the ground surface and spread rates are reduced. While there are no absolute standards for fuel break width or fuel manipulation in the literature and fuel break width will vary based on fuel type, topography, and expected fire behaviour⁵⁹, a 300-metre fuel break width is generally recommended. Fuel breaks should be designed to take advantage of natural and man-made fire resilient features and topography to enhance effectiveness. Surface fire spread across, and spotting over the fuel break are both concerns, and depend on the application of suppression resources to be effective.

RECOMMENDATION #12: Proceed with detailed assessment, prescription development, and treatment of hazardous units identified and prioritized in this CWPP.

⁵⁹ Agee, J.K., Bahro, B., Finney, M.A., Omi, P.N., Sapsis, D.B., Skinner, C.N., van Wagtendonk, J.W., Weatherspoon, C.P. The use of shaded fuelbreaks in landscape fire management. *Forest Ecology and Management*, 127 (2000), 55-66.



Table 15. Proposed Treatment Area Summary Table.

FTU # and Stratum	Geographic Area	Priority	Total Area (ha)	Treatment Unit Type/ Objective	Local Fire Threat (ha)			Overlapping Values/Treatment Constraints*	Treatment Rationale
					Extreme/H igh	Mod	Low/Very Low		
1	Cliffwood	High	17.8	Interface Fuel break Objective/Fuel treatment will result in residual stands with characteristics that will reduce continuity of fuel loads, crown and surface fire behaviour, and wildfire risk.	4.2	11.6	2.0	No overlapping values or treatment constraints were identified for this proposed treatment unit (PTU).	This PTU is located west of Deep Cove Rd and straddles the communities of Indian River and Cove Cliff. This area has been recommended for treatment due to its proximity to private residences (<100 m) and the presence of high hazard fuel type (C-3 fuel type) and moderate fuel loading. The stand is also composed of patches of moderate hazard C-5 and M-1/2 fuel types. Recommended treatments include removal of understorey conifers, pruning to increase crown base height, and removal of surface fuels.
2	Seymour River	High	12.4	Interface Fuel break Objective/Fuel treatment will result in residual stands with characteristics that will reduce continuity of fuel loads, crown and surface fire behaviour, and wildfire risk.	4.7	7.0	0.7	A masked species at risk (SAR) occurrence overlaps this PTU. This PTU is also located within the Lower Seymour Conservation Reserve. Consultation with a biologist and Metro Vancouver must occur during the prescription development phase and prior to implementation to ensure all concerns are addressed.	This PTU is located at the end of Riverside Drive within the Lower Seymour Conservation Reserve and adjacent to the community of Blueridge. It is comprised of C-3 and C-5 fuel types and contains a recreation trail which has high frequency of use. Stand density varies within this unit, from high understorey Hw densities, to more open, mature stands of Fd, Hw and Cw. This PTU is also adjacent to two previous treatment areas which were implemented in 2011. Recommended treatments include removal of understorey conifers, pruning to increase crown base height, and removal of surface fuels.



FTU # and Stratum	Geographic Area	Priority	Total Area (ha)	Treatment Unit Type/ Objective	Local Fire Threat (ha)			Overlapping Values/Treatment Constraints*	Treatment Rationale
					Extreme/H igh	Mod	Low/Very Low		
3	McCartney Park	High	8.5	Interface Fuel break Objective/Fuel treatment will result in residual stands with characteristics that will reduce continuity of fuel loads, crown and surface fire behaviour, and wildfire risk.	3.8	2.3	2.4	No overlapping values or treatment constraints were identified for this PTU.	This PTU is located adjacent (<100m) to private residences and surrounds the east, west and south sides of the sports field in McCartney Creek Park. High density conifer stands surround the trail system. This area has been recommended for treatment due to its proximity to private residences, and the high hazard fuel type (C-3 fuel type) and fuel loading present. The combination of low crown base heights, interlocking crowns, and ladder fuels, results in an increased potential for crown fire behaviour. Recommended treatments include removal of understorey conifers, pruning to increase crown base height, and removal of surface fuels.
4	Montroyal	Moderate	0.2	Interface Fuel break Objective/Fuel treatment will result in residual stands with characteristics that will reduce continuity of fuel loads, crown and surface fire behaviour, and wildfire risk.	0.2	0.0	0.0	No overlapping values or treatment constraints were identified for this PTU.	This PTU is located adjacent (<100m) to private residences and surrounds DNV critical infrastructure. This area has been recommended for treatment due to its proximity to private residences/infrastructure, and the high hazard fuel type (C-3 fuel type) present within the polygon. The combination of low crown base heights, interlocking crowns, and ladder fuels, results in increased potential for crown fire behaviour. Recommended treatments include removal of understorey conifers and pruning to increase crown base height.



FTU # and Stratum	Geographic Area	Priority	Total Area (ha)	Treatment Unit Type/ Objective	Local Fire Threat (ha)			Overlapping Values/Treatment Constraints*	Treatment Rationale
					Extreme/H igh	Mod	Low/Very Low		
5	Saint Albans	Moderate	4.7	Interface Fuel break Objective/Fuel treatment will result in residual stands with characteristics that will reduce continuity of fuel loads, crown and surface fire behaviour, and wildfire risk.	1.5	3.0	0.2	Partial overlap with masked SAR occurrence. Consultation with a biologist must occur during the prescription development phase and prior to implementation to ensure all concerns are addressed.	This PTU is located adjacent (<100m) to private residences and south of a BC Hydro right-of-way (currently acting as a fuel break) in the community of Upper Delbrook. This area has been recommended for treatment due to its proximity to private residences, the presence of high hazard fuel type (C-3 fuel type) within the polygon, and its potential to bolster the existing fuel break to the north (BC Hydro right-of-way). Recommended treatments include removal of understorey conifers, pruning to increase crown base height, and removal of surface fuels.
6	Parkgate	High	10.9	Interface Fuel break Objective/Fuel treatment will result in residual stands with characteristics that will reduce continuity of fuel loads, crown and surface fire behaviour, and wildfire risk.	0.0	9.9	1.0	Partial overlap with red-listed pacific water shrew (<i>Sorex bendirii</i>) occurrence and overlap with Mount Seymour Provincial Park. Taylor Creek bisects the unit on its western side. Consultation with a biologist and BC Parks must occur during the prescription development phase and prior to implementation to ensure all concerns are addressed.	This PTU is located between Mount Seymour Road and Parkgate Park, north of residences along Banff Crescent and Parkgate Community Centre. This area was identified for treatment due to its proximity to homes (<100 m), conifer dominated stands (C-3 and C-5 fuel types), and patches of high fuel loading. Recommended treatments include removal of understorey conifers, pruning to increase crown base height, and removal of surface fuels.



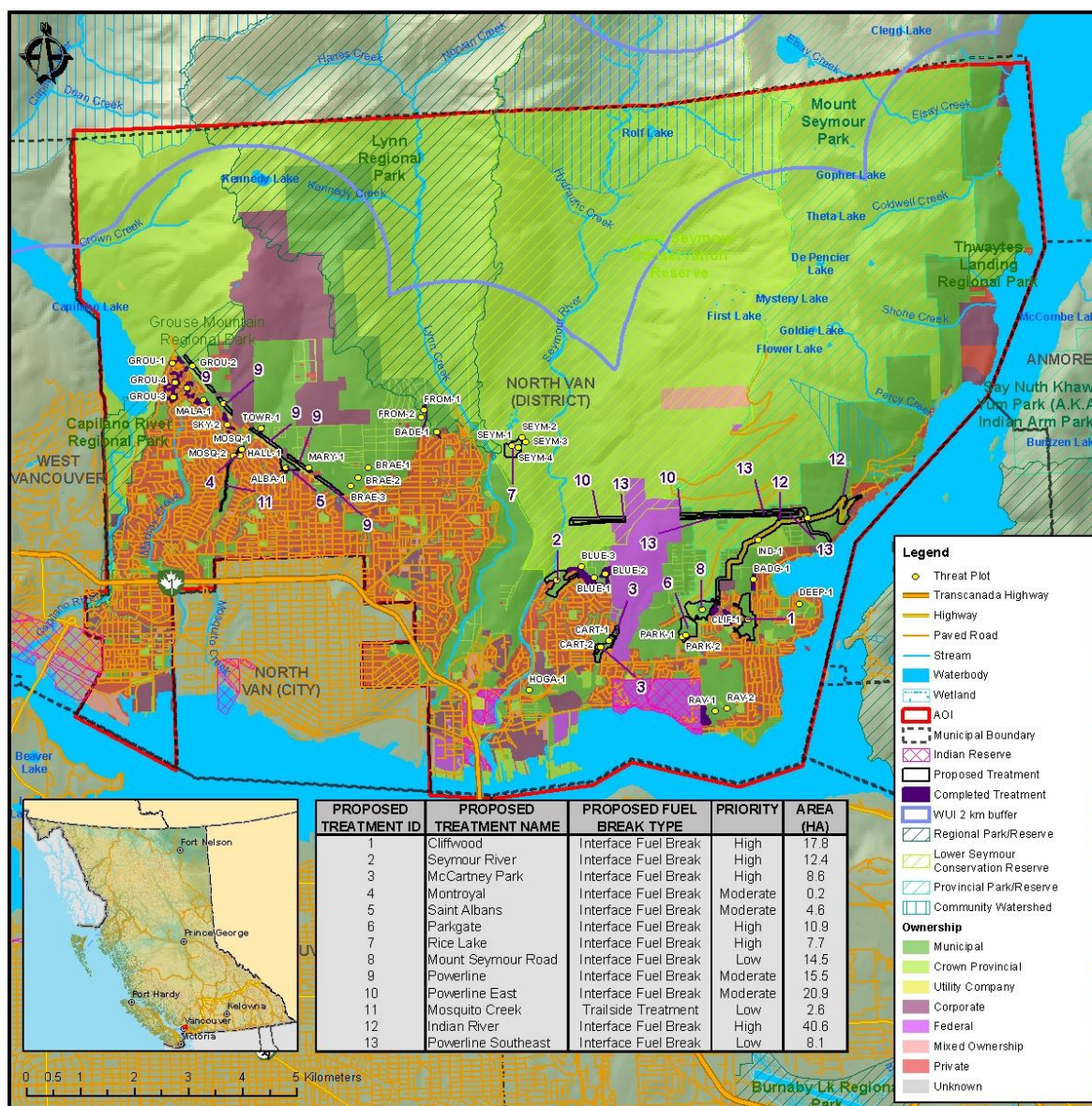
FTU # and Stratum	Geographic Area	Priority	Total Area (ha)	Treatment Unit Type/ Objective	Local Fire Threat (ha)			Overlapping Values/Treatment Constraints*	Treatment Rationale
					Extreme/H igh	Mod	Low/Very Low		
7	Rice Lake	High	7.7	Interface Fuel break Objective/Fuel treatment will result in residual stands with characteristics that will reduce continuity of fuel loads, crown and surface fire behaviour, and wildfire risk.	4.1	3.2	0.4	Full overlap with masked occurrence of SAR and full overlap with red-listed Johnson's hairstreak (<i>Callophrys johnsoni</i>). Consultation with a biologist must occur during the prescription development phase and prior to implementation to ensure all concerns are addressed.	This PTU is located south of Rice Lake in the Lower Seymour Conservation Reserve and is adjacent (<100m) to DNV critical infrastructure. This area has been recommended for treatment due to its proximity to critical infrastructure and the presence of high hazard fuel type (C-3 fuel type) within the polygon. The stand is also composed of patches of C-5 and M-1/2 fuel type with moderate hazard rating. Recommended treatments include removal of understorey conifers, pruning to increase crown base height, and removal of surface fuels.
8	Mount Seymour Road	Low	14.4	Interface Fuel break Objective/Fuel treatment will result in residual stands with characteristics that will reduce continuity of fuel loads, crown and surface fire behaviour, and wildfire risk.	0.0	13.8	0.6	Partial overlap with red-listed Johnson's hairstreak (<i>Callophrys johnsoni</i>) and overlap with Mount Seymour Park. Consultation with a biologist and BC Parks must occur during the prescription development phase and prior to implementation to ensure all concerns are addressed.	This PTU is located east of Mount Seymour Rd and north of the community of Indian River. The polygon is adjacent (<100m) to private property. This area has been recommended for treatment due to its proximity to private residences. The combination of low crown base heights, interlocking crowns, and ladder fuels, results in an increased potential for crown fire behaviour. Recommended treatments include removal of understorey conifers, pruning to increase crown base height, and removal of surface fuels.



FTU # and Stratum	Geographic Area	Priority	Total Area (ha)	Treatment Unit Type/ Objective	Local Fire Threat (ha)			Overlapping Values/Treatment Constraints*	Treatment Rationale
					Extreme/H igh	Mod	Low/Very Low		
9	Powerline	Moderate	15.5	Interface Fuel break Objective/Fuel treatment will result in residual stands that lower overall wildfire behaviour, reduce fuel loading and bolster access/egress route into and out of Sasquatch Park.	8.2	6.8	0.5	Partial overlap with masked SAR occurrence and partial overlap with red-listed pacific water shrew (<i>Sorex bendirii</i>) occurrence. Consultation with a biologist must occur during the prescription development phase and prior to implementation to ensure all concerns are addressed.	This PTU is located on Crown land above (northeast) of the power line right-of-way (ROW) which runs northwest from Braemar Road to the gravel parking lot at the base of Grouse Mountain. This primary fuel break is intended to bolster the ability of the ROW to act as a fuel break. The dominant fuel types present in this PTU are C-3, C-5, and M-1/2. Stand densities, fuel loading, and ladder fuel continuity vary widely along the length of the PTU. When implemented, this fuel break will increase safety and improve access for firefighters actioning a fire approaching from the contiguous forest above the ROW or from a fire approaching from the residential neighbourhoods below.
10	Powerline East	Moderate	21	Interface Fuel break Objective/Fuel treatment will result in residual stands that lower overall wildfire behaviour, reduce fuel loading and bolster access/egress route into and out of Sasquatch Park.	0.0	13.5	7.5	Partial overlap with masked SAR occurrence and with Mount Seymour Provincial Park. Consultation with a biologist and BC Parks must occur during the prescription development phase and prior to implementation to ensure all concerns are addressed.	This PTU is located on Crown land above (north) of the power line right-of-way (ROW) which runs northwest from Seymour River to the shores between Deep Cove and the Indian Arm Communities. This primary fuel break is intended to bolster the ability of the ROW to act as a fuel break. The dominant fuel types present in this PTU are C-5 and M-1/2. Stand densities, fuel loading, and ladder fuel continuity vary widely along the length of the PTU. When implemented, this fuel break will increase safety and improve access for firefighters actioning a fire approaching from the contiguous forest above the ROW or from a fire approaching from the residential neighbourhoods below.



FTU # and Stratum	Geographic Area	Priority	Total Area (ha)	Treatment Unit Type/ Objective	Local Fire Threat (ha)			Overlapping Values/Treatment Constraints*	Treatment Rationale
					Extreme/H igh	Mod	Low/Very Low		
11	Mosquito Creek	Low	2.5	Trailside Treatment	0.2	2.3	0.0	No overlapping values or treatment constraints were identified for this proposed treatment unit (PTU).	The Mosquito Creek PTU is a proposed trailside treatment located along Moquito Creek and south of the Montroyal PTU. The stands characteristic of this area are a mix of C-5 and M-1/2 fuel types with a moderate conifer component (30-60%). A light treatment is recommended, involving removal of understory conifer trees, pruning of retained stems to increase crown base heights and surface fuel removal.
12	Indian River	High	40.6	Interface Fuel break Objective/Fuel treatment will result in residual stands that lower overall wildfire behaviour, reduce fuel loading and bolster access/egress route into and out of Sasquatch Park.	0.0	39.1	1.5	Small overlap with Mount Seymour Provincial Park. Consultation with BC Parks must occur during the prescription development phase and prior to implementation to ensure all concerns are addressed.	This PTU is located along Indian River Dr on Crown land and is the only access/egress route to the remote Indian Arm Communities. This area has been strategically identified as a fuel break to reduce potential fire behaviour and improve suppression and/or evacuation efforts in the event of a wildfire.
13	Powerline Southeast	Low	8.1	Interface Fuel break Objective/Fuel treatment will result in residual stands that lower overall wildfire behaviour, reduce fuel loading and bolster access/egress route into and out of Sasquatch Park.	0.0	1.1	7.0	Partial overlap with a masked SAR occurrence and with Mount Seymour Park. Consultation with a biologist and BC Parks must occur during the prescription development phase and prior to implementation to ensure all concerns are addressed.	This PTU is located across the ROW from Blueridge #1 and has been identified as a proposed treatment to enhance the effectiveness of the ROW and Blueridge #1 to act as a fuel break. It has been assigned a lower priority due to the presence of mixed and deciduous stands along its length.



Map 11. Proposed and Past Fuel Treatments.

5.1.2 Maintenance of Previously Treated Areas

The DNV has shown leadership in completing fuel management projects within the AOI to reduce associated wildfire hazard. These activities have been implemented between 2010 and 2018 for a combined total treated area of 57 ha (Map 11). These are primarily interface fuel treatments and trailside treatments focused on forested municipal land adjacent to residential neighbourhoods and surrounding critical infrastructure within the DNV. These polygons are in various states of hazard, some of which required additional fuel management activities (maintenance) in order to be reduced to moderate, or

lower, threat class rating. Maintenance activities may include understorey thinning and/or surface fuel continuity reduction (removal of excess woody debris).

Maintenance of previously treated polygons should be a priority for the DNV. All polygons that were previously treated were assessed during field visits; polygons were prioritized for maintenance activities, such as removing standing dead and suppressed stems, reducing surface fuels, or additional thinning (overstorey reduction and thinning suppressed conifers or conifer regeneration, see Table 16. The return interval for maintenance activities depends upon site productivity and type and intensity of treatment. Less productive areas can likely withstand a longer frequency between maintenance activities, while more productive areas would require treatments more often.

RECOMMENDATION #13: Treatment monitoring to be completed by a qualified professional to schedule next set of maintenance activities (5 – 10 years out). This can be completed with a CWPP update, as it was for this document, or as a stand-alone exercise.

Table 16. Maintenance schedule for previously treated polygons within the study area. Priority 1 = high, 2 = moderate, 3 = low, 4 = no maintenance activities anticipated for the next five years.

Intake Year	Polygon Name/ Treatment Unit	Location	Area (Ha)	Plot Name and Threat Rating	Priority	Target timeline for return (years from 2019)	Comment
2008	AP1640-1	Grousewood Park	0.6	Walkthrough	1	1 - 3	Additional thinning should be completed to reduce crown fuels continuity and increase strata fuel gap. Other activities should include removal of small diameter standing mortality and surface fuels.
2008	AP1640-10		0.1				
2008	AP1640-11		0.02				
2008	AP1640-12		0.2				
2008	AP1640-13		0.9	GROU-3, High			
2008	AP1640-14		0.1	Walkthrough			
2008	AP1640-15		0.4				
2008	AP1640-16		0.03				
2008	AP1640-17		0.02				
2008	AP1640-18		0.2				
2008	AP1640-19		0.3				
2008	AP1640-2		0.04				
2008	AP1640-20		0.1				
2008	AP1640-21		0.01				
2008	AP1640-22		0.02				
2008	AP1640-3		0.01				
2008	AP1640-4		0.1				
2008	AP1640-5		0.4	GROU-5, High			
2008	AP1640-6		0.2	Walkthrough			
2008	AP1640-7		0.03				
2008	AP1640-8		0.1				
2008	AP1640-9		0.1				
2008	AP2370-1		0.04				
2008	AP2370-2	0.5	4	5 - 10	No maintenance activities anticipated in the next five years. Walk-through to assess for and recommend future maintenance needs should be completed 2024 – 2029.		
2008	AP2370-3	0.4					



Intake Year	Polygon Name/ Treatment Unit	Location	Area (Ha)	Plot Name and Threat Rating	Priority	Target timeline for return (years from 2019)	Comment
2008	AP2370-4	Grousewood Additional	1.0	GROU-5, Moderate	4	5 - 10	No maintenance activities anticipated in the next five years. Walk-through to assess for and recommend future maintenance needs should be completed 2024 – 2029.
2008	AP2370-5	Areas	0.4	Walkthrough			
2008	AP2660-1	Woodlands	0.6	Walkthrough			
2008	AP2660-10	Prospect	0.3	TOWR-1, Moderate			
2008	AP2660-11		0.1	Walkthrough			
2008	AP2660-12	McNair	0.01				
2011	AP2660-2	Hyannis	3.4	BLUE-2, Moderate			
2008	AP2660-3	Mountain Hwy	0.5	FROM-1, Moderate			
2008	AP2660-4		0.1	Walkthrough			
2008	AP2660-5		0.2				
2008	AP2660-6	McNair	0.2	BADE-1, Moderate			
2008	AP2660-7		0.1	Walkthrough			
2008	AP2660-8		0.03				
2008	AP2660-9		0.1				
2010	AP3620-1	Roche Point	3.6				
2011	SWPI2-1	Hyannis	0.5				
2011	SWPI2-2	Hyannis	1.4				
2011	SWPI2-3	Hyannis	0.6				
2011	SWPI2-4	Hyannis	0.5				
2011	SWPI2-5	Hyannis	0.9				
2011	SWPI2-6	Hyannis	3.2				
2011	SWPI2-7	Hyannis	0.6				
2013	SWPI394-1	Indian River South	2.0				
2013	SWPI394-2	Indian River North	1.5				



Funding Intake Year	Polygon Name/ Treatment Unit	Location	Area (Ha)	Plot Name and Threat Rating	Priority	Target timeline for return (years from 2019)	Comment
2013	SWPI394-3	Indian River Water Tower	2.0	Walkthrough	4	5 - 10	No maintenance activities anticipated in the next five years. Walk-through to assess for and recommend future maintenance needs should be completed 2024 – 2029.
2013	SWPI394-4	Badger	1.7				
2013	SWPI394-5	Indian River North	0.3				
2013	SWPI394-6	Firehall	0.5	MOSQ-1, Moderate			
2013	SWPI394-7	Owl	0.8	GROU-1, Moderate			
2013	SWPI394-8	Firehall	0.1	Walkthrough			
2013	SWPI394-9	Owl	0.1				
2013	SWPI394-10	Malaspina Park	0.1				
2013	SWPI394-11	Skyline	1.0	SKY-2, High	2	1 - 3	Additional thinning should be completed to reduce crown fuels continuity and increase strata fuel gap. Other activities should include removal of small diameter standing mortality and surface fuels.
2013	SWPI394-12	Skyline	0.2	Walkthrough	4	5 - 10	No maintenance activities anticipated in the next five years. Walk-through to assess for and recommend future maintenance needs should be completed 2024 – 2029.
2013	SWPI394-13	Malaspina Park	0.8				
2013	SWPI394-14	Malaspina Park	0.1				
2017	TUA	St Mary’s	5.5				
2017	TUC		0.1				
2017	TUA	Braemar Park	3.8				
2017	TUB		0.2				
2017	TUA	Mountain Hwy	4.3				
2017	TUA	Hoskins Rd	2.1				
2017	TUB	Hoskins Rd	0.4				
2017	TUC	Hoskins Rd	0.1				

5.2 FIRESMART PLANNING AND ACTIVITIES

This section provides detail on: 1) the current level of FireSmart implementation and uptake within the community; 2) identified FireSmart subdivisions and/or acceptance into the FireSmart Canada Community Recognition Program (FSCCRP); and 3) recommended potential FireSmart activities that can be applied within the AOI at a future date.

5.2.1 FireSmart Goals and Objectives

FireSmart® is the comprehensive nationally accepted set of principles, practices and programs for reducing losses from wildfire.⁶⁰ FireSmart spans the disciplines of hazard/threat assessment; regional planning and collaboration; policy and regulations; public communication and education; vegetation/fuel management; training and equipment; and, emergency preparedness and response. FireSmart concepts provide a sound framework for advancing the goal of wildfire loss reduction, as it is a common goal shared with CWPPs.

The FireSmart approach and concepts, including recommended FireSmart guidelines⁶¹, have been formally adopted by almost all Canadian provinces and territories, including British Columbia in 2000; FireSmart has become the de facto Canadian standard. FireSmart is founded in standards published by the NFPA. The objective of FireSmart is to help homeowners, neighbourhoods, whole communities and agencies with fire protection and public safety mandates to work together to prepare for the threat of wildfire in the WUI. Coordinated efforts between all levels of planning and action are integral to effectively and efficiently reducing the risk to communities.

The following are key principles of FireSmart:

- Wildland fires are a natural process and critical to the health of Canadian ecosystems.
- Mitigation and response efforts must be carefully coordinated through all stages of planning and implementation.
- Threats and losses due to wildfires can be reduced by working together. Responsibility for effectively mitigating hazards must be shared between many entities including homeowners, industry, businesses and governments.⁶²
- There are seven broad disciplines to help address the threat of wildfire: education, vegetation management, legislation and planning, development considerations, interagency cooperation, emergency planning, and cross training.⁶²
- Solutions are required at all scales from individual backyards, to communities and the wider landscape. In order to succeed, these efforts must be integrated across the mosaic of land ownership (Figure 3).

⁶⁰ FireSmart is the registered trademark held by the Partners in Protection Association.

⁶¹ FireSmart guidelines first published in the 1999 manual *"FireSmart: Protecting Your Community from Wildfire"*, with a second edition published in 2003.

⁶² <https://www.firesmartcanada.ca>

- The ultimate root of the WUI interface problem is the vulnerability of structures and homes to ignition during wildfire events, in particular vulnerability to embers. This leads to an emphasis on risk mitigations on private properties.

The highest level of planning within the FireSmart program is strategic direction, such as that provided in CWPPs.

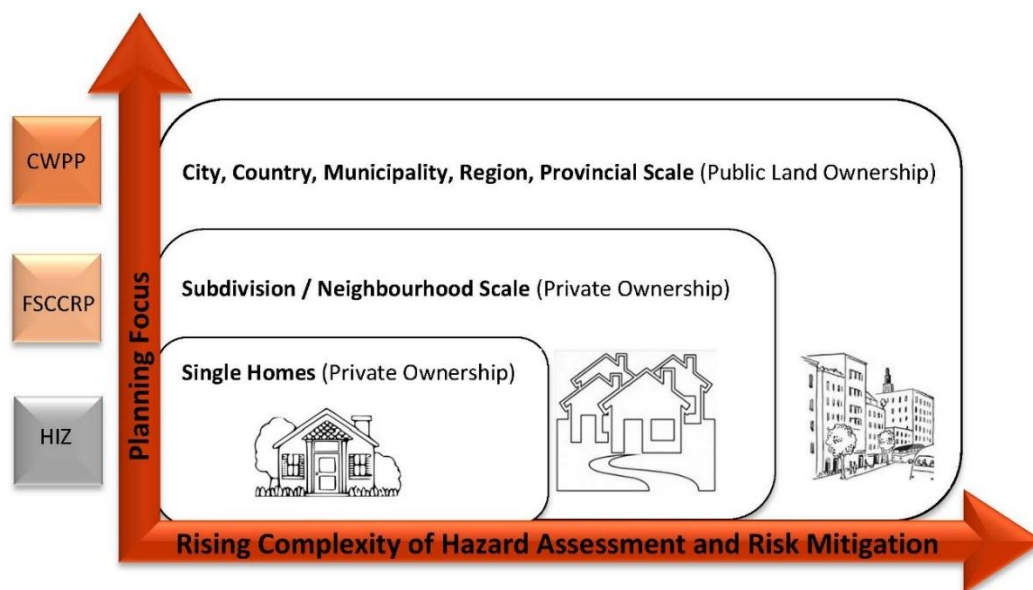


Figure 3. Diagram of the various, coordinated levels of the FireSmart program.⁶³ CWPP: Community Wildfire Protection Plan, FSCCRP: FireSmart Canada Community Recognition Program, HIZ: Home Ignition Zone.

Home Ignition Zone

Multiple studies have shown that the principal factors regarding home loss to wildfire are the structure's characteristics and immediate surroundings; the area that determines the ignition potential is referred to as the Home Ignition Zone (HIZ).^{64,65} The HIZ includes the structure itself and four concentric, progressively wider Priority Zones. HIZ Priority Zones are based upon distance from structure: 0 to 1.5m (Priority Zone 1a- fuel free zone), 0 – 10 m (Priority Zone 1), 10 – 30 m (Priority Zone 2), and 30 – 100 m (Priority Zone 3). These zones help to guide risk reduction activities, with Recommended FireSmart Guidelines being most stringent closest to the structure. The likelihood of home ignition is mostly determined by the area within 30 m of the structure (Priority Zones 1a, 1 and 2). Recommended FireSmart guidelines address a multitude of hazard factors within the HIZ: building materials and design; vegetation (native or

⁶³ Figure and content developed by A. Westhaver. Adapted by A. Duszynska, 2017.

⁶⁴ Reinhardt, E., R. Keane, D. Calkin, J. Cohen. 2008. Objectives and considerations for wildland fuel treatment in forested ecosystems of the interior western United States. *Forest Ecology and Management* 256:1997 - 2006.

⁶⁵ Cohen, J. Preventing Disaster Home Ignitability in the Wildland-urban Interface. *Journal of Forestry*. p 15 - 21.

landscaped materials); and the presence of flammable objects, debris, and vulnerable ignition sites. More detail on priority zones can be found in Appendix I.

It has been found that, during extreme wildfire events, most home destruction has been a result of low-intensity surface fire flame exposures, usually ignited by embers. Firebrands can be transported long distances ahead of the wildfire, across fire guards and fuel breaks, and accumulate within the HIZ in densities that can exceed 600 embers per square meter. Combustible materials found within the HIZ combine to provide fire pathways allowing spot surface fires ignited by embers to spread and carry flames or smoldering fire into contact with structures.

Because ignitability of the HIZ is the main factor driving structure loss, the intensity and rate of spread of wildland fires beyond the community has not been found to necessarily correspond to loss potential. For example, FireSmart homes with low ignitability may survive high-intensity fires, whereas highly ignitable homes may be destroyed during lower intensity surface fire events.⁶⁵ It is for this reason that the key to reducing WUI fire structure loss is to reduce home ignitability; mitigation responsibility must be centered on homeowners. Risk communication, education on the range of available activities, and prioritization of activities should help homeowners to feel empowered to complete simple risk reduction activities on their property.

FireSmart Canada Community Recognition Program

In the case of adjacent homes with overlapping HIZs, a neighbourhood (or subdivision) approach can be an effective method of reducing ignition potential for all homes within the neighbourhood. The FireSmart Canada Community Recognition Program (FSCCR Program) is an 8-step resident-led program facilitated by trained Local FireSmart Representatives designed for this purpose. It provides groups of residents with critical information and a means of organizing themselves to progressively alter hazardous conditions within their neighbourhood. The program also facilitates FireSmart knowledge and practices to quickly filter downwards onto the property of individual residents to further mitigate wildfire hazards at the single-home scale within the HIZ.

WUI Disaster Sequence

Calkin et al (2014) coined the 'WUI disaster sequence', a six-step sequence which has been used to describe the situation in which the firefighting capacity of a community is overwhelmed by wildland/interface fires in highly ignitable communities: 1) extreme wildfire behaviour weather combined with, 2) a fire start, which 3) exposes numerous homes with high ignition potential, and results in numerous structures burning, 4) overwhelms suppression efforts and capabilities, and 5) leads to unprotected homes, and therefore 6) considerable structure loss (Figure 4).

Once multiple homes are ignited in an urban area, there is increasing potential for fire to spread from structure to structure, independently of the wildland vegetation. This is known as an urban conflagration.

Effective fire protection depends on ignition resistant homes and properties during extreme wildfire events.⁶⁶

Overall, FireSmart leads to communities that are better adapted to wildfire, more resilient and able to recover following wildfires by sustaining fewer losses and disruption, and safer places to live and recreate. Action by homeowners is the number one priority for reducing structure loss in the event of a WUI fire, but the overall adaptation of the community to wildfire is multi-pronged and the landscape should not be ignored.⁶⁶



Figure 4. Wildland/urban interface disaster sequence.⁶⁷ It is possible to break up the disaster sequence by decreasing the number of highly ignitable homes exposed to embers, therefore reducing the number of homes ignited and removing the consequences of multiple structures lost.

5.2.2 Key Aspects of FireSmart for Local Governments

Reducing the fire risk profile of a community through FireSmart implementation requires coordinated action from elected officials, local government planners, developers, private land owners and industrial managers. This section presents various options of FireSmart practices, which when enacted, provide avenues for reducing fire risk within the community. An evaluation of the current level of FireSmart implementation within the DNV is also presented in this section.

Communication, Education and Partnerships

Communicating effectively is a key aspect of any education strategy. Communication materials must be audience specific and delivered in a format and through mediums that reach the target audience. Audiences should include home and landowners, students, local businesses, elected officials, DNV staff, and local utilities providers. Education and communication messages should be simple yet comprehensive. A basic level of background information is required to enable a solid understanding of fire risk issues and the level of complexity and detail of the message should be specific to the target audience.

⁶⁶ Calkin, D., J. Cohen, M. Finney, M. Thompson. "How risk management can prevent future wildfire"

⁶⁷ Graphic adapted from Calkin et. al, by A. Westhaver.

FireSmart information material is readily available and simple for municipalities to disseminate. It provides concise and easy-to-use guidance that allows homeowners to evaluate their homes and take measures to reduce fire risk. However, the information needs to be supported by locally relevant information that illustrates the vulnerability of individual houses to wildfire.

The DNV (primarily the DNVFRS) has undertaken a considerable amount of public education outreach in the community to date. This can be expanded upon and/or adapted to further enhance wildfire preparedness and education. The DNV should consider developing a school fire education program to include an element of wildfire preparedness education to be presented annually in elementary or high schools. Programming could include volunteer/advocacy work from professional foresters, wildland firefighters or prevention officers, and DNV staff. The DNV should consider holding a wildland specific Fire Prevention Day or Week, or similarly formatted event, in the spring prior to the wildfire season. Timely educational materials to increase preparedness would be most effective immediately prior to the fire season.

A full list of recommendations pertaining to the Communication, Education and Partnerships strategy is presented in Section 5.3.

FireSmart Vegetation Management

Some examples of actionable items for the DNV with regards to vegetation or fuel management and the FireSmart approach include: 1) policy development and implementation of FireSmart maintenance for community parks and open spaces; 2) implementing fire resistive landscaping requirements as part of the development permitting process; and 3) provision of collection services for private landowners with a focus on pruning, yard and thinning debris.

The DNV has engaged in a proactive vegetation management strategy, targeting high-use areas near values at risk, within and immediately adjacent to developed areas. Furthermore, the DNV currently enforces FireSmart landscaping requirements within a wildfire development permit area. The DNV also provides yard trimmings bin collection service to all residents within the District. Yard trimmings that exceed the size of the yard trimmings cart can be dropped off at the North Shore Transfer Station for a tipping fee of \$95/tonne. More detailed recommendations regarding municipal policies and bylaws are provided below in Planning and Development.

RECOMMENDATION #14: The DNV should consider applying for a FireSmart demonstration grant through the CRI program. This type of fuel treatment can display the practices and principles of FireSmart activities to the public in the form of demonstration treatments. These small projects are not necessarily completed to reduce fire behaviour or increase stand resiliency in any measurable way, but instead are prioritized more by their visibility to the public and combining the treatment with elements of public education (signage, community work days, public tours, active demonstrations of operations, etc.).

Planning and Development

Municipal policies and bylaws are tools available to mitigate wildfire risk to a community. It is recognized that, to be successful, all levels of government (municipal, provincial, and federal) and individual landowners need to work together to successfully reduce their risk. To that end, local government can use a range of policy tools to help the community to incrementally increase FireSmart compliance over the mid-term (5 – 20 years) and therefore play a role in reducing the chance of structure loss from wildfire.

The planning and development objectives for the District of North Vancouver are:

- To include wildfire considerations in the planning and acquisition strategy for parks and recreational areas.
- To utilize regulatory and administrative tools to reduce wildfire hazard on private land and increase number of homes compliant with FireSmart guidelines (with low ignition potential).

RECOMMENDATION #15: Review the DP process to assess the outcomes of DP applications and long-term compliance with DP recommendations on an ongoing basis to facilitate improvements to the process.

RECOMMENDATION #16: Develop a landscaping standard which lists flammable non-compliant vegetation and landscaping materials, non-flammable drought and pest resistant alternatives, and tips on landscape design to reduce maintenance, watering requirements, avoid wildlife attractants, and reduce wildfire hazard. Consider making it publicly available for residents and homeowners outside of the DP area (can be provided at issue of building permit and made available at the DNV Office or other strategic locations). For further assistance in creating a FireSmart landscape and to obtain a list of fire-resistant plants, refer to the FireSmart Guide to Landscaping at <https://www.firesmartcanada.ca/resources-library/firesmart-guide-to-landscaping>.⁶⁸

Other helpful links for finding fire resistant landscaping options can be found at:

- <http://www.wacdpmc.org/images/Fire-Resistant-Plants.pdf>
- <http://www.firefree.org/wp-content/uploads/2016/02/Fire-Resistant-Plants.pdf>
- <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/for-your-home-community>
- <http://articles.extension.org/pages/32729/selecting-firewise-plants>

RECOMMENDATION #17: Engage the development/building community (may include developers, builders, landscapers, and architects) in any amendments to the DP process. This can be accomplished through workshops/informational sessions and/or information packages to increase awareness of wildfire risk and to educate and inform regarding the DP process and expectations. This initiative should be a collaborative effort between the three North Shore communities to ensure similar standards apply across the North Shore area.

Additional recommendations for amendments to policies and bylaws were discussed in Section 2.5.3.

⁶⁸ Government of Alberta "FireSmart Guide to Landscaping"

Subdivision Design

Subdivision design should include consideration to decrease the overall threat of wildfire. Aspects of subdivision design that influence wildfire risk are access, water pressure and hydrant locations. The number of access points and the width of streets and cul-de-sacs determine the safety and efficiency of evacuation and emergency response. In communities and/or developed areas within the DNV, on-street parking can contribute hazards on narrow or dead-end roads, which are already unlikely to have a high capacity under heavy smoke conditions.⁶⁹ When the time for evacuation is limited, poor access has contributed to deaths associated with entrapments and vehicle collisions during wildfires.⁷⁰ Methods for access design at the subdivision level can provide tools that help manage the volume of cars that need to egress an area within a given period of time.⁶⁹ These factors should be considered during the review of applications for new developments occurring on vacant lots within the DNV's wildland urban interface.

For new development in remote areas where hydrants are limited or unavailable (or it is otherwise determined by the DNV that adequate or reliable water supply systems may not exist), the NFPA 1142 can be used to help determine minimum requirements for alternative water supply (natural or artificial). Alternative water sources, such as dry hydrant systems, water usage agreements for accessing water on private land, private wells or cisterns, etc., should be reviewed by the DNV and the fire department prior to development approval.

Increasing Local Capacity

Local capacity for emergency management and efficient response to wildland urban interface fires can be enhanced by addressing the following steps:

- Development and/or maintenance of Structural Protection Units (SPUs) which can be deployed in the event of a WUI fire;
- Conducting a comprehensive review of Emergency Management BC SPU deployment procedures for the purpose of fighting interface fires;
- Provision of sprinkler kits to community residents (at a cost) – this is particularly applicable to FireSmart priority neighbourhoods identified in Section 5.2.3 such as the Indian Arm communities; and
- Engagement in annual cross-training exercises with adjacent fire departments and/or BCWS in order to increase both local and regional emergency preparedness with regards to structural fire and wildfire training.

A detailed account of current local capacity for the District of North Vancouver and recommendations to address gaps is provided in Section 6.

FireSmart Compliance within the Area of Interest

As could be expected, there is a wide range of FireSmart compliance on private properties in the AOI. There are large differences in the degree to which FireSmart best practices are visible within individual

⁶⁹ Cova, T. J. 2005. Public safety in the wildland-urban interface: Should fire-prone communities have a maximum occupancy? *Natural Hazards Review*. 6:99-109.

⁷⁰ De Ronde, C. 2002. Wildland fire-related fatalities in South Africa – A 1994 case study and looking back at the year 2001. *Forest Fire Research & Wildland Fire Safety*, Viegas (ed.), <http://www.fire.uni-freiburg.de/GlobalNetworks/Africa/Wildland.cdr.pdf>

HIZs, and in neighbourhoods throughout the District of North Vancouver communities. Landscaping in the AOI is also in a range of FireSmart compliance. Generally speaking, many homes in the Woodlands neighbourhood, an interface area, are predominantly wood construction and lack defensible space between property footprints and adjacent forested areas. Similarly, many homes that are boat access only or have single road access along the west side of Indian Arm do not maintain 10 m defensible space. Accumulations of conifer foliage in roof corners and gutters was not uncommon across the AOI. Storage of combustible items under decks, carports, and other horizontal surfaces was also noted. On the other hand, many residences in the DNV are surrounded by lawn, 10 m defensible space, and/or hardscaping (rocks), all of which are FireSmart compliant. Most neighbourhoods within the DNV represent the full spectrum of FireSmart compliance rates, from no defensible space and wood constructions to completely FireSmart compliant homes. Within the AOI, the neighbourhood of Norgate displays the highest FireSmart compliance rate.

Aside from differing levels of awareness, understanding and acceptance of recommended FireSmart guidelines by residential and commercial property owners, there are a number of other factors that add variability to the level of FireSmart compliance within the AOI. Ultimately, these also impact the vulnerability of structures and the amount of effort required to achieve a FireSmart rating for individual homes, neighbourhoods or the communities as a whole. These factors include but are not limited to: the age of homes or subdivision; design features and favored building materials of the era; proximity to forested area (both on private land and adjacent provincial or municipal Crown land); density, lot size and lay-out of the subdivision; positioning of the home or neighbourhood in relation to slope, aspect and prevailing winds; and the stage and maturity of landscaping.

Neighbourhoods in the DNV AOI were unofficially surveyed during field work. The following observations were made:

- Wildfire hazard levels range from low to high across neighbourhoods within the AOI;
- The bulk of hazards are associated with conditions of natural and landscaped vegetation immediately surrounding residential properties;
- For new development, where landscaping is not yet completed, educational approaches may aid in promoting fire resistant landscaping options and achieving defensible space in the HIZ;
- Hazards are magnified in some neighbourhoods due to poor access (i.e., presence of private and gated roads) and distance from nearest water supply or fire hydrant location; and
- All neighbourhoods have good opportunities to mitigate risk through individual and collective action.

RECOMMENDATION #18: Continue to maintain trained Local FireSmart Representatives (LFRs) on staff to assist and engage various neighbourhoods in complying with FireSmart principles at both the neighbourhood and individual home-level.

5.2.3 Priority Areas within the AOI for FireSmart

This section identifies priority areas within the AOI that would benefit from FireSmart planning and activities. These priorities are based on general field observations and input from the DNV and are not based on a scientific sample or formal data collection. Recommended FireSmart activities are essentially the same for each neighbourhood or area; however, it is recommended that the DNV prioritize the neighbourhoods in Table 17.

Table 17. Summary of FireSmart Priority Areas.

Area	FireSmart Y/N	FireSmart Canada Recognition Received Y/N	Recommended FireSmart Activities
Priority Area #1: Indian Arm communities, including Woodlands, Sunshine, Alder Creek, Fernlee, Brighton Beach	N	N	<p>The following is a non-extensive list of FireSmart activities for which the District can engage suggested neighbourhood residents:</p> <ol style="list-style-type: none"> 1) Provide guidance to ensure landscaping complies to the FireSmart standard; 2) Incentivise private landowners to engage in retrofitting homes with building materials and design based on NFPA 1144 or FireSmart standards; 3) Encourage prompt removal of combustible construction materials or yard waste from private properties; and 4) Continue coordinating monthly or bi-monthly yard waste removal days prior to and during the fire season to reduce WUI fire hazard.
Priority Area #2: Riverside Drive	N	N	
Priority Area #3: Skyline Drive north of Montroyal Boulevard	N	N	
Priority Area #4: Capilano (areas that border Capilano River and MacKay Creek Greenbelt)	N	N	
Priority Area #5: Highlands and Canyon Heights (areas that border MacKay Creek and Mosquito Creek)	N	N	
Priority Area #6: Delbrook (areas that border Mosquito creek on the west and Thane Creek greenbelt on the east)	N	N	
Priority Area #7: Grousewoods, Cleveland, Upper Delbrook, Carisbrooke, Braemar	N	N	
Priority Area #8: Upper Lynn, Lynn Canyon, West Lynn Terrace, Upper West Lynn, Lower West Lynn, and Lynnmour North	N	N	
Priority Area #8: Riverside West (adjacent to Seymour River)	N	N	
Priority Area #9: Blueridge, Northlands, Parkgate, Indian River	N	N	
Priority Area #10: Maplewood, Windridge, Windsor Park, Dollarton, Roche Point (south of Mt. Seymour Parkway)	N	N	



Area	FireSmart Y/N	FireSmart Canada Recognition Received Y/N	Recommended FireSmart Activities
Priority Area #11: Critical infrastructure (i.e., water and wastewater treatment facilities)	Y (partially)	N/A	Based on field observations, most critical infrastructure has had some level of FireSmart setback from forested areas. Consider conducting frequent (2-3 years) maintenance treatments to ensure the wildfire risk does not reach higher than moderate. It is recommended that fuel treatments be considered for areas adjacent to critical infrastructure in order to bolster the effect of previous FireSmart treatments. FireSmart treatments may include thinning from below to reduce ladder fuels and crown fire potential, pruning of retained trees to 3 m, and reducing surface fuels. Additionally, consider adding regular brushing activities to the maintenance treatment schedule to control weeds and grasses around critical infrastructure.

RECOMMENDATION #19: The DNV should apply for funding from the UBCM CRI Program to develop a local FireSmart rebate program. This will allow homeowners to access partial rebates for FireSmart activities on their properties, if rated as high or extreme risk in a FireSmart home and property assessment. The rebate program is described in detail in Appendix 2 of the CRI Program 2020 FireSmart Community Funding and Supports – Program & Application Guide and must adhere to the goals of FireSmart, as outlined in Section 5.2.1.

5.3 COMMUNICATION AND EDUCATION

Establishing effective communications and actively engaging key stakeholders in risk reduction activities are keystones to building a FireSmart community. Without the support and involvement of residents, businesses, public officials, and industry, the efforts of public officials, fire department, and others to reduce wildfire losses will be hindered. In many communities, there is a general lack of understanding about interface fire, the relationship between ignition potential and loss of homes, and the simple steps that can be taken to minimize risk on private land. In addition, public perceptions regarding responsibility for risk reduction and the ability of firefighters to safely intervene to protect homes during a wildfire are often underdeveloped or inaccurate.

Based on the consultation completed during the development of this Plan, it is evident that DNV staff and some residents have a good level of awareness of interface fire risk and a strong level of commitment to continue to grow their understanding. However, field observations highlighted the need to further educate the community at large on what private land owners can do to build a FireSmart community and take personal responsibility for the ignition potential of their homes, businesses, lands, and neighbourhoods. Often, the risk of wildfire is at the forefront of public awareness during or after major wildfire events, whether close to home or further afield. The challenge is to retain this level of awareness beyond these times. The communication and education objectives for the DNV are:

- To improve public understanding of fire risk and personal responsibility by increasing resident and property owner awareness of the wildfire threat in their community, to establish a sense of responsibility for risk mitigation among property owners, and to empower them to act;
- To enhance the awareness of, and participation by, elected officials and all WUI stakeholders regarding proactive WUI risk mitigation activities;
- To reduce or avoid ignitions from industrial sources; and
- To increase awareness of human-caused ignitions.

Bringing organizations together to address wildfire issues that overlap physical, jurisdictional or organizational boundaries is a good way to help develop interagency structures and mechanisms to reduce wildfire risk. Engagement of various stakeholders can help with identifying valuable information about the landscape and help provide unique and local solutions to reducing wildfire risk. The DNV should consider collaborating with NSEM and other North Shore communities to create an Interface Steering Committee to coordinate wildfire risk reduction efforts. The steering committee could include key stakeholders such as DNV staff, District of West Vancouver and City of North Vancouver representatives, Squamish Nation, Tsleil-Waututh First Nation, DNVFRS, Metro Vancouver, BCWS, BC Parks, recreational groups/representatives, local environmental groups, and industrial operators.

As previously discussed in Section 3.3.2, the District is a busy recreational area and access hub to backcountry areas in the District and beyond. Raising the awareness of the public including those accessing the backcountry is an important consideration to address the risk of fire ignition and encourage adherence to open burning restrictions and good practices.

Moving from the CWPP to implementation of specific activities requires that the community is well informed of the reasons for, and the benefits of specific mitigation activities. In order to have successful implementation, the following communication and public education recommendations are made:

RECOMMENDATION #20: This report and associated maps should be made publicly available through webpage, social media, and public FireSmart meetings.

RECOMMENDATION #21: Complete or schedule periodic updates of the CWPP to gauge progress and update the threat assessment (hazard mapping) for changes in fuels, forest health, land planning, stand structure or changes to infrastructure in the interface. The frequency of updates is highly dependent upon

major changes which would impact the DNV's wildfire threat assessment or the rate at which wildfire risk reduction efforts are implemented. An evaluation of major changes (including funding program changes that may lead to new opportunities) and the potential need for a CWPP update should be initiated every 5 - 7 years.

RECOMMENDATION #22: Develop a social media strategy and ensure that its full power is leveraged to communicate fire bans, high or extreme Fire Danger days, wildfire prevention initiatives and programs, easily implementable FireSmart activities, updates on current fires and associated air quality, road closures, and other real-time information in an accurate and timely manner.⁷¹ This may be combined with incentive programs such as neighbourhood or community chipping days (see recommendation #49)

RECOMMENDATION #23: Promote FireSmart approaches for wildfire risk reduction to DNV residents through Town Hall meetings, workshops and/or presentations. Workshops should target priority neighbourhoods, and a FireSmart display set should be developed that can be transferred between community centres and libraries. Aim to conduct the engagement/promotion campaign prior and during the fire season. Continue supplying FireSmart materials to homeowners in the interface during these engagement campaigns. This initiative can be part of a North Shore-wide effort.

RECOMMENDATION #24: Engage in regular education initiatives targeting residential properties within the Wildfire Hazard DPA, including but not limited to door-to-door distribution of FireSmart door hangers.

RECOMMENDATION #25: Use the planned Maplewood Fire and Rescue Centre (within the Wildfire Hazard DPA) to demonstrate the use of flame proof/fire resistant building materials and FireSmart landscaping with interpretive low flammable landscaping and environmental enhancement areas open to the public. Interpretive/education materials may be provided onsite and/or on the District website.

RECOMMENDATION #26: Work towards FireSmart community recognition, at the neighbourhood level and facilitate uptake into the FireSmart Canada Community Recognition Program (FSCCRP). This will help reduce fire risk and aid in further funding applications.

RECOMMENDATION #27: Facilitate the FSCCRP uptake within the DNV and enhance its applications by including the following: 1) inviting BCWS crews to participate in and support the annual FireSmart events set up by participating neighbourhoods. 2) Encourage individual homeowner participants to complete the self-administered FireSmart home assessment tool. 3) Include within the FireSmart Canada Community Assessment Report the standard recommendation that participating neighbourhoods hold a home hazard assessment workshop as one of their FireSmart events.

⁷¹ Appendix K has general communication and social media information.

RECOMMENDATION #28: Promote the use of the FireSmart Home Partners Program offered by the Partners in Protection Association, which facilitates voluntary FireSmart assessments on private property. Use the opportunity to educate the home or business owner about the hazards which exist on their property and provide easy improvements to reduce their risk.

RECOMMENDATION #29: Encourage schools to adopt and deploy existing school education programs to engage youth in wildfire management and risk reduction. There is emergency preparedness curriculum available provincially, which includes preparedness for a variety of natural hazards, including wildfire (Master of Disaster). Other options/value-added activities include consulting with Association of BC Forest Professionals (ABC FP) and British Columbia Wildfire Service (BCWS) (Fraser Fire Zone), as well as local fire department and FireSmart representatives to facilitate and recruit volunteer teachers and experts to help with curriculum development to be delivered in elementary and secondary schools (field trips, guest speakers, etc.).

RECOMMENDATION #30: The North Shore Emergency Management should coordinate and facilitate engagement with all key stakeholders (BCWS, BC Parks, recreational groups/representatives, DNV staff, industrial operators, City of North Vancouver, District of West Vancouver representatives, Metro Vancouver staff, and local First Nations) to formalize an Interface Steering Committee. The purpose of the steering committee would be to identify wildfire related issues in the area and to develop collaborative solutions to minimize wildfire risks.

RECOMMENDATION #31: Work towards educating homeowners within fire limits areas (i.e., outside of the road accessible fire service area). This is particularly applicable to boat access only residents. It is common, especially in the case of second homeowners/vacation owners, for them to be unaware of the lack of fire services in their area (in the event they call 911).

RECOMMENDATION #32: Given the historically high proportion of preventable human-caused fire ignitions (see Section 2.3) and the high public and recreational usage of parks, trails and green spaces in the District and the backcountry beyond, the DNV should develop public education focused on increasing awareness of open burning restrictions and/or good wildfire prevention practices. This could include information on how ignitions can occur (including the range of human-related activities that can create a spark or heat source sufficient to ignite a wildfire), how easily they can occur and how they can be prevented. Public information or signage could be posted at busy parks and trailheads and/or posted on the District's website in the form of seasonal notices (similar to summer parking and access notices posted for popular destinations).

5.4 OTHER PREVENTION MEASURES

In addition to fuel treatment and community communication and education, fire prevention in the AOI is also addressed via the following avenues: 1) public display of danger class rating signs throughout the AOI, which should be updated on a weekly basis; 2) ability to restrict access to back country areas similar to provincial requirements, if necessary; and 3) enforcement of local bylaws such as the Fire Protection Equipment; Fireworks Regulation; Fire; Smoking Regulation; Wildfire Hazard DPA; Solid Waste Removal; Park Regulation, North Shore Emergency Management Office Agreement; Emergency Plan; and North Shore Disaster bylaws. The aforementioned activities are either currently being applied or have potential to be applied in order to reduce the potential and threat of wildfire ignitions within the AOI. The public display of danger class rating signs should be updated on a weekly basis.

Risk of human-caused ignition within the AOI is not limited to private property owners and individual residents. Power lines and industrial activities pose a risk of ignition, particularly in areas where cured fuels or fuel accumulations exist. Tree failures adjacent to power lines (transmission and distribution) are common occurrences and represent significant risks to ignition within the AOI. A cooperative approach for addressing the industrial area concerns must be undertaken by the DNV and pertinent industrial partners. Additionally, there is a high risk of ignitions due to high use of existing trails that overlap and are adjacent to BC Hydro transmission light right-of-ways. This has been recognized and identified in Section 5.1.1 where fuelbreaks have been recommended.

RECOMMENDATION #33: Work with industrial operators such as BC Hydro and Fortis BC to ensure that high risk activities, such as grubbing/brushing and right-of-way mowing work do not occur during high fire danger times to reduce chance of ignitions as per the Wildfire Act. It is recommended that communications are coordinated via weekly fire calls.

RECOMMENDATION #34: Work with industrial operators (i.e., BC Hydro) to ensure that rights-of-way do not contain fine fuel accumulations (< 7.5 cm, easily cured) and significant regeneration of conifer vegetation prior to and during the fire season and are maintained in a low hazard state (to serve as fuel breaks).

SECTION 6: WILDFIRE RESPONSE RESOURCES

This section provides a high-level overview of the local government resources accessible for emergency response and preparedness use. Accordingly, in emergency situations when multiple fires are burning in different areas of the Province, resource availability may be scarce. Therefore, local government preparedness and resource availability are critical components of efficient wildfire prevention and planning. Deployment of provincial resources occurs as per the process detailed in the *Provincial*

Coordination Plan for Wildland Urban Interface Fires document⁷². The aforementioned document establishes a protocol for collaborative and integrated emergency management in the event of WUI fires within British Columbia.

6.1 LOCAL GOVERNMENT AND FIRST NATION FIREFIGHTING RESOURCES

Firefighting efforts and effectiveness can be affected by access to secondary power sources, water pressure and supply, and existing local government contingency plans. In the event of a wildfire emergency situation and loss of power, the majority of critical infrastructure in the DNV has secondary power sources. However, should a wide-scale outage occur, known vulnerabilities to secondary power sources include mechanical failure and potential fuel shortages. The DNV has also identified issues with water pressure within particular areas that have fire hydrant service, and there are known limitations to water supply for firefighting in areas not supplied by the District water systems and consequently without hydrant service. Specific limitations of water availability with regards to wildfire suppression are detailed in Section 6.1.2.

Formal automatic aid agreements are in effect between the DNVFRS and local fire departments in neighbouring jurisdictions (West Vancouver Fire & Rescue and North Vancouver City Fire Department). In the event of a WUI fire emergency, automatic aid in the AOI is activated, as required, between these fire departments and also lead to aid requests with BCWS. DNVFRS and DNV Operations developed an agreement in 2018 for an Extended Operations Unit consisting of 35 operations staff that are trained in S-100, S-185, ICS-100.

6.1.1 Fire Department and Equipment

Fire protection within the AOI is the responsibility of the DNVFRS. Table 18 provides an overview of the fire services capacity in the AOI, including fire department personnel and equipment. In total, the DNVFRS fire protection services cover the entire area within the District municipal boundary that is accessible by road or boat. This excludes mountain ranges and undeveloped forested lands. The DNV has agreements in place with BCWS and the Metro Vancouver Watershed Protection Department for fire protection in these areas.

DNVFRS personnel are full-time, paid firefighters. The main personnel deficiencies reported by DNVFRS related to difficulties ensuring that all members are trained in structure protection training workshop (SPP-115), that higher level wildland firefighter training is also incorporated (e.g. Strike Team/Task Force Leader, Structure Branch Director, Helicopter Operations), and a lack of Danger Tree Assessors. The DNVFRS's equipment is listed in Table 18 below and includes capability to draft from natural water sources by truck draft or using portable pumps. An additional Type-II SPU, an off-road capable wildfire

⁷² Provincial Coordination Plan for Wildland Urban Interface Fires. 2016. Available online at: https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/provincial-emergency-planning/bc-provincial-coord-plan-for-wuifire_revised_july_2016.pdf

response vehicle, salt-water pumping capacity, and a watercraft for remote/boat access locations were cited as equipment deficiencies for the DNVFRS.

Table 18. Fire department capacity and equipment within the AOI.

Fire Protection Zones	Fire Department	Number of Stations	Number of Members	Apparatus type and number*
District of North Vancouver municipal boundary	District of North Vancouver Fire Rescue Services	5	140 full-time equivalent career members	4 Utilities (crew cab), 6 Engines, 1 Tower, 3 Squads, 1 Rescue, 1 Command, 1 Wildland, and 1 Duty Chief, 2 Quints, 1 Support, 1 Training Unit, 1 Hazmat, 1 Hazmat Support, 2 Type-II SPU, 1 Initial Attack Vehicle, 1 Extended Operations Unit trailer and wildfire equipment (water bladders, portable pumps, hand tools, forestry hose, and chainsaws). DNVFRS also has 6 non-specialized vehicles for prevention, education, and emergency communications.
*The DNV Parks Department has additional firefighting equipment, including a 500-gallon water tank on a 1 tonne truck, hydrant adaptors, hoses, a Honda stroke pump, wildfire bladders, pulaskis, backpack pumps, and chainsaws.				

Members of the DNVFRS undergo significant training focused on structural firefighting and annual structure protection program wildland firefighter level 1 (SPP-WFF 1) and SPP-115 training. The DNVFRS has in-house SPP-WFF 1, S-100, S-185, and ICS-100 train-the-trainers. The DNVFRS does not, however, have a junior firefighter work experience program. DNVFRS is planning to train 14 members as Wildlife Danger Tree Assessors in early 2019. Every two years a multi-agency exercise is held with Metro Vancouver Wildfire and BCWS. In 2019, this training exercise will occur on the North Shore and will involve a dry lightning wildfire simulation. It is recommended that all DNVFRS members continue to receive at a minimum SPP-WFF1 (or equivalent) training, and that fire department members engage in yearly practical wildland fire training with BCWS that covers at a minimum: pump, hose, hydrant, air tanker awareness, and employment of SPUs. The aforementioned cross-training opportunity should continue to include joint wildfire simulation exercises such as the Dry Lightning 3 exercise that was held on the North Shore in 2019. This level of training would improve the local fire department's ability to respond to wildfires within the DNV and adjacent communities.

Over the previous 8 years (2011-2018), the DNVFRS responded to an average of 238 calls per year (wildland and structure fire calls), of which an average of 49 per year were wildland (bush) fires. This ranged from a low of 30 wildland fire calls in 2011 to a high of 69 in 2013 and 2015. In 2018, the DNVFRS responded to 53 wildland fire calls.

6.1.2 Water Availability for Wildfire Suppression

Water is the single most important suppression resource. In an emergency response scenario, it is critical that sufficient water supply be available. The Fire Underwriters Survey summarizes their

recommendations regarding water works systems fire protection requirements, in the document entitled *Water Supply for Public Fire Protection* (1999).⁷³ Some key points from this document include the need for:

- Duplication of system parts in case of breakdowns during an emergency;
- Adequate water storage facilities;
- Distributed hydrants, including hydrants at the ends of dead-end streets;
- Piping that is correctly installed and in good condition; and
- Water works planning should always take worst-case-scenarios into consideration. The water system should be able to serve more than one major fire simultaneously, especially in larger urban centers.

Water service within the DNV is an important component of emergency response for a wildland urban interface fire in the event of a large-scale emergency, and in particular for structural fires. As previously noted in Sections 3.2.3 and 3.3.1, water service is provided by a DNV operated system which relies on surface water from Metro Vancouver reservoirs (Seymour and Capilano). For suppression within the AOI, hydrant (and draft well) service in the AOI is limited to the extent of these District water systems. In consultation with the DNVFRS, it was noted that hydrants are available throughout the majority of the District, and water supply and pressure are generally good. However, there are portions of the District without hydrant protection or with poor supply or pressure. The DNV has developed a Master Requirement (SPE 103) for this Fire Limits Area, which encompasses homes located in areas with limited water supply, limited access, and increased response times by the DNVFRS.⁷⁴ The following areas are included in the Fire Limits Area:

- 4700 and greater Blocks Prospect Road,
- 4900 and greater Blocks Skyline,
- 4300 and greater Blocks St. Georges Ave,
- 4300 and greater Blocks St. Mary's Ave,
- 1500 and greater Blocks Lillooet Road,
- 4400 and greater Blocks Marion Road,
- 4500 and greater Blocks Lynn Valley Road,
- 2200 and greater Blocks Indian River Crescent,
- 4000 and greater Blocks Indian River Drive,
- 2800 and greater Blocks Panorama Drive,
- Eastridge Road - even addresses only,
- Any construction above the 1050 ft (320 m) elevation,
- The areas designated as Woodlands, Sunshine and Cascades, and

⁷³ <http://www.scm-rms.ca/docs/Fire%20Underwriters%20Survey%20-%201999%20Water%20Supply%20for%20Public%20Fire%20Protection.pdf>

⁷⁴ Fire Limits Area – Sprinklers, Master Requirement SPE 103. District of North Vancouver.

- The area designated as Indian Arm.

Water supply in the DNV has been susceptible to drought events in past years, sometimes resulting in a reduction of reservoir levels to 60% capacity.⁷⁵ As noted in Section 4.1.3, the combination of reduced snowpack and drought events could have a considerable effect on water supply into the future, particularly during the summer months.⁷⁶ To supplement water availability for firefighting, the DNVFRS can draft from natural static water sources such lakes, rivers, and ponds using either truck mounted or portable pumps. However, these sources are also at risk of drying or experiencing reduced water levels during drought events, which typically coincide with high and extreme fire danger rating days. Two Vancouver Fire Boats that may be deployed to assist the DNV also have capability for ship to shore pumping from ocean water sources. In addition, Grouse Mountain has the ability to use available snow-making machinery to pump water for fire suppression during the fire season. Natural water sources within the District are known and mapped.

The WWG stated that in the event of prolonged power outage, the capacity of the District water system and reservoirs to operate under these conditions is limited. The DNV pump stations do not have onsite backup power, however, three small and one large portable generator can be available to power these systems if required. In the event that the Lynn Pump Station (primary pump station) loses power, the secondary pump station at the top of Skyline Drive will lose power as well. This will result in 24 hours of remaining capacity for water provision to the DNV and 6 hours of water provision for firefighting capacity. The DNV's current water infrastructure and system was not designed to support domestic, structural firefighting, and wildland firefighting needs concurrently. The DNV's water system provides adequate supply of water for domestic water use and structure protection. Therefore, hydrant spacing, hydrant location, flow rates, and capacity are all based on meeting these aforementioned needs. Drawing a water system down to fight a fire may result in rapid depressurization of the affected water lines.

RECOMMENDATION #35: Conduct an assessment of diesel supply for backup generators (scenario-based - e.g. assuming bridges are blocked/inaccessible). This recommendation relates to Required Action 2.2. in the DNV's Climate Change Strategy: invest in backup power equipment for critical functions and develop a fueling strategy.

RECOMMENDATION #36: Consider purchasing a tender or tank to provide additional on-site water storage for fire suppression use in the Woodlands area and the Baden Powell trail.

RECOMMENDATION #37: Consider installing an alarm system to warn of de-pressurization of water lines. This recommendation relates to Required Action 1.2. in the DNV's Climate Change Strategy (Develop and implement additional technological tools to assist in situational awareness and emergency response communication).

⁷⁵ District of North Vancouver. 2017. Climate Change Adaptation Strategy: Acting Now for a Resilient Future.

⁷⁶ Metro Vancouver. 2018. Climate 2050 Discussion Paper.

RECOMMENDATION #38: Consider a variety of approaches to improve District water availability and ensure domestic water needs are not compromised in an emergency event that requires sustained use of large quantities of water (i.e., from concurrent structural and wildland firefighting events). For example, the DNV can commission a scenario-based cost/benefit analysis to improve limitations of the DNV water system so that it can support domestic water needs, structural firefighting, and wildland firefighting demands, concurrently in the event of an emergency. This analysis should identify the resources required to upgrade the current DNV water system, the costs associated with implementation, and develop a workplan that targets priority high risk areas first (i.e., areas of low pressure, as mapped by the DNV).

RECOMMENDATION #39: All new development outside existing District water systems should have a water system which meets or exceeds minimum standards of NFPA 1142, *Standard on Water Supplies for Suburban and Rural Fire Fighting*⁷⁷. The fire department should review the water supply to ensure it provides sufficient placement, flow, and reliability for suppression needs and that secondary power is available in the event of power outages.

6.1.3 Access and Evacuation

Road networks in a community serve several purposes including providing access for emergency vehicles, providing escape/evacuation routes for residents, and creating fuel breaks. Access and evacuation during a wildfire emergency often must happen simultaneously and road networks should have the capacity to handle both. In the event of a wildfire emergency, Highway 1 is the primary access/egress route within the District running east and west. Marine Drive, Capilano Road, Lonsdale Avenue, Lynn Valley Road and Mount Seymour Parkway are arterial roads that provide access to and from developments located in interface areas within the District.

A significant emergency evacuation concern has been identified for Indian River Drive and boat access only communities along Indian Arm. There is currently no secondary exit or bypass from these areas to provide reliable egress for area residents and visitors. The Indian River Drive single access/egress route is vulnerable to wildfires, vehicular accidents, and rockfall/geotechnical hazards. If a wildfire were to block Indian River Drive or any of the major evacuation routes described above, smoke and poor visibility, car accidents, wildlife, traffic congestion, and other unforeseen circumstances can further complicate evacuations and hinder safe passage. Boat access communities of Indian Arm can only be serviced by the Vancouver Fire Boats with relatively long response times (approximately 45 minutes). Deep Cove also has limited emergency egress, particularly the neighbourhood accessed by Panorama Drive, a narrow, single route that also experiences considerable traffic from visitors to the Village of Deep Cove, Panorama Park and Quarry Rock. Traffic congestion is a recognized issue on the North Shore (INSTPP, 2018)⁷⁸ and may

⁷⁷ National Fire Protection Association (NFPA). 2017. Standard on Water Supplies for Suburban and Rural Fire Fighting. Retrieved online at: <https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1142>

⁷⁸ <https://www.instpp.ca/uploads/1/2/1/6/121600566/instpp-full-report.pdf>

exacerbate existing evacuation and access issues in the event of a wildfire emergency, particularly with respect to Seymour area in the east of the AOI that is accessed by Mt. Seymour Parkway.

RECOMMENDATION #40: Restrict public access into work zones in the event of wildfire suppression activities in the Mt. Seymour Parkway/Seymour area to ensure public safety and reduce the risk of entrapment⁷⁹.

While the Indian River Drive corridor/Woodlands area, and boat access only Indian Arm communities; Panorama Drive; and Grousewoods are areas of greatest concern identified by the Wildfire Working Group, various other neighbourhoods within the AOI are located on single access roads or are isolated neighbourhoods that cause suppression or evacuation concerns (i.e., Underwood and Skyline Drive). Some of the critical infrastructure within the AOI is reached via narrow forested roads, which may impede suppression efforts and response times. Furthermore, there is a significant portion of land within the AOI which is inaccessible by roads.

Emergency access and evacuation planning is of particular importance in the event of a wildfire event or other large-scale emergency. The District of North Vancouver has developed an evacuation guidelines document (2009); however, the emergency evacuation plan is currently being updated (2019) under the leadership of NSEM in the form of a multi-jurisdictional North Shore emergency evacuation plan. This includes an evaluation of alternative evacuation routes considering the current context and challenges on the North Shore. This CWPP Update and associated recommendations will be considered in the development of the North Shore evacuation plan which includes basic contingencies in the event of a wildland/interface fire (i.e., contacts and roles of local government personnel). However, the ERP does not specify evacuation routes to be used during an emergency situation (in the absence of identified evacuation routes, it was noted by the Wildfire Working Group that all mapping is readily available through the District GIS Department). Evacuation would be conducted by first responders, RCMP, and the North Shore Rescue team. Currently, in the event of a wildfire emergency within the AOI, the Gerry Brewer Building (North Vancouver RCMP detachment and North Shore Emergency Management office), at 147 E 14th St in the City of North Vancouver, can be designated as the EOC for the three North Shore municipalities. It is recommended that the District develop a detailed evacuation plan that includes the following provisions:

- Mapping and identification of safe zones, marshaling points and aerial evacuation locations;
- Planning of traffic control and accident management;
- Identification of volunteers that can assist during and/or after evacuation; and
- Development of an education/communication strategy to deliver emergency evacuation procedures to residents.

⁷⁹ Fire entrapment is a life-threatening situation that occurs when individuals are threatened by a sudden change in fire conditions and are unable to utilize escape routes to access safety zones.

Recreation trails built to support ATVs can provide access for ground crews and act as fuel breaks for ground fires, particularly in natural areas. Strategic recreational trail development to a standard that supports ATVs, and the installation of gates or other barriers to minimize access by unauthorized users can be used as a tool that increases the ability of local fire departments to access interface areas.

RECOMMENDATION #41: Devise trails or corridors with a minimum 3-4 m width, that are suitable for ATV use in remote or limited access areas (i.e., surrounding the Deep Cove and Seymour areas) in the event of an emergency.

RECOMMENDATION #42: Acquire an ATV or off-road vehicle (i.e., Polaris side by side) and equip with fire suppression equipment. This vehicle can be used for rapid access in remote or limited access areas within the District boundaries.

In order to effectively use the trails as crew access or fuel breaks during suppression efforts, it is recommended to develop a Total Access Plan. This plan should be made available to the DNVFRS, other local fire departments (under mutual aid agreement), Metro Vancouver Watershed Protection and the BCWS in the event that they are aiding suppression efforts on an interface fire in the AOI. The plan should include georeferenced maps with associated spatial data and ground-truthed locations of potential optimal firebreaks, identify the type of access available for each access route, identify those trails that are gated or have barriers, and provide information as to how to unlock or remove barriers. The plan should also identify those natural areas where access is insufficient. Access assessment should consider land ownership, proximity of values at risk, wildfire threat, opportunities for use as fuel break or control lines, trail and road network linkages where fuel-free areas or burn off locations can be created or used as potential sprinkler locations; and requirements for future maintenance activities such as operational access for fuel treatments and other hazard reduction activities.

In addition to providing the safest, quickest, and easiest access routes for emergency crews, a Total Access Plan would minimize the need for using machinery or motorized access in an otherwise undisturbed area. This would reduce the risk of soil disturbance and other environmental damage, as well as reduce rehabilitation costs.

RECOMMENDATION #43: Develop an evacuation strategy for the area served by Indian River Drive.

RECOMMENDATION #44: Complete and participate in regular testing of, and updates to, the evacuation plan.

RECOMMENDATION #45: Develop a community wildfire pre-planning brochure to be shared with key DNV, Metro Vancouver and NSEM staff, that addresses the following: 1) locations of staging areas; 2) identifies water reservoirs, communications requirements (i.e., radio frequencies), minimum resource requirements for structure protection in the event of an interface fire, and values at risk; and 3) maps of

the area of interest. Collaborate with the District of West Vancouver to ensure similar information is provided.

RECOMMENDATION #46: Develop a Total Access Plan for the DNV to map and inventory trail and road network in natural areas for suppression planning, identify areas with insufficient access and to aid in strategic planning. Georeferenced maps with ground-truthed locations of potential optimal firebreaks should be developed as part of the Total Access Plan and shared with fire suppression personnel and BCWS to support emergency response in the event of a wildfire. The plan should be updated every five years, or more regularly, as needed to incorporate additions and/or changes.

RECOMMENDATION #47: Include a qualified professional with experience in operational wildland/interface fire suppression in the planning and strategic siting of future trails and parks.

6.1.4 Training

The DNVFRS maintains a current level of structural protection training as described in Section 6.1.1. Additionally, the DNVFRS trains all members to SPP-WFF 1 with annual refresher training. The DNVFRS is also committed to training its members to SPP-115 (focused on the use of wildfire pumps and hose, as well as the use of fire service hose and hydrants, in the application of sprinklers on structures) with 65 personnel currently trained and an additional 25 scheduled for yearly training starting with the year 2020. Additionally, the DNVFRS is considering adding training elements including Wildlife Dangerous Tree Assessor certification for some members in 2019. It must be noted, that outside of the DNVFRS, additional wildland interface fire suppression capacity exists within the DNV's Parks department, with Extended Operations Unit staff trained in S100, S185 and ICS100. Provision of training opportunities for structural firefighters in the realm of wildland firefighting is critical to building capacity for suppression and emergency management at the local level. It is recommended that all fire department members continue to receive SPP-WFF 1 (or equivalent) at minimum, and that the fire department engage in yearly practical wildland fire training with BCWS.

The current level of communication between the DNVFRS and BCWS is dictated by fire season demands and generally occurs via North Shore Emergency Management coordinated multi-jurisdictional seasonal wildfire readiness workshops and, when fire danger rating is high or extreme, via weekly wildfire coordination calls. These multi-agency engagement activities are also attended by the three North Shore municipality fire departments, parks departments, and communications departments; as well as the Squamish Nation and Tsleil-Waututh Nation, and during high or extreme fire danger rating, by BC Parks, Metro Vancouver Watershed Fire Protection, Cypress Mountain Resort, Grouse Mountain Resort, North Shore Rescue, Royal Canadian Marine Search and Rescue, and British Properties.. The BCWS participates in community events or public education opportunities as requested by the North Shore fire departments; most recently, this included a Wildfire Day in 2018 attended by all three fire departments, BCWS, and Metro Vancouver Watershed Protection. The DNVFRS currently engages in annual cross-training with BCWS and Metro Vancouver and participates in a multi-agency response exercise/simulation ever two

years. Ongoing cross-training with the BCWS would enable the DNVFRS to prepare its responders with the technical and practical firefighting experience in order to action both structural and wildland fires.

It is recommended that the DNVFRS continue working cooperatively with the BCWS (Fraser Fire Zone, Cultus/Haig Fire Base) to conduct yearly mock exercises, where information and technical/practical knowledge are shared, such as: fireline construction, Mark 3 pump operations, sprinkler protection, skid pack operations, portable water tank deployment, and wildland hose operations. These practices also provide training to wildland crews on hydrant hookup methods, as well as an avenue to discuss working together on inter-agency fires. Continuing the practice of conducting joint training/multi-agency exercises will strengthen regional emergency response and firefighting training. Operationally, the DNVFRS participated as members of an incident command team and response to the 2018 White Lake Fire in the District of West Vancouver which resulted in valuable learning and experience.

RECOMMENDATION #48: The DNVFRS should continue working with BCWS to maintain an annual structural and interface training program. As part of the training, it is recommended to conduct annual reviews to ensure PPE and wildland equipment resources are complete, in working order, and the crews are well-versed in their set-up and use. It is recommended the DNVFRS engage in yearly practical wildland fire training with BCWS that covers at a minimum: pump, hose, hydrant, air tanker awareness, and employment of SPUs. Interface training should include completion of a joint wildfire simulation exercise and safety training specific to wildland fire and risks inherent with natural areas. It is recognized that BCWS crew resources are limited and their availability and is highly dependent upon the current fire season and other BCWS priorities.

RECOMMENDATION #49: Ensure that the DNVFRS maintains the capability to effectively suppress wildland fires, through wildfire-specific training sessions. Ensure all DNVFRS members continue to have SPP-WFF 1 at a minimum. Consider expanding the training program to maintain a high level of member education and training specific to interface and wildland fires. The Office of the Fire Commissioner (OFC) also offers SPP-115 (formerly S-115) to train structural firefighters on the use of wildfire pumps and hose, and fire service hose and hydrants in the application of structural protection units (SPUs); consider training all members to this standard.; the DNVFRS should continue the practice of staying up to date on wildfire training opportunities, and to train members in this capacity, as training resources/budgets allow.

6.2 STRUCTURE PROTECTION

The DNVFRS is well resourced in structural suppression equipment, and wildland equipment (i.e., one Initial Attack vehicle, one Extended Operations Unit Trailer, hand tools, hose and associated appliances). The wildland equipment is primarily used to defend properties close to road access while the DNVFRS has noted the need for a small watercraft to defend water access and remote properties. The fire department maintains a current level of training in both wildfire and structural firefighting (see Section 6.1.1 for additional detail). The DNVFRS is equipped with two Structural Protection Units (SPUs). The UBCM owns

four complete SPUs, each equipped to protect 30 – 35 structures. The kits are deployed by the MFLNRORD/BCWS incident command structure and are placed strategically across the province during the fire season based on fire weather conditions and fire potential. When the kits are not in use, they may be utilized by fire departments for training exercises. SPUs can be useful tools in the protection of rural/interface homes in the event of a wildfire.

An important consideration in protecting the WUI zone from fire is ensuring that homes can withstand an interface fire event. Structure protection is focused on ensuring that building materials and construction standards are appropriate to protect individual homes from interface fire. Materials and construction standards used in roofing, exterior siding, window and door glazing, eaves, vents, openings, balconies, decks, and porches are primary considerations in developing FireSmart neighbourhoods. Housing built using appropriate construction techniques and materials in combination with fire resistant landscaping are less likely to be impacted by interface fires. Sprinkler protection for new home construction is also being provided through the District's Wildfire Hazard DPA, when recommended by the QP.

While many BC communities established to date were built without significant consideration of interface fire, there are still ways to reduce home vulnerability. Changes to roofing materials, siding, and decking can be achieved over the long-term through voluntary upgrades, as well as changes in bylaws and building codes. The FireSmart approach has been adopted by a wide range of governments and is a recognized process for reducing and managing fire risk in the wildland urban interface. More details on FireSmart construction can be found in Appendix J.

The DNV has implemented a Wildfire Hazard DPA that dictates building materials and FireSmart landscaping requirements for new construction. However, FireSmart principles can be voluntarily implemented by homeowners in numerous ways. It is recommended that homeowners take a building envelope – out approach, that is, starting with the home and working their way out. Addressing little projects first can allow for quick, easy, and cost-effective risk reduction efforts to be completed sooner, while larger, more costly projects can be completed as resources and planning allow. For example, prior to the fire season, clearing roofs and gutters of combustible materials (leaves and needles), clean out any combustible accumulations or stored materials from under decks, moving large potential heat sources such as firewood, spare building materials or vehicles as far from the structure as possible, maintaining a mowed and watered lawn, removing dead vegetation, and pruning trees are actionable steps that residents can start working on immediately. The following link accesses an excellent four-minute video demonstrating the importance of FireSmart building practices during a simulated ember shower: <http://www.youtube.com/watch?v=Vh4cQdH26g>.

The structure protection objectives for the DNV are to:

- Encourage private homeowners to voluntarily adopt FireSmart principles on their properties and to reduce existing barriers to action;
- Enhance protection of critical infrastructure from wildfire (and post-wildfire impacts); and

- Enhance protection of residential/commercial structures from wildfire.

RECOMMENDATION #50: Work with local distributors and homeowners within the District. The objective is to improve education of homeowners and remove some barriers to FireSmart action. Local distributors can include: hardware stores, garden centers, and aggregate providers. Initiatives may include:

- 1) Developing and delivery of FireSmart workshop(s) for local distributors on FireSmart issues and solutions/advice for homeowners. These distributors can be educated upon which supplies are FireSmart and in what configuration they can be used (for example, external sprinkler system equipment, aggregates and ground cover, wire mesh for vents, deck skirting).
- 2) Advocating for a FireSmart branding in the retail stores (could be stickers on shelf pricing or a FireSmart-specific section) to increase public exposure to projects that can be done at a relatively low cost.
- 3) Develop general cost implications of improvements so property owners can prioritize replacements.

RECOMMENDATION #51: Expand on existing programs which serve to remove barriers to action for homeowners by providing methods for them to cheaply and easily dispose of wood waste removed from their property. The current yard trimmings bin collection and North Shore Transfer Station for-free tipping may be expanded to include scheduled community chipping opportunities, or yard waste dumpsters available by month in neighbourhoods. Programs should be available during times of greatest resident activity (likely spring and fall). Consider making community chipping programs available to interested strata properties.

RECOMMENDATION #52: Complete a vulnerability assessment of all critical infrastructure, secondary power sources, and fuel availability. Review current capability of secondary power sources, identify vulnerabilities, and prioritize needs, in the case of prolonged or extensive power outages. Upgrade or realign resources, as prioritized.

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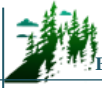
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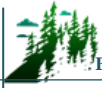
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APPENDIX A – WILDFIRE THREAT ASSESSMENT – FBP FUEL TYPE CHANGE RATIONALE

Provided separately as PDF package.

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APPENDIX B – WILDFIRE THREAT ASSESSMENT WORKSHEETS AND PHOTOS

Provided separately as PDF package.

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APPENDIX C – MAPS

Provided separately as PDF package.

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APPENDIX D – WILDLAND URBAN INTERFACE DEFINED

The traditional and most simple definition for the wildland/urban interface (WUI) is “the place where the forest meets the community”. However, this definition can be misleading. Incorrectly, it implies that neighbourhoods and structures well within the perimeter of a larger community are not at risk from wildfire. As well, it fails to recognize that developments adjacent to grassland and bush are also vulnerable.

A more accurate and helpful definition of the WUI is based on a set of conditions, rather than a geographical location: “the presence of structures in locations in which conditions result in the potential for ignition of structures from the flames, radiant heat or embers of a wildland fire.” This definition was developed by the National Fire Protection Association and is used by the US Firewise program. It recognizes that all types of wildland fuel/fire can lead to structural ignition (i.e. forest, grassland, brush) and also identifies the three potential sources of structural ignition.

Two situations are differentiated. Locations where there is a clean/abrupt transition from urban development to forest lands are usually specified as the “interface” whereas locations where structures are embedded or mingled within a matrix of dense wildland vegetation are known as the “intermix”. An example of interface and intermixed areas is illustrated in Figure 5.

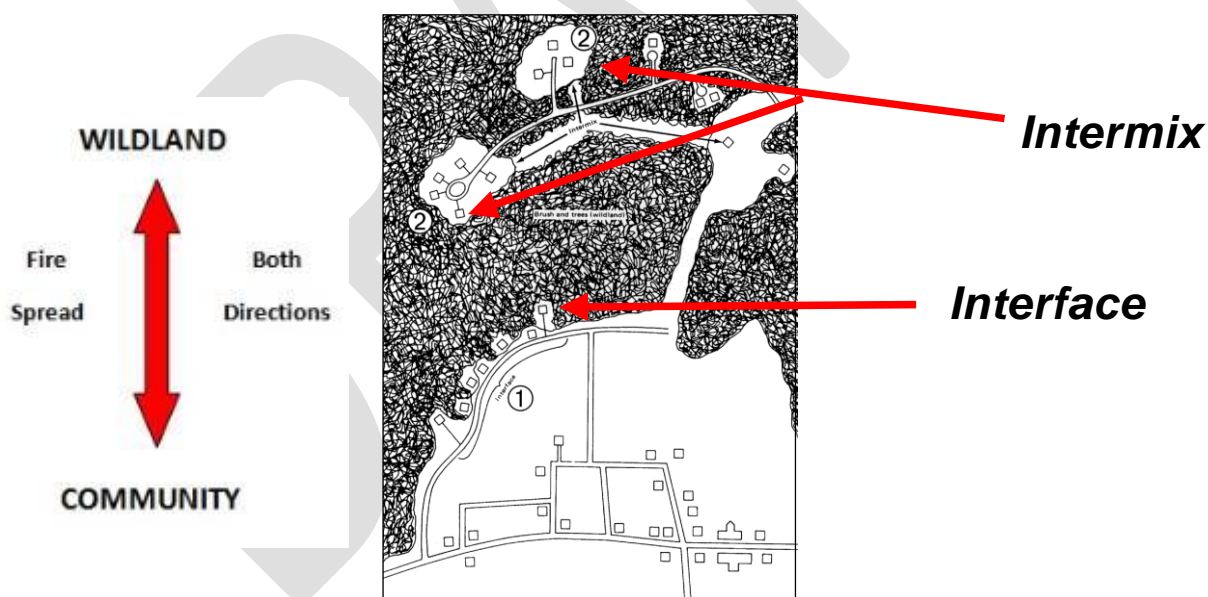


Figure 5. Illustration of intermix and interface situations.

Within the WUI, fire has the ability to spread from the forest into the community or from the community out into the forest. Although these two scenarios are quite different, they are of equal importance when considering interface fire risk. Regardless of which scenario occurs, there will be consequences for the community and this will have an impact on the way in which the community plans and prepares itself for interface fires.



Fires spreading into the WUI from the forest can impact homes in two distinct ways:

1. From sparks or burning embers carried by the wind, or convection that starts new fires beyond the zone of direct ignition (main advancing fire front), that alight on vulnerable construction materials or adjacent flammable landscaping (roofing, siding, decks, cedar hedges, bark mulch, etc.) (Figure 6).
2. From direct flame contact, convective heating, conductive heating or radiant heating along the edge of a burning fire front (burning forest), or through structure-to-structure contact. Fire can ignite a vulnerable structure when the structure is in close proximity (within 10 meters of the flame) to either the forest edge or a burning house (Figure 7).



Figure 6. Firebrand caused ignitions: burning embers are carried ahead of the fire front and alight on vulnerable building surfaces.



Figure 7. Radiant heat and flame contact allows fire to spread from vegetation to structure or from structure to structure.

Current research confirms that the majority of homes ignited during major WUI events trace back to embers as their cause (e.g. 50% – 80+ %). Firebrands can be transported long distances ahead of the wildfire, across any practicable fire guards, and accumulate on horizontal surfaces within the home ignition zone in densities that can reach 600+ /m². Combustible materials found within the home ignition zone combine to provide fire pathways allowing spot fires ignited by embers to spread and carry flames or smoldering fire into contact with structures.

APPENDIX E – WUI THREAT PLOT LOCATIONS

Table 19 displays a summary of all WUI threat plots completed during CWPP field work. The original WUI threat plot forms and photos will be submitted as a separate document. The following ratings are applied to applicable point ranges:

- Wildfire Behaviour Threat Score – Low (0-40); Moderate (41 – 95); High (96 – 149); Extreme (>149); and,
- WUI Threat Score – Low (0 – 13); Moderate (14 – 26); High (27 – 39); Extreme (>39).

Table 19. Summary of WUI Threat Assessment Worksheets.

WUI Plot #	Geographic Location	Wildfire Behaviour Threat Class	WUI Threat Class*
ALBA-1	Upper Delbrook	High	High
BADE-1	Upper Lynn	Moderate	N/A
BADG-1	Deep Cove	Moderate	N/A
BLUE-1	Blueridge	Moderate	N/A
BLUE-2	Blueridge	Moderate	N/A
BLUE-3	Blueridge	Moderate	N/A
BLUE-4	Riverside East	High	High
BRAE-1	Braemar	Moderate	N/A
BRAE-2	Braemar	Moderate	N/A
BRAE-3	Carisbrooke	Moderate	N/A
CART-1	McCartney Woods	High	Extreme
CART-2	McCartney Woods	High	Extreme
CLIF-1	Cliffwood	High	Extreme
DEEP-1	Deep Cove	Moderate	N/A
FROM-1	Upper Lynn	Moderate	N/A



WUI Plot #	Geographic Location	Wildfire Behaviour Threat Class	WUI Threat Class*
FROM-2	Upper Lynn	Moderate	N/A
GROUS-1	Grousewoods	Moderate	N/A
GROUS-2	Grousewoods	High	High
GROUS-3	Grousewoods	High	High
GROUS-4	Grousewoods	High	High
GROUS-5	Grousewoods	Moderate	N/A
HALL-1	Delbrook	High	Extreme
HOGA-1	Riverside East	Moderate	N/A
MALA-1	Cleveland	Moderate	N/A
MARY-1	Carisbrooke	Moderate	N/A
MOSQ-1	Upper Delbrook	Moderate	N/A
MOSQ-2	Delbrook	Moderate	N/A
PARK-1	Parkgate	High	High
PARK-2	Parkgate	Moderate	N/A
RAV-1	Roche Point	Moderate	N/A
RAV-2	Dollarton	Moderate	N/A
SEY-1	Indian River	Moderate	N/A
SEYM-1	Lower Seymour Conservation Area	Moderate	N/A
SEYM-2	Lower Seymour Conservation Area	Moderate	N/A
SEYM-3	Lower Seymour Conservation Area	Moderate	N/A
SEYM-4	Lower Seymour Conservation Area	High	Moderate



WUI Plot #	Geographic Location	Wildfire Behaviour Threat Class	WUI Threat Class*
SKY-1	Upper Delbrook	High	High
SKY-2	Upper Delbrook	High	Extreme
TOWR-1	Upper Delbrook	Moderate	N/A
IND-1	Indian River Rd	Moderate	N/A
ROW-1	Indian River Rd	Moderate	N/A

*Note that WUI threat scores are only collected for untreated polygons that rate high or extreme for Wildfire Behaviour Threat score. Whereas, for treated polygons, WUI threat scores are collected regardless of Wildfire Behaviour Threat score.

DRAFT

APPENDIX F – FUEL TYPING METHODOLOGY AND LIMITATIONS

The initial starting point for fuel typing for the AOI was the 2017 provincial fuel typing layer provided by BCWS as part of the *2017 Provincial Strategic Threat Analysis (PSTA)* data package. This fuel type layer is based on the FBP fuel typing system. PSTA data is limited by the accuracy and availability of information within the Vegetation Resource Inventory (VRI) provincial data; confidence in provincial fuel type data is very low on private land. The PSTA threat class for all private land within the AOI was not available. Fuel types within the AOI have been updated using orthoimagery of the AOI with representative fuel type calls confirmed by field fuel type verification. Polygons not field-verified were assigned fuel types based upon similarities visible in orthophotography to areas field verified. Where polygons were available from the provincial fuel typing layer, they were utilized and updated as necessary for recent harvesting, development, etc.

It should be noted that fuel typing is intended to represent a fire behaviour pattern; a locally observed fuel type may have no exact analog within the FBP system. The FBP system was almost entirely developed for boreal and sub-boreal forest types, which do not occur within the AOI. As a result, the AOI fuel typing is a best approximation of the Canadian Forest Fire Danger Rating System (CFFDRS) classification, based on the fire behaviour potential of the fuel type during periods of high and extreme fire danger within the South Coast region. Additionally, provincial fuel typing depends heavily on Vegetation Resource Inventory (VRI) data, which is gathered and maintained in order to inform timber management objectives, not fire behaviour prediction. For this reason, VRI data often does not include important attributes which impact fuel type and hazard, but which are not integral to timber management objectives. Examples include: surface fuels and understory vegetation.

In some cases, fuel type polygons may not adequately describe the variation in the fuels present within a given polygon due to errors within the PSTA and VRI data, necessitating adjustments required to the PSTA data. In some areas, aerial imagery is not of sufficiently high resolution to make a fuel type call. Where fuel types could not be updated from imagery with a high level of confidence, the original PSTA fuel type polygon and call were retained.

For information on the provincial fuel typing process used for PSTA data as well as aiding in fuel type updates made in this document, please refer to Perrakis et al, 2018.

APPENDIX G – WUI THREAT ASSESSMENT METHODOLOGY

As part of the CWPP process, spatial data submissions are required to meet the defined standards in the Program and Application Guide. As part of the program, proponents completing a CWPP or CWPP update are provided with the Provincial Strategic Threat Analysis (PSTA) dataset. This dataset includes:

- Current Fire Points
- Current Fire Polygons
- Fuel Type
- Historical Fire Points
- Historical Fire Polygons
- Mountain pine beetle polygons (sometimes not included)
- PSTA Head Fire Intensity
- PSTA Historical Fire Density
- PSTA Spotting Impact
- PSTA Threat Rating
- Structure Density
- Structures (sometimes not included)
- Wildland Urban Interface Buffer Area

The required components for the spatial data submission are detailed in the Program and Application Guide Spatial Appendix – these include:

- AOI
- Fire Threat
- Fuel Type
- Photo Location
- Proposed Treatment
- Structures
- Threat Plot
- Wildland Urban Interface

The provided PSTA data does not necessarily transfer directly into the geodatabase for submission, and several PSTA feature classes require extensive updating or correction. In addition, the Fire Threat determined in the PSTA is fundamentally different than the Fire Threat feature class that must be submitted in the spatial data package. The Fire Threat in the PSTA is based on provincial scale inputs - fire density; spotting impact; and head fire intensity, while the spatial submission Fire Threat is based on the components of the Wildland Urban Interface Threat Assessment Worksheet. For the scope of this project, completion of WUI Threat Assessment plots on the entire AOI is not possible, and therefore an analytical

model has been built to assume Fire Threat based on spatially explicit variables that correspond to the WUI Threat Assessment worksheet.

Field Data Collection

The primary goals of field data collection are to confirm or correct the provincial fuel type, complete WUI Threat Assessment Plots, and assess other features of interest to the development of the CWPP. This is accomplished by traversing as much of the AOI as possible (within time, budget and access constraints). Threat Assessment plots are completed on the 2012 version form, and as per the Wildland Urban Interface Threat Assessment Guide.

For clarity, the final threat ratings for the AOI were determined through the completion of the following methodological steps:

1. Update fuel-typing using orthophotography provided by the client and field verification.
2. Update structural data using critical infrastructure information provided by the client, field visits to confirm structure additions or deletions, and orthophotography
3. Complete field work to ground-truth fuel typing and threat ratings (completed 41 WUI threat plots on a variety of fuel types, aspects, and slopes and an additional 174+ field stops with qualitative notes, fuel type verification, and/or photographs)
4. Threat assessment analysis using field data collected and rating results of WUI threat plots – see next section.

Spatial Analysis

Not all attributes on the WUI Threat Assessment form can be determined using a GIS analysis on a landscape/polygon level. To emulate as closely as possible the threat categorization that would be determined using the Threat Assessment form, the variables in Table 20 were used as the basis for building the analytical model. The features chosen are those that are spatially explicit, available from existing and reliable spatial data or field data, and able to be confidently extrapolated to large polygons.

Table 20. Description of variables used in spatial analysis for WUI wildfire threat assessment.

WUI Threat Sheet Attribute	Used in Analysis?	Comment
FUEL SUBCOMPONENT		
Duff depth and Moisture Regime	No	Many of these attributes assumed by using 'fuel type' as a component of the Fire Threat analysis. Most of these components are not easily extrapolated to a landscape or polygon scale, or the data available to estimate over large areas (VRI) is unreliable.
Surface Fuel continuity	No	
Vegetation Fuel Composition	No	
Fine Woody Debris Continuity	No	
Large Woody Debris Continuity	No	
Live and Dead Coniferous Crown Closure	No	
Live and Dead Conifer Crown Base height	No	
Live and Dead suppressed and Understory Conifers	No	
Forest health	No	



WUI Threat Sheet Attribute	Used in Analysis?	Comment
Continuous forest/slash cover within 2 km	No	
WEATHER SUBCOMPONENT		
BEC zone	Yes	
Historical weather fire occurrence	Yes	
TOPOGRAPHY SUBCOMPONENT		
Aspect	Yes	
Slope	Yes	Elevation model was used to determine slope.
Terrain	No	
Landscape/ topographic limitations to wildfire spread	No	
STRUCTURAL SUBCOMPONENT		
Position of structure/ community on slope	No	
Type of development	No	
Position of assessment area relative to values	Yes	Distance to structure is used in analysis; position on slope relative to values at risk is too difficult to analyze spatially.

The field data is used to correct the fuel type polygon attributes provided in the PSTA. The corrected fuel type layer is then used as part of the initial spatial analysis process. The other components are developed using spatial data (BEC zone, fire history zone) or spatial analysis (aspect, slope). A scoring system was developed to categorize resultant polygons as having relatively low, moderate, high or extreme Fire Threat, or Low, Moderate, High or Extreme WUI Threat.

These attributes are combined to produce polygons with a final Fire Behaviour Threat Score. To determine the Wildland Urban Interface Score, only the distance to structures is used. Buffer distances are established as per the WUI Threat Assessment worksheet (<200, 200-500 and >500) for polygons that have a 'high' or 'extreme' Fire Behaviour Threat score. Polygons with structures within 200m are rated as 'extreme', within 500m are rated as 'high', within 2km are 'moderate', and distances over that are rated 'low'.

There are obvious limitations in this method, most notably that not all components of the threat assessment worksheet are scalable to a GIS model, generalizing the Fire Behaviour Threat score. The WUI Threat Score is greatly simplified, as determining the position of structures on a slope, the type of development and the relative position are difficult in an automated GIS process. This method uses the best available information to produce the initial threat assessment across the AOI in a format which is required by the UBCM SWPI program.

Upon completion of the initial spatial threat assessment, individual polygon refinement was completed. In this process, the WUI threat plots completed on the ground were used in the following ways:

- fuel scores were reviewed and applied to the fuel type in which the threat plot was completed;

- conservative fuel scores were then applied to the polygons by fuel type to check the initial assessment;
- high Wildfire Behaviour Threat Class polygons were reviewed in Google Earth to confirm their position on slope relative to values at risk.

In this way, we were able to consider fuel attributes outside the fuel typing layer, as well as assessment area position on slope relative to structures, which are included in the WUI threat plot worksheet.

Limitations

The threat class ratings are based initially upon geographic information systems (GIS) analysis that best represents the WUI wildfire threat assessment worksheet and are updated with ground-truthing WUI threat plots. WUI threat plots were completed in a variety of fuel types, slopes, and aspects in order to be able to confidently refine the GIS analysis. It should be noted that there are subcomponents in the worksheet which are not able to be analyzed using spatial analysis; these are factors that do not exist in the GIS environment.

The threat assessment is based largely on fuel typing, therefore the limitations with fuel typing accuracy (as detailed in Section 4.3.1) impacts the threat assessment, as well.

APPENDIX H – PRINCIPLES OF FUEL MANAGEMENT

Fuel or vegetation management is a key element of the FireSmart approach. Given public concerns, fuel management is often difficult to implement and must be carefully rationalized in an open and transparent process. Vegetation management should be strategically focused on minimizing impact while maximizing value to the community. The decision whether or not to implement vegetation management must be evaluated against other elements of wildfire risk reduction to determine the best avenue for risk reduction. The effectiveness of fuel treatments is dependent on the extent to which hazardous fuels are modified or removed and the treatment area size and location (strategic placement considers the proximity to values at risk, topographic features, existing fuel types, etc.) in addition to other site-specific considerations. The longevity of fuels treatments varies by the methods used and site productivity.

What is Fuel Management?

Fuel management is the planned manipulation and/or reduction of living and dead forest fuels for land management objectives (*e.g.*, hazard reduction). Fuels can be effectively manipulated to reduce fire hazard by mechanical means, such as tree removal or modification, or abiotic means, such as prescribed fire. The goal of fuel management is to lessen potential fire behavior proactively, thereby increasing the probability of successful containment and minimizing adverse impacts to values at risk. More specifically, the goal is to decrease the rate of fire spread, and in turn reduce fire size and intensity, as well as crowning and spotting potential (Alexander, 2003).

Fire Triangle:

Fire is a chemical reaction that requires fuel (carbon), oxygen and heat. These three components make up the fire triangle and if one is not present, a fire will not burn. Fuel is generally available in adequate quantities in the forest. Fuel comes from living or dead plant materials (organic matter). Trees and branches lying on the ground are a major source of fuel in a forest. Such fuel can accumulate gradually as trees in the stand die. Fuel can also build up in large amounts after catastrophic events such as insect infestations. Oxygen is present in the air. As oxygen is used up by fire it is replenished quickly by wind. Heat is needed to start and maintain a fire. Heat can be supplied by nature through lightning or people can be a source through misuse of matches, campfires, trash fires and cigarettes. Once a fire has started, it provides its own heat source as it spreads through a fuel bed capable of supporting it.



Forest Fuels:

The amount of fuel available to burn on any site is a function of biomass production and decomposition. Many of the forest ecosystems within BC have the potential to produce large amounts of vegetation biomass. Variation in the amount of biomass produced is typically a function of site productivity and

climate. The disposition or removal of vegetation biomass is a function of decomposition. Decomposition is regulated by temperature and moisture. In wet maritime coastal climates, the rates of decomposition are relatively high when compared with drier cooler continental climates of the interior. Rates of decomposition can be accelerated naturally by fire and/or anthropogenic means.

A hazardous fuel type can be defined by high surface fuel loadings, high proportions of fine fuels (<1 cm) relative to larger size classes, high fuel continuity between the ground surface and overstory tree canopies, and high stand densities. A fuel complex is defined by any combination of these attributes at the stand level and may include groupings of stands.

Surface Fuels:

Surface fuels consist of forest floor, understory vegetation (grasses, herbs and shrubs, and small trees), and coarse woody debris that are in contact with the forest floor. Forest fuel loading is a function of natural disturbance, tree mortality and/or human related disturbance. Surface fuels typically include all combustible material lying on or immediately above the ground. Often roots and organic soils have the potential to be consumed by fire and are included in the surface fuel category.

Surface fuels that are less than 7 cm in diameter contribute to surface fire spread; these fuels often dry quickly and are ignited more easily than larger diameter fuels. Therefore, this category of fuel is the most important when considering a fuel reduction treatment. Larger surface fuels greater than 7 cm are important in the contribution to sustained burning conditions, but, when compared with smaller size classes, are often not as contiguous and are less flammable because of delayed drying and high moisture content. In some cases, where these larger size classes form a contiguous surface layer, such as following a windthrow event or wildfire, they can contribute an enormous amount of fuel, which will increase fire severity and the potential for fire damage.

Aerial Fuels:

Aerial fuels include all dead and living material that is not in direct contact with the forest floor surface. The fire potential of these fuels is dependent on type, size, moisture content, and overall vertical continuity. Dead branches and bark on trees and snags (dead standing trees) are important aerial fuels. Concentrations of dead branches and foliage increase the aerial fuel bulk density and enable fire to move from tree to tree. The exception is for deciduous trees where the live leaves will not normally carry fire. Numerous species of moss, lichens, and plants hanging on trees are light and easily ignited aerial fuels. All of the fuels above the ground surface and below the upper forest canopy are described as ladder fuels.

Two measures that describe crown fire potential of aerial fuels are the height to live crown and crown closure (Figure 8 and Figure 9). The height to live crown describes fuel continuity between the ground surface and the lower limit of the upper tree canopy. Crown closure describes the inter-tree crown continuity and reflects how easily fire can be propagated from tree to tree. In addition to crown closure, tree density is an important measure of the distribution of aerial fuels and has significant influence on the overall crown and surface fire conditions (Figure 10). Higher stand density is associated with lower inter tree spacing, which increases overall crown continuity. While high density stands may increase the



potential for fire spread in the upper canopy, a combination of high crown closure and high stand density usually results in a reduction in light levels associated with these stand types. Reduced light levels accelerate self-tree pruning, inhibit the growth of lower branches, and decrease the cover and biomass of understory vegetation.

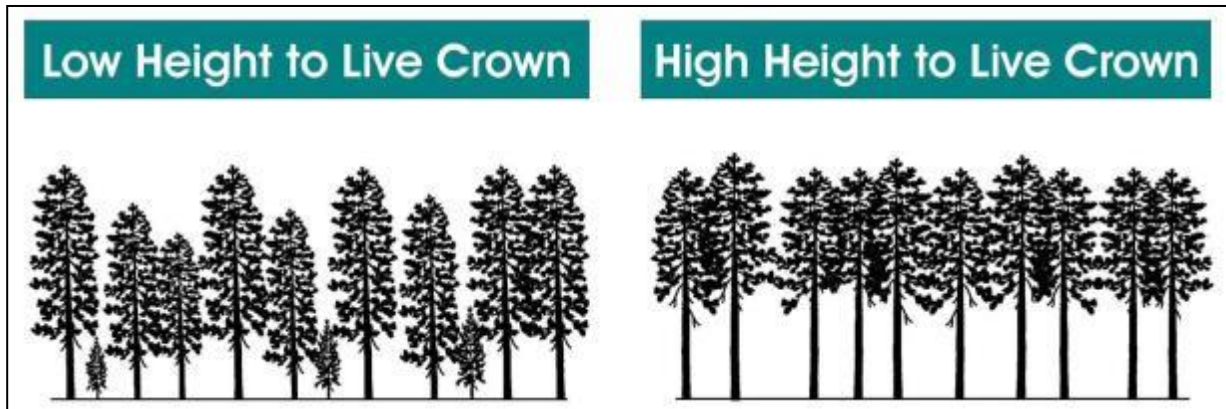


Figure 8. Comparison of stand level differences in height-to-live crown in an interior forest, where low height to live crown is more hazardous than high height to live crown.

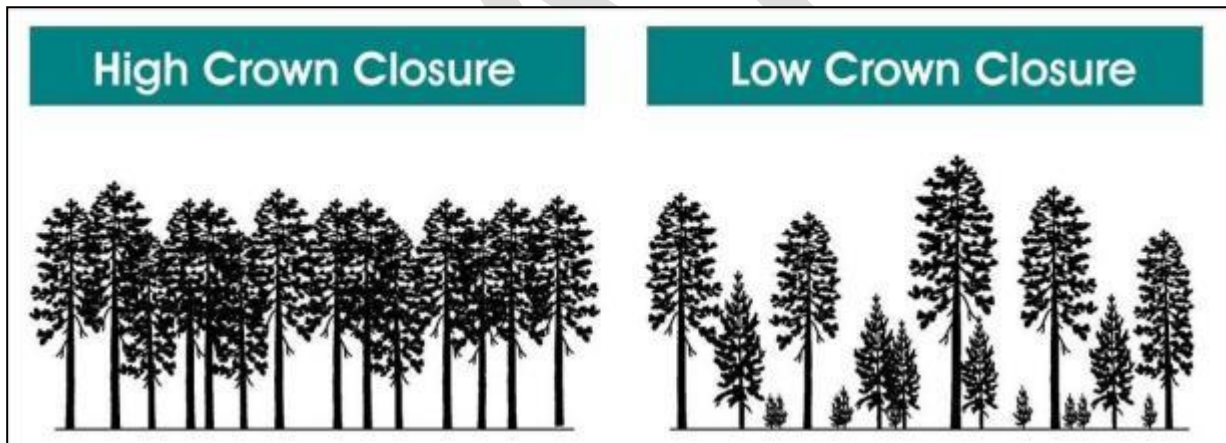


Figure 9. Comparison of stand level differences in crown closure, where high crown closure/continuity contributes to crown fire spread, while low crown closure reduces crown fire potential.

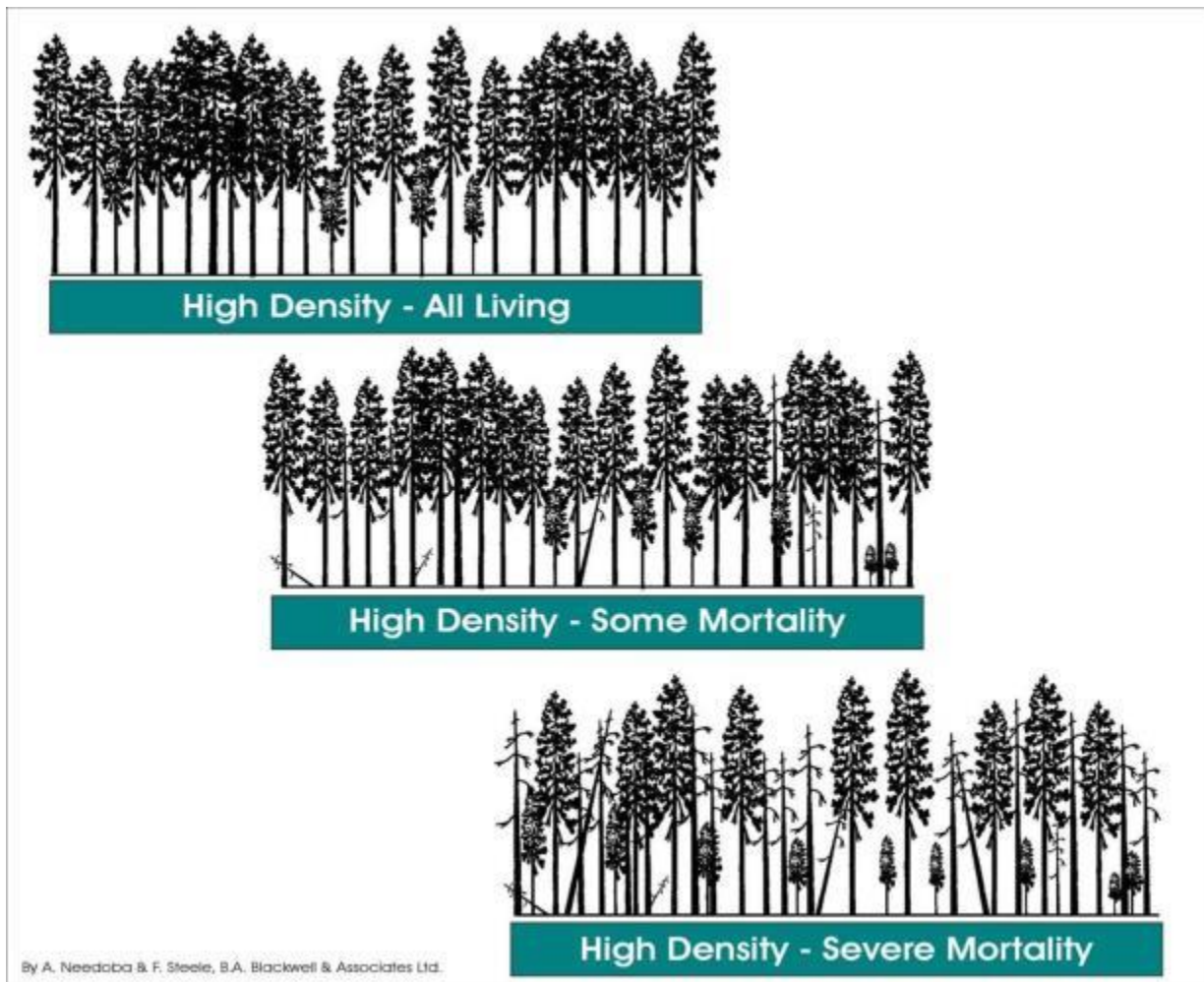


Figure 10. Comparison of stand level differences in density and mortality, and the distribution of live and dead fuels in these types of stands.

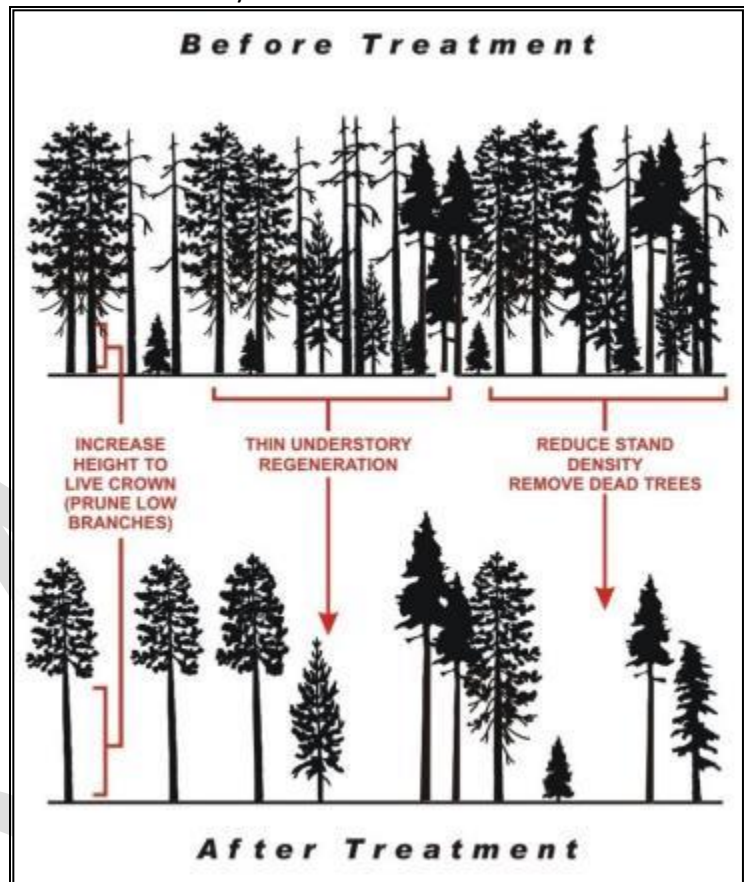
Thinning is a preferred approach to fuel treatment (Figure 11.) and offers several advantages compared to other methods:

- Thinning provides the most control over stand level attributes such as species composition, vertical structure, tree density, and spatial pattern, as well as the retention of snags and coarse woody debris for maintenance of wildlife habitat and biodiversity.
- Unlike prescribed fire treatments, thinning is comparatively low risk, and is less constrained by fire weather windows.
- Thinning may provide marketable materials that can be utilized by the local economy.
- Thinning can be carried out using sensitive methods that limit soil disturbance, minimize damage to leave trees, and provide benefits to other values such as wildlife.

The main wildfire objective of thinning is to shift stands from having a high crown fire potential to having a low surface fire potential. In general, the goals of thinning are to:

- Reduce stem density below a critical threshold to minimize the potential for crown fire spread;
- Prune to increase the height to live crown to reduce the potential of surface fire spreading into tree crowns; and
- Remove slash created by spacing and pruning to minimize surface fuel loadings while still maintaining adequate woody debris to maintain ecosystem function.

Figure 11. Illustration of the principles of thinning to reduce the stand level wildfire hazard.



Fuel type, weather and topography are all primary factors that influence the spread of fires. The three most important components of weather include wind, temperature and humidity. Fuel type and slope are primary concerns related to fire spread along the forested areas on the slopes surrounding the District communities. The steepness of a slope can affect the rate and direction a fire spreads and generally fires move faster uphill than downhill, and fire will move faster on steeper slopes. This is attributed to (MFLNRO, 2014):

- *On the uphill side, the flames are closer to the fuel;*
- *The fuels become drier and ignite more quickly than if on level ground;*
- *Wind currents are normally uphill and this tends to push heat flames into new fuels;*
- *Convected heat rises along the slope causing a draft which further increases the rate of spread; and*
- *Burning embers and chunks of fuel may roll downhill into unburned fuels, increasing spread and starting new fires.*

APPENDIX I – FIRESMART FUEL TREATMENTS

The following information regarding fuel treatments is based on the FireSmart Manual (Partners in Protection 2002).

Priority Zone 1 is a 10 m fuel free zone around structures. This ensures that direct flame contact with the building cannot occur and reduces the potential for radiative or conductive heat to ignite the building. While creating this zone is not always possible, landscaping choices should reflect the use of less flammable vegetation such as deciduous shrubs, herbs and other species with low flammability. Coniferous vegetation such as juniper or cedar shrubs and hedges should be avoided, as these are highly flammable.

Priority Zone 2 extends from 10 to 30 m from the structure. In this zone, trees should be widely spaced 5 to 10 m apart, depending on size and species. Tree crowns should not touch or overlap. Deciduous trees have much lower volatility than coniferous trees, so where possible deciduous trees should be preferred for retention or planting. Trees in this area should be pruned as high as possible (without compromising tree health), especially where long limbs extend towards buildings. This helps to prevent a fire on the ground from moving up into the crown of the tree or spreading to a structure. Any downed wood or other flammable material should also be cleaned up in this zone to reduce fire moving along the ground.

Priority Zone 3 extends from 30 to 100 m from the home. The main threat posed by trees in this zone is spotting, the transmission of fire through embers carried aloft and deposited on the building or adjacent flammable vegetation. To reduce this threat, cleanup of surface fuels as well as pruning and spacing of trees should be completed in this zone (Partners in Protection 2002).



Figure 12.
Illustration
of FireSmart
zones.
(Figure adapted
from FireSmart)

APPENDIX J – FIRESMART CONSTRUCTION AND LANDSCAPING

Two recent studies by Westhaver (2015, 2017) found that certain “fatal flaws”, such as high-flammability landscaping like bulky ornamental junipers and large, easily ignited fuel sources (e.g. motorized vehicles, firewood, construction materials, *etc.*) were sufficiently influential to result in structure ignition of homes otherwise assessed as “Low” hazard by overwhelming the advantages provided by highly fire resistant structures⁸⁰.

In the 2017 Fort McMurray investigations (Westhaver) it was found that the most notable observed attributes of the surviving interface homes were: vegetation and fuels within the HIZ which were compliant with FireSmart practices, HIZs with relatively few combustible objects and ignition sites (examples of ignition sites include: combustible accumulations on roofs, gutters, *etc.*) , and Low to Moderate structural hazard ratings.^{81,82} This investigation, and other similar investigations, indicate that the FireSmart principles can be effective at reducing structure loss, particularly in the urban perimeter where fire initially spreads from the forest to structures. .

The following link accesses an excellent four-minute video demonstrating the importance of FireSmart building practices during a simulated ember shower: <https://www.youtube.com/watch?v=lvbNOPSYyss>.

FireSmart Construction

Roofing Material:

Roofing material is one of the most important characteristics influencing a home’s vulnerability to fire. Roofing materials that can be ignited by burning embers increases the probability of fire related damage to a home during an interface fire event.

In many communities, there is no fire vulnerability standard for roofing material. Homes are often constructed with unrated materials that are considered a major hazard during a large fire event. In addition to the vulnerability of roofing materials, adjacent vegetation may be in contact with roofs, or roof surfaces may be covered with litter fall from adjacent trees. This increases the hazard by increasing the ignitable surfaces and potentially enabling direct flame contact between vegetation and structures.

Soffits and Eaves

Open soffits or eaves provide locations for embers to accumulate, igniting a structure. Soffits and eaves should be closed. Vents which open into insulated attic space are of particular concern, as they provide a clear path for embers to a highly flammable material inside the structure. Any exhaust or intake vents that open into attic spaces should resist ember intrusion with non-combustible wire mesh no larger than 3 mm.

⁸⁰ Westhaver, A. 2017. *Why some homes survived. Learning from the Fort McMurray wildland/urban interface fire disaster*. A report published by the Institute for Catastrophic Loss Reduction – ICLR research paper series – number 56. https://www.iclr.org/images/Westhaver_Fort_McMurray_Final_2017.pdf

⁸¹ Ibid.

⁸² Using the FireSmart hazard assessment system.

Building Exterior - Siding Material:

Building exteriors constructed of vinyl or wood are considered the second highest contributor to structural hazard after roofing material. These materials are vulnerable to direct flame or may ignite when sufficiently heated by nearby burning fuels. The smoke column will transport burning embers, which may lodge against siding materials. Brick, stucco, or heavy timber materials offer much better resistance to fire. While wood may not be the best choice for use in the WUI, other values from economic and environmental perspectives must also be considered. It is significantly less expensive than many other materials, supplies a great deal of employment in BC, and is a renewable resource. New treatments and paints are now available for wood that increase its resistance to fire and they should be considered for use.

Balconies and Decking:

Open balconies and decks increase fire vulnerability through their ability to trap rising heat, by permitting the entry of sparks and embers, and by enabling fire access to these areas. Closing these structures off limits ember access to these areas and reduces fire vulnerability. Horizontal surfaces, such as decks, of flammable materials are vulnerable to ignition from embers. Fire resistant decking/ patio materials will reduce the ignitability of the home.

Combustible Materials:

Combustible materials stored within 10 m of residences are also considered a significant issue. Woodpiles, propane tanks, recreational motorized vehicles, and other flammable materials adjacent to the home provide fuel and ignitable surfaces. Locating these fuels away from structures helps to reduce structural fire hazards and makes it easier and safer for suppression crews to implement suppression activities adjacent to a house or multiple homes.

FireSmart Landscaping

Future landscaping choices should be limited to plant species with low flammability within 10 m of the building. Coniferous vegetation such as Juniper, Cypress, Yew or Cedar hedging or shrubs of any height should not be planted within this 10 m zone as these species are considered highly flammable under extreme fire hazard conditions.

Decorative bark mulch, often used in home landscapes is easily ignitable from wildfire embers or errant cigarettes and can convey fire to the home. Alternatives to bark mulch include gravel, decorative rock, or a combination of wood bark and decorative rock.⁸³

Landscaping Alternatives

The landscaping challenges faced by many homeowners pertain to limited space, privacy and the desire to create visually explicit edge treatments to demarcate property ownership from adjacent lots with evergreen vegetation screens. Ornamental plant characteristics fulfilling these criteria have an upright

⁸³ *Fire Resistant Plants for Home Landscapes: Selecting plants that may reduce your risk from wildfire*. 2006. A Pacific Northwest Extension Publication (PNW 590).

branching habit, compact form, dense foliage, as well as a moderate growth rate. Dwarf and ornamental conifers such as Arborvitae hedging are popular choices, yet conifers such as these which have needle or scale-like foliage are highly flammable and not compliant with FireSmart principles and should be omitted from the 10 m Fire Priority Zone of the planned home footprint.

There are a number of broadleaved deciduous and evergreen plants with low flammability which can be used for landscaping within FireSmart PZ 1 (within 10 m of structures). Landscaping should be selected for the appropriate Canadian Plant Hardiness Zone (see www.planthardiness.gc.ca for the Hardiness Zone specific to the various AOI). The majority of the areas would be within Zone 3b.

Plants that are fire resistant/ have low flammability generally have the following characteristics:

- Foliage with high moisture content (moist and supple),
- Little dead wood and do not tend to accumulate dry and dead foliage or woody materials, and
- Sap that is water-like and without a strong odour.³

It is important to note that even fire resistant plants can burn if not maintained. Grass, shrubs, and herbs must be maintained in a state that reduces fire hazard by maintaining foliar moisture content. This can be accomplished by:

- Choosing plant species that are well-adapted to the site (microclimate and soil conditions of the parcel);
- Incorporating a landscape design where shrubs, herbs, and grasses are planted in discrete units manageable by hand watering;
- Removal of dead and dying foliage; and/or,
- Installing irrigation.

Depending solely on irrigation to maintain landscaping in a low flammability state can be limiting and may actually increase the fire hazard on the parcel, particularly in times of drought and watering restrictions. Lack of irrigation in times of watering restrictions may create a landscape which is unhealthy, unsightly, as well as dead, dry, and highly flammable.

There are a number of resources available to aid in development of FireSmart compliant landscaping curriculum or educational material; links can be found below.

The Canadian and U.S. systems for determining Plant Hardiness Zones differ.

- The USDA bases hardiness zones on minimum winter temperatures only: <http://planthardiness.ars.usda.gov/PHZMWeb/Default.aspx>,
- The Canadian system bases them on seven climatic factors including frost free days, and minimum and maximum temperature: <http://www.planthardiness.gc.ca/>

APPENDIX K – COMMUNICATION AND EDUCATION

Communicating effectively is the key aspect of education. Communication materials must be audience specific and delivered in a format and through a medium that will reach the target audience. Audiences should include home and landowners and occupiers, school students, local businesses, municipal officials and staff, community members, and other community groups. Education and communication messages should be engaging, empowering, simple yet comprehensive. A basic level of background information is required to enable a solid understanding of fire risk issues and the level of complexity and detail of the message should be specific to the target audience.

Websites and social media are some of the most cost-effective methods of communication available. Pew Research Center recently found that approximately 60% of Americans get their news from social media; 44% get their news from Facebook.⁸⁴ Twitter, LinkedIn, and Instagram are other social media platforms which can be used to provide real-time information to a large audience and are used, albeit to a lesser extent, by users as their primary news source.⁸⁵

The challenge of all social media is to ensure that your message reaches the intended audience, accomplished by having users ‘like’ the page, engage with the posts, or re-share information to an even larger audience. There are communication experts who specialize in social media who can evaluate an organization’s goals and offer tips to increase engagement and create compelling content to communicate the message. Likewise, it is important to be aware of the demographic of the community; a younger, more digitally connected community is more likely to use social media to get updates on ‘newsworthy items.’⁸⁶

⁸⁴ Pew Research Center Journalism and Media. Social media news use: Facebook leads the pack. May 25, 2016. Accessed December 17, 2017 from http://www.journalism.org/2016/05/26/news-use-across-social-media-platforms-2016/pj_2016-05-26_social-media-and-news_0-03/.

⁸⁵ Although the research cited in this document is of American social media users, it can be cautiously assumed that, while data and numbers are not likely exact to the Canadian demographic, similar trends in Canada likely occur.

⁸⁶ The Pew Research Center finds that 69% of Facebook users are 49 and younger. Only 8% of Facebook users are older than 65.

APPENDIX L – SUMMARY OF 2007 COMMUNITY WILDFIRE PROTECTION PLAN RECOMMENDATIONS

Communication and Education

Recommendation 1: The North Vancouver english and non-english news media (e.g., North Shore News, North Shore Outlook, Farhang etc.) should be engaged on this issue with the intention of furthering public education and communication. Further interest can be cultivated and encouraged to improve the transfer of information to the public by more frequent media contact.

Recommendation 2: The District should work with local developers to construct a FireSmart show home or public building to be used as a tool to educate and communicate the principles of FireSmart to the public. The demonstration home would be built to FireSmart standards using recommended materials for interface communities. Additionally, vegetation adjacent to the home would be managed to guidelines outlined in the FireSmart program.

Recommendation 3: DNVFRS and the DNV should enhance their existing website to provide more detailed information on community fire risks and proactive steps individual homeowners can take to make their homes safer. During the fire season, fire danger and links to wildfire information should be prominently displayed. Educational initiatives such as FireSmart demonstration/pilot projects should be added to the DNVFRS site.

Recommendation 4: Solar powered signage consisting of current fire danger and warnings to be careful with fire should be posted at all major entrances to the community (exits from Highway 1) and at high use park entrances. Signs should be updated with current fire danger information as required.

Recommendation 5: District of North Vancouver Fire and Rescue Services should work with the Regional Chamber of Commerce to educate the local business community, particularly businesses that depend on forest use (i.e., tourism and recreation), on FireSmart preparation and planning. Public education programs should be enhanced by: 1) integrating a unit of “FireSmart” and wildfire safety into the local elementary school curriculum promoting the principles of community wildfire protection at a young age in order to improve awareness over time. This unit could be part of a general emergency preparedness teaching program; 2) creating a “FireSmart” sticker program where Fire Department personnel and community volunteers attend residences and certify them as meeting “FireSmart” guidelines.

Recommendation 6: The District should investigate working with other lower mainland municipalities and the MOFR to develop a regional approach to enhancing education and communication related to this issue.

Recommendation 7: The District should consider applying for UBCM funding to carry out a fuel treatment pilot project that will strategically mitigate fuel hazard within the treatment area. This pilot project will provide a tool to demonstrate the principles of fuel hazard reduction treatments to the public and

contribute to fire risk reduction within the District. The recommended location of this fuel treatment pilot is in one or more of the polygons shown in Figure 16. A detailed prescription signed by a Qualified Professional is required for each of the areas.

Structure Protection

Recommendation 8: It is recommended that the District conduct detailed FireSmart assessments in identified high risk areas of the community to further communicate and promote fire risk reduction on private property. The WRMS developed for the District provides a sound scientific framework on which to complete more detailed local neighbourhood risk assessments.

Recommendation 9: The District should investigate the policy tools available for reducing wildfire risk within the municipality. These include voluntary fire risk reduction for landowners, bylaws for building materials and subdivision establishment, covenants for vegetation set-backs, incentives such as exclusion from a fire protection tax, education and establishment of Wildfire Development Permit Areas.

Recommendation 10: Specifically, the District should begin a process to review and revise existing bylaws including the Fire bylaw and building codes to be consistent with the development of a FireSmart Community. In areas of identified high wildfire risk, consideration should be given to the creation of Wildfire Development Permit Areas and a Wildfire section within the Fire bylaw that mandates fire resistant building materials, sprinkler protection, providing for good access for emergency response, and specifies fuel management on both public and private property.

Recommendation 11: If Wildfire Development Permit Areas are established, the District should require roofing materials that are fire retardant with a Class A and Class B rating within new subdivisions in the Wildfire Development Permit Areas. While it is recognized that wholesale changes to existing roofing materials within the District are not practical, a long-term replacement standard that is phased in over the roof rotation period would significantly reduce the vulnerability of the community. The District should obtain legal advice regarding the implementation of building requirements that are more restrictive than the BC Building Code. While restrictions to rated roofing are not supported in the Code at this time, there are several communities who have or are undergoing various processes (e.g., lobbying, legal opinion, declaration of hazard by Fire Chief) to enact roofing bylaws within their Wildfire Development Permit Areas.

Recommendation 12: The District should consider working with the Building Policy Branch to create a structure that would enable the District to better address wildland urban interface protection considerations for buildings.

Recommendation 13: The District should investigate developing a landscaping standard for vegetation within Wildfire Development Permit Areas. If enforcement resources permit, this standard should be applied to all new properties within the proposed Wildfire Development Permit Areas and be implemented on existing properties when building permits are requested for renovations/retrofits. If

enforcement is not possible, then education and incentives for homeowners to plan FireSmart landscaping should be considered.

Recommendation 14: Many homes and businesses are built immediately adjacent to the forest edge. In these neighbourhoods, coniferous trees and vegetation are often in direct contact with homes. The District should incorporate building set backs into a policy or bylaw with a minimum distance of 10 m when buildings border the forest interface.

Recommendation 15: Where applicable, the District should work closely with the Province and GVRD to identify, document and address hazardous fuel types on crown land within and adjacent to District boundaries and residential neighbourhoods. Effort must be directed at encouraging the Province and the GVRD to initiate a fuel treatment program for these lands and this may include coordinating lobbying initiatives with other local governments from within the Lower Mainland.

Recommendation 16: The District Tree Bylaw should be reviewed to ensure that it does not limit the ability of homeowners to address genuine wildfire hazards, as determined by the Fire Chief, associated with trees on private property immediately adjacent to homes.

Emergency Response

Recommendation 17: The District must work towards improving access in identified areas of the community that are considered isolated and that have inadequately developed access for evacuation and fire control (for example, by opening dead end roads [bollards] and connecting roads).

Recommendation 18: A District evacuation plan should be developed and appropriate evacuation routes should be mapped, considering Disaster Response Routes (DRR). Major evacuation routes should be signed and communicated to the public. The plan should identify loop roads and ensure access has sufficient width for two way traffic. In addition, alternative emergency responder access should be considered. For example, the Fromme Mountain gravel road, the firelanes in Woodlands and BC Hydro right-of-way access. Fuel treatments such as overstory thinning along these access routes should be considered in order to create fuel breaks and improve firefighter safety.

Recommendation 19: New subdivisions should be developed with access points that are suitable for evacuation and the movement of emergency response equipment. The number of access points and their capacity should be determined during subdivision design and be based on threshold densities of houses and vehicles within the subdivisions.

Recommendation 20: Where forested lands abut new subdivisions, consideration should be given to requiring roadways to be placed adjacent to those lands. If forested lands surround the subdivision, ring roads should be part of the subdivisions design. These roads both improve access to the interface for emergency vehicles and provide a fuel break between the wildland and the subdivision.

Recommendation 21: Given the values at risk identified in this plan, it is recommended that, during periods of high and extreme fire danger (danger class IV and V), the District work with adjacent

municipalities and the Ministry of Forests and Range to maintain a local helicopter with a bucket on standby within 15 minutes of the community. Depending on specific circumstances, coordination with the GVRD may be necessary.

Recommendation 22: Residences and businesses on steep slopes are vulnerable to increased fire behaviour potential and should be the immediate focus of initial attack if there is a fire start within these areas. Flame length and rate of spread will increase on these slopes, resulting in suppression difficulty and increased safety issues for both wildland and structural fire fighters. More detailed assessment work is required to identify these areas.

Recommendation 23: During a large wildfire it is probable that lower elevations (location of fire rescue service, potential reception centres, the EOC and the Lion's Gate hospital) could be severely impacted by smoke. It is recommended that contingency plans be developed in the event that smoke causes evacuation of critical emergency facilities in North Vancouver. The District should co-operate with Provincial and Regional governments to develop an alternate incident command location and mobile facility in the event that the District is evacuated. A mobile command centre could also be used by emergency services for other major incidents/disasters. Individual smoke management systems for key buildings (e.g., fire halls, hospitals, District Hall, etc.) may be required.

Recommendation 24: The District should consider purchasing two additional interface fire trucks, community sprinkler protection kits, large volume fire hose, portable pumps and firefighter personal protection (PPE) to adequately resource the interface area. During periods of high fire risk, trucks should be stationed within the Grousewoods, Lynn Valley and Seymour areas.

Recommendation 25: The District should consider conducting a review of critical water infrastructure to determine whether water flow and pressure will be adequate in an interface fire emergency. The review should consider water supply, water delivery volumes/pressure, pumping capacity and vulnerability of reservoirs; particularly in the upper portions of the District.

Training

Recommendation 26: The current level of training is considered adequate, but given the risk of fire to the community, the District of North Vancouver Fire and Rescue Services and Development Services should adopt an advanced program that fosters continuous improvement and skill renewal, establish a fast attack team during periods of extreme fire danger and conduct training and scenario-based training exercises with other responding agencies.

Vegetation (Fuel) Management

Recommendation 27: The District should investigate the potential for fuel management programs. In some areas it may be necessary to work closely with the GVRD and the Province. Any treatments that take place on sloped sites must be prescribed with consideration given to slope stability. Where slope stability may be an issue, a Professional Geotechnical Engineer should review the treatment prescription.

Recommendation 28: A number of high hazard areas immediately adjacent to or embedded in the community have been identified as part of the wildfire risk assessment. The hazardous fuel types that are within the District boundary and that are outside the hatched 'Assessment Areas Only' should be the focus of a progressive thinning program implemented over the next 5 to 10 years. The areas with 'Assessment Areas Only' should be evaluated in detail to determine whether a thinning treatment would provide any benefit. The use of a fire growth model such as FARSITE or Prometheus could provide an indication of the efficacy of fuel treatments on the landscape.

Recommendation 29: A qualified professional (Registered Professional Forester), with a sound understanding of fire behaviour and fire suppression, should develop fuelbreak plans and fuel treatment prescriptions.

Recommendation 30: Prioritize the development of a fuel break network that builds on existing breaks such as the BC Transmission Corridors running through the District. Investigate the feasibility of using this network as staging areas for suppression crews and for developing open area nodes at strategic locations to enhance usability (e.g., heli pads, gravel access roads).

Recommendation 31: The District should work with British Columbia Transmission Corporation (BCTC) to ensure that transmission infrastructure can be maintained and managed during a wildfire event. Maintaining the transmission corridor to a fuel break standard will provide the community with a more reliable power supply that is less likely to fail during a fire event and will reduce the probability of fire spreading into the community. In addition, the District should work with BCTC to schedule slashing and clean-up of debris resulting from vegetation management on transmission rights-of-way and identified high risk areas.

Recommendation 32: The District should consider developing a comprehensive forest health strategy to address long-term forest health issues associated with the legacy of dwarf mistletoe infected western hemlock left by historic logging at the turn of the century.

Recommendation 33: The existing arboriculture program should be expanded to include a combined approach that addresses both public safety (hazard trees) and wildfire risk (hazardous fuels issues).

Recommendation 34: The District should consider thinning and surface fuel reduction to a FireSmart standard 3-5 metres on either side of high-use trails as identified by the District. Where appropriate consider improving access for small emergency vehicles by increasing surface trail widths to 3.4 metres.

Recommendation 35: The District should undertake a comprehensive Sensitive Ecosystem Inventory that addresses both flora and fauna issues. This will ensure the standard of fuel management and other development planning activities meet or exceed current legislated environmental standards.

Wildfire Rehabilitation Planning

Recommendation 36: The District should develop a plan for post fire rehabilitation that considers the procurement of seed, seedlings and materials required to regenerate an extensive burn area (1,000-5,000

ha). The opportunity to conduct meaningful rehabilitation post fire will be limited to a short fall season (September to November). The focus of initial rehabilitation efforts should be on slope stabilization, environmental impacts and infrastructure protection. These issues should form the foundation of an action plan that lays out the necessary steps to stabilize and rehabilitate the burn area and that considers potential environmental impacts of fire.

Recommendation 37: The District should investigate the potential of partnering with residents to promote treatment of public lands adjacent to private property. Private land owners could be encouraged to not only clean their own yards of debris and brush but also be responsible for the removal of debris and brush from public lands immediately adjacent to them to a depth of 20 meters. Removal of material would be coordinated with the spring yard waste pickup program.

Recommendation 38: The District should access funding options and incentives to encourage compliance with changes to roofing and building materials, assist property owners with fuel mitigation. A minimal increase in property taxes could facilitate treatments on public lands.

Local Government Program Services

...programs to address provincial-local government shared priorities



**FIRST NATIONS'
Emergency Services**
BRITISH COLUMBIA



**The Strategic Wildfire
Prevention Initiative
is managed by the
Provincial Fuel
Management Working
Group. For program
information, visit the
Funding Program
section at:**

www.ubcm.ca

LGPS Secretariat

Local Government House
525 Government Street
Victoria, BC, V8V 0A8

E-mail: lgps@ubcm.ca
Phone: (250) 356-2947
Fax: (250) 356-5119

June 1, 2017

Fiona Dercole, Section Manager – Public Safety
District of North Vancouver
355 West Queens Road
North Vancouver, BC, V7N 4N5

**RE: Strategic Wildfire Prevention Initiative – Approval in Principle –
(SWPI-778: DNV CWPP Update, 2017)**

Dear Ms. Dercole,

Thank you for submitting an application for a Community Wildfire Protection Plan Update grant for the above noted project. The SWPI Working Group has reviewed your submission and has noted that the following application requirement remains outstanding:

- A current Council Resolution, indicating support for the proposed project and a willingness to provide overall grant management.

Upon receipt of the outstanding item, your application will be eligible for approval in the amount of \$21,821.20.

If you have any questions, please feel free to contact Local Government Program Services at (250) 356-2947 or swpi@ubcm.ca.

Sincerely,

Peter Ronald
Programs Officer

cc: Tony Botica, Fuel Management Specialist, Coastal Fire Centre

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DISTRICT OF NORTH VANCOUVER COMMUNITY WILDFIRE PROTECTION PLAN UPDATE

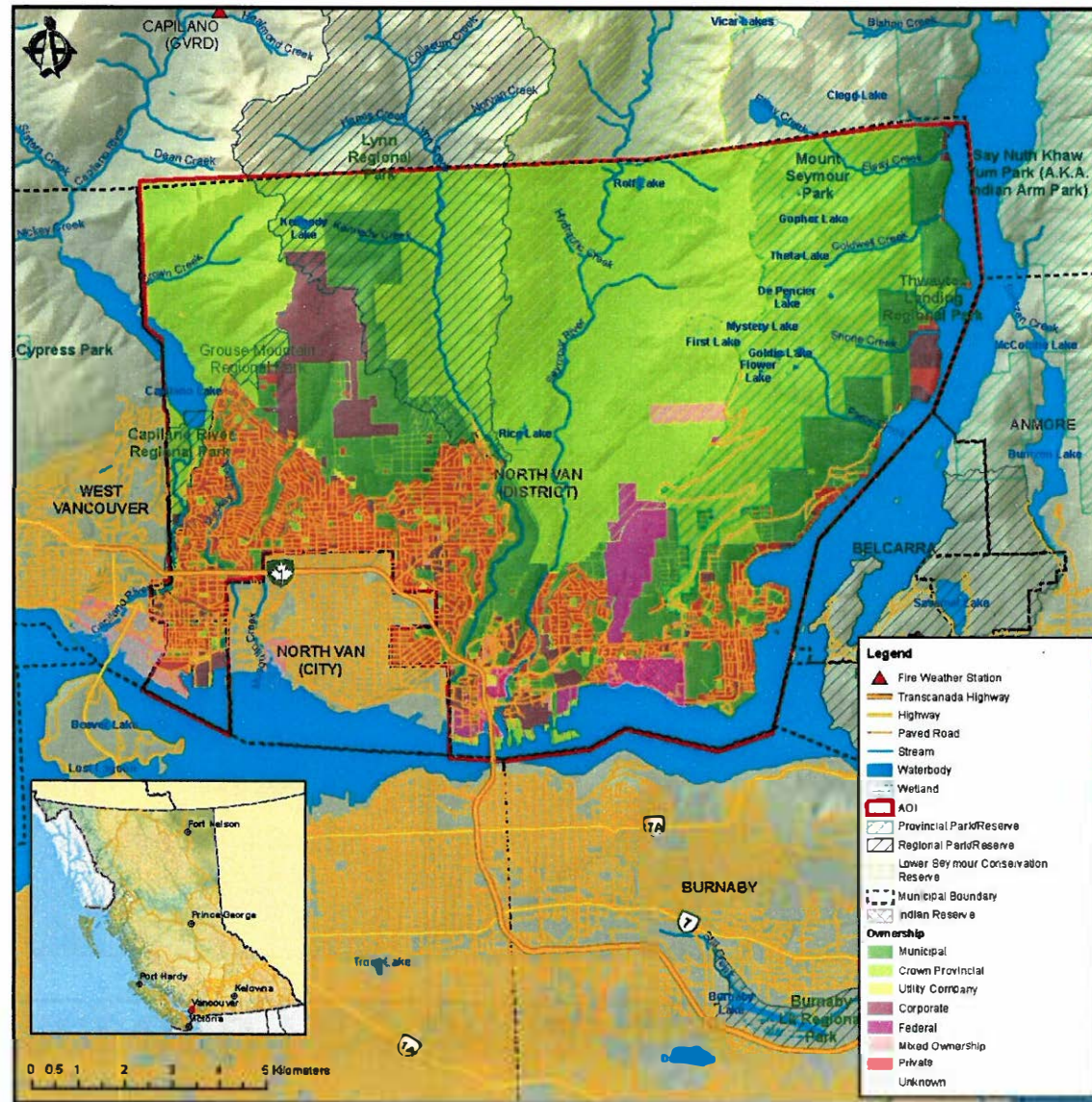


October 7, 2019

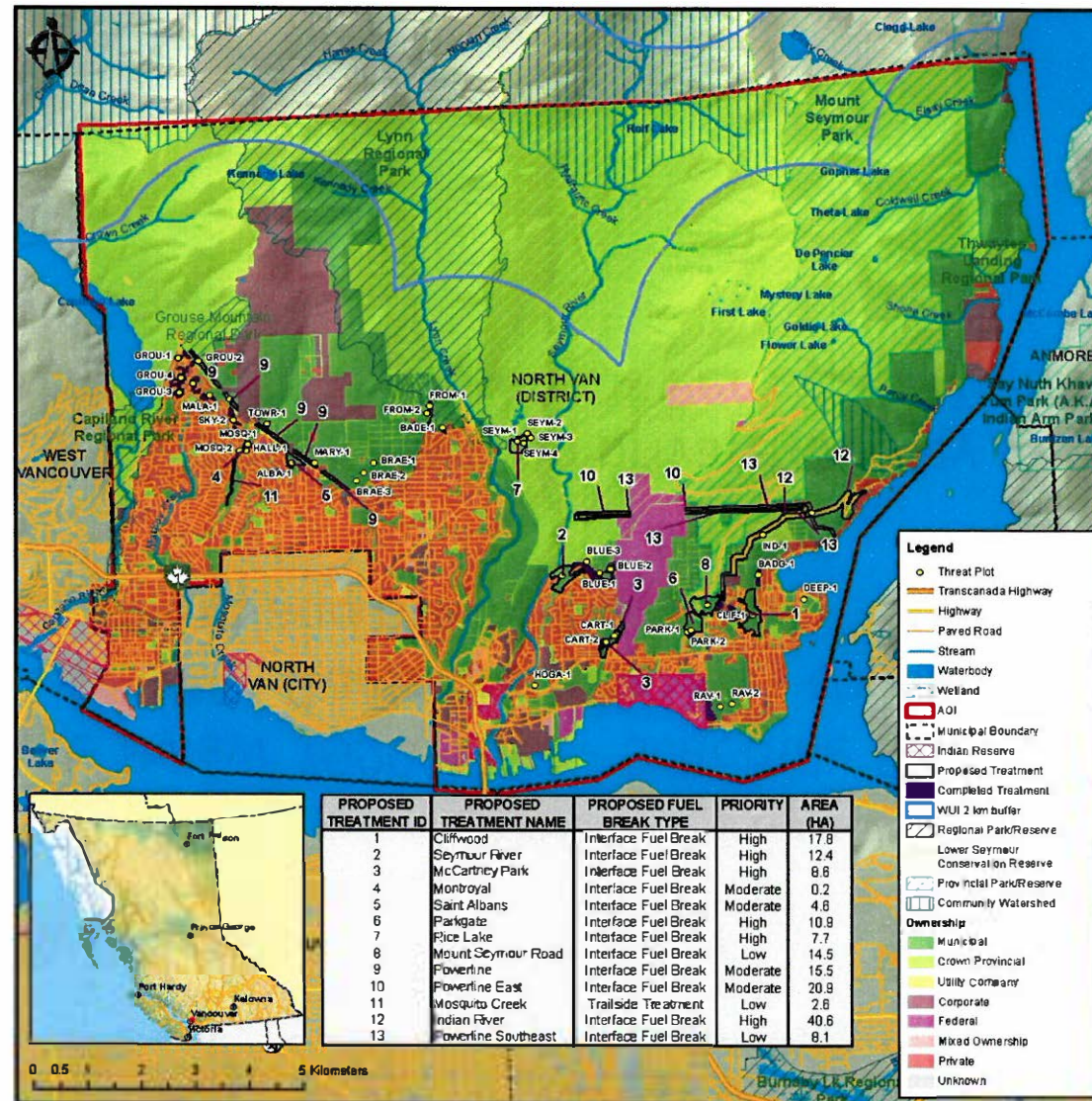
Presented by: Bruce Blackwell (RPF, RPBio)
Presented to: District of North Vancouver Council



Area of Interest



Proposed Priority Treatment Areas (~165 ha)



Summary of Key Recommendations & Objectives

- **Fuel Management**
 - Effectively reduce fuel loading in the interface through prescription development and fuel management
 - Maintain landscape-level fire breaks through collaboration with BC Hydro



Summary of Key Recommendations & Objectives

- **Communication & Education**

- Promote FireSmart approaches to high risk neighborhoods
- Develop trailhead signage to improve wildfire prevention practices
- Use the planned Maplewood Fire and Rescue Centre to demonstrate the use of fire resistant building materials and FireSmart landscaping



Retrieved from: <https://www.dnv.org/programs-services/maplewood-fire-and-rescue-centre>



Summary of Key Recommendations & Objectives

- **Wildfire Preparedness**
 - Maintain DNVFRS capacity for wildland fire suppression



Retrieved online from:
<https://www.dnv.org/programs-and-services/fire-and-rescue-services>





Photo by: B.A. Blackwell & Associates

Thank you!
Questions?

District of North Vancouver – Community Wildfire Protection Plan Update**Additional Notes:****Slide 4:**

As part of this CWPP, one objective is to provide the District with an accurate fire threat assessment within the area of interest. The threat assessment is completed according to mandated methodology developed by the British Columbia Wildfire Service (BCWS) and the Strategic Wildfire Prevention Initiative (SWPI).

This map shows fire behaviour potential threat class (red is extreme, orange is high, green is low and grey is private). The breakdown of the classes within the AOI is as follows: 2% extreme threat class rating, 6% high, 53% moderate, and 13% low wildfire behaviour threat class. The remaining 26% of the AOI is classified as private or very low fire threat.

All developed areas within the community are assessed as having no threat. However, this does not imply that ignitions from spotting or structural fires are not possible or likely. SWPI does not fund assessment of fire threat on private land and, as such, emphasis in these areas will be heavily reliant on the practice of FireSmart principles. Communication, education and policy tools are critical in these areas.

Slide 5:

41 wildland urban interface threat assessment plots were completed over 6 field days. From these field visits, 13 polygons were identified for potential treatment. Only land that is Crown or municipally owned was identified for treatment due to eligibility limits for provincial funding at the time of the CWPP development. The treatment areas are identified and prioritized based upon proximity to values at risk (residences, critical infrastructure, businesses, etc.), hazardous fuels, position of proposed treatment area in relation to values and dominant fire season wind direction, operational feasibility, and other variables.

An estimated 165 hectares (ha) of gross potential treatment areas were identified within the District, 98 ha of which are high priority. The next phase is detailed site assessment to identify values and constraints, outline exact treatment area boundaries (i.e., net down of gross area, based on fuel and stand type and operational constraints), and treatment specifications.

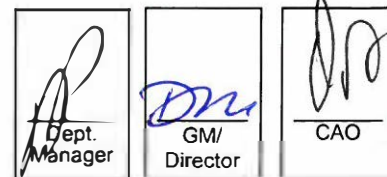
Slide 6:**Policies and Bylaws****Update Bylaw 7900 – OCP Schedule B:**

- Include language regarding management of non-compliant hedging and other vegetation
- Identify a list of approved building materials and establish an approval procedure that uses an expert in the field
- Set a procedure for establishing and updating fire testing standards to enable timely adoption of novel exterior building materials

Slide 11:**Maintain DNVFRS capacity for wildland fire suppression:**

- Continue working with BCWS to maintain an annual structural and interface training program.
- Consider expanding wildland-specific training sessions for DNVFRS members
- Ensure all DNVFRS members continue to have SPP-WFF 1 certification at a minimum

AGENDA INFORMATION	
<input checked="" type="checkbox"/> Regular Meeting	Date: <u>October 7, 2019</u>
<input type="checkbox"/> Other:	Date: _____



The District of North Vancouver REPORT TO COUNCIL

September 27, 2019
File: 13.6480.30/003.000.000

AUTHOR: Nicole Foth, Community Planner

SUBJECT: Introduction of Bylaw Amendments for a Revised Coach House Program

RECOMMENDATION

THAT "District of North Vancouver Official Community Plan Bylaw 7900, 2011, Amendment Bylaw 8359, 2019 (Amendment 37)" is given FIRST Reading;

AND THAT "District of North Vancouver Rezoning Bylaw 1382 (Bylaw 8360)" is given FIRST Reading;

AND THAT "Fees & Charges Bylaw 6481, 1992 Amendment Bylaw 8362, 2019 (Amendment 61)" is given FIRST, SECOND and THIRD Reading;

AND THAT "Bylaw Notice Enforcement Bylaw 7458, 2004 Amendment Bylaw 8361, 2019 (Amendment 41)" is given FIRST, SECOND and THIRD Reading;

AND THAT in accordance with Section 477 of the *Local Government Act*, Council has considered Bylaw 8359 in conjunction with its Financial Plan and applicable Waste Management Plans;

AND THAT, in relation to Bylaw 8397, additional consultation pursuant to Section 475 and Section 476 of the *Local Government Act*, is not required beyond that already undertaken;

AND THAT the revised Non-Statutory Public Consultation Policy for Development Applications as attached to the September 27, 2019 report of the Community Planner entitled Introduction of Bylaw Amendments for a Revised Coach House Program is approved subject to bylaw adoption;

AND THAT Bylaw 8359 and Bylaw 8360 are referred to a Public Hearing.

REASON FOR REPORT

At the July 9th, 2018, Regular Meeting of Council, Council directed staff to proceed with public engagement on a revised approach to coach houses in the District. Council further

directed that, following public engagement, staff bring bylaw amendments regarding coach houses to Council for introduction and First Reading.

This report introduces a revised Coach House Program and amending bylaws for Council's consideration. The revised program proposes a simplified coach house applications and approvals process. Implementation of the program would require amendments to 4 bylaws:

- Official Community Plan Bylaw 7900 (Amending Bylaw 8359);
- Zoning Bylaw 3210 (Amending Bylaw 8360);
- Fees and Charges Bylaw 6481 (Amending Bylaw 8362); and
- Bylaw Notice Enforcement Bylaw 7458 (Amending Bylaw 8361).

SUMMARY

The revised Coach House Program proposes the following key elements:

1. A simplified approval process for lots with open lane access and a minimum width of 15m (49.2 ft.) that entails:
 - A building permit only for one-storey coach houses; and
 - A Development Permit (DP), with authority delegated to staff, for two-storey coach houses;
 - The continued use of the Development Variance Permit (DVP) process so that Council may consider other lots for coach houses on a case-by-case basis.
2. The introduction of a new Accessory Coach House Form and Character Development Permit Area in the Official Community Plan (OCP) to promote neighbourly design of two-storey coach houses; and
3. The introduction of Zoning Bylaw definitions, conditions of use, and related regulations for the location and size of coach houses, as well as to allow for reasonable incentives for energy efficient construction.

BACKGROUND

To date, Council has approved 17 coach houses through the Development Variance Permit process. This is an average of approximately four per year since Council endorsed the gradual entry coach house program in November 2014. Coach houses are market rental units that form a part of the District's Housing Continuum (**Attachment 1**). Coach houses may suit diverse demographics and potentially meet the housing demands of various ages, incomes, and housing preferences. This may include seniors looking to downsize, inter-generational and extended families, or young couples looking for ground-oriented homes.

At the July 9th, 2018, Regular Meeting of Council, Council directed staff to engage the public on the proposed approach to simplifying the coach house application and approvals process, and then to bring bylaw amendments for Council's consideration.

EXISTING POLICY

Official Community Plan

The District's Official Community Plan contains the following objectives:

- increase housing choices across the full continuum of housing needs;
- provide more options to suit different residents' ages, needs and incomes; and
- provide more alternatives to home ownership (i.e. rental).

The OCP also identifies the opportunity for a greater diversity of housing choices in existing residential neighbourhoods through sensitive residential infill such as coach houses. The *Detached Residential* OCP land use designation includes provision for secondary rental units such as coach houses or secondary suites.

Coach House Program

The District currently regulates coach house development through the issuance of Development Variance Permits (DVP) that vary the location of a secondary suite. The *Coach House How-To Guide*, available on DNV.org, contains development guidelines and outlines the application and approval process. Final approval of a DVP rests with Council.

The DVP approach was selected as it would provide Council with the opportunity to review all applications for coach houses, a new housing option in the municipality. This approach has facilitated the intended oversight and gradual entry of coach houses in the District, although at a lower rate than the rate of 5 to 25 applications per year that was initially anticipated.

PUBLIC INPUT

In fall 2018, staff held engagement events for the public, and local builders and designers, to seek input on the proposed simplified approach to the coach house program. Approximately 135 people attended three pop-up events that were held across the District (Seymour, Lynn Valley, and Edgemont) in October 2018. There were 142 online survey respondents. See **Attachment 2** for a complete summary of the public engagement process.

Overall, the majority of survey respondents indicated:

- Support for the simplified application process (i.e. the ability to apply directly for a building permit for a one-storey coach house on a lot with open lane access and a width of 15m);
- Support for a Coach House Development Permit to allow for second storey design review;
- Support for adjacent neighbour notification and input; and
- Support for enabling coach house development through:
 - additional floor space for energy efficient construction;
 - additional floor space on lots where coach houses are built;
 - allowing full basements that could be used for living space; and
 - reducing parking requirements from 3 to 2 spaces where the lot is close to the Frequent Transit Network (FTN).

Many respondents also indicated that:

- Coach houses should also be allowed on lots without open lane access through the simplified approach (i.e. apply directly for building permit);
- Neighbour input on a coach house application should be limited; and
- Other forms of housing should be considered in single-family neighbourhoods such as a house with both a suite and a coach house, duplexes, triplexes, and fourplexes.

At the builders' and designers' stakeholder meeting, participants supported a broader coach house program that would expand lot eligibility, and reduce requirements.

ANALYSIS

Current Program

The current, gradual entry coach house program is generally structured as follows:

- All coach house applications require a Development Variance Permit;
- A coach house is eligible on a single family lot that:
 - has a minimum width of 15m (50 ft.) and either has an open lane or is a corner lot; or
 - is greater than 929m² (10,000 sq. ft.) in size (does not require an open lane).

Proposed Approach

The aim of the revised Coach House Program is to increase the uptake of coach houses while continuing to effectively integrate new coach house development with the surrounding neighbourhood. The revised program also seeks to expand the diversity of housing options and the number of rental units in the District, as envisioned in the OCP.

Based on a review of coach house applications submitted since 2014, the following observations can be made:

- One-storey coach houses, and lots with open lane access, generally tended to be more supportable from neighbours' perspectives; and
- Council expressed support for two-storey coach houses, but also expressed some concern about privacy and overlook.

To respond to these concerns, and to reflect public feedback, the revised Coach House Program proposes to:

- Allow one-storey coach houses on lots with an open lane and a minimum width of 15 m (49.2 ft.) to be considered through building permit only;
- Require two-storey coach houses on lots with an open lane and a minimum width of 15 m (49.2 ft.) to go through a new Development Permit (staff-delegated) process that incorporates:
 - a guideline-based design review on second storey aspects such as massing location and window orientation; and
 - notification to abutting neighbours;
- Continue to use the *Coach House How-To Guide*'s lot eligibility criteria, through Council's consideration of a DVP, for coach houses on lots without lane access that are:
 - greater than 929m² (10,000 sq. ft.);
 - corner lots with a minimum width of 15m; and to include
 - double-fronting lots with a minimum width of 15m;
- Introduce Zoning Bylaw definitions, conditions of use and related regulations to ensure coach houses are appropriately located and sized, and to allow for modest incentives to energy efficient construction.

Proposed Bylaw Amendments

To implement the revised Coach House Program, amendments to four bylaws would be required, along with a change to the Non-Statutory Public Consultation For Development Applications Policy.

Official Community Plan Bylaw 7900 Amendment (**Attachment 3** and red-line version in **Attachment 4**)

The *Local Government Act*, subsection 488.1(e), permits an Official Community Plan to designate Development Permit Areas (DPAs) for a number of stated purposes, including the “establishment of objectives for the form and character of intensive residential development”. This provides statutory authority to establish a Development Permit Area for coach houses, and the ability to define them as a form of intensive residential development. This section of the Act was created to assist local governments to manage sensitive infill opportunities.

The proposed OCP Bylaw amendment contains a new Accessory Coach House Form and Character Development Permit Area (“Coach House DPA”) in Schedule B of the OCP. The Coach House DPA guidelines would apply to two-storey coach houses to review aspects such as window orientation and massing in order to minimize overlook and impact on neighbouring lots. It is proposed that the Coach House DP be a staff-delegated permit to allow for a more streamlined application process. The application of the Coach House DP is an administrative process to ensure neighbour notification for two-storey coach houses, and the application of Council’s approved guidelines.

Zoning Bylaw 3210, Rezoning Bylaw 1382 (**Attachment 5** and red-line version in **Attachment 6**)

The proposed Zoning Bylaw amendments introduce a new definition of coach house as an accessory use to single-family residential uses. A number of conditions of use are proposed in the Zoning Bylaw that include:

- Coach house must be located within the Urban Containment Boundary and within single-family residential zones;
- Only one coach house permitted per lot;
- Coach house not permitted where there is a secondary suite on the same property; and
- Owner of the single-family lot must reside in either the coach house or the principal dwelling unit.

The proposed Zoning Bylaw amendments also establish the size, shape, and siting regulations for new coach house development. The regulations are generally based on the District’s existing *Coach House How-To Guide*, and reflect input from public engagement. Some key regulations include:

- Located on a lot with open lane access;
- Lot width of at least 15m (49.2 ft.);
- Maximum size of 90m² (968 sq. ft.);
- 6.1m (20 ft.) separation between coach house and principal house;
- Coach house must be sited to the rear of the principal house;
- Second storey area limited to 50-60% of the first floor (depending on roof slope); and
- Modest accommodations for energy efficiency.

The proposed zoning regulations include incentivizing coach house applications that meet Step 4 or Step 5 of the Energy Step Code. To account for thicker walls and thicker roof

construction associated with energy efficient buildings, the incentives for Step 4 and Step 5 are:

- Minor floor space exemptions of 2.8m² to 8.4m² (30 to 90 sq. ft.); and
- Minor height increases of 0.15m to 0.3m (0.5 to 1 ft.).

Several aspects of the revised Coach House Program were surveyed as part of the public engagement, and supported broadly by respondents. However, the following aspects are not being recommended at this time:

- Additional 0.05 floor space ratio up to 37m² (400 sq. ft.) for a lot that builds a coach house: Council is currently having discussions about single-family residential standards and regulations, and additional floor space may be considered as part of those discussions;
- Basements in coach houses: the District is currently studying the location and impacts of groundwater and infiltration. The results of this study may inform the potential for basements in coach houses;
- Parking reductions (i.e. from three to two spaces) for lots with coach houses near the Frequent Transit Network. Staff have heard concerns around the potential impact of parking that could occur on neighbourhood streets, and parking reductions are not supported at this time. This may be considered in the future, such as when FTN service expands, and as part of a site specific proposal through a DVP.

The proposed Zoning Bylaw amendments also include corresponding ticketing regulations and housekeeping amendments to re-number sections.

In summary, if the proposed Zoning Bylaw amendments are adopted by Council, an applicant would be able to apply directly for a building permit to build a one-storey coach house that complies with the regulations on a minimum 15m lot. Applications for two-storey coach houses would require an Accessory Coach House Form and Character Development Permit (in addition to a building permit). Requests for variances to allow coach houses on lots without lane access may still be submitted, providing Council will the ability to consider each application on a case-by-case basis through the DVP process.

Fees and Charges Bylaw 6481 (Attachment 7)

The Fees and Charges Bylaw establishes fees for development applications. The proposed amendment adds fees for an Accessory Coach House Form and Character Development Permit. The recommended fee of \$670.00 and a \$36.00 profiling fee is equivalent to the Development Variance Permit fees (for 3 variances or fewer) that are levied for coach houses in the existing coach house program. All coach house applications would be charged the same fees whether applying through the Development Permit or the Development Variance Permit process.

Bylaw Notice Enforcement Bylaw 7458 (Attachment 8)

The Bylaw Notice Enforcement Bylaw contains fines for unauthorized land uses. The amendment adds coach house fines, which mirror the existing secondary suite violation fine rates as both are accessory dwelling units. The proposed amendments also include housekeeping amendments to re-number sections.

Draft Revised Non-Statutory Public Consultation For Development Applications Policy
(Attachment 9)

Should Council approve the bylaw amendments, a change to the Non-Statutory Public Consultation For Development Applications Policy would be required to include notification for coach house applications for an Accessory Coach House Form and Character Development Permit. The draft revised policy is included as an attachment for Council's review at this time.

The draft policy proposes to include notification to abutting neighbours when an Accessory Coach House Form and Character DP application is received. Neighbours would be able to provide comment to staff on the application. Approval of the DP would rest solely on the fulfilment of the DP design guidelines and zoning regulations.

Timing/Approval Process

If the proposed bylaw amendments to the Zoning Bylaw and OCP receive First Reading, a Public Hearing would be scheduled. Should the amendments be approved by Council, the *Coach House How-To Guide* would be updated to reflect any program changes.

Concurrence

The recommendations of this report have been reviewed by Building, Bylaws, Development Planning, Legal, and Transportation. The District of North Vancouver Rezoning Bylaw 8360 affects land lying within 800m of a controlled access intersection and therefore approval by the Provincial Ministry of Transportation and Infrastructure will be required after third reading of the bylaw and prior to bylaw adoption.

Financial Impacts

Application fees from a new Accessory Coach House Form and Character Development Permit, and tax revenues as a result of coach house development, will help offset costs associated with the administration of application review.

Social Policy Implications

Coach houses provide opportunities for greater housing diversity, enable residents to age-in-place on their property or in their neighbourhood, or provide housing for family members. Coach houses have the potential to enable young families or young adults to live in single-family neighbourhoods in a detached dwelling that might otherwise be unaffordable. Coach houses provide a unique housing option that is different than apartments, townhouses, and larger single-family homes.

Environmental Impact

Coach houses can enable the efficient use of existing developed land and infrastructure in existing neighbourhoods throughout the District. Coach house development must adhere to environmental Development Permit Area regulations.

Conclusion

The proposed revised Coach House Program aims to increase the diversity of housing choices in the District to fit the needs of a diverse population, including a mix of ages and incomes. The District has had a gradual entry program for coach houses and has approved

an average of four per year since the program began in 2014. The revised program outlined in this report aims to simplify the application and approvals process with the focus on lots with open lanes. It also seeks to ensure that coach houses, which provide at-grade, detached housing, fit within the character of established single-family neighbourhoods.

Options

1. That Council give first reading to bylaws 8359 and 8360, and three readings to bylaws 8362 and 8361 (staff recommendation).

Or

2. That Council take no further action on coach house bylaws.

Respectfully submitted,



Nicole Foth, MCIP, RPP
Community Planner

Attachment 1: District's Housing Continuum

Attachment 2: Coach House Public Engagement Summary

Attachment 3: District of North Vancouver Official Community Plan Bylaw 7900, 2011, Amendment Bylaw 8359

Attachment 4: Red-line version of OCP Amendment Bylaw 8359

Attachment 5: District of North Vancouver Rezoning Bylaw 1382 (Bylaw 8360)

Attachment 6: Red-line version of Zoning Bylaw amendments (Rezoning Bylaw 1382)

Attachment 7: District of North Vancouver Fees & Charges Bylaw 6481, 1992 Amendment Bylaw 8362

Attachment 8: District of North Vancouver Bylaw Notice Enforcement Bylaw 7458, 2004 Amendment Bylaw 8361

Attachment 9: Proposed amendments to District of North Vancouver Non-Statutory Public Consultation For Development Applications Policy

REVIEWED WITH:					
<input type="checkbox"/> Community Planning	_____	<input type="checkbox"/> Clerk's Office	_____	External Agencies:	
<input type="checkbox"/> Development Planning	_____	<input type="checkbox"/> Communications	_____	<input type="checkbox"/> Library Board	_____
<input checked="" type="checkbox"/> Development Engineering		<input type="checkbox"/> Finance	_____	<input type="checkbox"/> NS Health	_____
<input type="checkbox"/> Utilities	_____	<input type="checkbox"/> Fire Services	_____	<input type="checkbox"/> RCMP	_____
<input type="checkbox"/> Engineering Operations	_____	<input type="checkbox"/> ITS	_____	<input type="checkbox"/> NVRC	_____
<input type="checkbox"/> Parks	_____	<input type="checkbox"/> Solicitor	_____	<input type="checkbox"/> Museum & Arch.	_____
<input type="checkbox"/> Environment	_____	<input type="checkbox"/> GIS	_____	<input type="checkbox"/> Other:	_____
<input type="checkbox"/> Facilities	_____	<input type="checkbox"/> Real Estate	_____		
<input type="checkbox"/> Human Resources	_____	<input checked="" type="checkbox"/> Bylaw Services			
		<i>* BUILDING</i>			

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District of North Vancouver's Housing Continuum



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Coach House

PUBLIC ENGAGEMENT SUMMARY



OCTOBER 2018



EXECUTIVE SUMMARY

This report summarizes the input that we heard during the public engagement on the proposed approach to coach houses held in September - October 2018. The District is considering changes to the coach house program, and Council directed staff to carry out public engagement to gather input on the proposed approach.

LOT ELIGIBILITY & APPLICATION PROCESS

	LOT ELIGIBILITY CRITERIA	APPLICATION PROCESS
PROPOSED SIMPLIFIED PROCESS	<ul style="list-style-type: none"> ✓ Lot width minimum 49.2 ft. (15 m); Open lane access; Lot area minimum 5,000 sq. ft. (464.5 m²); and Within the Urban Containment Boundary. 	 One-Storey Coach Houses <ul style="list-style-type: none"> • Building Permit
		 Two-Storey Coach Houses <ul style="list-style-type: none"> • Development Permit (DP) issued by staff • Building Permit
EXISTING PROCESS (WILL CONTINUE)	<ul style="list-style-type: none"> ✓ Lot width minimum 50 ft (~15 m) and is a corner lot <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> ✓ Lot area minimum 10,000 sq. ft. (929 m²) without lane access 	<ul style="list-style-type: none"> • All coach house applications must go through the Development Variance Permit (DVP) process, which is decided by Council on a case-by-case basis.

OPPORTUNITIES FOR INPUT

There were three opportunities to gather input:

- Approximately 135 people stopped by three pop-up information events;
- 142 online survey responses; and
- 7 participants at the designers and builders stakeholder meeting.

WHAT WE HEARD

In the online survey we heard the following responses to the questions, and common themes* from the comments:

- support for the proposed approach, and to expand the lot eligibility beyond the proposed approach;
- support for a Coach House Development Permit for second storey design review;
- support for an adjacent neighbour notification and input process, with a limit on the influence of neighbour input;
- support to enable coach house development with:
 - additional floor space for energy efficient construction;
 - basements for living space;
 - slightly increased total allowable floor space on lots with coach houses; and
 - reduce parking requirements from three to two spaces close to the Frequent Transit Network.
- interest in other forms of housing in single-family neighbourhoods, namely a house with a suite and a coach house, and duplexes.

Overall, stakeholder meeting participants supported a broader-reaching coach house program by expanding lot eligibility, and reducing requirements in the applications and approvals processes (no neighbour input).

*themes with 20+ responses



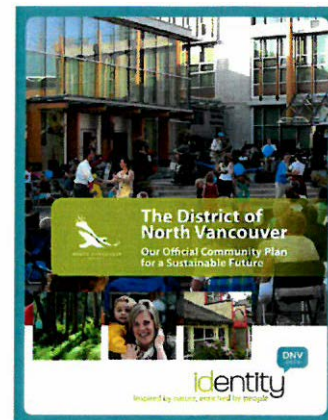
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4.2 COACH HOUSE DESIGNERS & BUILDERS STAKEHOLDER MEETING	17

1.0 CONTEXT

The District's Official Community Plan (OCP) encourages diversity of housing choices across the full spectrum of housing needs. The Detached Residential land use designation in the OCP includes provision for secondary suites or coach houses in single-family residential areas.

The District began its coach house program in 2014 when Council endorsed a "gradual entry" process to consider coach house applications on a case-by-case basis through the Development Variance Permit process. As of October 2018, 14 coach houses have been approved by Council.



*District of North Vancouver's
Official Community Plan*

Council expressed concern about the low number of coach house applications received at the June 19, 2017 Council Workshop. As a result, the District is considering to simplify the process, with a general focus on lots that have open lane access. Council directed staff to seek public input on the proposed approach to coach houses at the July 9, 2018 Regular Council Meeting.

This report summarizes the results of the public engagement, held in fall 2018, on changes considered to the coach house program. The report will be shared with Council for their consideration.

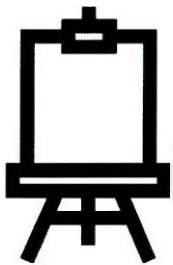
2.0 PROCESS

The planning process includes three phases, as shown below.

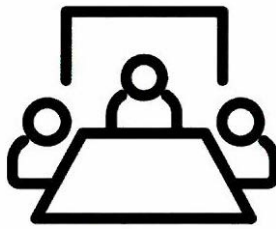


3.0 OPPORTUNITIES FOR INPUT

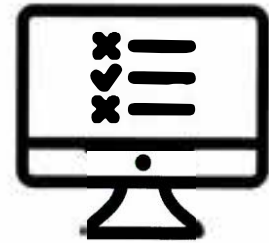
In the second phase of this process, we asked the general public and stakeholders who are involved in designing and building coach houses to provide feedback on the proposed changes to the coach house program. We used three different methods to gather input and feedback:



**Pop-Up
Information
Events**

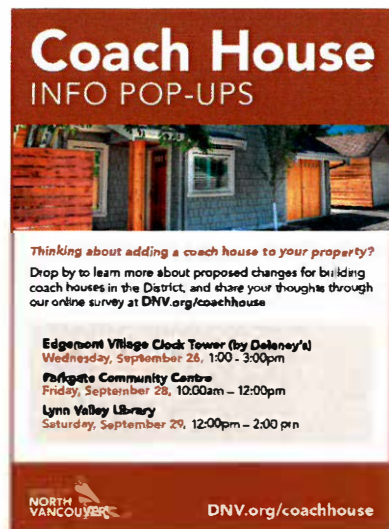


**Coach House Designers
& Builders Stakeholder
Meeting**



**Online Public
Survey**

Public engagement can occur across a range of participation levels, from informing to empowering. Different levels of engagement are appropriate at different times and for different projects. The goal for this phase of engagement on the coach house program was to obtain feedback on alternatives to the current program, which corresponds to the 'Consult' level on the *International Association for Public Participation's* (IAP2) Spectrum of Public Participation. This means that we will keep you informed, and listen to and acknowledge your concerns and aspirations in developing final solutions, and we will report back to you on how your input influenced the decision.



North Shore News Advertisement

3.1 COMMUNICATION

We used several methods of communicating the opportunities for input, including:

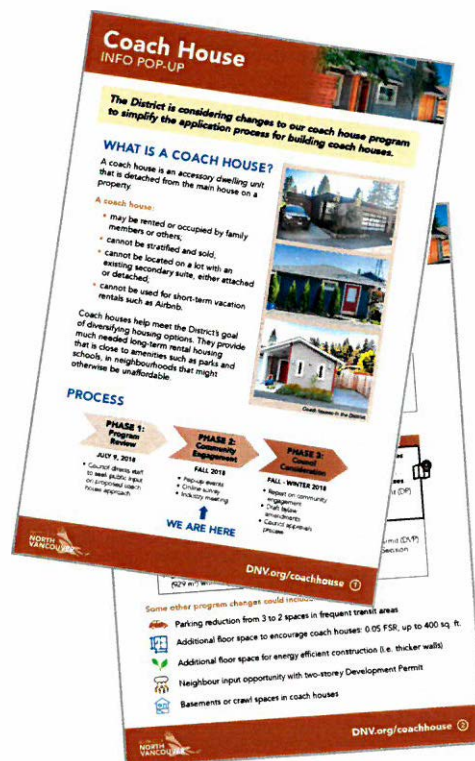
- North Shore News advertisements (Wednesday, September 19, Friday, September 21, and Wednesday, September 26, 2018);
- The District's website (DNV.org);
- Social media posts (DNV Facebook, Twitter, and LinkedIn, and School District 44 Facebook and Twitter);
- Paid social media ads (DNV Facebook); and
- The stakeholder meeting was promoted on DNV.org between September 19-28, 2018, and email invitations were sent to current and previous District coach house applicants and several coach house and laneway house designers and builders in the region.

3.2 POP-UP INFORMATION EVENTS

Pop-up events are informal drop-by events where staff are available to answer questions and share information. Pop-up events are held in public places to invite interest from people passing by, as well as people who came for the event.

Approximately 135 people stopped by the three pop-up events that were held across the District.

At the pop-up events, there were display boards with information on the proposed changes to the coach house program, information hand-outs, and staff available to answer questions. Staff encouraged attendees to share their input through the online survey.



Display information at the pop-up events

Coach House Pop-up Events

WHEN	WHERE	WHY	ATTENDEES
Wednesday, September 26, 2018, 1- 3 pm	Edgemont Clocktower near Delany's	This was an early dismissal day for public schools, and we aimed to increase the opportunity for people walking through the village at this time.	Approx. 35 people
Friday, September 28, 2018, 10 - noon	Parkgate Community Recreation Centre	This was during a North Shore Culture Days event at this location.	Approx. 40 people
Saturday, September 29, 2018, noon - 2 pm	Lynn Valley Library	This was before a North Shore Culture Days event at this location.	Approx. 60 people

The display boards from the pop-up events were placed in the District Hall atrium from October 1 to October 12, 2018, and available to the public visiting District Hall during business hours.



Coach house pop-up event at Parkgate Community Recreation Centre

**Approximately
135 people
were engaged
by the three
pop-up events.**

3.3 ONLINE SURVEY

The online survey asked for input on the proposed changes to the coach house program. It was open for three weeks on the District website, *DNV.org/coachhouse*, from September 20, 2018 to October 14, 2018. In total, 142 responses were received.



3.4 COACH HOUSE DESIGNERS & BUILDERS STAKEHOLDER MEETING

We held a stakeholder meeting for coach house designers and builders to hear their input on the proposed changes to the program. There were seven attendees at the meeting held on October 3, 2018 at the District Hall.



Coach house pop-up event at Lynn Valley Library



4.0 WHAT WE HEARD

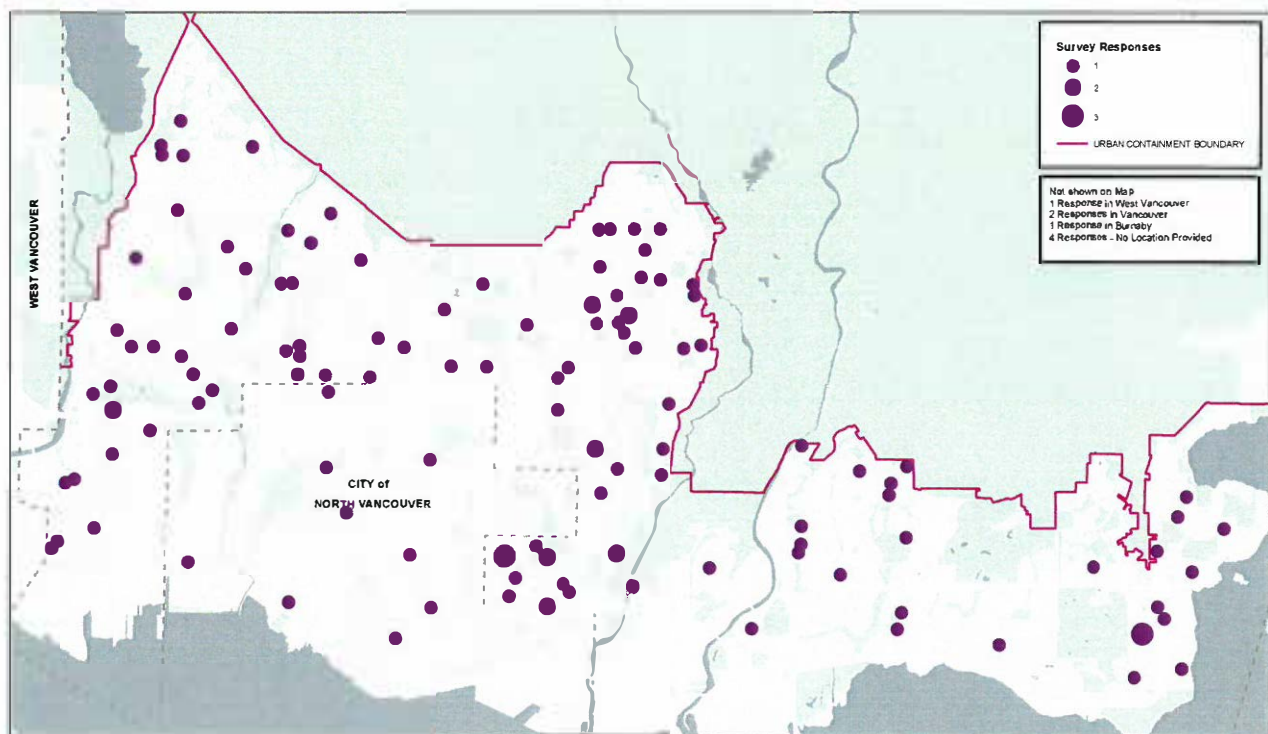
4.1 ONLINE SURVEY

There were 142 respondents to the online survey. The number of responses to each question may vary because respondents may not have chosen to answer every question.

Survey responses were received from across the District as shown in **Figure 2**. The majority of respondents identified as homeowners and residents of the District (77%, 110 of 142).

A minority of respondents (9%, 13 of 142) were located outside of the District based on postal codes provided by respondents, including the City of North Vancouver (9), West Vancouver (1), Vancouver (2), and Burnaby (1). Over half of respondents from outside of the District indicated they are interested in living in or returning to the District (62%, 8 of 13). Four respondents did not provide postal codes.

Figure 2: Location of coach house survey responses based on postal codes provided by respondents.



Survey questions were accompanied by background information to provide the context for the question. The background information for each question is summarized in this report, and accompanies each set of related questions.

4.1.1 Demographics

Respondents provided some information about who they are (**Figure 3**) and their age range (**Figure 4**). The majority identified as homeowners, while the largest age group to respond was the 41-55 age range.

Figure 3: Status of survey respondents.

Total responses: 147
(some respondents selected more than one response)

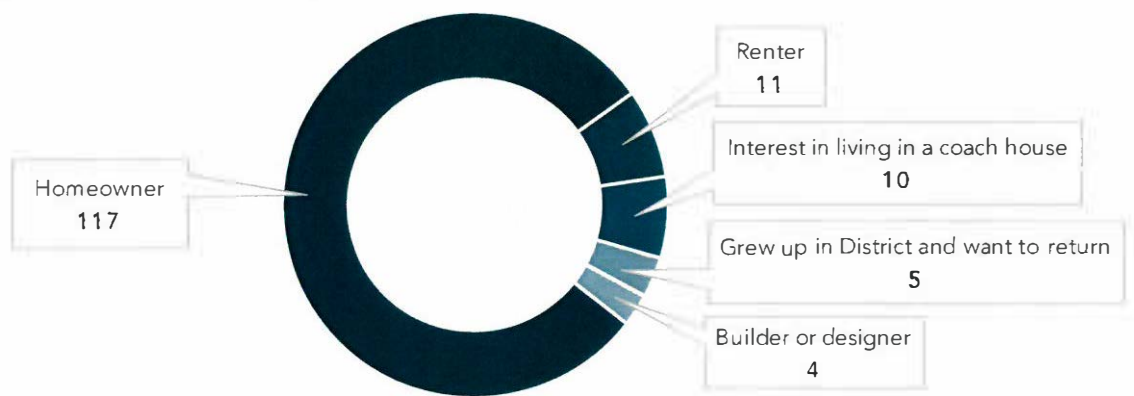
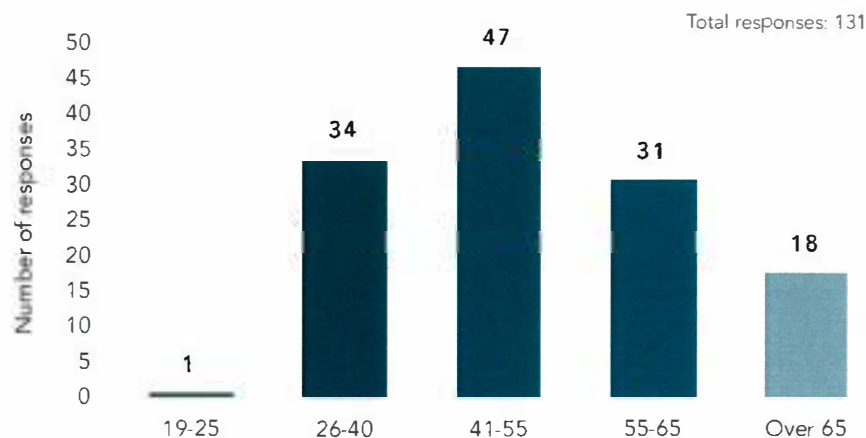


Figure 4: Age distribution of survey respondents.



4.1.2 ONE-STOREY COACH HOUSES

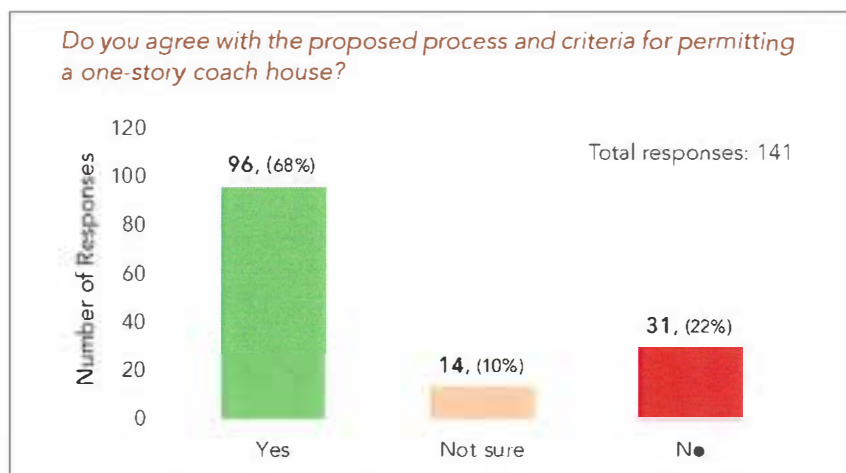
BACKGROUND

Under the proposed new process, homeowners wishing to build a one-storey coach house would skip the existing Development Variance Permit process (a case-by-case decision by Council), and apply directly for a Building Permit. To qualify to apply directly for a Building Permit, a lot would need to meet all of these criteria:

- Open lane access;
- Lot width minimum 49.2 ft. (15 m);
- Lot area minimum 5,000 sq. ft. (464.5 m²);
- Within the Urban Containment Boundary.

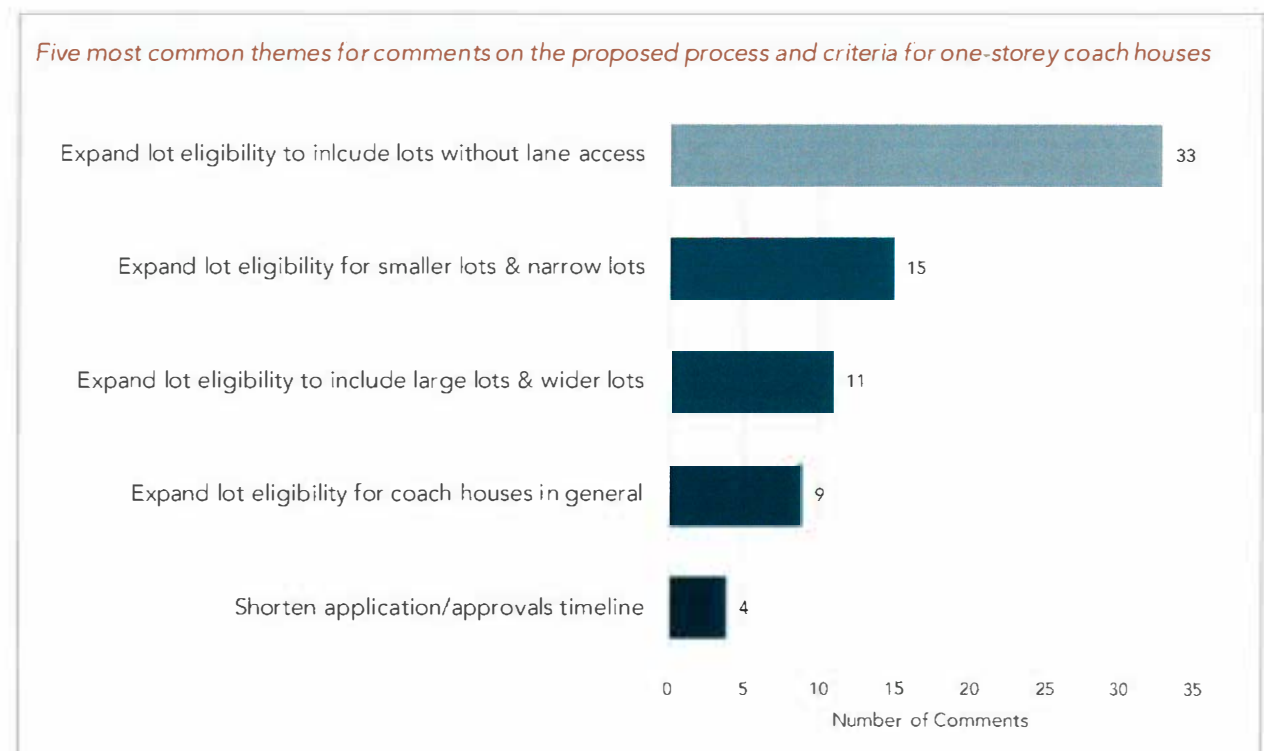
Q1. Do you agree with the proposed process and criteria for permitting a one-story coach house?

The majority of respondents agreed with the proposed process and criteria (68%, 96 of 141).



Q2. Do you have any comments on the proposed process or criteria?

In total, 103 comments were received for this question. The five most common themes were:



Some comments showed that respondents were under the impression that the proposed approach would remove other lot types that are currently eligible for the Development Variance Permit process, namely corner lots and large lots. To clarify, the proposed approach would allow the currently eligible corner lots and large lots to continue under the existing Development Variance Permit process.

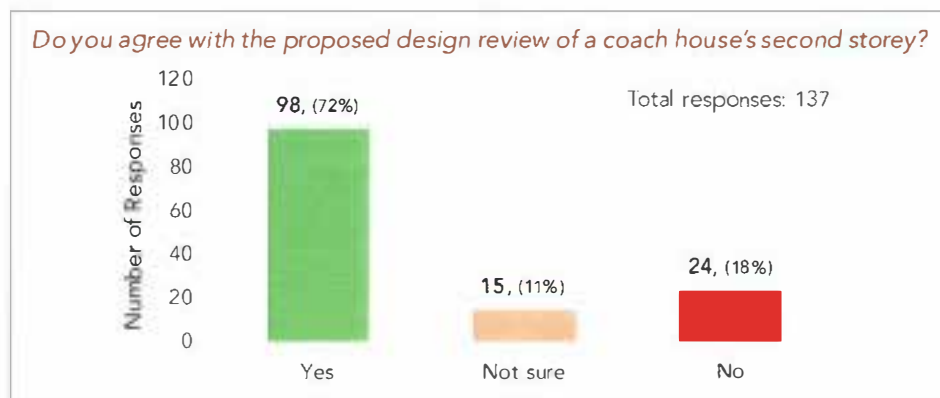
4.1.3 TWO-STOREY COACH HOUSES

BACKGROUND

We heard some concerns about loss of privacy and overlook from the second storey of a coach house. One tool we can use to review design of the upper storey is a Coach House Development Permit.

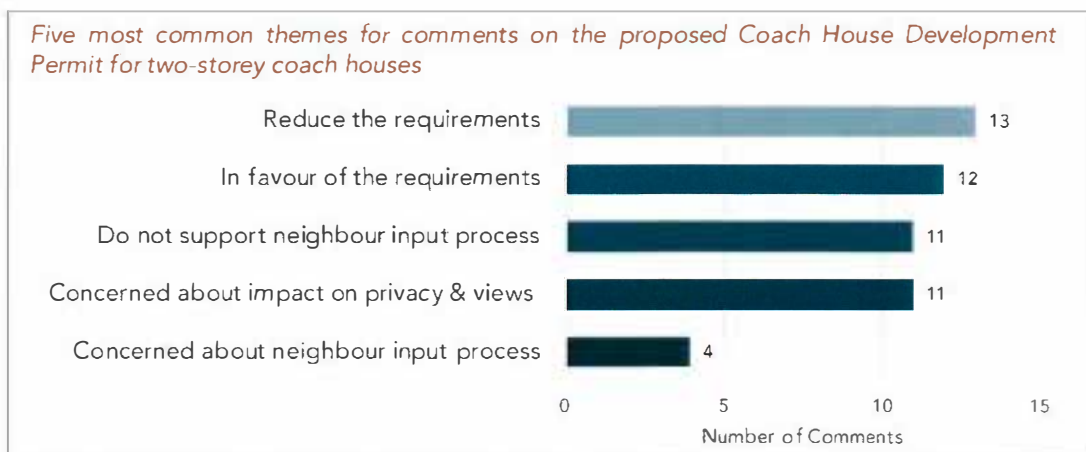
Q3. Do you agree with the proposed design review of a coach house's second storey?

The majority of respondents agreed with the proposed design review process (72%, 98 of 137).



Q4. Do you have any comments on our proposed Coach House Development Permit for two-storey coach houses?

In total, 66 comments were received for this question. The five most common themes were:



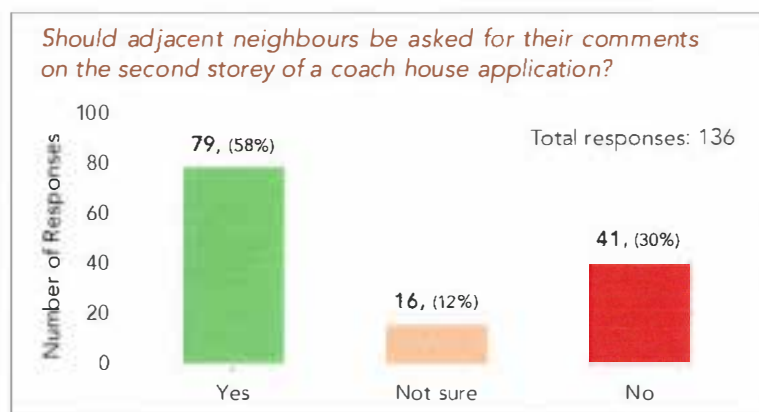
NEIGHBOUR INPUT ON TWO-STOREY COACH HOUSES

BACKGROUND

Through a Coach House Development Permit, we could also require that adjacent neighbours be notified of a two-storey coach house application, and given opportunity to comment on design. Staff would consider the input that could result in small design changes that are in line with the Coach House Development Permit guidelines.

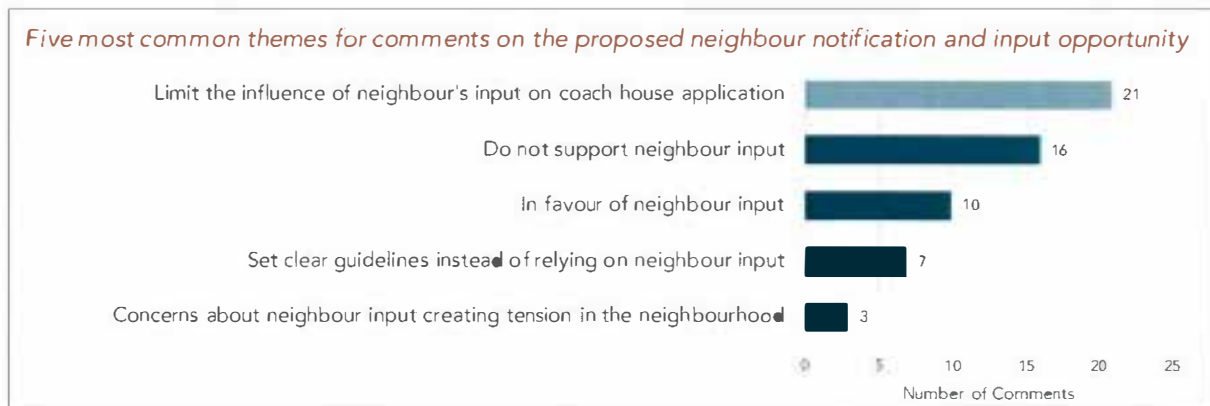
Q5. Should adjacent neighbours be asked for their comments on the second storey of a coach house application?

The majority of respondents agreed that adjacent neighbours be asked for their comments (58%, 79 of 136).



Q6. Do you have any comments on the proposed neighbour notification and input opportunity?

In total, 59 comments were received for this question. The five most common themes were:



4.1.5 ENABLING COACH HOUSE DEVELOPMENT

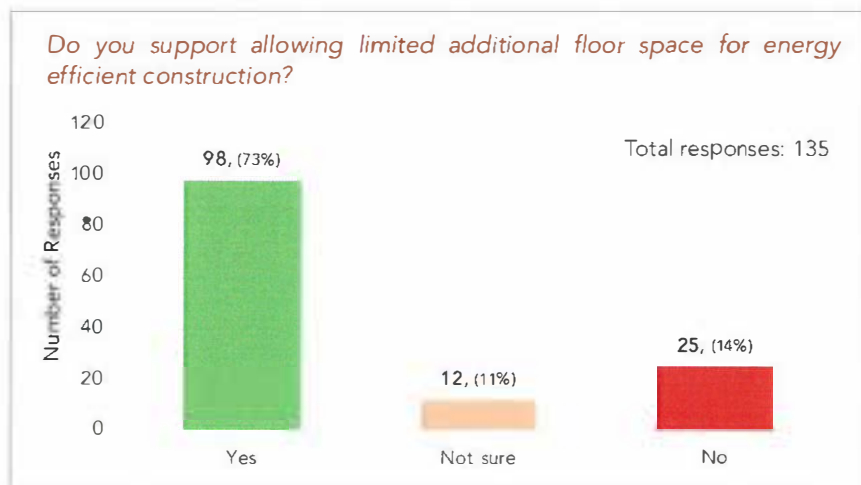
BACKGROUND

To encourage coach house development, we are considering a variety of approaches that will make coach houses more flexible and functional.

- Allowing some additional floor space to make up for loss of usable space as a result of energy efficient construction
- Allowing basements for living or crawlspaces for storage (currently not permitted in coach houses)
- Allowing some additional floor space on lots that build coach houses (+0.05 FSR, up to 400 sq. ft.)
- Reducing onsite parking requirements from 3 spaces to 2 spaces for lots within 400m (about a five minute walk) of the frequent transit network

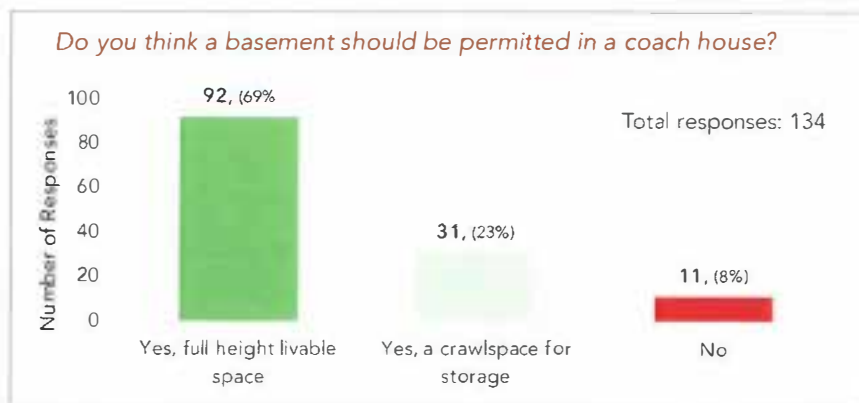
Q7. Do you support allowing limited additional floor space for energy efficient construction?

The majority of respondents agreed we should allow limited additional floorspace for coach houses that are built to be more energy efficient (73%, 98 of 135).



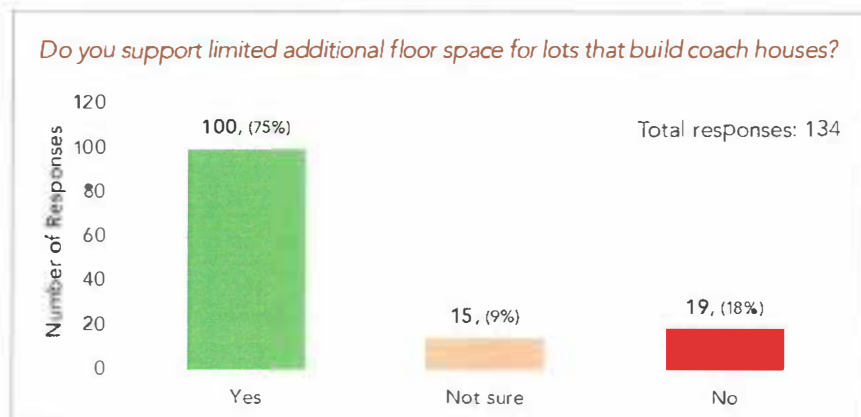
Q8. Do you think a basement should be permitted in a coach house?

The majority of respondents agreed that full height basements that could be used as living space should be permitted (69%, 92 of 134). Some respondents agreed with allowing crawlspaces for storage (23%, 31 of 134). Respondents could only choose one answer.



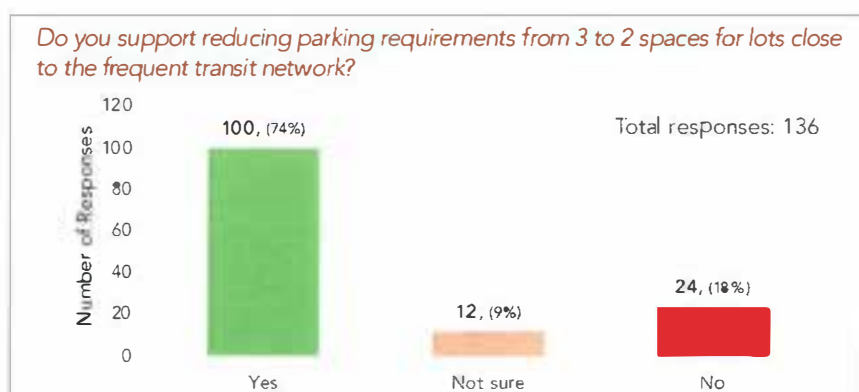
Q9. Do you support limited additional floor space for lots that build coach houses?

The majority of respondents agreed with allowing limited additional floor space for lots that build coach houses (75%, 100 of 134).



Q10. Do you support reducing parking requirements from 3 to 2 spaces for lots close to the frequent transit network?

The majority of respondents agreed with reducing parking requirements for lots close to the frequent transit network (74%, 100 of 136).



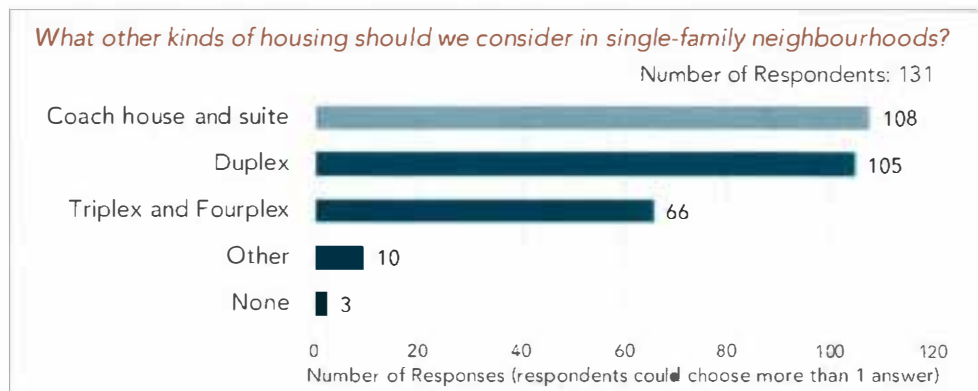
4.1.6 CONCLUDING THOUGHTS

BACKGROUND

Coach houses are just one of several ways to diversify our housing mix while maintaining the character of single-family neighbourhoods. We have heard the need for less expensive housing options in the District, and more flexible housing types.

Q11. What other kinds of housing should we consider in single-family neighbourhoods?

The majority of respondents indicated interest in houses with coach houses and secondary suites (82%, 108 of 131), and duplexes (80%, 105 of 131). Half of the respondents were interested in triplexes and fourplexes (50%, 66 of 131).

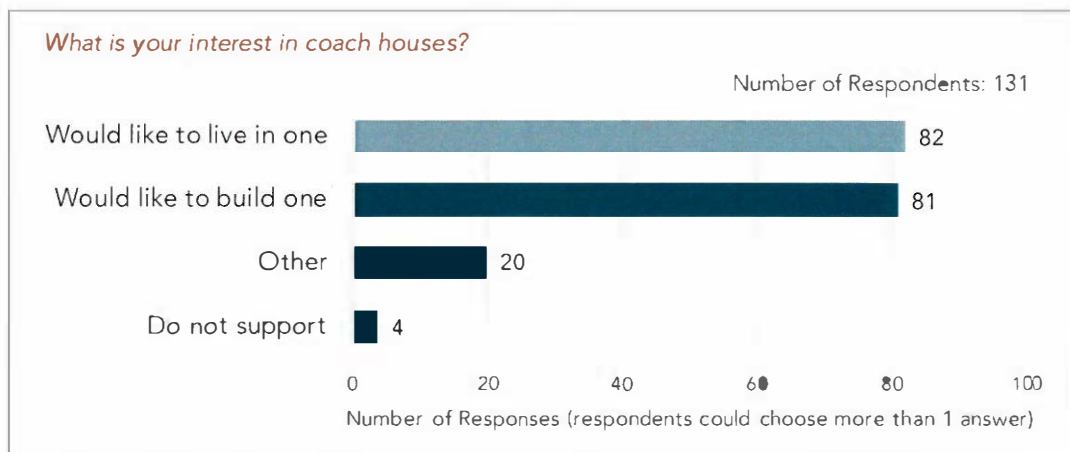


Other – respondents that provided other comments suggested these housing forms in single-family neighbourhoods (in no particular order):

- Small Lot Infill Areas;
- Mixed-use zoning;
- Multi-storey on transit routes;
- Bare land strata lots;
- Compact, denser homes with strata or subdivision;
- Duplexes with lock-off suites or secondary suites
- Townhouses;
- Rowhouses and townhouses near schools, community centres and public institutions;
- Semi-detached homes;
- Suites above garages;
- Condominium towers;
- Tiny houses; and
- Recreational vehicles.

Q12. What is your interest in coach houses?

The majority of respondents indicated they would like to live in a coach house (63%, 82 of 131), and build a coach house (62%, 81 of 131).

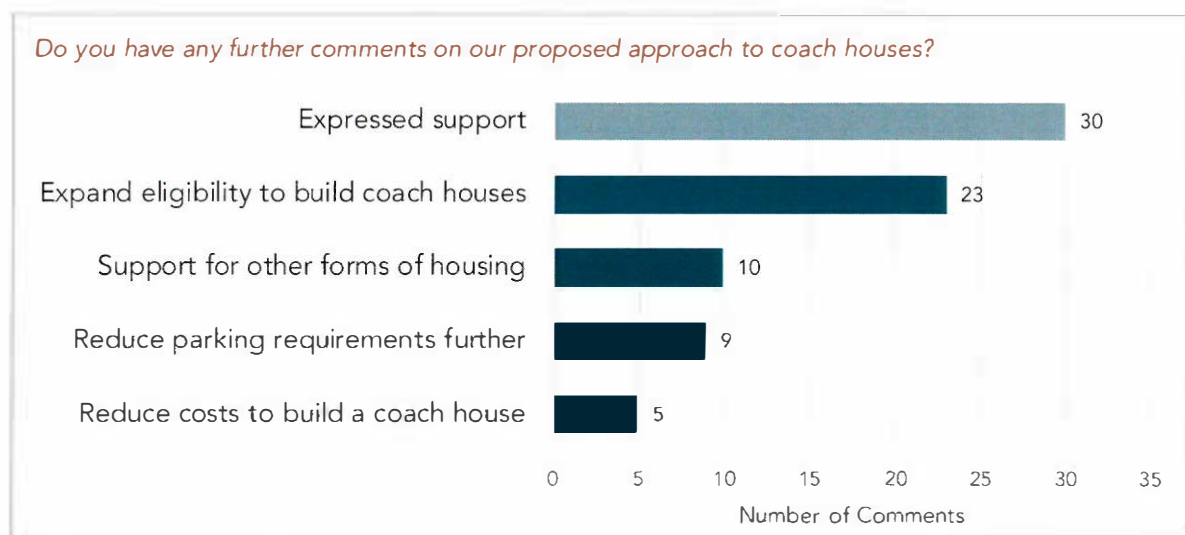


Other – respondents that provided other comments generally mentioned the following themes (in no particular order):

- Support housing diversity;
- Support densifying the District;
- Concerned about housing affordability;
- Are considering building a coach house now or in the future;
- Are involved in the industry;
- Desire for loved ones to age in place;
- Concerned about managing growth; and
- Feel the current requirements are sufficient.

Q13. Do you have any further comments on our proposed approach to coach houses?

In total, 83 comments were received for this question. The five most common themes are shown below.



Emails

In addition to the survey, three emails with additional input were received during the time that the online survey was open. The input provided includes the following themes:

- Expand lot eligibility criteria to include 33 foot wide lots;
- Develop a staff-level approval process to open the existing “closed” lane right-of-ways in order to increase the number of eligible lots;
- Support for one-storey Building Permit and two-storey Development Permit approach; and
- Shorten timelines, and limit influence of neighbour input on approval.

4.2 COACH HOUSE DESIGNERS & BUILDERS STAKEHOLDER MEETING

There were seven participants at the stakeholder meeting. The meeting consisted of a short presentation by staff, facilitated discussion, and written feedback from participants.

Overall, the participants supported the steps toward simplifying the application and approvals process, however they also suggested to expand the lot eligibility criteria. The input is summarized by theme in the table below.

Summary Table of Coach House Designers and Builders Stakeholder Meeting Input

TOPIC	COMMENTS
Feedback on current program	<ul style="list-style-type: none">• Current program very restrictive (lot eligibility and Development Variance Permit process)• Suggest to have a goal for a number of coach houses• Consider a bolder proposal to expand program
Lot eligibility	<ul style="list-style-type: none">• Expand the lot eligibility criteria to include more lots, or all lots• Include lots without lane access• Clarify eligibility of double-fronting lots• Include 10,000 sq. ft. lots to apply directly for a Building Permit• Remove minimum lot size criteria
Proposed one-storey coach house process	<ul style="list-style-type: none">• Support for the simplified approach for one-storey coach houses (apply directly to Building Permit)
Proposed Development Permit (DP) for two-storey coach houses	<ul style="list-style-type: none">• Suggest a simplified Development Permit process• Suggest a combined Development Permit-Building Permit process• Suggest allowing two-storey coach houses to apply directly for a Building Permit
Adjacent neighbour notification for two-storey coach houses	<ul style="list-style-type: none">• Do not support• Suggest that privacy/overlook concerns can be addressed through design guidelines and setbacks instead• Caution that neighbour involvement adds costs, time, uncertainty, may contribute to negative neighbour relationships

Summary Table of Coach House Designers and Builders Stakeholder Meeting Input (*continued*)

TOPIC	COMMENTS
Additional floor space for energy efficiency	<ul style="list-style-type: none"> • Support • Need to exclude thicker walls (8-12% depending on level of efficiency) and thicker roofs (18 inches)
Additional floor space	<ul style="list-style-type: none"> • Support • Consider allowing enough floor space to build a coach house that is not tied to the main house size • Consider allowing larger 'family sized' (1400 sq. ft.) units on large lots
Basements	<ul style="list-style-type: none"> • Some expressed support for crawl spaces for storage purposes, some for full height basements • Crawlspace comments: good location for utilities, but hard to use/access • Exempt basement area if want to encourage
Parking reduction	<ul style="list-style-type: none"> • Providing 3 parking spaces is challenging for coach house design • Support for 2 parking spaces near Frequent Transit Areas, as well as everywhere • Some expressed support for 1 parking space for lots with lane access and if parking allowed on street
Design	<ul style="list-style-type: none"> • Note that 8 ft. setback for two-storey units is challenging • Consider siting coach house to mostly shade own lot • Consider reducing setback between main house and one-storey coach house to enable development
Process	<ul style="list-style-type: none"> • A simpler process would encourage applications, and cost the homeowner less • Consider a site meeting to discuss issues with staff

The Corporation of the District of North Vancouver

Bylaw 8359

A bylaw to amend District of North Vancouver Official Community Plan Bylaw 7900, 2011

The Council for The Corporation of the District of North Vancouver enacts as follows:

Citation

1. This bylaw may be cited as "District of North Vancouver Official Community Plan Bylaw 7900, 2011, Amendment Bylaw 8359, 2019 (Amendment 37)".

Amendments

2. District of North Vancouver Official Community Plan Bylaw 7900, 2011 is amended as follows:

- a) Schedule B: Table of Contents by adding, after "Part 6: Energy and Water Conservation and Greenhouse Gas Emission Reduction Development Permit Area", "Part 7: Form and Character of Accessory Coach House Development".
- b) Schedule B: Introduction:
 - i. By removing, following "6. Form and Character DPA", "and".
 - ii. By replacing, following "7. Energy and Water Conservation and GHG Emission Reduction DPA", the period with "; and".
 - iii. By adding, following "7. Energy and Water Conservation and GHG Emission Reduction DPA", "8. Accessory Coach House Form and Character DPA."
 - iv. By removing, in the paragraph beginning with "Finally, Part Six", "Finally,".
 - v. By adding, after the paragraph beginning with "Part Six", the following:

Part Seven deals with the *Accessory Coach House Form and Character DPA*. It provides the context and objectives for this DPA and provides exemptions and guidelines in relation to the built form of a two-storey accessory coach house. A Development Approval Information Area is designated at the end of Part Seven.

- c) Schedule B: Development Permit Areas: Part 1: Designation, Requirement for a Development Permit and Delegation, Section A: Designation of Development

Permit Areas by adding the following after Sub-section 7. Energy and Water Conservation and Reduction of Greenhouse Gas Emissions:

8. Form and Character of Accessory Coach House Development

Pursuant to subsection 488.1(e) of the *Local Government Act*, all lands within the Urban Containment Boundary that are zoned for single-family residential uses in the *Zoning Bylaw* are collectively designated as the development permit area for the form and character of intensive (*coach house*) residential development (the "*Accessory Coach House Form and Character DPA*").

- d) Schedule B: Development Permit Areas: Part 1: Designation, Requirement for a Development Permit and Delegation, Section B: Requirement for a Development Permit: by deleting "Under certain conditions, as set out in Parts 3, 4, 5 and 6 of this *document*, *development* may be exempted from the requirement to obtain a development permit." and replacing with "Under certain conditions, as set out in Parts 3, 4, 5, 6 and 7 of this *document*, *development* may be exempted from the requirement to obtain a development permit."
- e) Schedule B: Development Permit Areas: Part 1: Designation, Requirement for a Development Permit and Delegation, Section C: Delegation of Authority to Issue Development Permits: Sub-section 1 by deleting "*Slope Hazard DPA*; and *Energy and Water Conservation and GHG Emission Reduction DPA*;" and replacing with "*Slope Hazard DPA*; *Energy and Water Conservation and GHG Emission Reduction DPA*; and *Accessory Coach House Form and Character DPA*;"
- f) Schedule B: Development Permit Areas: Part 2: Definitions by adding after the definition of "accessory" and before the definition of "active floodplain":

"Accessory Coach House Form and Character DPA" means the development permit area designated in Part One section A.8 of this *document*;

- g) Schedule B: Development Permit Areas: Part 2: Definitions by adding after the definition of "buffer" or "buffer area" and before the definition of "Council":

"coach house" means an accessory dwelling unit that is detached from the principle dwelling unit on a lot in a zone that permits single-family residential use.

- h) Schedule B: Development Permit Areas by adding, after "Part 6: Energy and Water Conservation and Greenhouse Gas Emission Reduction Development Permit Area", "Part 7: Form and Character of Accessory Coach House Development" as per Schedule A attached to and forming part of this bylaw.

READ a first time by a majority of all Council members.

PUBLIC HEARING held

READ a second time by a majority of all Council members.

READ a third time by a majority of all Council members.

ADOPTED by a majority of all Council members.

Mayor

Municipal Clerk

Certified a true copy

Municipal Clerk

Schedule A to Bylaw 8359

Part 7: Form and Character of Accessory Coach House Development

Guidelines for Accessory Coach Housing

Context

The intent of this development permit area is to guide the form and character of a two-storey detached accessory *coach house development*, as a form of intensive residential *development* on properties with single-family residential use. Further, this development permit area guides the relationship to the surrounding neighbourhood, public realm, and the principal residence to achieve the vision, goals and strategic directions as articulated in the Official Community Plan. The *District* aspires to have neighbourhoods that offer a range of housing choices, and a high quality built environment that reflects the beautiful setting of the North Shore.

Objectives

The *Accessory Coach House Form and Character DPA* and corresponding Development Approval Information Area are established to address the following objectives:

Housing Diversity – Striving to introduce more diverse housing forms while being respectful of and reflecting the detached residential neighbourhood character. Coach housing expands choices for extended families, aging-in-place, and serve as a possible mortgage helper.

Good Neighbour – Promoting neighbourly two-storey *coach house development* that respects privacy and sunlight access, and reduces overlook. Coach housing should be designed to minimize impacts on adjacent properties, particularly with respect to overlook from two-storey *coach house development*.

Exemptions

An Accessory Coach House Form and Character development permit is not required in the following circumstances:

1. One-storey *coach house* buildings;
2. Interior alterations or renovations to existing *coach house* buildings; or
3. Minor exterior renovations to existing *coach house* buildings that do not significantly alter the building form and character of the *coach house*.

If unsure, property owners may submit a written description of a proposed *development* activity and District staff will advise in writing whether the *development* is exempt from the requirement for a development permit.

Discussion

These guidelines apply to accessory *coach house development* applications that are two storeys in height and on lots with single-family residential use. This form of intensive residential *development* may only be considered as an accessory use to the principal residence on the property.

The purpose of the guidelines is to ensure that the design of a two-storey *coach house* considers the privacy of abutting properties and reduces overlook, while balancing access to natural light and livability of the *coach house*.

The design of a two-storey *coach house* should be sensitive to *development* on adjacent properties and seek to achieve the following:

- minimize overlook on adjacent properties;
- promote privacy for neighbours, as well as for *coach house* occupants;
- complement the detached residential neighbourhood character; and
- be subordinate in overall size to the principal residence on the property.

Guidelines

The following guidelines apply to the design of a two-storey *coach house*:

1. Building and Architectural Form

- 1.1 Floor space: To reduce the impression of building massing, floor space on the second storey should be no more than 50% of the floor area beneath it (including garages and carports) for a *coach house* with a roof pitch of less than 3:12, or no more than 60% for a roof pitch of 3:12 or greater (see Figure 108).

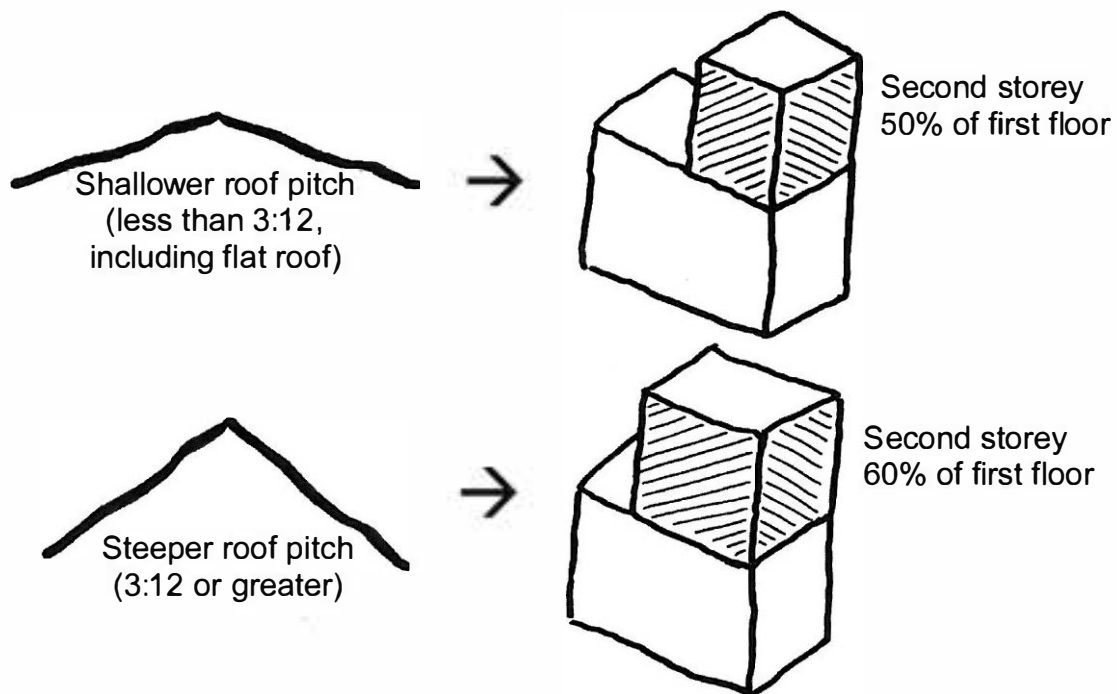


Figure 108

- 1.2 Building massing: Second storey massing should be oriented toward the lane, the centre of the lot, and/or the flanking street for corner lots. Massing should avoid being oriented toward lot line(s) shared with an adjacent property.
- 1.3 Building massing on sloped property: In order to respond to topography, a *coach house* on sloped property with an angle greater than 10 degrees (18%) should avoid orienting the second storey massing toward the downslope side where adjacent property is single-family residential (see Figure 109).

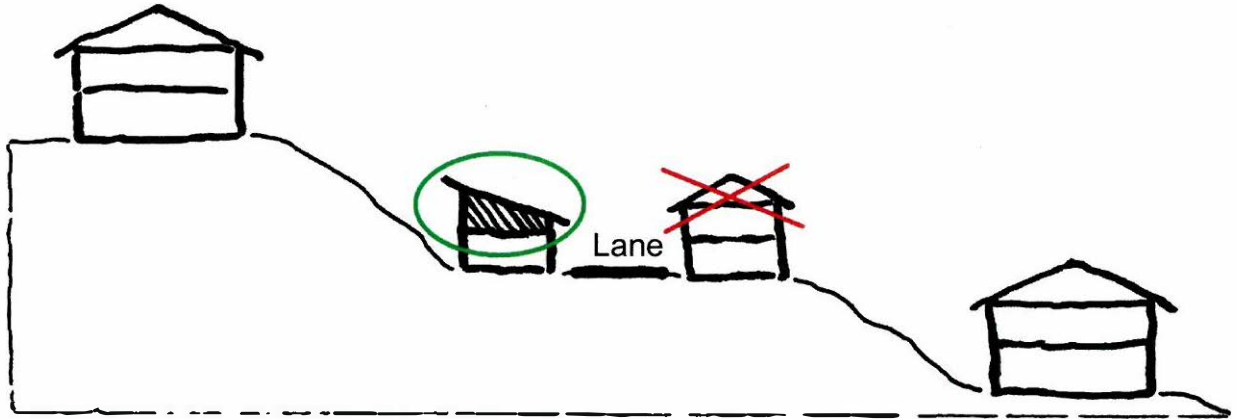


Figure 109

- 1.4 Integrated form: The second storey should be integrated into the roof form, such as with the use of dormers, in order to diminish the apparent height and massing of the *coach house* (see Figure 110). Flat roofs may require a lower building height and should be designed to reduce the massing of a two-storey building.

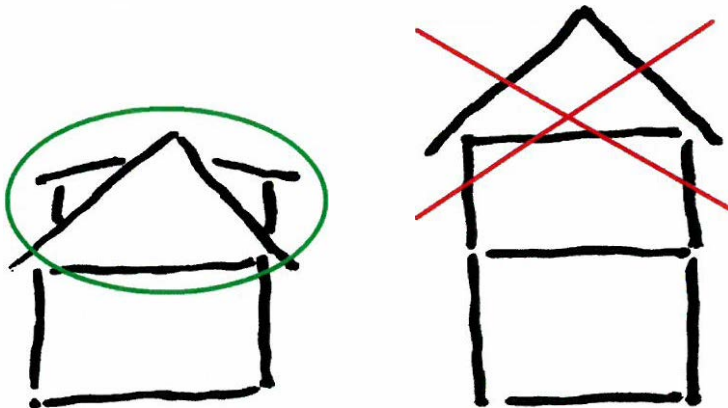


Figure 110

- 1.5 Dormers: Dormers should be positioned and proportioned to be smaller than and secondary to the primary roof form. Dormers should be set back a minimum of 0.6 m / 2 ft. from the wall below (see Figure 111). Dormer wall width on an elevation should not exceed 50% of the width of the first storey.

Dormer roofs should be sloped and the slope should be shallower than the primary roof. Dormers must include windows, may not extend above a roof ridgeline, and may not project beyond the wall below.

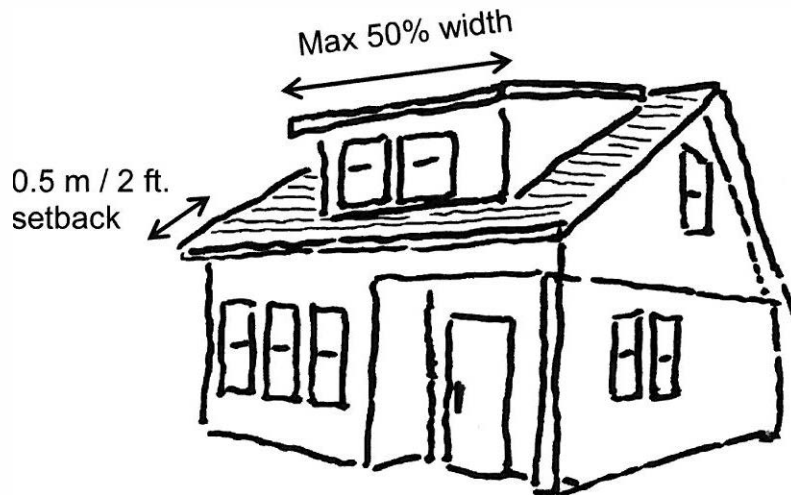


Figure 111

- 1.6 Height and massing: Second storey height and massing should include architectural treatments such as the use of trim, colour accents, secondary roof elements, building recesses, and stepped building form to reduce the appearance of bulk from adjacent single-family residential yards.

2. Privacy and Overlook

- 2.1 Windows: Size and placement of second storey windows should be oriented to reduce the potential for overlook into neighbouring properties, including potential overlook due to topography.

Examples of window types that assist in reducing the potential for overlook include skylights, translucent eye-level windows, clerestory windows (sills above 1.75 m / 5.75 ft.), and floor level windows (top of the window no higher than 0.3 m / 1 ft. above floor level) (see Figure 112). Clear, eye-level second storey windows may face the lane, or the flanking street on a corner lot, or both; other locations may be considered if the windows are facing adjacent property that is not single-family residential.

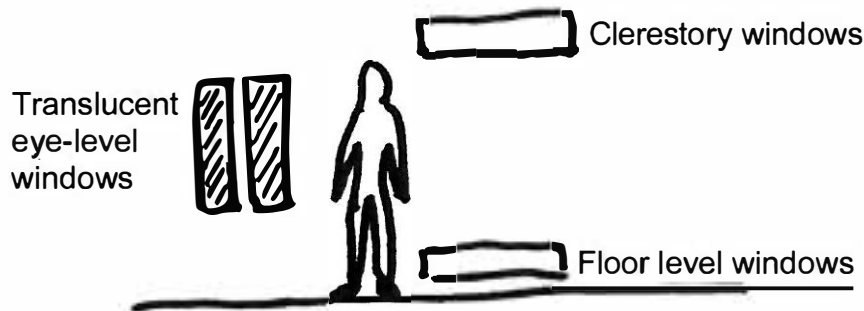


Figure 112

- 2.2 Decks: In order to reduce potential overlook, second storey decks should be recessed into the building and should not project beyond the wall below (see Figure 113). Second storey decks should primarily face the lane, or flanking street of a corner lot; other locations may be considered if the deck faces an adjacent property that is not single-family residential. Second storey decks should not be enclosed (except by railing) nor covered. Second storey decks should not exceed 7.43 m² / 80 sq. ft. in area, and shall be set back a minimum of 0.6 m / 2 ft. from the wall below. Roof top decks are not permitted.

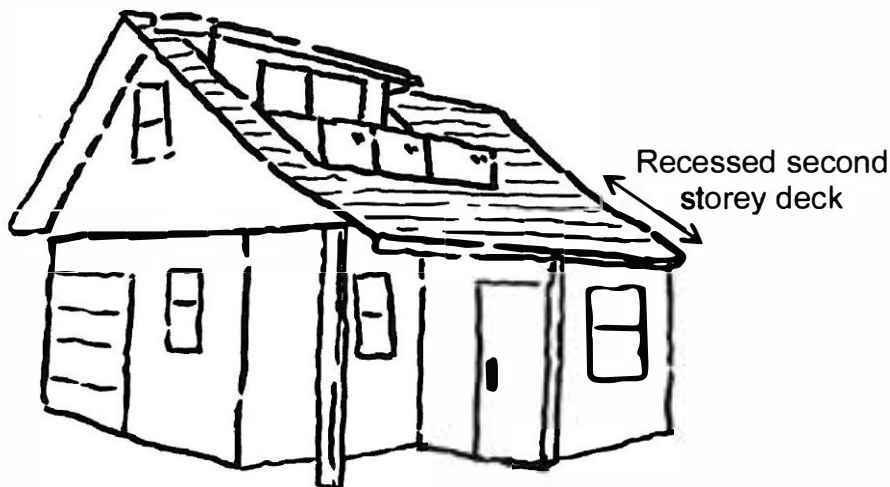


Figure 113

- 2.3 Natural light: Windows and balconies should be positioned to provide opportunities for natural light, while avoiding overlook into adjacent properties.

Development Approval Information Area

Land within the *Accessory Coach House Form and Character DPA* is also designated as a Development Approval Information Area in accordance with Section 484 of the *Local Government Act*. Applicants for form and character of accessory coach house development permits may be required by the *District* to provide, at the applicant's

expense, information in order to demonstrate compliance with the form and character of accessory coach house guidelines.

Any such information deemed by the *District* to be necessary for the purposes of determining requirements to be addressed in a development permit shall be identified and conveyed to the applicant during the development application process.

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Introduction

This Schedule B establishes seven Development Permit Areas (DPAs):

1. Protection of the Natural Environment DPA;
2. Streamside Protection DPA;
3. Wildfire Hazard DPA;
4. Creek Hazard DPA;
5. Slope Hazard DPA;
6. Form and Character DPA; **and**
7. Energy and Water Conservation and GHG Emission Reduction DPA; **and**
8. **Accessory Coach House Form and Character DPA.**

Part One of this Schedule B designates the areas that are subject to the above DPAs, and delegates the issuance of some development permits to the *District's* General Manager, Planning, Properties and Permits.

Part Two of this Schedule B contains definitions.

Part Three deals with the *Protection of the Natural Environment DPA* and the *Streamside Protection DPA*. It provides the context and objectives for these DPAs and provides exemptions and guidelines applicable to each. Corresponding Development Approval Information Areas are designated at the end of Part Three.

Part Four deals with the *Wildfire Hazard DPA*, the *Creek Hazard DPA* and the *Slope Hazard DPA*. It provides the context and objectives for these DPAs and provides exemptions and guidelines applicable to each. Requirements in relation to hazard assessment reports to be prepared by *qualified professionals* are then provided. A Development Approval Information Area is designated at the end of Part Four.

Part Five deals with the *Form and Character DPA*. It provides the context and objectives for this DPA and provides exemptions and guidelines in relation to different types of built form. A Development Approval Information Area is designated at the end of Part Five.

Finally, Part Six deals with the *Energy and Water Conservation and GHG Emission Reduction DPA*. It provides the context and objectives for this DPA and provides applicable exemptions and guidelines. A Development Approval Information Area is designated at the end of Part Six.

Part Seven deals with the *Accessory Coach House Form and Character DPA*. It provides the context and objectives for this DPA and provides exemptions and guidelines in relation to the built form of a two-storey accessory *coach house*. A Development Approval Information Area is designated at the end of Part Seven.

5. Protection of Development from Slope Hazards

Pursuant to section 919.1(b) of the *Local Government Act*, all:

- a) *potential slope hazard areas*;
- b) parcels that are located wholly or partially within any *potential slope hazard areas*;
- c) parcels upon which there is located a *steep slope* are collectively designated as the slope hazards development permit area (the “*Slope Hazard DPA*”); and
- d) parcels that intersect or touch any red line (the 20 metre reference line) adjacent to a *potential slope hazard area* shown on Map 2.3

are collectively designated as the slope hazard development permit area (the “*Slope Hazard DPA*”).

6. Form and Character of Commercial, Industrial and Multi-Family Development

Pursuant to subsections 919.1(d), 919.1(c) and 919.1(f) of the *Local Government Act*, all lands coloured red on Map 3.1 and all lands zoned for commercial, industrial or multi-family residential uses in the *Zoning Bylaw*, are collectively designated as the development permit area for form and character of commercial, industrial and multi-family *development* (the “*Form and Character DPA*”).

7. Energy and Water Conservation and Reduction of Greenhouse Gas Emissions

Pursuant to subsections 919.1(h), (i) and (j) of the *Local Government Act*, all lands coloured purple on Map 4.1 and all lands zoned in the *Zoning Bylaw*:

- a) for commercial, industrial/employment, multi-family and institutional purposes; and
- b) zoned Comprehensive Development and containing commercial, employment, multi-family or institutional land uses

are collectively designated as the development permit area for energy and water conservation and greenhouse gas emission reduction development permit area (the “*Energy and Water Conservation and GHG Emission Reduction DPA*”).

8. Form and Character of Accessory Coach House Development

Pursuant to subsection 488.1(e) of the *Local Government Act*, all lands within the Urban Containment Boundary that are zoned for single-family residential uses in the *Zoning Bylaw*, are collectively designated as the development permit area for form and character of intensive (*coach house*) residential *development* (the “*Accessory Coach House Form and Character DPA*”).

B. Requirement for a Development Permit

All *development* and all subdivisions (other than a subdivision of a new building under the British Columbia *Strata Property Act*) within a designated development permit area shall require a development permit unless exempted in accordance with the provisions of this *document*. Development permits issued may include any *development* conditions permitted by the *Local Government Act*, as appropriate to the development permit area and *development* in question.

The requirements and guidelines in this *document* supplement regulations in other *District* development control bylaws - they do not replace them. Issuance of a development permit does not absolve an applicant from compliance with any other *District* bylaw and the requirements and guidelines in this *document* should be read in conjunction with the balance of this *Official Community Plan*, the *Zoning Bylaw*, *Building Regulation Bylaw* and the *Development Servicing Bylaw* in particular.

A development variance may either relax or increase a bylaw requirement if doing so results in an improved form of *development* on a particular parcel of land. It must be noted however, that development permits may not alter the permitted land use or density as specified in the *Zoning Bylaw*, as this is not permitted under the *Local Government Act*.

Under certain conditions, as set out in Parts 3, 4, 5, ~~and 6, and 7~~ of this *document*, *development* may be exempted from the requirement to obtain a development permit. If unsure, property owners may submit a description of a proposed *development* activity with appropriate supporting information, and *District* staff will advise in writing whether the *development* is exempt from the requirement ~~for~~ a development permit.

An *exemption* from the requirement to obtain a development permit in connection with one development permit area shall not act as an *exemption* in connection with another development permit area. Also, an *exemption* from the requirement to obtain a development permit under the *Protection of the Natural Environment DPA* or under the *Streamside Protection DPA* shall not act as an *exemption* in connection with a requirement to obtain an environmental permit in accordance with the provisions of *Environmental Protection and Preservation Bylaw No. 6515*, as amended.

The *District* may impose in a development permit, any condition permitted by law in order to ensure compliance with the guidelines set out in this *document*.

When assessing a development permit application and determining what conditions, if any, should be imposed in a development permit, the applicable guidelines in this *document* should be followed. Alternative methods or materials may be considered where they provide equivalent or better performance and fulfill the objectives of the applicable guidelines. Staff should require that sufficient evidence or proof be submitted to substantiate any claims that may be used regarding use of the alternative method or material.

Where a parcel is designated as more than one type of development permit area, a single development permit may be issued, provided that the guidelines for all applicable development permit areas are addressed in the development permit.

C. Delegation of Authority to Issue Development Permits

In accordance with Section 920 of the *Local Government Act*, the *Council* hereby delegates to the *director* the powers of the *Council* to:

1. issue development permits with or without conditions in connection with the *Protection of the Natural Environment DPA*; *Streamside Protection DPA*; *Wildfire Hazard DPA*; *Creek Hazard DPA*; *Slope Hazard DPA*; **and** *Energy and Water Conservation and GHG Emission Reduction DPA*; **and** *Accessory Coach House Form and Character DPA*;
2. issue *minor development permits* with or without conditions in connection with the *Form and Character DPA*; *and*
3. provide any approval, acceptance or consent, form any opinion or determination, or require, provide or accept any reports, information or other items in connection with the foregoing as required or permitted in this *document*,

all in accordance with the applicable guidelines set out in this *document*, provided that:

1. the development permit does not involve any variances of the *Zoning Bylaws*;
2. in the case of a streamside protection development permit, the development permit does not involve parcels that are greater than 0.5 hectares in size located on or adjacent to the Capilano River, Lynn Creek or Seymour River, or located on or adjacent to Mackay Creek at any point south of Marine Drive;
3. the *director* may refer any DPA application to Council for decision, and in that event the provisions of this section related to reconsideration do not apply to the application.
4. the *director* may, in accordance with the applicable guidelines herein, require the applicant to provide security to be applied by the *District* to the cost of:
 - a) providing landscaping, including vegetation and trees provided to preserve, protect, restore or enhance riparian areas, that the permit requires to be provided;
 - b) correcting an unsafe condition that has resulted as a consequence of the contravention of a condition in the permit; and
 - c) correcting damage to the environment that has resulted as a consequence of the contravention of a condition in the permit;

In this *document*, the following terms have the meanings assigned to them below:

“accessory” means accessory as defined in the *Zoning Bylaw*;

“Accessory Coach House Form and Character DPA” means the development permit area designated in Part One section A.8 of this *document*;

“active floodplain” means an area of land that supports floodplain plant species and is:

1. adjacent to a *stream* that may be subject to temporary, frequent or seasonal inundation, or
2. within a boundary that is indicated by the *high water mark*;

“APEGBC” means the Association of Professional Engineers and Geoscientists of British Columbia or any replacement or successor professional association;

“buffer” or **“buffer area”** means an area that remains undeveloped in order to protect slope stability or to provide a setback from a natural hazard;

“coach house” means an accessory dwelling unit that is detached from the principle dwelling unit on a lot in a zone that permits single-family residential use;

“Council” means the Council of the *District*;

“Creek Hazard DPA” means the development permit area designated in Part One section A.4 of this *document*;

“debris flood” means a flood of water that carries an unusually large amount of sediment and/or wood debris, and that is often triggered by a *landslide* dam outbreak;

“debris flow” means a fast moving, liquefied and channelized *landslide* of mixed and unconsolidated water and debris that may occur during unusually wet weather on a steep mountain creek with abundant debris sources;

“defensible space” means the area around a structure where *fuel* and vegetation should be managed to reduce the *risk* of structure fires spreading to the forest or vice versa and to provide safe working space for fire fighters;

“designated flood” generally means an event that has a 1 in 200 chance of occurring in any given year, based on a frequency analysis of unregulated historic flood records or by regional analysis in cases of inadequate stream flow data available. In some cases, a designated flood can be the *flood of record* (for example, when an event greater than the 1 in 200 year event has occurred in recent history);



Photos courtesy of the Lynn Canyon Ecology Centre



PART 7 | Form and Character of Accessory Coach House Development

Context

The intent of this development permit area is to guide the form and character of a two-storey detached accessory *coach house development*, as a form of intensive residential *development* on properties with single-family residential use. Further, this development permit area guides the relationship to the surrounding neighbourhood, public realm, and the principal residence to achieve the vision, goals and strategic directions as articulated in the Official Community Plan. The *District* aspires to have neighbourhoods that offer a range of housing choices, and a high quality built environment that reflects the beautiful setting of the North Shore.

Objectives

The *Accessory Coach House Form and Character DPA* and corresponding Development Approval Information Area are established to address the following objectives:

HOUSING DIVERSITY – Striving to introduce more diverse housing forms while being respectful of and reflecting the detached residential neighbourhood character. Coach housing expands choices for extended families, aging-in-place, and serve as a possible mortgage helper.

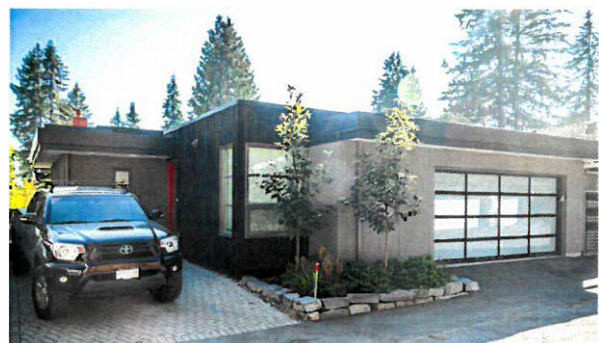
GOOD NEIGHBOUR – Promoting neighbourly two-storey *coach house development* that respects privacy and sunlight access, and reduces overlook. Coach housing should be designed to minimize impacts on adjacent properties, particularly with respect to overlook from two-storey *coach house development*.

Exemptions

An Accessory Coach House Form and Character development permit is not required in the following circumstances:

1. One-storey *coach house* buildings;
2. Interior alterations or renovations to existing *coach house* buildings; or
3. Minor exterior renovations to existing *coach house* buildings that do not significantly alter the building form and character of the *coach house*.

If unsure, property owners may submit a written description of a proposed *development* activity and District staff will advise in writing whether the *development* is exempt from the requirement for a development permit.



One-storey coach houses in the District of North Vancouver (right and left).

Discussion

These guidelines apply to accessory *coach house development* applications that are two storeys in height and on lots with single-family residential use. This form of intensive residential *development* may only be considered as an accessory use to the principal residence on the property.

The purpose of the guidelines is to ensure that the design of a two-storey *coach house* considers the privacy of abutting properties and reduces overlook, while balancing access to natural light and livability of the *coach house*.

The design of two-storey *coach houses* should be sensitive to *development* on adjacent properties and seek to achieve the following:

- minimize overlook on adjacent properties;
- promote privacy for neighbours, as well as for *coach house* occupants;
- complement the detached residential neighbourhood character; and
- be subordinate in overall size to the principal residence on the property.

Guidelines

The following guidelines apply to the design of a two-storey *coach house*:

1. Buildings and Architectural Form

1.1: Floor space: To reduce the impression of building massing, floor space on the second storey should be no more than 50% of the floor area beneath it (including garages and carports) for a *coach house* with a roof pitch of less than 3:12, or no more than 60% for a roof pitch of 3:12 or greater (see Figure 108).

1.2: Building massing: Second storey massing should be oriented toward the lane, the centre of the lot, and/or the flanking street for corner lots. Massing should avoid being oriented toward lot line(s) shared with an adjacent property.

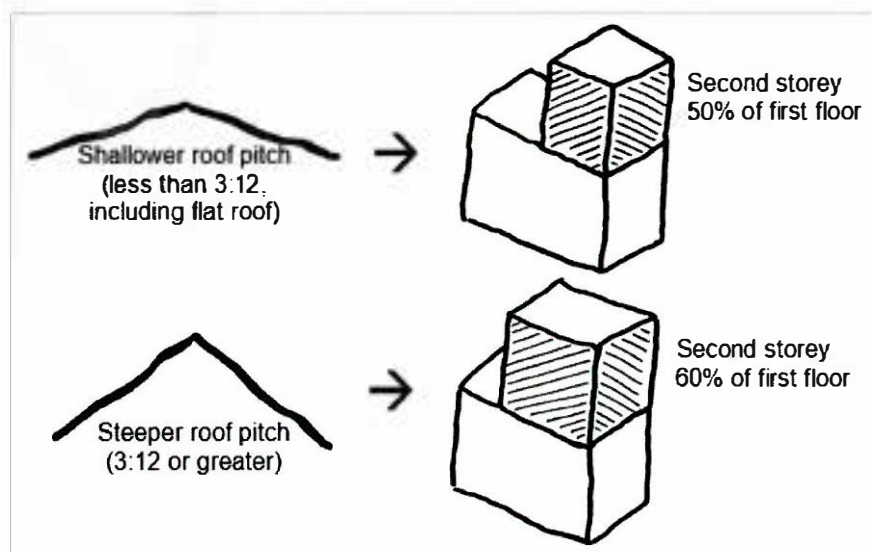


Figure 108

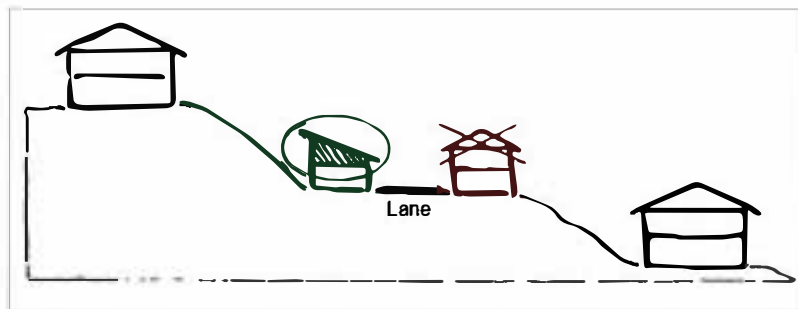


Figure 109

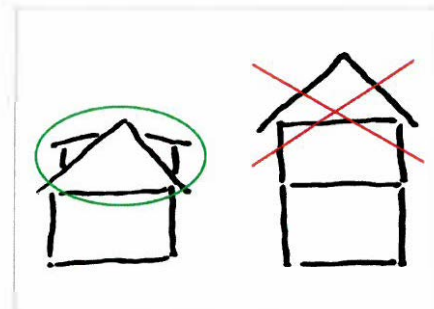


Figure 110

1.3: Building massing on sloped property: In order to respond to topography, a *coach house* on a sloped property with an angle greater than 10 degrees (18%) should avoid orienting the second storey massing toward the downslope side where adjacent property is single-family residential (see Figure 109).

1.4: Integrated form: The second storey should be integrated into the roof form, such as with the use of dormers, in order to diminish the apparent height and massing of the *coach house* (see Figure 110). Flat roofs may require a lower building height and should be designed to reduce the massing of a two-storey building.

1.5: Dormers: Dormers should be positioned and proportioned to be smaller than and secondary to the primary roof form. Dormers should be set back a minimum of 0.6 m / 2 ft. from the wall below (see Figure 111). Dormer wall width on an elevation should not exceed 50% of the width of the first storey. Dormer roofs should be sloped and the slope should be shallower than the primary roof. Dormers must include windows, may not extend above a roof ridge line, and may not project beyond the wall below.

1.6: Height and massing: Second storey height and massing should include architectural treatments such as the use of trim, colour accents, secondary roof elements, building recesses, and stepped building form to reduce the appearance of bulk from adjacent single-family residential yards.

2. Privacy and Overlook

2.1: Windows: Size and placement of second storey windows should be oriented to reduce the potential for overlook into neighbouring properties, including potential overlook due to topography.

Examples of window types that assist in reducing the potential for overlook include skylights, translucent eye-level windows, clerestory windows (sills above 1.75 m / 5.75 ft.), and floor level windows (top of the window no

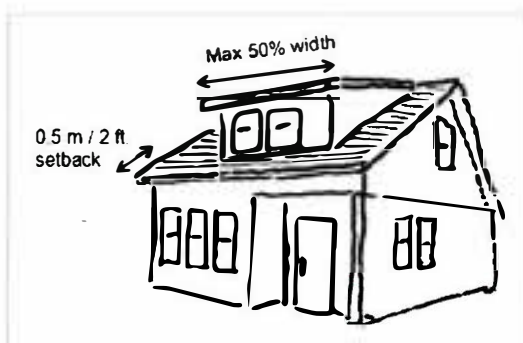


Figure 111

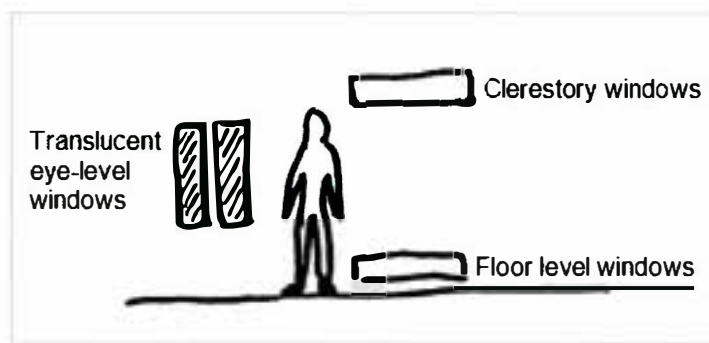


Figure 112

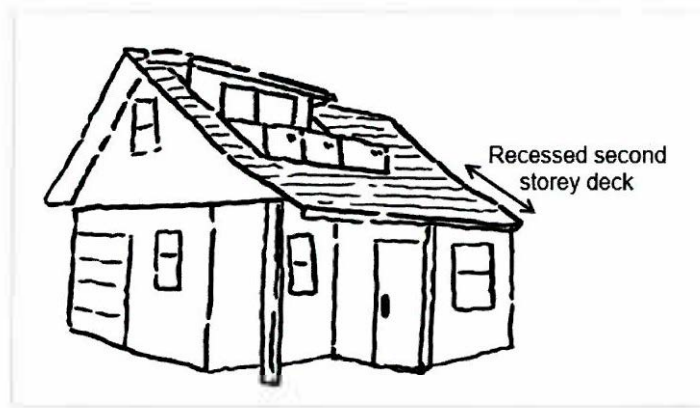


Figure 113

higher than 0.3 m / 1 ft. above floor level) (see Figure 112). Clear, eye-level second storey windows may face the lane, or the flanking street on a corner lot, or both; other locations may be considered if the windows are facing adjacent property that is not single-family residential.

2.2: Decks: In order to reduce potential overlook, second storey decks should be recessed into the building and should not project beyond the wall below (see Figure 113). Second storey decks should primarily face the lane, or flanking street of a corner lot; other locations may be considered if the deck faces an adjacent property that is not single-family residential. Second storey decks should not be enclosed (except by railing) nor covered. Second storey decks should not exceed 7.43 m² / 80 sq. ft. in area, and shall be set back a minimum of 0.6 m / 2 ft. from the wall below. Roof top decks are not permitted.

2.3: Natural light: Windows and balconies should be positioned to provide opportunities for natural light, while avoiding overlook into adjacent properties.

Development Approval Information Area

Land within the *Accessory Coach House Form and Character DPA* is also designated as a Development Approval Information Area in accordance with Section 484 of the *Local Government Act*. Applicants for form and character of accessory *coach house* development permits may be required by the *District* to provide, at the applicant's expense, information in order to demonstrate compliance with the form and character of accessory *coach house* guidelines.

Any such information deemed by the *District* to be necessary for the purposes of determining requirements to be addressed in a development permit shall be identified and conveyed to the applicant during the development application process.

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The Corporation of the District of North Vancouver**Bylaw 8360**

A bylaw to amend District of North Vancouver Bylaw 3210, 1965

The Council for The Corporation of the District of North Vancouver enacts as follows:

Citation

1. This bylaw may be cited as "District of North Vancouver Rezoning Bylaw 1382 (Bylaw 8360)".

Amendments

2. District of North Vancouver Zoning Bylaw 3210, 1965 is amended as follows:

- a) In Part 2 Interpretation,

- i. Adding the following definitions in alphabetical order among the existing definitions:

"coach house" means an accessory dwelling unit that is detached from a single-family residential building on a lot in a zone that permits a single-family residential building;

- ii. Within the definition for "secondary suite" replacing "accessory dwelling unit" with "accessory dwelling unit that is attached to a single-family residential building".
 - iii. Within the definition for "veranda" replacing "single family residential building" with "single family residential building or coach house".

- b) In Part 4 General Regulations, Section 410(1)(e) replacing the two occurrences of "accessory buildings containing secondary suites" with "coach houses".

- c) In Part 5 Residential Zone Regulations:

- i. Re-numbering Section 501.1(b)(ii) "home occupations" to Section 501.1(b)(i).
 - ii. Section 501.1(b)(iii), after subsection b) adding "c) a secondary suite is not permitted if there is a coach house on a single-family residential lot;", and renumbering the subsequent subsections.
 - iii. Section 501.1(b)(iv), after the semicolon removing "and,"

- iv. Section 501.1(b)(v), removing the period and replacing it with “; and,”
- v. Section 501.1(b) after subsection (v), adding the following:
 - (vi) coach houses subject to the following conditions:
 - a) coach houses are not permitted outside the Urban Containment Boundary as per the District of North Vancouver’s Official Community Plan, as may be amended from time to time;
 - b) coach houses are not permitted in any zone other than single-family residential zones;
 - c) coach houses are subject to the size, shape and siting regulations in Section 502.5;
 - d) only one coach house is permitted on a single-family residential lot;
 - e) a coach house is not permitted if there is a secondary suite on a single-family residential lot;
 - f) the owner of a single-family residential lot must be a resident of either the coach house or the principal residential dwelling unit; and
 - g) a single-family residential building containing more than one boarder or lodger may not have a coach house on that lot.

- d) In Part 5 Residential Zone Regulations, adding the following after 502.4:

502.5 Coach house regulations: regulations in Table 502.5 apply to any lot upon which a coach house is located. In the event of a conflict between any regulation in Table 502.5 and any other regulation in this Bylaw, the regulation in Table 502.5 shall apply:

Element	Regulation
Lot Width	15m (49.2 ft.) minimum
Lane Access	Lot must have vehicular access from a street classified as a lane where the lane is open to vehicle travel.
Coach House Siting	Must be sited to the rear of a principal dwelling.
Coach House Setbacks	
a) rear	1.2m (4 ft.) minimum
b) side	1.2m (4 ft.) minimum

c) flanking street	3.1m (10 ft.) minimum
d) separation between principal building and coach house, including attached structures more than 0.91m (3 ft.) above grade	6.1m (20 ft.) minimum
e) Ocean Natural Boundary Line	7.62m (25 ft.) minimum
Required Rear Yard Coverage	No maximum
Coach House Floor Space Ratio Exemptions	The following exemptions apply (exemptions for principal dwellings do not apply to coach houses):
a) Energy efficient construction <ul style="list-style-type: none"> - Step 4 of the Energy Step Code - Step 5 of the Energy Step Code 	2.8m ² (30 sq.ft.) maximum 8.4m ² (90 sq.ft.) maximum
b) Veranda	4.6m ² (50 sq.ft.) maximum
c) Miscellaneous	Floor area under sloped ceilings, not exceeding a floor to ceiling height of 1.2m (4 ft.).
Maximum Coach House Size	90m ² (968 sq.ft.) maximum excluding exemptions
Coach House Second Storey Floor Area	Cannot exceed the following percentage of the total floor area of the largest storey below, including attached parking structure:
a) roof slope of less than 3 in 12	50%
b) roof slope of 3 in 12 or greater	60%
Coach House Height	
a) one-storey building <ul style="list-style-type: none"> - roof slope of less than 3 in 12 	Measured from top of slab 3.7m (12 ft.) maximum

<ul style="list-style-type: none"> - roof slope of 3 in 12 or greater <p>b) two-storey building</p> <ul style="list-style-type: none"> - roof slope of less than 3 in 12 - roof slope of 3 in 12 or greater <p>c) Energy Step Code</p> <ul style="list-style-type: none"> - Step 4 of the Energy Step Code - Step 5 of the Energy Step Code 	<p>4.5m (15 ft.) maximum</p> <p>Measured using building height base line</p> <p>6.7m (22 ft.) maximum</p> <p>7.6m (25 ft.) maximum</p> <p>Additional 0.15m (0.5 ft.) in height</p> <p>Additional 0.3m (1 ft.) in height</p> <p>Energy Step Code height bonus is not cumulative.</p>
Coach House Living Room	Except in the case of a coach house that is a studio, a coach house must have at least one living room, that is not a bedroom, that is at least 16.7m ² (180 sq.ft.), with either the room length or width at least 2.1m (7 ft.). This living room may contain a combined kitchen, living, and dining area.
Coach House Bedroom Size	If the coach house has at least one bedroom (not a studio unit), at least one bedroom must have a minimum area of 8.4m ² (90 sq.ft.), with either the room length or width at least 2.1m (7 ft.).
Pedestrian Access	A minimum 0.9m (3 ft.) wide pedestrian walkway must be provided to the coach house entrance from: <ul style="list-style-type: none"> a) the side lot line on a flanking street of a corner lot, or b) the front lot line of a lot that is not a corner lot.
Coach House Private Outdoor Patio, Deck or Veranda Space	At least one patio, deck or veranda must have a minimum area of 4.5m ² (48 sq.ft.) with one dimension at least 1.8m (6 ft.).
Coach House Basement	Not permitted
Coach House Rooftop Deck	Not permitted

Parking	
a) Enclosed stall	Not more than 1 parking stall may be fully-enclosed within a coach house structure.
b) Location on corner lot	Where there is an adjacent flanking street, parking stalls must be located adjacent to the interior side lot line.

Table 502.5

- e) In Part 10 Off-Street Parking Space and Loading Space Regulations, Section 1001 Required Off-Street Parking Spaces,

- i. Removing the following row:

2. Single family residential building with suite	3 per building (Bylaw 6922)
--	-----------------------------

and replacing with the following row:

2. Single family residential lot with a secondary suite or a coach house	1 space in addition to the Base Rate.
--	---------------------------------------

- f) Part 12 Enforcement, Section 1207 Ticketing,

- i. Removing the following after "More than One Secondary Suite":

Secondary Suite Exceed Floor Area	501.1(a)(iii)(c)	\$200.00
Secondary Suite Not Owner Occupied	501.1(a)(iii)(c)	\$200.00
Un-permitted Secondary Suite	501.1(a)(iii)(d)	\$200.00
Un-permitted Boarder/Lodger	501.1(a)(iii)(d)	\$200.00

and replacing with the following:

Un-permitted Secondary Suite with Coach House	501.1(b)(iii)c)	\$200.00
Secondary Suite Not Owner Occupied	501.1(a)(iii)(d)	\$200.00
Un-permitted Boarder/Lodger	501.1(a)(iii)(e)	\$200.00
Un-permitted Secondary Suite	502.3	\$200.00
Secondary Suite Exceed Floor Area	502.4	\$200.00

- ii. Adding the following after "Secondary Suite Exceed Floor Area":

Coach House outside Urban Containment Boundary	501.1(b)(vi)a)	\$200.00
Coach House in Un-permitted Zone	501.1(b)(vi)b)	\$200.00
More than one Coach House	501.1(b)(vi)d)	\$200.00
Un-permitted Coach House with Secondary Suite	501.1(b)(vi)e)	\$200.00
Owner Not Residing in Coach House or Principal Residential Dwelling Unit	501.1(b)(vi)f)	\$200.00
Un-permitted Boarder/Lodger	501.1(b)(vi)g)	\$200.00
Un-permitted Coach House	502.5	\$200.00

READ a first time

PUBLIC HEARING held

READ a second time

READ a third time

Certified a true copy of "Bylaw 8360" as at Third Reading

Municipal Clerk

APPROVED by the Ministry of Transportation and Infrastructure on

ADOPTED

Mayor

Municipal Clerk

Certified a true copy

Municipal Clerk

REZONING BYLAW 1382 (BYLAW 8360)

RED-LINE VERSION

PART 2 INTERPRETATION

"coach house" means an accessory dwelling unit that is detached from a single-family residential building on a lot in a zone that permits a single-family residential building;

"secondary suite" means an accessory dwelling unit that is attached to a single-family residential building on a lot in a zone that permits a single-family residential building;

"veranda" for a single family residential building or coach house means a one storey high roofed portico, gallery or porch adjoining an exterior wall or walls of a building and open at all other sides with the exception of necessary structural support columns and a guard or rail not exceeding a height of 1.1m (3.5 ft.) and with a floor not higher than the lowest above-grade building floor on the side of the building to which it is attached;

PART 4 GENERAL REGULATIONS

410 Floor Space Ratio Exemptions

The following are excluded from floor space ratio calculations:

(1) For single family residential buildings, exclude:

(e) except in the RSK and RSE zones, accessory buildings, other than parking structures and ~~coach houses accessory buildings containing secondary suites~~, not exceeding 25m² (269 sq.ft.). In the RSE zone, accessory buildings, other than parking structures and ~~coach houses accessory buildings containing secondary suites~~, not exceeding 19.5m² (210 sq.ft.); and

(Bylaws 7006, 7042, 7190, 8036)

PART 5 RESIDENTIAL ZONE REGULATIONS

501 Uses in Single-Family Residential Zones (RS)

All uses of land, buildings and structures in RS Zones are prohibited except

501.1 (a) Principal Use:

(i) One single-family residential building

501.1 (b) Accessory Uses:

~~(ii)~~(i) home occupations;

- (ii) accommodation of not more than two boarders or lodgers in a single-family residential building;
- (iii) secondary suites subject to the following regulations:
 - a) secondary suites are permitted only in single-family residential zones;
 - b) only one secondary suite is permitted on a single-family residential lot;
 - c) a secondary suite is not permitted if there is a coach house on a single-family residential lot;
 - ~~e~~d) the owner of a single-family residential building containing a secondary suite shall be a resident of either the secondary suite or the principal residential dwelling unit; and
 - ~~d~~e) a single-family residential building containing more than one boarder or lodger may not have a secondary suite;
- (iv) bed and breakfast business subject to the regulations contained in Section 405A; ~~and~~;
- (v) buildings and structures accessory to Subsection 501.1(a); ~~and~~;
- (vi) coach houses subject to the following conditions:
 - a) coach houses are not permitted outside the Urban Containment Boundary as per the District of North Vancouver's Official Community Plan, as may be amended from time to time;
 - b) coach houses are not permitted in any zone other than single-family residential zones;
 - c) coach houses are subject to the size, shape and siting regulations in Section 502.5;
 - d) only one coach house is permitted on a single-family residential lot;
 - e) a coach house is not permitted if there is a secondary suite on a single-family residential lot;
 - f) the owner of a single-family residential lot must be a resident of either the coach house or the principal residential dwelling unit; and
 - g) a single-family residential building containing more than one boarder or lodger may not have a coach house on that lot.

502 Size, Shape and Siting of Residential Buildings and Accessory Buildings and Structures in Single-Family Residential Zones (RS)

502.1 Notwithstanding the height provisions in subsection 502.2.a, single-family residential buildings located within a neighbourhood listed and delineated in Schedule "A" attached hereto, shall only be added onto, altered or replaced if the addition, alteration or replacement building does not exceed the maximum building height or maximum eave height of the single-family residential building lawfully existing immediately prior to the date of application for any permit authorizing that addition, alteration or demolition and reconstruction.

502.3 Location of Secondary Suites: secondary suites must be located within the single-family residential building.

502.4 Size of secondary suite: a secondary suite shall not exceed in total area the lesser of 90m² (968 sq.ft.) or 40% of the residential floor space of the principal single-family residential building.

502.5 Coach house regulations: regulations in Table 502.5 apply to any lot upon which a coach house is located. In the event of a conflict between any regulation in Table 502.5 and any other regulation in this Bylaw, the regulation in Table 502.5 shall apply:

Element	Regulation
Lot Width	15m (49.2 ft.) minimum
Lane Access	Lot must have vehicular access from a street classified as a lane where the lane is open to vehicle travel.
Coach House Siting	Must be sited to the rear of a principal dwelling.
Coach House Setbacks	
a) rear	1.2m (4 ft.) minimum
b) side	1.2m (4 ft.) minimum
c) flanking street	3.1m (10 ft.) minimum
d) separation between principal building and coach house, including attached structures more than 0.91m (3 ft.) above grade	6.1m (20 ft.) minimum
e) Ocean Natural Boundary Line	7.62m (25 ft.) minimum

Required Rear Yard Coverage	No maximum
Coach House Floor Space Ratio Exemptions	The following exemptions apply (exemptions for principal dwellings do not apply to coach houses):
<ul style="list-style-type: none"> a) Energy efficient construction <ul style="list-style-type: none"> - Step 4 of the Energy Step Code - Step 5 of the Energy Step Code b) Veranda c) Miscellaneous 	<p>2.8m² (30 sq.ft.) maximum</p> <p>8.4m² (90 sq.ft.) maximum</p> <p>4.6m² (50 sq.ft.) maximum</p> <p>Floor area under sloped ceilings, not exceeding a floor to ceiling height of 1.2m (4 ft.).</p>
Maximum Coach House Size	90m ² (968 sq.ft.) maximum excluding exemptions
Coach House Second Storey Floor Area	Cannot exceed the following percentage of the total floor area of the largest storey below, including attached parking structure:
<ul style="list-style-type: none"> a) roof slope of less than 3 in 12 b) roof slope of 3 in 12 or greater 	<p>50%</p> <p>60%</p>
Coach House Height	
<ul style="list-style-type: none"> a) one-storey building <ul style="list-style-type: none"> a) roof slope of less than 3 in 12 b) roof slope of 3 in 12 or greater b) two-storey building <ul style="list-style-type: none"> a) roof slope of less than 3 in 12 b) roof slope of 3 in 12 or greater 	<p>Measured from top of slab</p> <p>3.7m (12 ft.) maximum</p> <p>4.5m (15 ft.) maximum</p> <p>Measured using building height base line</p> <p>6.7m (22 ft.) maximum</p> <p>7.6m (25 ft.) maximum</p>

<p>c) Energy Step Code</p> <ul style="list-style-type: none"> • Step 4 of the Energy Step Code • Step 5 of the Energy Step Code 	<p>Additional 0.15m (0.5 ft.) in height</p> <p>Additional 0.3m (1 ft.) in height</p> <p>Energy Step Code height bonus is not cumulative.</p>
Coach House Living Room	Except in the case of a coach house that is a studio, a coach house must have at least one living room, that is not a bedroom, that is at least 16.7m ² (180 sq.ft.), with either the room length or width at least 2.1m (7 ft.). This living room may contain a combined kitchen, living, and dining area.
Coach House Bedroom Size	If the coach house has at least one bedroom (not a studio unit), at least one bedroom must have a minimum area of 8.4m ² (90 sq.ft.), with either the room length or width at least 2.1m (7 ft.).
Pedestrian Access	<p>A minimum 0.9m (3 ft.) wide pedestrian walkway must be provided to the coach house entrance from:</p> <ul style="list-style-type: none"> a) the side lot line on a flanking street of a corner lot, or b) the front lot line of a lot that is not a corner lot.
Coach House Private Outdoor Patio, Deck or Veranda Space	At least one patio, deck or veranda must have a minimum area of 4.5m ² (48 sq.ft.) with one dimension at least 1.8m (6 ft.).
Coach House Basement	Not permitted
Coach House Rooftop Deck	Not permitted
<p>Parking</p> <ul style="list-style-type: none"> a) Enclosed stall 	Not more than 1 parking stall may be fully-enclosed within a coach house structure.

b) Location on corner lot	Where there is an adjacent flanking street, parking stalls must be located adjacent to the interior side lot line.
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Table 502.5

PART 10 OFF-STREET PARKING SPACE AND LOADING SPACE REGULATIONS

1001 Required Off-Street Parking Spaces

The base rate noted for each use category in the table below shall apply to all uses in that category unless they are specifically identified with a different parking rate.

USE	PARKING REQUIREMENTS
Residential (5)	
1. Base Rate	2 per dwelling unit
2. Single family residential building with suite 2. Single family residential lot with a secondary suite or a coach house	3 per building (Bylaw 6922) 1 space in addition to the Base Rate.

PART 12 ENFORCEMENT

1207 Ticketing

Designated Expressions	Section	Fine
Un-permitted Secondary Suite with Coach House	501.1(b)(iii)c)	\$200.00
Secondary Suite Not Owner Occupied	501.1(a)(iii)(e) 501.1(a)(iii)(d)	\$200.00
Un-permitted Boarder/Lodger	501.1(a)(iii)(d) 501.1(a)(iii)(e)	\$200.00
Un-permitted Secondary Suite	501.1(a)(iii)(d) 502.3	\$200.00
Secondary Suite Exceed Floor Area	501.1(a)(iii)(e) 502.4	\$200.00
Coach House outside Urban Containment Boundary	501.1(b)(vi)a)	\$200.00
Coach House in Un-permitted Zone	501.1(b)(vi)b)	\$200.00
More than one Coach House	501.1(b)(vi)d)	\$200.00
Un-permitted Coach House with Secondary Suite	501.1(b)(vi)e)	\$200.00

Owner Not Residing in Coach House or Principal Residential Dwelling Unit	501.1(b)(vi)f)	\$200.00
Un-permitted Boarder/Lodger	501.1(b)(vi)g)	\$200.00
Un-permitted Coach House	502.5	\$200.00

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The Corporation of the District of North Vancouver**Bylaw 8362**

A bylaw to amend Fees and Charges Bylaw 6481, 1992

The Council for The Corporation of The District of North Vancouver enacts the following:

Citation

1. This bylaw may be cited as "Fees and Charges Bylaw 6481, 1992, Amendment Bylaw 8362, 2019 (Amendment 61)".

Amendments

2. Fees and Charges Bylaw 6481, 1992 is amended as follows:

Schedule B Development and Permitting Fees, subsection Development Permit – Major is amended by inserting after the row "Multi family – base fee plus" and before the row "Environmental or Hazardous Conditions:" the following rows:

Form and character of accessory coach house:	\$670.00	
Profiling Fee	\$36.00	
Total	\$706.00	

READ a first time

READ a second time

READ a third time

ADOPTED

Mayor

Municipal Clerk

Certified a true copy

Municipal Clerk

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The Corporation of the District of North Vancouver

Bylaw 8361

A bylaw to amend Bylaw Notice Enforcement Bylaw 7458, 2004

The Council for The Corporation of The District of North Vancouver enacts the following:

Citation

1. This bylaw may be cited as "Bylaw Notice Enforcement Bylaw 7458, 2004, Amendment Bylaw 8361, 2018 (Amendment 41)".

Amendments

2. Bylaw Notice Enforcement Bylaw 7458, 2014 is amended as follows:

a) Under the heading "Zoning Bylaw 3210, 1965",

- i. Between the rows "501.1(b)(iii)b) More than One Secondary Suite" and "501.1(b)(iii)c) Secondary Suite Not Owner Occupied" adding the following:

501.1(b)(iii)c)	Un-permitted Secondary Suite with Coach House	200	150	300	NO	N/A
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- ii. Renumbering the row "501.1(b)(iii)c) Secondary Suite Not Owner Occupied" to "501.1(b)(iii)d)";
- iii. Renumbering the row "501.1(b)(iii)d) Un-permitted Boarder/Lodger" to "501.1(b)(iii)e)";
- iv. Adding the following after the row "502.4 Secondary Suite Exceed Floor Area":

501.1(b)(vi)a)	Coach House outside Urban Containment Boundary	200	150	300	NO	N/A
501.1(b)(vi)b)	Coach House in Un-permitted Zone	200	150	300	NO	N/A
501.1(b)(vi)d)	More than one Coach House	200	150	300	NO	N/A
501.1(b)(vi)e)	Un-permitted Coach House with Secondary Suite	200	150	300	NO	N/A
501.1(b)(vi)f)	Owner Not Residing in Coach House or Principal Residential Dwelling Unit	200	150	300	NO	N/A
501.1(b)(vi)g)	Un-permitted Boarder/Lodger	200	150	300	NO	N/A

502.5	Un-permitted Coach House	200	150	300	NO	N/A
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READ a first time

READ a second time

READ a third time

ADOPTED

Mayor

Municipal Clerk

Certified a true copy

Municipal Clerk



CORPORATE POLICY MANUAL

Section:	Land Administration	8
Sub-Section:	Development - Applications	3060
Title:	NON-STATUTORY PUBLIC CONSULTATION FOR DEVELOPMENT APPLICATIONS	2

POLICY

It is the policy of the District to:

- encourage applicants for Official Community Plan amendments, Zoning Bylaw amendments, development permits, development variance permits, and liquor license applications to notify the public of development applications and solicit feedback prior to the proposal being considered by Council,
- encourage applicants for Official Community Plan amendments, Zoning Bylaw amendments, and certain development permits to hold one or more public information meetings prior to the proposal being considered by Council,
- provide notice of public information meetings in accordance with this policy, and
- provide Council with an information report prior to the holding of a public information meeting.

REASON FOR POLICY

1. To establish early dialogue with the community and identify specific issues of concern.
2. To expand the opportunities for public consultation.
3. To ensure that factual information is conveyed to the community.
4. To enable staff and Council to gauge public opinion on a particular application.
5. To inform Council of development applications in process.

PROCEDURE

The following table summarizes the recommended public notification:

Development Proposal	¹ Notification Delivery Area	Sign
Official Community Plan & Zoning Bylaw Amendment		
Preliminary application	100 m	No
Public Information Meeting	100 m	Yes
Major Development Permit for Commercial, Industrial & Multi-Family Form and Character		
Preliminary application	100 m	No
Public Information Meeting	100 m	Yes
Other Permit and Approvals		
Development Variance Permit	Abutting land	No
Development Permit for Accessory Coach House Form and Character	Abutting land	No
Liquor Licence (requiring a resolution)	100 m	Yes

¹ The notification delivery area includes the lands subject to the bylaw alteration, permit or approval.

The above table does not apply if 10 or more parcels owned by 10 or more persons are the subject of the bylaw alteration, permit or approval. In such cases, newspaper notice will be sufficient.

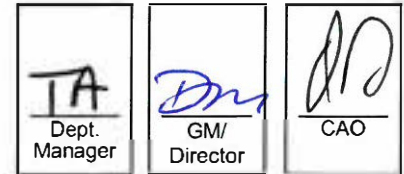
AUTHORITY TO ACT

Delegated to Staff

Approval Date:	July 10, 2017	Approved by:	Regular Council
1. Amendment Date:		Approved by:	
2. Amendment Date:		Approved by:	

DRAFT

AGENDA INFORMATION	
<input checked="" type="checkbox"/> Regular Meeting	Date: <u>Oct 7, 2019</u>
<input type="checkbox"/> Other:	Date: _____



The District of North Vancouver REPORT TO COUNCIL

September 25, 2019
File: 13.6440.50/000.000

AUTHOR: Shazeen Tejani, Community Planner

SUBJECT: Non-Medical Retail Cannabis Bylaw and Policy Amendments

RECOMMENDATION:

THAT "District of North Vancouver Rezoning Bylaw 1379, (Bylaw 8340)" is given FIRST Reading;

AND THAT "Business Licence Bylaw 4567, 1974 Amendment Bylaw 8341, 2019 (Amendment 50)" is given FIRST Reading;

AND THAT "District of North Vancouver Fees and Charges Bylaw 6481, 1992, Amendment Bylaw 8343, 2019 (Amendment 59)" is given FIRST, SECOND, and THIRD Readings;

AND THAT "Bylaw Notice Enforcement Bylaw 7458, 2004, Amendment Bylaw 8346, 2019 (Amendment 40)" is given FIRST, SECOND, and THIRD Readings;

AND THAT "District of North Vancouver Rezoning Bylaw, 1379 (Bylaw 8340)" is referred to a Public Hearing;

AND THAT pursuant to Section 59 (2)(b) of the *Community Charter*, "Business Licence Bylaw 8341, 2019 (Amendment 50)" is referred to a Public Meeting to provide an opportunity for persons who consider they are affected by the bylaw to make representations to Council;

AND THAT pursuant to Sections 59 (2)(a) and (3) of the *Community Charter*, Council direct staff to give notice of its intention to hold a Public Meeting as follows:

1. The notice shall state the following:
 - a. the time and date of the Public Meeting;
 - b. the place of the Public Meeting;
 - c. in general terms the purpose of the bylaw; and
 - d. the place and the times and dates when copies of bylaw may be inspected.

2. The notice shall be published in at least 2 consecutive issues of a newspaper, the last publication to appear not less than 3 days and not more than 10 days before the Public Meeting.

AND THAT the revised Non-Medical Retail Cannabis Policy as attached to the September 25, 2019 report of the Community Planner entitled Non-Medical Retail Cannabis Bylaw and Policy Amendments is approved;

AND THAT the revised Non-Statutory Public Consultation Policy for Development Applications as attached to the September 25, 2019 report of the Community Planner entitled Non-Medical Retail Cannabis Bylaw and Policy Amendments is approved.

REASON FOR REPORT:

At the July 22, 2019, Regular Meeting of Council, Council approved the Non-Medical Retail Cannabis Policy and directed staff to draft amendments to the Zoning Bylaw 3210, Business Licence Bylaw 4567, Fees and Charges Bylaw 6481, and, the Bylaw Notice Enforcement Bylaw 7458 to create the ability for approval of cannabis retailing, manufacturing, and warehousing.

Minor amendments to the Non-Medical Retail Cannabis Policy are proposed to clarify the application process. An amendment to the Non-Statutory Public Consultation for Development Applications Policy is also proposed to add a notification delivery area for Cannabis Retail Licence applications.

SUMMARY:

Under the Non-Medical Retail Cannabis Policy, retail cannabis stores are subject to the following regulations:

- Site must be zoned to permit a liquor store;
- Must be located at least 200 m from the property line of any elementary or high school;
- Does not exceed a maximum of one (1) business in each in the following growth centres: Maplewood Village Centre, Lions Gate Village Centre and Marine Drive, Lynn Valley Town Centre, and Lynn Creek Town Centre;
- Requires an individual rezoning of the property; and
- Complies with all the requirements of the Provincial *Cannabis Licensing Regulation*.

Implementation of the District's cannabis framework requires amendments to four bylaws and two related policies. Each is summarized below and described in more detail further in this report.

These amendments are intended to precede any rezoning applications being considered by Council for a retail cannabis store.

1. **Zoning Bylaw 3210:** to define cannabis related uses and add relevant zones for future site-specific rezoning.
2. **Fees and Charges Bylaw 6481:** to include a cannabis retail store business licence fee and application fee.

3. **Business Licence Bylaw 4567:** to include a cannabis retail store as an allowable licenced business and to regulate nuisances.
4. **Bylaw Notice Enforcement Bylaw 7458:** to add ticketable offences for breach of bylaws or operating outside of permitted hours.
5. **Non-Medical Retail Cannabis Policy:** to make minor amendments to the policy to align definitions between bylaws and policies and clarify the review process for Provincial store applications.
6. **Non-Statutory Public Consultation For Development Applications Policy:** to include a public notification area for a Cannabis Retail Store.

BACKGROUND:

Public and stakeholder consultation in 2018 informed the locational and operational guidelines to regulate cannabis retail stores in the District. While the policy approved by Council on July 22, 2019 sets out the framework for where cannabis retail stores may be considered, retail cannabis as a use is still prohibited in the District's Zoning Bylaw 3210. Council directed staff to amend the Zoning Bylaw 3210, the Business Licence Bylaw 4567, the Fees and Charges Bylaw 6481, and the Bylaw Notice Enforcement Bylaw 7458 to define cannabis and put in place the mechanisms through which retail stores could be regulated. A consequential amendment to the Non-Statutory Public Consultation for Development Applications Policy is needed to provide staff with direction on consultation associated with application review. Specifically, staff propose to amend the policy to include a minimum notification delivery area for all Cannabis Retail Licences.

EXISTING POLICY:

On October 29, 2018 Council adopted an amendment to the Smoking Regulation Bylaw 7792 in light of cannabis legalization, to ensure that smoking of cannabis would be regulated in the same way as cigarettes, cigars, or other lighted smoking equipment. These regulations prohibit smoking inside buildings (except where privately owned and not publicly accessible), in vehicles for hire, on public transit, or within close proximity to doors and windows. These regulations further prohibit smoking tobacco or cannabis within 6 metres of a park or other municipal property.

The Non-Medical Retail Cannabis Policy provides the framework to consider applications to amend the Zoning Bylaw to permit a cannabis retail stores.

ANALYSIS:

The proposed amendments to the individual bylaws and policies are described in detail below.

Zoning Bylaw 3210 Amendments (Attachment 1):

1. Adds definitions for cannabis, non-medical cannabis, cannabis accessory, cannabis retail store, and cannabis warehouse. Cannabis warehouses will be permitted in all zones that allow a warehouse use.
2. Amends ten zones where the retail sale of cannabis is specifically permitted on properties listed in a table located in Part 4: General Regulations. Specific properties may be added to this table once successfully rezoned to permit a cannabis retail store.

In accordance with Council's Non-Medical Retail Cannabis Policy, a cannabis retail store will only be considered in those zones which currently permit a liquor store use.

3. Continues a prohibition of commercial growing and harvesting.

Fees and Charges Bylaw 6481 (Attachment 2):

1. Adds a cannabis licence application fee of \$2,040. The proposed fee is the same as liquor licence applications, as it has similar costs associated with the administration, processing, and public engagement.
2. Adds an annual business licence fee of \$5,000. This fee is similar to liquor licence applications and reflects the administrative and policing costs anticipated with this new retail business, which was formerly a controlled substance prior to legalization.

Business Licence Bylaw 4567 (Attachment 3):

1. Adds definitions for cannabis, non-medical cannabis, cannabis accessory, cannabis retail store, and cannabis warehouse.
2. Adds licence conditions for a retail store including prevention of nuisances, minimizing negative impacts on neighbours, and hours of operation.
3. Outlines conditions of operating the cannabis retail store, including but not limited to not operating any other business from the cannabis retail store and only operating the store between the hours of 9:00 am to 9:00 pm, seven days a week.

Bylaw Notice Enforcement Bylaw 7458 (Attachment 4):

1. Adds offences for non-compliance with the applicable regulations in the Business Licence Bylaw 4567, the terms of conditions of the cannabis licence, operating another business from the store, or operating outside of the designated store hours.

Non-Medical Retail Cannabis Policy (Attachment 5):

1. Changes 'Retail Cannabis Business' under 'Definitions' to 'Cannabis Retail Store' to align with the Zoning Bylaw 3210 definition.
2. Adds a 15-day window, from the date a referral is received from the Provincial Liquor and Cannabis Regulation Branch (LCRB), for an applicant to submit an application to the District.
3. Adds greater clarity on the processing of Provincial applications. Provincial stores are not required to have a referral from the LCRB, as stated by the Attorney General of British Columbia. As such, the date that an application for a Provincial cannabis retail store is submitted to the District will be considered the date of the referral.

Non-Statutory Public Consultation for Development Applications Policy (Attachment 7):

1. Adds a line in the 'Procedures' table in the 'Other Permit and Approvals' category that includes 'Cannabis Retail Licence' with a notification delivery area of 100m and the

requirement to add a sign on the site, to be consistent with the notice requirements for liquor licence applications.

Timing/Approval Process:

Non-medical cannabis became legal in Canada on October 17, 2018. The District of North Vancouver began the process of reviewing non-medical cannabis regulations in June 2018, as indicated in the timeline below.

DATE	DECISION POINT	OUTCOME
JUNE 2018	START OF PROCESS	<ul style="list-style-type: none">• Cannabis use prohibited• Report to Council outlining proposed approaches to regulate businesses & land uses following legalization
JULY - SEPT 2018	COMMUNITY CONSULTATION	<ul style="list-style-type: none">• Online survey• Stakeholder consultations
OCTOBER 2018	COUNCIL APPROVAL	<ul style="list-style-type: none">• Council approved amendments to the smoking bylaw to regulate smoking of cannabis like tobacco
MARCH 2019	COUNCIL CONSIDERATION	<ul style="list-style-type: none">• Report to Council recommending an approach to regulating retail stores based on feedback received
JULY 2019	COUNCIL APPROVAL	<ul style="list-style-type: none">• Council approved Non-Medical Retail Cannabis Policy
OCTOBER 2019	COUNCIL CONSIDERATION	<ul style="list-style-type: none">• Introduction of bylaw amendments and policy amendments

WE ARE HERE

Figure 1: Planning Process for Non-Medical Retail Cannabis Regulation

On July 22nd, 2019, Council approved the Non-Medical Retail Cannabis Policy and as of July 23rd, 2019, the District began accepting referrals for cannabis retail stores from the LCRB.

As of September 25th, 2019, staff have received seven referrals for cannabis retail stores, four of which have active rezoning applications with the District. The bylaw and policy amendments proposed in this report seek to implement the administrative elements of the cannabis framework in advance of the individual rezoning applications proceeding to first reading. Each rezoning application will be forwarded to Council for consideration of Bylaw Introduction and referral to a Public Hearing.

Concurrence:

The proposed bylaw amendments have been reviewed by Legal, Development Planning, Bylaw Services and the Clerks Department. The District of North Vancouver Rezoning Bylaw 8340 affects land lying within 800m of a controlled access intersection and therefore has a signature block for the required approval by the Provincial Ministry of Transportation and

Infrastructure, which will be attained following third reading of the bylaw and prior to bylaw adoption.

Public Input:

Between July and September of 2018, District staff conducted public and stakeholder consultation on non-medical cannabis, including locational and operational requirements for cannabis retail stores. The policy adopted by Council in July 2019 reflects the public's interest in locating cannabis retail stores with appropriate buffers from schools. The public will have an opportunity to comment on the Zoning Bylaw amendments proposed in this report at the required Public Hearing and on the proposed amendment to the Business License Bylaw at a Public Information Meeting.

Each application for a new cannabis retail store will require a separate rezoning application, including notice in accordance with the Non-Statutory Public Consultation for Development Applications Process, the Development Procedures Bylaw 8144, and the *Local Government Act*.

Conclusion:

The bylaw and policy amendments proposed in this report establish a regulatory framework for non-medical cannabis retail stores and warehouses in the District of North Vancouver. These amendments are based on the Non-Medical Retail Cannabis Policy adopted by Council on July 22, 2019. The proposed amendments establish the zoning, licensing, enforcement, and notification requirements related to cannabis uses in the District. If approved, the framework will facilitate Council's review and consideration of individual cannabis retail stores through separate rezoning applications.

Respectfully submitted,



Shazeen Tejani
Community Planner

- Attachment 1:** District of North Vancouver Rezoning Bylaw 1379, (Bylaw 8340).
- Attachment 2:** District of North Vancouver Fees and Charges Bylaw 6481, 1992, Amendment Bylaw 8343, 2018 (Amendment 59)
- Attachment 3:** Business Licence Bylaw 4567, 1974 Amendment Bylaw 8341, 2018 (Amendment 50)
- Attachment 4:** Bylaw Notice Enforcement Bylaw 7458, 2004, Amendment Bylaw 8346, 2018 (Amendment 40)
- Attachment 5:** Proposed Non-Medical Retail Cannabis Policy
- Attachment 6:** Red-lined Non-Medical Retail Cannabis Policy
- Attachment 7:** Proposed Non-Statutory Public Consultation for Development Applications Policy
- Attachment 8:** Red-lined Non-Statutory Public Consultation for Development Applications Policy

REVIEWED WITH:		
<input type="checkbox"/> Community Planning	_____	<input type="checkbox"/> Clerk's Office <i>DB</i>
<input type="checkbox"/> Development Planning <i>CP</i>	_____	<input type="checkbox"/> Communications _____
<input type="checkbox"/> Development Engineering _____	_____	<input type="checkbox"/> Finance _____
<input type="checkbox"/> Utilities _____	_____	<input type="checkbox"/> Fire Services _____
<input type="checkbox"/> Engineering Operations _____	_____	<input type="checkbox"/> ITS _____
<input type="checkbox"/> Parks _____	_____	<input checked="" type="checkbox"/> Solicitor <i>JS</i>
<input type="checkbox"/> Environment _____	_____	<input type="checkbox"/> GIS _____
<input type="checkbox"/> Facilities _____	_____	<input type="checkbox"/> Real Estate _____
<input type="checkbox"/> Human Resources _____	_____	<input checked="" type="checkbox"/> Bylaw Services <i>CW</i>
		External Agencies:
		<input type="checkbox"/> Library Board _____
		<input type="checkbox"/> NS Health _____
		<input type="checkbox"/> RCMP _____
		<input type="checkbox"/> NVRC _____
		<input type="checkbox"/> Museum & Arch. _____
		<input type="checkbox"/> Other: _____

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The Corporation of the District of North Vancouver

Bylaw 8340

A bylaw to amend District of North Vancouver Bylaw 3210, 1965

The Council for The Corporation of the District of North Vancouver enacts as follows:

Citation

1. This bylaw may be cited as "District of North Vancouver Rezoning Bylaw 1379 (Bylaw 8340)".

Amendments

2. District of North Vancouver Zoning Bylaw 3210, 1965 is amended by:

- a) inserting the following definitions in alphabetical order in Part 2:

"Cannabis" has the meaning given to it in the *Cannabis Act*, as amended or replaced;

"Cannabis Accessory" has the meaning given to it in the *Cannabis Act*, as amended or replaced;

"Cannabis Retail Store" means a business for the retail sale of non-medical cannabis for off-site consumption and cannabis accessories and does not permit a warehouse use.

"Cannabis Warehouse" means a warehouse for the storage and distribution of cannabis and cannabis accessories established in accordance with the *Cannabis Distribution Act*, as amended or replaced, and does not permit the retail sale of non-medical cannabis;

"Non-Medical Cannabis" means cannabis for which no medical document has been issued;

- b) substituting the definition of "warehousing" with the following:

"warehousing" means the storage of goods or products for distribution but does not include wholesaling. This use includes cannabis warehouse.

- c) inserting the following definitions in Part 2A as a subsection to "warehouse use":

“Cannabis Warehouse” means a warehouse for the storage and distribution of cannabis and cannabis accessories established in accordance with the Cannabis Distribution Act, as amended or replaced, and does not permit the retail sale or wholesale of non-medical cannabis;

d) deleting section 403A(1)(j) and substituting the following:

(j) the commercial growing or harvesting of cannabis;

e) inserting the following as section **405B Cannabis Retail Store**

(1) One cannabis retail store will be permitted on each the following properties:

Legal Description (PID)	Address	Town or Village Centre	Bylaw No.

f) inserting the following in alphabetical order in Section 4B89 “Uses” of the Comprehensive Development Zone 21 (CD21):

(i) Cannabis Retail Store (where included on the table in Section 405B(1))

g) inserting the following in alphabetical order in Section 4B239 “2) Principal Uses” of the Comprehensive Development Zone 45 (CD 45):

(viii) Cannabis Retail Store (where included on the table in Section 405B(1))

h) inserting the following in alphabetical order in Section 4B412 “2) Principal Uses” of the Comprehensive Development Zone 68 (CD 68):

(i) Cannabis Retail Store (where included on the table in Section 405B(1))

i) Inserting the following in alphabetical order in Section 4B80-2 “b) Conditional Uses” of the Comprehensive Development Zone 80 (CD80):

(iv) Cannabis Retail Store (where included on the table in Section 405B(1))

j) Inserting the following in Section 4B90-2 “b) Conditional Uses Defined in Part 2” of the Comprehensive Development Zone (CD90):

(i) Cannabis Retail Store (where included on the table in Section 405B(1))

- k) Inserting the following in section 4B94-2 “b) Conditional Uses Defined in Part 2” of the Comprehensive Development Zone 94 (CD94):
 - (i) Cannabis Retail Store (where included on the table in Section 405B(1))
- l) inserting the following in alphabetical order in Section 608 ‘Uses’ of the General Commercial Zone 1L (C1L):
 - (c) Cannabis Retail Store (where included on the table in Section 405B(1))
- m) Inserting the following in alphabetical order in Section 621.2 “Principal Uses” of the General Commercial Zone (C2):
 - (d) Cannabis Retail Store (where included on the table in Section 405B(1))
- n) Inserting the following in alphabetical order in Section 688.1 “Principal Uses” of the Marine Drive Commercial Zone (C9):
 - c) Cannabis Retail Store (where included on the table in Section 405B(1))
- o) Inserting the following in alphabetical order in Section 695.1 “Principal Uses” of the Main Street Commercial Zone (C10):
 - e) Cannabis Retail Store (where included on the table in Section 405B(1))

READ a first time

PUBLIC HEARING held

READ a second time

READ a third time

Certified a true copy of “Bylaw 8340” as at Third Reading

Municipal Clerk

APPROVED by the Ministry of Transportation and Infrastructure on

ADOPTED

Mayor

Municipal Clerk

Certified a true copy

Municipal Clerk

The Corporation of the District of North Vancouver

Bylaw 8343

A bylaw to amend Fees and Charges Bylaw 6481, 1992

The Council for The Corporation of the District of North Vancouver enacts as follows:

Citation

1. This bylaw may be cited as “Fees and Charges Bylaw 6481, 1992, Amendment Bylaw 8343, 2019 (Amendment 59)”.

Amendments

2. The Fees and Charges Bylaw 6481, 1992 is amended by:
 - a) Adding the following to the table in Schedule B – Development and Permitting Fees – Liquor Related Applications:

Liquor and Cannabis Related Applications		
Permanent Liquor and Cannabis Licences:		
Applications for a new liquor or cannabis licence or an amendment to an existing licence	\$2,040.00	
Public Notification Fee	\$1,785.00	

- b) Adding the following to the table in Schedule E – Licencing and Film Fees – Fees for Business Licences – Schedule of Licence Fees A:

Group 6 Cannabis Retail Store		
Licence Fee	\$5,000.00	

READ a first time

READ a second time

READ a third time

ADOPTED

Mayor

Municipal Clerk

Certified a true copy

Municipal Clerk

The Corporation of the District of North Vancouver

Bylaw 8341

A bylaw to amend Business Licence Bylaw 4567, 1974

The Council for The Corporation of the District of North Vancouver enacts as follows:

Citation

1. This bylaw may be cited as "Business Licence Bylaw 4567, 1974 Amendment Bylaw 8341, 2019 (Amendment 50)".

Amendments

2. Business Licence Bylaw 4567, 1974 is amended by:

(a) In Part 1, inserting the following new definitions in the correct numerical order:

364	Cannabis	"Cannabis" has the meaning given to it in the <i>Cannabis Act</i> , as amended or replaced.
365	Cannabis Accessory	"Cannabis accessory" has the meaning given to it in the <i>Cannabis Act</i> , as amended or replaced.
366	Cannabis Retail Store	"Cannabis Retail Store" means a business for the retail sale of non-medical cannabis for off-site consumption and cannabis accessories and does not permit a warehouse use.
367	Non-Medical Cannabis	"Non-medical cannabis" means cannabis for which no medical document has been issued;
368	Cannabis Warehouse	"Cannabis Warehouse" means a warehouse for the storage and distribution of cannabis and cannabis accessories established in accordance with the Cannabis Distribution Act, as amended or replaced, and does not permit the retail sale of non-medical cannabis;

(b) inserting the following as section 408A immediately after section 408:

408A LICENCE CONDITIONS

The Inspector may impose terms and conditions that must be met for obtaining, continuing to hold, or renewing a licence respecting the following matters:

- (1) prevention of nuisances, including but not limited to conditions intended to reduce noise, odours, and patron misconduct on or about the licensed premises;
- (2) Reducing, eliminating, preventing, or mitigating actual or potential negative impacts on the public, the neighbourhood or other businesses in the vicinity, that, in the opinion of the Inspector, may be associated with the licenced business, including, without limitation, conditions respecting:
 - i. employee and patron behaviour at the business premises;
 - ii. types of entertainment that may be provided in or on the business premises;
- (3) employee, patron and public health, safety and security at the business premises;
- (4) physical condition of the business premises;
- (5) hours of operation; and
- (6) effective period of any licence.

(c) inserting the following as sections 409A immediately after section 409:

409A Compliance

- (1) The applicant for and any holder of a licence under this bylaw must be in compliance with all applicable federal and provincial regulatory requirements and all applicable District bylaws.
- (2) The holder of a licence under this bylaw to which terms and conditions have been attached in accordance with section 408A must comply with such terms and conditions at all times.

(d) inserting the following as section 518A immediately after section 518:

518A Cannabis Retail Store

- (1) Only the registered owner of the land or lessee of premises on the land may hold a licence under this bylaw to operate a cannabis retail store on such land.

- (2) A licence to operate a cannabis retail store cannot be transferred.
- (3) A person must not:
 - (a) Operate any other business from the premises of a cannabis retail store;
 - (b) Open a cannabis retail store for business at any time other than between the hours of 9:00 a.m. and 9:00 p.m., seven days a week.

READ a first time

NOTICE given under Section 59 of the *Community Charter* on _____ and _____

OPPORTUNITY for representations to Council provided in accordance with Section 59 of the *Community Charter* on _____

READ a second time

READ a third time

ADOPTED

Mayor

Municipal Clerk

Certified a true copy

Municipal Clerk

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The Corporation of the District of North Vancouver

Bylaw 8346

A bylaw to amend the Bylaw Notice Enforcement Bylaw 7458, 2004

The Council for The Corporation of the District of North Vancouver enacts as follows:

Citation

1. This bylaw may be cited as "Bylaw Notice Enforcement Bylaw 7458, 2004, Amendment Bylaw 8346, 2019 (Amendment 40)".

Amendments

2. Schedule A to Bylaw 7458 is amended by adding the following offences to the Business Licence Bylaw No. 4567, 1974 section, inserted in the appropriate numerical order in the table:

Bylaw Section	Description	A1 Penalty Amount (\$)	A2 Discounted Penalty (within 14 days) (\$)	A3 Late Payment (after 28 days) (\$)	A4 Compliance Agreement Available	A5 Compliance Agreement Discount (\$)
Business Licence Bylaw 4567, 1974						
409A(1)	Failure to comply with applicable regulations	200	150	300	NO	N/A
409A(2)	Failure to comply with terms and conditions of licence	300	225	450	NO	N/A
518A(3)(a)	Operate any other business from the premises of a cannabis retail store	300	225	450	NO	N/A
518A(3)(b)	Open cannabis retail store outside permitted hours	400	300	600	NO	N/A

READ a first time

READ a second time

READ a third time

ADOPTED

Mayor

Municipal Clerk

Certified a true copy

Municipal Clerk



The Corporation of the District of North Vancouver

CORPORATE POLICY

Title	Non-medical Retail Cannabis Policy
Section	Development and Social Planning

POLICY

It is the policy of Council that the approval of a retail cannabis business in the District of North Vancouver may only be considered through a rezoning application that meets the guidelines, criteria and processing requirements set out in this policy.

Policy approved on: July 22, 2019

Policy amended on:

PROCEDURE

The following procedure is used to implement this policy but does not form part of the policy. This procedure may be amended from time to time at the discretion of the Chief Administrative Officer.

DEFINITIONS

“Council” means the Council for the District of North Vancouver.

“District” means the District of North Vancouver.

“Liquor & Cannabis Regulation Branch” means the Provincial branch which regulates British Columbia’s liquor industries and private retail non-medical cannabis industries (formerly Liquor Control and Licensing Branch).

“Cannabis Retail Store” means a business for the retail sale of non-medical cannabis for off-site consumption and cannabis accessories and does not permit a warehouse use.

REASON FOR POLICY

To provide locational and evaluation criteria to guide decisions on permitting the retail sale of non-medical cannabis in the District.

PREAMBLE

The District has taken the approach of considering retail cannabis businesses through an individual rezoning process considered on a case-by-case basis. Applications for a retail cannabis business should comply with the locational guidelines and other criteria contained in this policy and will be subject to public consultation requirements of the District's Development Procedures Bylaw and the statutory provisions of the *Local Government Act*.

APPLICATION

1. This policy applies to applications for rezoning to operate a retail cannabis business in the District of North Vancouver.
2. Administration of this policy is handled through the processing of rezoning applications and preparation of bylaws for Council consideration. Compliance with this policy does not guarantee development approval from Council.
3. Applicants who apply to the Liquor and Cannabis Regulation Branch (LCRB) for any retail cannabis business licence must submit a rezoning application to the District after the application is referred to the municipality for input by the LCRB. Rezoning applications will only be considered after the date of approval of this policy.

LOCATIONAL GUIDELINES

The following locational guidelines will be used to assess the suitability of a site for a retail cannabis business when an application for rezoning for such a use has been submitted to the District:

A retail cannabis business may be located on a site that:

1. Is currently zoned to permit a liquor store use;
2. Is located at least 200 metres from any elementary or high school property;
3. Does not exceed a maximum of one (1) business per each of the following key growth centres identified in the Official Community Plan*:

- a. Maplewood Village Centre;
- b. Lions Gate Village Centre and Marine Drive Corridor;
- c. Lynn Valley Town Centre;
- d. Lynn Creek Town Centre.

*Additional businesses outside of Town and Village Centres may be given consideration on a case-by-case basis, subject to a review of the merits of the application.

4. Complies with all of the requirements of the Provincial *Cannabis Licensing Regulation*.

OTHER EVALUATION CRITERIA

In addition to the above locational guidelines, the following criteria will be considered in evaluating a rezoning application for a retail cannabis business use:

1. Access for vehicles, including potential traffic impacts and parking availability;
2. Access for pedestrians and cyclists, including proximity to public transit;
3. A proposed interior layout that does not accommodate product sampling;
4. A proposed exterior design that is sensitive to the design and character of the respective Town and Village Centre in which it is located and is consistent with all applicable guidelines that regulate the exterior appearance of all residential and commercial properties within that Centre to the extent possible that it complies with the Provincial *Cannabis Control and Licensing Act*;
5. Design of signage that is in accordance with the District of North Vancouver Sign Bylaw;
6. Operating hours that do not exceed 9am – 9pm;
7. Store security requirements that meet the Provincial Cannabis Retail Store Licence Terms and Conditions Handbook.

NON-MEDICAL CANNABIS APPROVAL PROCESS

All retail cannabis businesses must undergo a site-specific rezoning process before the retail sale of non-medical cannabis is permitted. This will include opportunities for public consultation.

All applicants interested in establishing a retail cannabis business shall submit the following applications:

1. An application to the Provincial Liquor & Cannabis Regulation Branch (LCRB) for a cannabis retail store license prior to submitting an application for rezoning to the District;
2. An application to the District for a rezoning of the parcel to permit a retail cannabis business, once the application has been referred from the Provincial Liquor &

Cannabis Regulation Branch to the District for input. Applications for rezoning will be processed using a first-come-first-served model based on the date and time the application was forwarded to the District from the LCRB. Applications should be submitted to the District within 15 days of a referral from the LCRB. If an application is submitted more than 15 days after the referral from the LCRB, then it will be processed on a first-come-first-served model based on the date that the complete application is accepted by the District.

3. In the case of a Provincial store, the date that an application is submitted to the District will be considered the date of referral.
4. An application to the District for a development permit as required by the District;
5. An application for a District business licence, upon successful adoption of a rezoning bylaw and a positive recommendation from the District to the LCRB; and
6. Additional permit applications as required by the District, including but not limited to a building permit and/or sign permit applications.

PUBLIC CONSULTATION

1. Rezoning to permit a retail cannabis business will require public consultation as specified in District bylaws and policies (e.g. Development Procedures Bylaw) and statutory procedures set out in the *Local Government Act* (e.g. Public Hearing).
2. A summary of the public consultation will be included in a Report to Council for the rezoning application.

CONDITIONS OF REZONING

Council may require that one or more of the following conditions must be met prior to the adoption of a rezoning bylaw for a retail cannabis business:

1. The applicant may be required to submit details regarding on-site signage.
2. The applicant may be required to submit details on how potential odour that may be emitted from the premises will be controlled. A Section 219 covenant, or other means, may be used to secure any required odour mitigation measures.
3. The warehousing of cannabis as an accessory use shall not be permitted.
4. Any other conditions as may be required by Council.

SMOKING REGULATIONS SIGNAGE

1. A minimum of two signs shall be posted within the interior of the building and a minimum of one sign on the exterior of the building, with all signs having dimensions of at least 12" x 18". The signage shall detail the restrictions for smoking within 6 metres of any openings to the building, including doors and windows that open and any air intake, as outlined in section 6(a) of the Smoking Regulation Bylaw.

COUNCIL DISCRETION

While this policy is intended to establish a framework which would apply to all rezoning applications for retail cannabis uses, Council maintains full discretion to allow or reject any application for a retail cannabis use and may, in its sole discretion, exempt applications from all or any part of this policy.

AUTHORITY TO ACT

Provincial legislation, including the *Community Charter*, *Local Government Act*, and the *Cannabis Control and Licensing Act*, authorizes the District to regulate locational aspects of retail cannabis businesses and to establish procedures to assess and approve such businesses.

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The Corporation of the District of North Vancouver

CORPORATE POLICY

ATTACHMENT 6

Title	Non-medical Retail Cannabis Policy
Section	Development and Social Planning

POLICY

It is the policy of Council that the approval of a retail cannabis business in the District of North Vancouver may only be considered through a rezoning application that meets the guidelines, criteria and processing requirements set out in this policy.

Policy approved on: July 22, 2019

Policy amended on:

PROCEDURE

The following procedure is used to implement this policy but does not form part of the policy. This procedure may be amended from time to time at the discretion of the Chief Administrative Officer.

DEFINITIONS

"Council" means the Council for the District of North Vancouver.

"District" means the District of North Vancouver.

"Liquor & Cannabis Regulation Branch" means the Provincial branch which regulates British Columbia's liquor industries and private retail non-medical cannabis industries (formerly Liquor Control and Licensing Branch).

~~"Retail Cannabis Business"~~ "Cannabis Retail Store" means a business for the retail sale of non-medical cannabis for off-site consumption and cannabis accessories and does not permit a warehouse use.

REASON FOR POLICY

To provide locational and evaluation criteria to guide decisions on permitting the retail sale of non-medical cannabis in the District.

PREAMBLE

The District has taken the approach of considering retail cannabis businesses through an individual rezoning process considered on a case-by-case basis. Applications for a retail cannabis business should comply with the locational guidelines and other criteria contained in this policy and will be subject to public consultation requirements of the District's Development Procedures Bylaw and the statutory provisions of the *Local Government Act*.

APPLICATION

1. This policy applies to applications for rezoning to operate a retail cannabis business in the District of North Vancouver.
2. Administration of this policy is handled through the processing of rezoning applications and preparation of bylaws for Council consideration. Compliance with this policy does not guarantee development approval from Council.
3. Applicants who apply to the Liquor and Cannabis Regulation Branch (LCRB) for any retail cannabis business licence must submit a rezoning application to the District after the application is referred to the municipality for input by the LCRB. Rezoning applications will only be considered after the date of approval of this policy.

LOCATIONAL GUIDELINES

The following locational guidelines will be used to assess the suitability of a site for a retail cannabis business when an application for rezoning for such a use has been submitted to the District:

A retail cannabis business may be located on a site that:

1. Is currently zoned to permit a liquor store use;
2. Is located at least 200 metres from any elementary or high school property;
3. Does not exceed a maximum of one (1) business per each of the following key growth centres identified in the Official Community Plan*:
 - a. Maplewood Village Centre;
 - b. Lions Gate Village Centre and Marine Drive Corridor;
 - c. Lynn Valley Town Centre;
 - d. Lynn Creek Town Centre.

*Additional businesses outside of Town and Village Centres may be given consideration on a case-by-case basis, subject to a review of the merits of the application.

4. Complies with all of the requirements of the *Provincial Cannabis Licensing Regulation*.

OTHER EVALUATION CRITERIA

In addition to the above locational guidelines, the following criteria will be considered in evaluating a rezoning application for a retail cannabis business use:

1. Access for vehicles, including potential traffic impacts and parking availability;
2. Access for pedestrians and cyclists, including proximity to public transit;
3. A proposed interior layout that does not accommodate product sampling;
4. A proposed exterior design that is sensitive to the design and character of the respective Town and Village Centre in which it is located and is consistent with all applicable guidelines that regulate the exterior appearance of all residential and commercial properties within that Centre to the extent possible that it complies with the *Provincial Cannabis Control and Licensing Act*;
5. Design of signage that is in accordance with the District of North Vancouver Sign Bylaw;
6. Operating hours that do not exceed 9am – 9pm;
7. Store security requirements that meet the Provincial Cannabis Retail Store Licence Terms and Conditions Handbook.

NON-MEDICAL CANNABIS APPROVAL PROCESS

All retail cannabis businesses must undergo a site-specific rezoning process before the retail sale of non-medical cannabis is permitted. This will include opportunities for public consultation.

All applicants interested in establishing a retail cannabis business shall submit the following applications:

1. An application to the Provincial Liquor & Cannabis Regulation Branch (LCRB) for a cannabis retail store license prior to submitting an application for rezoning to the District;
2. An application to the District for a rezoning of the parcel to permit a retail cannabis business, once the application has been referred from the Provincial Liquor &

Cannabis Regulation Branch to the District for input. Applications for rezoning will be processed using a first-come-first-served model based on the date and time the application was forwarded to the District from the LCRB. Applications should be submitted to the District within 15 days of a referral from the LCRB. If an application is submitted more than 15 days after the referral from the LCRB, then it will be processed on a first-come-first-served model based on the date that the complete application is accepted by the District.

3. In the case of a Provincial store, the date that an application is submitted to the District will be considered the date of referral.
4. An application to the District for a development permit as required by the District;
5. An application for a District business licence, upon successful adoption of a rezoning bylaw and a positive recommendation from the District to the LCRB; and
6. Additional permit applications as required by the District, including but not limited to a building permit and/or sign permit applications.

PUBLIC CONSULTATION

1. Rezoning to permit a retail cannabis business will require public consultation as specified in District bylaws and policies (e.g. Development Procedures Bylaw) and statutory procedures set out in the *Local Government Act* (e.g. Public Hearing).
2. A summary of the public consultation will be included in a Report to Council for the rezoning application.

CONDITIONS OF REZONING

Council may require that one or more of the following conditions must be met prior to the adoption of a rezoning bylaw for a retail cannabis business:

1. The applicant may be required to submit details regarding on-site signage.
2. The applicant may be required to submit details on how potential odour that may be emitted from the premises will be controlled. A Section 219 covenant, or other means, may be used to secure any required odour mitigation measures.
3. The warehousing of cannabis as an accessory use shall not be permitted.
4. Any other conditions as may be required by Council.

SMOKING REGULATIONS SIGNAGE

1. A minimum of two signs shall be posted within the interior of the building and a minimum of one sign on the exterior of the building, with all signs having dimensions of at least 12" x 18". The signage shall detail the restrictions for smoking within 6 metres of any openings to the building, including doors and windows that open and any air intake, as outlined in section 6(a) of the Smoking Regulation Bylaw.

COUNCIL DISCRETION

While this policy is intended to establish a framework which would apply to all rezoning applications for retail cannabis uses, Council maintains full discretion to allow or reject any application for a retail cannabis use and may, in its sole discretion, exempt applications from all or any part of this policy.

AUTHORITY TO ACT

Provincial legislation, including the *Community Charter*, *Local Government Act*, and the *Cannabis Control and Licensing Act*, authorizes the District to regulate locational aspects of retail cannabis businesses and to establish procedures to assess and approve such businesses.

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**CORPORATE POLICY MANUAL**

Section:	Land Administration	8
Sub-Section:	Development - Applications	3060
Title:	NON-STATUTORY PUBLIC CONSULTATION FOR DEVELOPMENT APPLICATIONS	2

POLICY

It is the policy of the District to:

- encourage applicants for Official Community Plan amendments, Zoning Bylaw amendments, development permits, development variance permits, and liquor license applications to notify the public of development applications and solicit feedback prior to the proposal being considered by Council,
- encourage applicants for Official Community Plan amendments, Zoning Bylaw amendments, and certain development permits to hold one or more public information meetings prior to the proposal being considered by Council,
- provide notice of public information meetings in accordance with this policy, and
- provide Council with an information report prior to the holding of a public information meeting.

REASON FOR POLICY

1. To establish early dialogue with the community and identify specific issues of concern.
2. To expand the opportunities for public consultation.
3. To ensure that factual information is conveyed to the community.
4. To enable staff and Council to gauge public opinion on a particular application.
5. To inform Council of development applications in process.

PROCEDURE

The following table summarizes the recommended public notification:

Development Proposal	¹ Notification Delivery Area	Sign
Official Community Plan & Zoning Bylaw Amendment		
Preliminary application	100 m	No
Public Information Meeting	100 m	Yes
Major Development Permit for Commercial, Industrial & Multi-Family Form and Character		
Preliminary application	100 m	No
Public Information Meeting	100 m	Yes
Other Permit and Approvals		
Development Variance Permit	Abutting land	No
Liquor Licence (requiring a resolution)	100 m	Yes
Cannabis Retail Licence	100 m	Yes

¹ The notification delivery area includes the lands subject to the bylaw alteration, permit or approval.

The above table does not apply if 10 or more parcels owned by 10 or more persons are the subject of the bylaw alteration, permit or approval. In such cases, newspaper notice will be sufficient.

AUTHORITY TO ACT

Delegated to Staff

Approval Date:	July 10, 2017	Approved by:	Regular Council
1. Amendment Date:		Approved by:	
2. Amendment Date:		Approved by:	



The Corporation of the District of North Vancouver

CORPORATE POLICY MANUAL

ATTACHMENT 8

Section:	Land Administration	8
Sub-Section:	Development - Applications	3060
Title:	NON-STATUTORY PUBLIC CONSULTATION FOR DEVELOPMENT APPLICATIONS	2

POLICY

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Development Variance Permit	Abutting land	No
Liquor Licence (requiring a resolution)	100 m	Yes
Cannabis Retail Licence	100 m	Yes

¹ The notification delivery area includes the lands subject to the bylaw alteration, permit or approval.

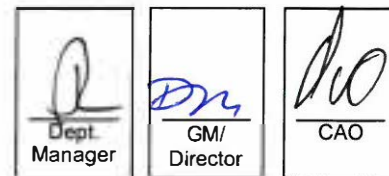
The above table does not apply if 10 or more parcels owned by 10 or more persons are the subject of the bylaw alteration, permit or approval. In such cases, newspaper notice will be sufficient.

AUTHORITY TO ACT

Delegated to Staff

Approval Date:	July 10, 2017	Approved by:	Regular Council
1. Amendment Date:		Approved by:	
2. Amendment Date:		Approved by:	

AGENDA INFORMATION	
<input checked="" type="checkbox"/> Regular Meeting	Date: October 7 th , 2019
<input type="checkbox"/> Other:	Date: _____



The District of North Vancouver REPORT TO COUNCIL

September 20, 2019
File: 08.3164.000.000

AUTHOR: Janine Ryder, Manager- Real Estate and Properties

SUBJECT: District-Owned Single Family Rental Housing Policy

RECOMMENDATION:

That Council approve the District-Owned Single Family Rental Housing Policy (Attachment1).

REASON FOR REPORT:

At the Regular Council Meeting on April 1st, 2019, Council directed staff to prepare a policy for Council consideration to prioritize vacant District-owned single family rental houses for non-profit housing providers. This report has been prepared in response to Council's direction.

BACKGROUND:

The District purchases residential single family properties for a number of municipal priorities, including expansion of greenspaces, roadways and municipal buildings. In most cases, the single family homes are rented for a period of time until they are utilised for their intended purpose. Specially, these homes are advertised and rented at a current market rental value to private tenants under a Residential Tenancy Agreement.

ANALYSIS:

Under the proposed policy, if a property becomes vacant, and will be vacant for a period of 2-5 years, staff would approach the non-profit housing providers operating in the District and request proposals for the temporary occupation of a single-family home. Staff will review the applications ensuring that the use and client type is appropriate for the type of house and the neighbourhood. Staff will then forward the applications to Council for direction on the preferred operator and the terms of the licence agreement.

Financial Impacts:

Currently, the single family houses generate market rents while they are awaiting redevelopment, under this policy if the property is rented to a non-profit housing provider the rent would be at a nominal rate.

The non-profit organisation would be responsible for all capital, maintenance and operating costs for the property. It is likely that the non-profit organisation will request a property tax

exemption for the property. It is difficult to forecast the anticipated financial impact as few properties may become unavailable.

Social Policy Implications:

There is significant demand by non-profit housing providers for residential properties to meet the needs of various client types. Typically the non-profit organisation is looking for a long term housing arrangements within specific geographic locations and with a house layout that meet the requirements for their specific client type and needs. However, some operators may be interested in renting District-owned properties with the limitations of the property availability. The District currently has agreements in place for four single-family houses with non-profit housing providers. This policy prioritises non-profit housing providers who cannot pay market rental rates.

Conclusion:

Providing a Licence Agreement to a non-profit housing provider for a District owned single family house on a short term basis provides extra resources to address the social needs in our community.

Options:

1. That Council approve the District-Owned Single Family Rental Housing Policy as drafted (staff recommendation); or
2. That Council provides input and staff return with a revised District-Owned Single Family Rental Housing Policy incorporating Council's input for Council consideration.

Respectfully submitted,



Janine Ryder
Manager, Real Estate and Properties

REVIEWED WITH:					
<input type="checkbox"/> Community Planning	_____	<input type="checkbox"/> Clerk's Office	_____	External Agencies:	
<input type="checkbox"/> Development Planning	_____	<input type="checkbox"/> Communications	_____	<input type="checkbox"/> Library Board	_____
<input type="checkbox"/> Development Engineering	_____	<input type="checkbox"/> Finance	_____	<input type="checkbox"/> NS Health	_____
<input type="checkbox"/> Utilities	_____	<input type="checkbox"/> Fire Services	_____	<input type="checkbox"/> RCMP	_____
<input type="checkbox"/> Engineering Operations	_____	<input type="checkbox"/> ITS	_____	<input type="checkbox"/> NVRC	_____
<input type="checkbox"/> Parks	_____	<input type="checkbox"/> Solicitor	_____	<input type="checkbox"/> Museum & Arch.	_____
<input type="checkbox"/> Environment	_____	<input type="checkbox"/> GIS	_____	<input type="checkbox"/> Other:	_____
<input type="checkbox"/> Facilities	_____	<input type="checkbox"/> Real Estate	_____		
<input type="checkbox"/> Human Resources	_____	<input type="checkbox"/> Bylaw Services	_____		

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Attachment 1
Draft District-Owned Single Family Rental Housing



The Corporation of the District of North Vancouver

COUNCIL POLICY

Title	District-Owned Single Family Rental House Policy
Section	Real Estate and Properties

POLICY

It is the policy of Council that non-profit housing providers are given an opportunity to negotiate the rental of District-Owned single family houses that are available for short term rental.

Policy approved on:

Policy amended on:

PROCEDURE

The following procedure is used to implement this policy but does not form part of the policy. This procedure may be amended from time to time at the discretion of the Chief Administrative Officer.

The District purchases residential houses for various municipal purposes, if a single family house will be vacant for a period of 2-5 years, before it is required for its intended use, then the house should be offered to a non-profit housing organisation.

When a house becomes available and will be vacant for more than a 2-5 year period, staff will approach the non –profit housing providers operating in the District of North Vancouver, for proposals to operate the house for short term rental. Staff will provide the list of respondents and a recommendation for a non profit housing providers to operate the house under a licence agreement for a nominal rate for Council's approval at an In Camera Council meeting.

If no non-profit housing providers are identified, the house will be advertised for rent on the open market.

COUNCIL AGENDA/INFORMATION			
<input type="checkbox"/> In Camera	Date:	Item #	
<input checked="" type="checkbox"/> Regular	Date: <u>September 30, 2019</u>	Item # <u>2611A</u>	
<input type="checkbox"/> Agenda Addendum	Date:	Item #	
<input type="checkbox"/> Info Package			
<input type="checkbox"/> Council Workshop	DM#	Date:	Mailbox:



The District of North Vancouver REPORT TO COUNCIL

September 3, 2019

File: 11.5225.01/017.000

Tracking Number: RCA -

AUTHOR: Stephen Bridger, Section Manager Engineering, Planning and Design

SUBJECT: **UBCM Community Emergency Preparedness Fund - Structural Flood Mitigation Application for Funding for Kilmer Creek Relocation**

RECOMMENDATION:

THAT the application for grant funding through the *UBCM Community Emergency Preparedness Fund - Structural Flood Mitigation* for relocation and culvert upgrades related to Kilmer Creek be supported.

REASON FOR REPORT:

A resolution of Council is required to support the grant application to the *UBCM Community Emergency Preparedness Fund – Structural Flood Mitigation* program. Staff are initiating further work to extend flood mitigation works on Kilmer Creek beyond the segment of daylighting to be constructed through the redevelopment of Argyle School. This project will improve resilience to potential flooding from extreme flows by replacing undersized culverts and relocating the creek to the west side of Fromme Rd between Fredrick Rd and Croft Rd. The existing channel and culverts have experienced flooding in major storm events in 2014 and 2018 respectively resulting in significant damage to public and private property.

The proposed total budget for the project is \$2,704,000 with a maximum grant contribution of \$750,000. This project is to be funded through the 2020 and 2021 Capital Plans such that funds will be available to cover the remaining portion. Staff are very familiar with the UBCM grant management procedures and shall meet necessary the reporting requirements.

Respectfully submitted,

Stephen Bridger,
Section Manager Engineering Planning and Design

**SUBJECT: UBCM Community Emergency Preparedness Fund - Structural Flood
Mitigation Application for Funding for Kilmer Creek Relocation**

September 3, 2019

Page 2

REVIEWED WITH: <input type="checkbox"/> Sustainable Community Development <input type="checkbox"/> Development Services <input type="checkbox"/> Utilities <input type="checkbox"/> Engineering Operations <input type="checkbox"/> Parks & Environment <input type="checkbox"/> Economic Development	REVIEWED WITH: <input type="checkbox"/> Clerk's Office <input type="checkbox"/> Corporate Services <input type="checkbox"/> Communications <input type="checkbox"/> Finance <input type="checkbox"/> Fire Services <input type="checkbox"/> Human resources <input type="checkbox"/> ITS <input type="checkbox"/> Solicitor <input type="checkbox"/> GIS	REVIEWED WITH: External Agencies: <input type="checkbox"/> Library Board <input type="checkbox"/> NS Health <input type="checkbox"/> RCMP <input type="checkbox"/> Recreation Commission <input type="checkbox"/> Other: _____	REVIEWED WITH: Advisory Committees: <input type="checkbox"/> _____ <input type="checkbox"/> _____ <input type="checkbox"/> _____
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