COUNCIL AGENDA/INFORMATION			
☐ In Camera	Date:	Item #	
☑ Regular	Date: June 17, 2019	Item #	
☐ Agenda Addendum	Date:	Item#	
☐ Info Package			
☐ Council Workshop	DM# Date:	Mailbox:	

Dept. Manager	GM/ Director	CAO

The District of North Vancouver
REPORT TO COUNCIL

June 06, 2019
File: 13.6780/Infrastructure General/File

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

SUBJECT: Wildland - Urban Interface Fire Risk Management

RECOMMENDATION:
THAT Council support fuel treatment in the remaining high risk interface area at Carmaria Court and Braemar/Dempsey (Attachment 1) and the application for grant funding through the *UBCM 2019 Community Resiliency Investment (CRI) Program: FireSmart Community Funding & Supports* (Attachment 2) awarded a $100,000 funding contribution (Attachment 3) be approved;

AND THAT the District of North Vancouver commit to its share ($260,000) of the project cost of $360,000 to be funded through reallocation from the general risk management provision in the 2019 to 2023 Approved Financial Plan.

REASON FOR REPORT:
To update Council on the implementation status of the 2007 District of North Vancouver (DNV) Community Wildfire Protection Plan (CWPP) and plans being developed in 2019 (Attachment 4), and to seek a Council resolution in support of the 2019 Fuel Treatment.

BACKGROUND:
The 2007 CWPP was prepared by BA Blackwell & Associates. 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. Approximately 70 hectares (ha) of high hazard fuel type was identified.

The CWPP is now more than a decade old and does not meet the current requirements of the Provincial CWPP Template or meet current spatial data and wildfire threat assessment worksheet standards. In the interim years the District population has also increased by

approximately 4.2% (2016 Census) and both land values, development and outdoor activities have all increased significantly. As supported by the Strategic Wildfire Prevention Initiative (SWPI) and funded by UBCM, a project to update the current CWPP is now underway.

The District Climate Change Adaptation Strategy adopted by Council on July 24 2017 indicates that wildfire risk is the hazard of greatest concern, as our summers become warmer, drier and longer. Several must-do actions have been identified to become more resilient to wildfire, including to proactively manage all forested areas to increase resilience by improving health & structure, continue the fuel (vegetation) management, to develop a post-wildfire forest restoration plan, and provision for a water strategy under drought conditions. To address these action items, two additional projects are also underway to provide a Post Fire Rehabilitation Plan and a Forest Resilience Plan, deliverable as part of the CWPP update project.

In addition, the April 2018 report to the Premier of British Columbia titled *Addressing the New Normal: 21st Century Disaster Management in British Columbia*, Co-Chaired by Chief Chapman and Mr. Abbott, examined the unprecedented 2017 flood and wildfire season and provides 108 recommendations, broadly captured under the four pillars of emergency management: Partnerships and participation; Knowledge and tools; Communication and awareness; Investment.

One of the key findings of the report is the need to make investment in advance planning of a disaster is vital in an era of climate change and extreme weather events, and the Closing Thoughts section states "*The experience of 2017 demonstrated the consequences of ignoring the growing gap between spending in the areas of response versus planning/preparedness and prevention/ mitigation. If we are to limit the vulnerability of our homes, our properties and our communities to such extreme weather events and the new normal, the time to reinvest is now.*"

The CWPP update together with the Post Fire Rehabilitation and Forest Resilience Plans are consistent with this messaging and will provide the future framework to continue to build on community wildfire resiliency.

Please see Attachment 4 for an overview of the progress of implementing the recommendations in the current CWPP 2007 and other work currently underway.

Timing/Approval Process:
The CWPP update together with the forest resilience and post-fire rehabilitation plans are scheduled to be completed by August, 2019.

An application (Attachment 2) for grant funding to the *UBCM FireSmart Community Funding & Supports Program* for the fuel treatment of Carmaria Court and Braemar/Dempsey was submitted in December of 2018, with the understanding that a Council resolution, supporting the application may be provided at a later date.

The UBCM funded 2019 Fuel Treatment Project to treat the remaining 15.4 ha of high risk interface area, Carmaria Crt & Braemar/Dempsey, to be completed by March 2020.

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

Financial Impacts:
The total cost to complete the remaining 15.4 ha of high risk fuel type, at Carmaria Court and Braemar/ Dempsey, is estimated at $360,000. A UBCM Community Resiliency grant will fund $100,000 of the costs and remaining funds ($260,000) will be reallocated from a risk management provision ($3 million) included in the financial plan.

The cost per hectare of fuel treatment for this project is estimated at $23.4k, which is in line with the previous completed fuel treatment projects.

Liability/Risk:
Completion of recommendations outlined in the current CWPP reduces liability by demonstrating an ongoing work plan toward wildfire risk reduction.

Communication and Education:
Wildfire hazard maps and the Wildfire Protection DPA maps are available on GeoWeb in the Hazards application, along with public access to the CWPP and FireSmart educational information via the DNV website at http://www.dnv.org/programs-services/community-wildfire-protection-plan

For the ongoing operational fuel treatment program, community mail outs and information meetings are held prior to works and social media messaging used during and after works. Large temporary public information signs describing the fuel treatment works are placed at strategic access/egress points before the start of each treatment. Contact information is also detailed for further questions or information.

March 2019, two Fire Department staff have successfully trained to be certified FireSmart Canada Representatives.

April 30 and May 02, 2019 a successful training event called Operation Dry Lightening 3, a NSEM interagency wildfire readiness event held in both the District of North Vancouver and West Vancouver.

Communications, Fire and Environment department have collaboratively developed a FireSmart door hanger & rack card, and an interactive web based tool. The rack card has already been dropped to 400 residents as part of the recent NSEM Dry Lightening 3 evacuation exercise.

The Fire Department organised a FireSmart Day May 04, 2019, a public outreach event held at the Parkgate Community Centre.

May 14, 2019 Inter-City Tree Bylaw Group Meeting held at Lynn Canyon Restaurant, a presentation made of the Districts' implementation of the CWPP, fuel treatment program and administering the Wildfire DPA.

May 29, 2019 WUI Community Fire Risk & Response Information Session held at Heritage Woods Secondary School, Port Moody organised by the Port Moody Fire & Rescue, guest speaker presentation made of the Districts' implementation of the CWPP and fuel treatment program. Other gust speakers included Gord Parker - Wildfire BC Technologist; Rod Tulett and Marcel Labreche - Metro Vancouver.

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

Environmental Impact:
Operational fuel treatment projects demonstrate the ecosystem restoration benefits and wildfire risk reduction in the District's forests. Both the post fire rehabilitation and forest resilience plans will pay long-term dividends, and reduce the possibility of environmental and hazard impacts associated with wildfire. The rehabilitation plan will ensure processes are in-place for implementing immediate slope stability and erosion measures, and followed by comprehensive forest restoration planting after a significant wildfire event. The forest resilience plan will provide the management framework for creating healthier and diverse forest mosaics that are naturally more resilient to wildfire.

Conclusion:
The DNV wildfire protection program has been very successful to date and results have been accomplished through collaboration, creativity, leveraging of external funding opportunities and community support. 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. We continue to provide a 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. Fuel Management Prescriptions: Braemar/Dempsey and Carmaria Court.
2. Application and Worksheets 1 & 2: 2019 Community Resiliency Investment Program FireSmart Community Funding & Supports
3. UBCM: March 11, 2019 Approval Agreement & Terms of Conditions of Funding Letter
4. CWPP 2007 Wildland Urban Interface (WUI) Fire Risk Management Update

REVIEWED WITH:

				External Agencies:	
❑ Sustainable Community Dev.	____	❑ Clerk's Office	____	❑ Library Board	____
❑ Development Services	____	❑ Communications	____	❑ NS Health	____
❑ Utilities	____	❑ Finance	____	❑ RCMP	____
❑ Engineering Operations	____	❑ Fire Services	____	❑ NVRC	____
❑ Parks	____	❑ ITS	____	❑ Museum & Arch.	____
❑ Environment	____	❑ Solicitor	____	❑ Other:	____
❑ Facilities	____	❑ GIS	____		
❑ Human Resources	____	❑ Real Estate	____		

ATTACHMENT 1

Fuel Management Prescription
Braemar & Dempsey,
District of North Vancouver

B.A. Blackwell & Associates Ltd.

NORTH VANCOUVER DISTRICT

Prepared by: Ben Andrew, RPF 270-18 Gostick Place, North Vancouver BC, V7M 3G3 Ph: 604-986-8346 Email: b_andrew@bablackwell.com	**Deliver or Mail to:** Fuels Management Specialist: Derek Lefler RPF District Forester: Mark Brown RPF
Location: North of Braemar and Dempsey Roads, District of North Vancouver, BC	These units are located on District (Crown Municipal) lands off Braemar and Dempsey Roads, adjacent to residential private properties.
Comments: This prescription may only be implemented after receipt of : • Streamside DPA Permits from the DNV • External block boundaries adjacent to private land flagged by DNV surveyors; *No Treatment areas as shown on the maps must be ribboned prior to treatment*	

Fuel Management Objectives

The objectives of this prescription are to:

- Enhance the ability of the Wildfire Management Branch, DNV Fire and Rescue Services, and Metro Vancouver Suppression Crews to protect both public and private values at risk;
- Contribute to the provision of landscape scale shaded fuel break along the WUI;
- Demonstrate the principles and practices of vegetation and fuels management to community members and the public;
- Reduce surface fire behaviour potential;
- Reduce the potential for crown fires; and
- Minimize negative impacts to, and where possible enhance, the many values of the treated stand, including recreation, public safety, wildlife habitat, and biodiversity.

Fuel Management Strategies

The fuel management objectives stated above will be achieved using the following strategies:

- Reduce surface fuels to improve suppression crew access to and success at actioning fires in the case of wildfire;
- Maximize retention of dominant and co-dominant canopy trees to maintain a cool, moist, and dark understorey microclimate;
- Thin from below (i.e. smallest trees first) to reduce ladder fuels;
- Retain the healthiest juvenile trees for contribution to the future stand where desirable;
- Reduce surface fuel loading through chipping or removal of debris to reduce the risk, potential behaviour, and intensity of surface fire;
- Minimize the creation of surface fuels by chipping or removing slash created during treatment;
- Retain or plant deciduous tree species and shrubs to reduce fire behaviour and provide wildlife habitat;
- Retain minimum targets of coarse woody debris to contribute to healthy forest ecosystems and biodiversity;
- Protect existing trail networks and ensure post-treatment trail conditions meet or exceed pre-treatment conditions; and
- Engage in community consultation and communication, as appropriate, before and throughout the treatment implementation.

Treatment Longevity

This prescription is expected to achieve the fuel management objectives for approximately 10 years after implementation. After this time it is expected that understory regeneration may create ladder fuels that are likely to increase the crown fire hazard and overstory mortality and branch loss will create surface fuel accumulations. Maintenance required at this time may involve understory thinning and surface fuel disposal.

TREATMENT UNIT - AREA BREAKDOWN (ha)				
TU	**Gross Area**	**No Treatment**	**Streamside Management Area**	**Net Area**
A	12.0	0	0	12.0
B	1.0	0	1.0	1.0
TOTAL	13.0	0	1.0	13.0

TREATMENT UNIT - SUMMARY				
TU	**Block**	**Area**	**Treatment Type**	**Access**
A	Braemar	6.6	HTR, TFB, SFR, PB	See prescription map
A	Dempsey	5.4	HTR, TFB, SFR, PB	See prescription map
B	Braemar	0.2	HTR, PB	See prescription map
B	Dempsey	0.8	HTR, PB	See prescription map

HTR – Hazard tree removal, TFB – Thin from below, SFR – Surface fuel removal, PB – Prune Branches

Field Marking Convention: Treatment area boundary – orange; boundary corners – double orange and single white ribbon with aluminum tag and corner number painted in blue at tree base; Photo plots – double yellow ribbon and pink dot at tree base facing plot centre; No Treatment Zone – blue; Riparian Management Zone – Orange with 'Riparian Management Zone RMZ' printed in black.

CURRENT STAND CONDITION

Treatment units were delineated based upon treatment specifications based on ecosystem characteristics, fuel types, and stand type. Treatment units may be implemented in conjunction with each other, separately, or in part as funding and work window timing allow. Partial implementation of TUs should be done in discrete blocks that can be completed in the allotted funding and/or time.

Braemar: Treatment Unit A: TU A is a mature stand of Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), and western redcedar (*Thuja plicata*). The understorey consists of 600 sph of coniferous trees and various herb and shrub species. The stand is in the CWHdm and is site series 01 (Hw-FlatMoss) and 05 (Cw-Sword fern). Dense patches of mostly western hemlock intermediate and suppressed trees create areas of moderate to high ladder fuels and are interspersed by open patches of well spaced mature trees. Height to live crown in the dominant and codominant trees is variable across the TU (10-15 m) and lower branches add to ladder fuels in areas of denser understorey and at the forest edge. TU A is identified as high priority for treatment due to its close proximity to residences, Braemar Road and very high use mountain bike and hiking trails. This TU also has good access for treatment crews along its southern edge where three trail heads enter the forest from the road. The data presented here is a summary of 6 plots.

LAYER	Definition	Species % Composition by Basal Area (L1) by density (L2-L3)	Stems per hectare	Basal area (m^2/ha)	DBHq (cm)	Heightq (m)	Crown Closure (% Cover)	Height to Live Crown (m)
L1 Merch	>17.5cm DBH	Fd63Hw34Cw2Dr1	240	39	57	29	85%	10-15
L1 Submerch	12.5 - 17.5 cm DBH	Hw87Cw13	120	2	16	11		
L2	7.5 - 12.5 cm DBH	Hw100	60					
L3	<7.5 cm DBH, >1.3m height	Hw78Cw22	540					
L4	<1.3m height	-	-					

Dempsey: Treatment Unit A: TU A is a well stocked stand of mature stand of Douglas-fir, western hemlock, and western redcedar. The stand is in the CWHdm and is site series 01 (Hw-FlatMoss) and 05 (Cw-Sword fern). The understorey is denser throughout TU A at approximately 720 sph of western redcedar and western hemlock poles and saplings. Height to live crown can be as low as 1 meter in some areas, low limbs and a dense understorey combine to create ladder fuels into the canopy through much of this TU. TU A is identified as high priority for treatment due to its close proximity to residences, critical infrastructure, Dempsey Road and very high use mountain bike and hiking trails. Access to this TU is difficult in some areas and is via roadside and trail heads. The data presented in the table below is a summary of 5 plots.

LAYER	Definition	Species Composition by Basal Area (L1) by density (L2-L3)	Stems per hectare	Basal area (m^2/ha)	DBHq (cm)	Heightq (m)	Crown Closure (% Cover)	Height to Live Crown (m)
L1 Merch	>17.5cm DBH	Fd70Cw19Hw9Dr2	440	103	71	30	75-85%	5-10
L1 Submerch	12.5 - 17.5 cm DBH	Cw54Hw46	60	1	13	9		
L2	7.5 - 12.5 cm DBH	Hw100	20					
L3	<7.5 cm DBH, >1.3m ht	Cw63Hw37	700					
L4	<1.3m height	-	-					

Braemar and Dempsey Riparian Areas: Treatment Unit B: TU B consists of riparian areas. The unit is stocked with western redcedar, western hemlock and Douglas-fir. As these areas are located adjacent to streams, the only treatment in these areas will consist of pruning trees.

LAYER	Definition	Species Composition by Basal Area (L1) by density (L2-L3)	Stems per hectare	Basal area (m^2/ha)	DBHq (cm)	Heightq (m)	Crown Closure (% Cover)	Height to Live Crown (m)
L1 Merch	>17.5cm DBH	Cw60Fd20Hw20Dr10	270				65	1-10
L1 Submerch	12.5 - 17.5 cm DBH	Cw50Hw50	100					
L2	7.5 - 12.5 cm DBH	Hw90Cw10	60					
L3	<7.5 cm DBH, >1.3m ht	Hw80Cw20	550					
L4	<1.3m height	-	-					

TREATMENT SPECIFICATIONS	
Live Thinning – Merchantable Trees (≥17.5cm dbh)	**All Units**: No falling is prescribed, with the exception of danger trees. A wildlife danger tree assessment according to the appropriate Level of Disturbance (LOD) is required. See **Operational Specifications – Wildlife Tree Retention** for details.
Live Thinning – Sub – merchantable Trees (<17.5cm dbh)	**Thinning Specifications** **TU A:** Thin from below (i.e. remove smallest trees first) up to a maximum diameter at breast height of 17.5 cm and until the target density of 50 sph (L1 submerch) has been achieved. The 50 sph of L1 submerch will be retained for aesthetic and habitat complexity. Cedar and Douglas-fir are preferred over hemlock. **Retention Specifications TU A:** All deciduous species, western yew (*Taxus brevifolia*) and any rare or unusual trees must be retained unless they pose a safety concern. Douglas-fir should be prioritized for retention where occurring then western redcedar. Retained trees in all layers and of all species should be free of diseases that could result in imminent mortality. Target density guidelines are categorized by diameter class and species by treatment unit and detailed in the tables and graphs in Appendix A: Diameter Distributions and Post-treatment Stand Targets. No cutting of live deciduous trees or any shrubs should occur. All deciduous tree species, western white pine (*Pinus monticola*), and western yew should be retained as "ghost trees" and not contribute to target densities. Minimize scarring on retained trees. Retain all stems with flagging according to the ribboning specifications as described in the treatment unit summary, and/or marked metal tags identifying permanent photo plot location. Stumps must be less than 10 cm tall from the ground surface and cut at an angle less than 10 degrees from level.
Pruning	**All Units:** All retained coniferous trees must be pruned to 3 metres. This is calculated by the minimum distance between surface fuels and the lowest part of a branch (usually the tip). A minimum 40% live crown must be retained on all pruned trees.
Coarse Woody Debris (>12.5 cm diameter)	**TU A:** Leave a minimum of 100 pieces per hectare and a maximum of 200 pieces per hectare of logs > 12.5 cm in diameter and > 3 m in length (spacing of approximately 4 – 8 m). Retained coarse woody debris (CWD) should be left unbucked whenever possible. Retained coarse fuels should be evenly spaced and not piled or continuous. CWD that is decay class III or greater can be retained on site. CWD in decay Class V does not count towards coarse woody fuel loading.
Fine Fuels (<12cm diameter)	**TU A:** Post-treatment surface fuels should not exceed the following loadings: • woody debris 7 – 12.5 cm diameter should not exceed 2.5 kg/m^2 (25 tonnes/ha) • woody debris < 7 cm should not exceed 0.5 kg/m^2 (5 tonnes/ha)
Debris Disposal –Chipping	**TU A:** Average chip depth must not exceed 3 cm. No chipping is permitted onto existing trails or into the 5 m zone around creeks. Chips should be directed to areas to minimize negative aesthetic impacts. Where humus soil degradation has occurred, chips may be directed to these areas to help rebuild an organic layer at the discretion of the site supervisor. After chipping, chips should be blown off of high points such as logs and stumps to reduce aesthetic impacts. Where accumulations exceed the maximum depth, the contractor will be required to redistribute this material. **Where treatment units abut roads, debris and chips must be hauled away within 20 m of road edges.**
Invasive Plant Removal	**All Units:** Cut and remove all invasive shrub and tree species with woody stems. These include plants such as laurel (*Laurus* spp.), Scotch broom (*Cytisus scoparius*), and holly (*Ilex* spp.) species but not species such as Himalayan blackberry (*Rubus discolor*).
Community Usage of materials	**TU A:** Western redcedar with minimum diameter of 10 cm may be left in long lengths and piled at locations adjacent to existing mountain bike trails for use as structure materials. Specific amounts and locations for material to be stored will be determined during treatment implementation and will be communicated to the contractor at this time.

OPERATIONAL SPECIFICATIONS

Riparian Areas - Work Procedures

These apply to mapped streams in TU B and within 5 m of any streams outside these TUs. The following measures apply:

- a streamside DPA permit must be issued for the work by the DNV prior to any work occurring within 15 m top of stream bank or 5 m from the edges of ravines;
- no machine use (except those used by hand);
- use vegetable-based bar and chain oils only;
- no refuelling of any equipment;
- no removal of pre-existing coarse woody debris from stream bank or stream bed;
- exclusion of workers from areas of wet soils that will be degraded by foot traffic; and
- any debris introduced to the watercourse must be removed by hand to ensure water flow is not impeded;
- no chips allowed in these areas
- no crossing creeks with machinery;

Wildlife Tree Retention

Wildlife danger tree assessment must be performed by a registered WDTA assessor (harvesting/Silviculture module) according to the appropriate Level of Disturbance (LOD). Assessments should appropriately balance worker safety, treatment objectives, and wildlife tree retention. As part of the Danger Tree Assessment, the contractor should identify and retain high value wildlife trees with a variety of defects (broken tops, mistletoe, cavities, etc) without unduly reducing the effectiveness of the fuel management treatment. No more than 5% of the treatment area should be designated as No Work Zones. Treatment specifications may be reduced to activities that constitute LOD 1 to allow for modified treatment in the vicinity of large diameter LOD 2 danger trees which are characterized as high value wildlife trees. The precise specifications for LOD 1 treatments must be confirmed with a WCB inspector, but the following specifications may be considered:

- Limbing;
- Pruning trees <20 cm dbh;
- Use of in-helmet radio communication; and
- Moving debris manually.

Access

Potential access points are shown on the prescription map. Not all points are machine accessible; in particular areas in the Dempsey portion of TU A above Citadel and Quarry Court have constrained access. The contractor is responsible for determining suitable access points for the type of equipment they propose to use. Consultation with the DNV over access must occur to ensure all values are considered prior to treatment implementation.

Machine Use

Machine use is prohibited on sites with sensitive soils such as thin folisols over rock and wet organic or mineral soils where soil compaction hazard is high. Machine use on slopes over 35% is also prohibited. Where excessive soil disturbance is anticipated or observed by the site supervisor machine use will be prohibited. Machines cannot be used on existing trails where they may cause damage to the trails. Any damage to trails is fully the responsibility of the contractor to repair to pre-treatment or better conditions. This includes all structures used by mountain bikers or hikers.

All machine disturbance post treatment must be rehabilitated. Any rutting or unacceptable soil disturbance must be rehabilitated by the contractor at the contractor's expense. Where access trails have been created, these must be decommissioned after treatment through the use of logs or other structures. This is the responsibility of the contractor implementing the treatments.

Breeding Birds

A bird survey(s) must be conducted by a qualified biologist prior to any vegetation management activities that may disturb nesting birds if treatment occurs during breeding bird season (April 1 – August 31st).

Fire Prevention and Suppression Capabilities

Prevention and suppression capabilities during implementation must be in accordance with the BC Wildfire Act and Wildfire Regulation and follow Wildfire Management Branch fire emergency reporting procedures and protocols.

Safety

The treatment area is adjacent to public roadways and private infrastructure. There are multiple high-use hiking and recreational mountain biking trails that run through the treatment area. Appropriate precautions must be taken by the contractor to ensure safety of workers, the public, and trail users are maintained during operations. Precautionary measures should include signage, crew members posted on trails while working within 1.5 tree lengths (when falling or other hazardous activities are occurring), removing all slash from the trail at the end of each work day, and contacting the NSMBA and relevant stakeholders to inform them of work to take place, timing, and duration.

Measures to prevent the spread of Invasive Plants

Without proper management, treatment operations have considerable potential to contribute to the spread of invasive plants within the treatment area. There are identified invasive plant sites including Scotch broom (*Cytisus scoparius*), English Ivy (*Hedera helix*), silver nettle (*Lamiastrum galeobdolon*), and Himalayan blackberry (*Rubus discolor*) within in and in close proximity to the treatment area. The following procedures should be used to minimize the spread of invasive plants into and between the treatment units:

1. Ensure that crews are aware of the importance of invasive species management and can identify the species listed above;
2. Ensure that all access routes are free of invasive species; and
3. Avoid driving through or parking on weed infestations.

English holly and laurel should be dealt with as prescribed in **Treatment Specifications – Invasive Plant Removal**.

Public Notification

At least two weeks prior to project start-up, neighbourhood residents and stakeholder groups such as the NSMBA should be notified of the project through door to door or by email notification. Information should include a contact name and phone number and details of start-up dates.

LAND STATUS, FOREST PLANNING, MAPPING AND REFERRALS	
Appropriate investigations have been conducted to ensure that the area included in the prescription is crown land or land under the direct control or ownership of provincial, federal, or municipal government. The area proposed does not overlap or conflict with private land, an Indian reserve, a park or protected area, and is not encumbered by other tenures or jurisdictional issues.	Yes ☒ No ☐
This application is consistent with a Community Wildfire Protection Plan for the area. If there is no CWPP for the area, MoFLNRO Wildfire Management Branch (WMB) staff must have signed off on the proposed treatment. A CWPP has been completed. **The DNV has been instructed by Fuels Specialist Derek Lefler that they treatments are consistent with fire hazard reduction goals.**	Yes ☒ NA ☐
Map(s) are attached and comply with the standard required.	Yes ☒
The proposal has been referred to the appropriate major licensee and BCTS and documentation of the response is available indicating no significant reasons to prevent the proposed operations.	Yes ☐ NA ☒
The major licensee and/or BCTS have been provided with an accurate location and assessment of potential impact on silviculture from use of trails and landings in plantations.	Yes ☐ NA ☒
A field assessment has been conducted and all resource values that could be materially affected by this fuel management proposal have been appropriately addressed.	Yes ☒ NA ☐
RESOURCE VALUES: *The area has been checked for the following values and appropriate management is described if an issue is noted.*	
Other leases, licences or permits:	Yes ☐ No ☐ NA ☒
Visual Quality (check 'No' if the treatment area is not consistent with visual quality requirements):	Yes ☐ No ☐ NA ☒
Species at Risk: **Pacific water shrew**	Yes ☒ No ☐ NA ☐
Old Growth Management Areas:	Yes ☐ No ☐ NA ☒
Recreation resources, features, recreation site, forest interpretive site or recreation trail: **North Shore bike trails, community hiking trails**	Yes ☒ No ☐ NA ☐
Archaeological Resources:	Yes ☐ No ☐ NA ☒
Cultural Heritage Resources (Referral required to appropriate First Nations):	Yes ☐ No ☐ NA ☒
Wildlife habitat features: [Must comply with FPPR s. 70(2) unless exempted under section 92(2)]	Yes ☐ No ☐ NA ☒
Resource features: [Must comply with FPPR s. 70(1) unless exempted under section 91(1)]:	Yes ☐ No ☐ NA ☒
Comments received from public referral:	Yes ☐ No ☐ TBD ☒

RESOLUTION OF IDENTIFIED RESOURCE ISSUES.	
Recreation resources	This area has world renowned mountain biking trails. Existing trails cannot be used as travel corridors for machinery where this may cause damage to the trails. Crossing trails and the use of trail heads is permitted but care should be taken to minimize disturbance. Chipping onto existing trails is not permitted. Falling across trails should be avoided where possible. Trails must be kept clear of debris during treatment implementation and access to trails must be maintained except where safety concerns require closures. Any damage to trails or structures is the responsibility of the contractor to repair. Post-treatment trail condition must meet or exceed pre-treatment conditions. Trails in this unit include: Braemar; Lower Boundary; Lower Digger; Lower Crippler; Dempsey; Espresso; Kilmer; and Quarry Court and several unnamed trails.

Species at Risk	A non-sensitive, historical occurrence of Pacific water shrew (*Sorex bendirii*) (72710) overlaps the Braemar Treatment area. This is a red-listed species that was collected in 1955. Suitable habitat exists in the riparian areas adjacent to the streams. Upland ecosystems are primarily site series 01/05 and do not provide high quality habitat. While no records exist, it is highly probable that red-legged (*Rana aurora*) and Tailed-Frog (*Ascaphus truei*) inhabit some of these areas. Treatment in the riparian draws is limited to pruning trees. No machine use is permitted in riparian zones. As work will be completed manually and is limited to pruning in riparian management areas, no negative impacts on these species are anticipated. Large elevated CWD will be maintained throughout the treatment areas. Should any listed species be observed in the field, a qualified professional should be consulted to determine if mitigation measures are required.
Invasive Alien Plants	There are documented occurrences of invasive alien plants in the vicinity of the treatment area. **Operational Specifications - Measures to Prevent the Spread of Invasive Plants** should be followed.
Public referral	Public meetings with residents and stakeholders should occur to ensure that public comments and concerns are addressed prior to treatment implementation.

RIPARIAN MANAGEMENT & BIODIVERSITY	
Streams, wetlands and lakes are correctly classified and indicated on the map.	Yes ☒ No ☐ NA ☐
Appropriate timing for removal of skid trail crossings of streams and non-classified drainages is identified. **Machine use across streams is not permitted**	Yes ☐ No ☒ NA ☐
Treatment in Stream DPA has been approved by DNV: **Permit is required before treatment commences**	Yes ☐ No ☒ NA ☐
Treatment is planned in the riparian area identified on the map (TU B)	Yes ☒ No ☐ NA ☐
Riparian treatment areas have been marked in the field: **See Riparian Areas - Work Procedures**	Yes ☒ No ☐ NA ☐
Treatment is planned in a Stream DPA area identified on the map	Yes ☒ No ☐ NA ☐
Wildlife tree retention is consistent with the FPPR.	Yes ☒ No ☐ NA ☐

RIPARIAN ASSESSMENTS

TU	Riparian I.D. and Class.	DPA Width (m)	Streamside Management Tree Retention	Comments (Indicate if in a community watershed)
B	2 – No Name S-6	15	All	Prune trees to 3 m. Foot traffic in areas with sensitive soils is not permitted. DPA permit is required prior to treatment.
B	3 - Dyer Creek S-6	15	All	Prune trees to 3 m. Foot traffic in areas with sensitive soils is not permitted. DPA permit is required prior to treatment.
B	15 – Kilmer Creek S-6	15	All	Prune trees to 3 m. Foot traffic in areas with sensitive soils is not permitted. DPA permit is required prior to treatment.
B	151 – Kilmer Creek S-6	15	All	Prune trees to 3 m. Foot traffic in areas with sensitive soils is not permitted. DPA permit is required prior to treatment.

SOIL DISTURBANCE

Treatment Area	Soil Hazard Ratings			Maximum Allowable Soil Disturbance (%)	Sensitive Soils (Y/N)	Texture	Coarse Fragments
	Compaction	Displacement	Erosion				
A	M	M	M	5	N	SL	25
B	M	M	M	5	**Y**	SL	20

SEASONAL CONSTRAINTS AND SLOPE STABILITY	
All season treatment is appropriate (low potential for archaeological resources and suitable soil conditions)	Yes ☒ No ☐
The treatment is to occur only when soil is dry or frozen, or when adequate snow pack exists to ensure minimal soil disturbance to sensitive soils.	Yes ☐ No ☒
Primary forest activities under this fuel management proposal will not materially reduce slope stability on the area or on adjacent areas.	Yes ☒ No ☐
BOUNDARY, ROADS, AND TRAILS	
Treatment boundaries are clearly marked on site and accurately mapped.	Yes ☒ No ☐
The condition of existing trails will be assessed and documented prior to treatment.	Yes ☐ No ☒
Existing roads and landings are in a condition suitable for use without modification. **See Operational Specifications - Access**	Yes ☐ No ☒
Access trails will be marked in the field prior to treatment after consultation with the contractor. **Implementation trails will be determined at time of implementation based upon contractors proposed methods**	Yes ☐ No ☒ NA ☐

Temporary access trails will be rehabilitated.	Yes ☒ No ☐ NA ☐

FOREST HEALTH			
AGENT NAME	**SPECIES AFFECTED**	**% INCIDENCE**	**MORTALITY**
Western Hemlock Dwarf Mistletoe	Hw	5	<1
Armillaria spp	Hw,Fd	<5	<1
Western hemlock in the understorey should be removed, as they will become infected by mistletoe in the overstory. Retention of other species is preferred over western hemlock.			

Windthrow:
There is a moderate windthrow hazard and high consequence of windthrow in TU A due to the proximity treatment area to houses, roads and public trails. The treatment will not significantly reduce crown closure in these units and no new edges or openings of significant size will be created. Any reduction in canopy closure will occur in the intermediate and suppressed canopy layers and will not increase wind loading on dominant and co-dominant trees. Hazard tree removals are incorporated as part of the treatment and will reduce the existing windthrow risk. Individual overstory trees removed as danger trees are not expected to be enough to impact wind loading on dominant and co-dominant trees. Endemic windthrow is expected after treatment, particularly in those trees impacted by root rot, at the same frequency as in the pre-treatment stand. This will not be explicitly managed and will contribute to long-term woody debris recruitment.

RPF PRINTED NAME		**Registered Professional Foresters Signature and Seal**
Ben Andrew	**4666**	
DATE SIGNED		
March 27, 2013		
I certify that I have reviewed this document and I have determined that this work has been done to standards acceptable of a Registered Professional Forester.		

ACKNOWLEDGEMENT BY LOCAL GOVERNMENT REPRESENTATIVE
I certify that I have reviewed this fuel management proposal, all assessments and fieldwork. I agree it is consistent with the recommendations contained within the Community Wildfire Protection Plan, or with the objective of reducing fire hazard in the community interface area.
Signature:
REPRESENTATIVE NAME: DATE SIGNED:

Appendix A: Diameter Distributions and Post-treatment Stand Targets

Post-treatment density targets are below according to diameter class for each TU. These targets are a tool that may be useful during thinning activities and as a guide for the overall end resulting stand. It is understood that natural variation and individual tree health may not allow for strict adherence to these targets. TU B is not shown as no removals will occur in this unit.

Figure 1. Current diameter distribution by species for Badger TU A (left). Post-treatment density targets by diameter class for Braemar TU A (right).

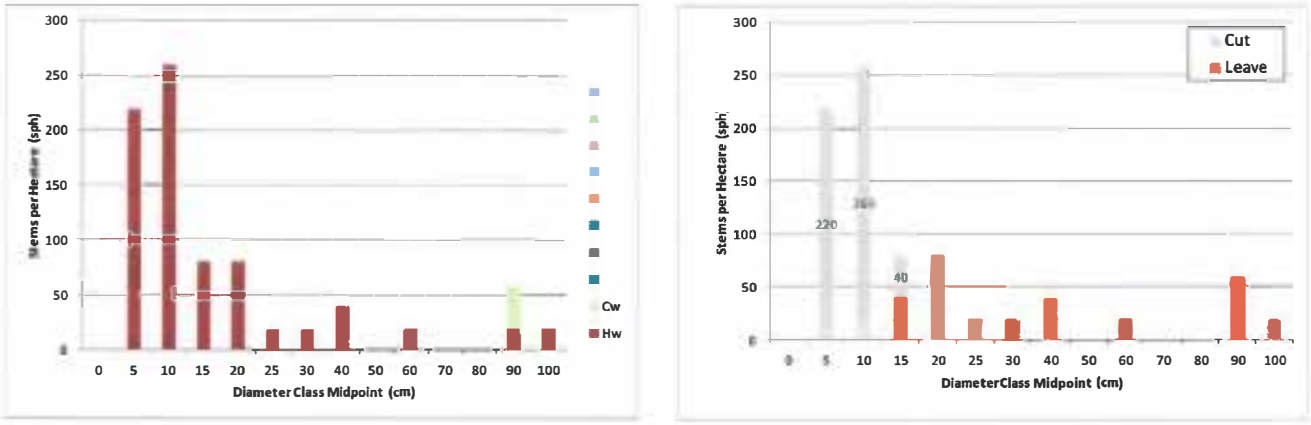


Figure 2: Current diameter distribution by species for Indian River TU A (left). Post-treatment density targets by diameter class for Dempsey TU A (right).

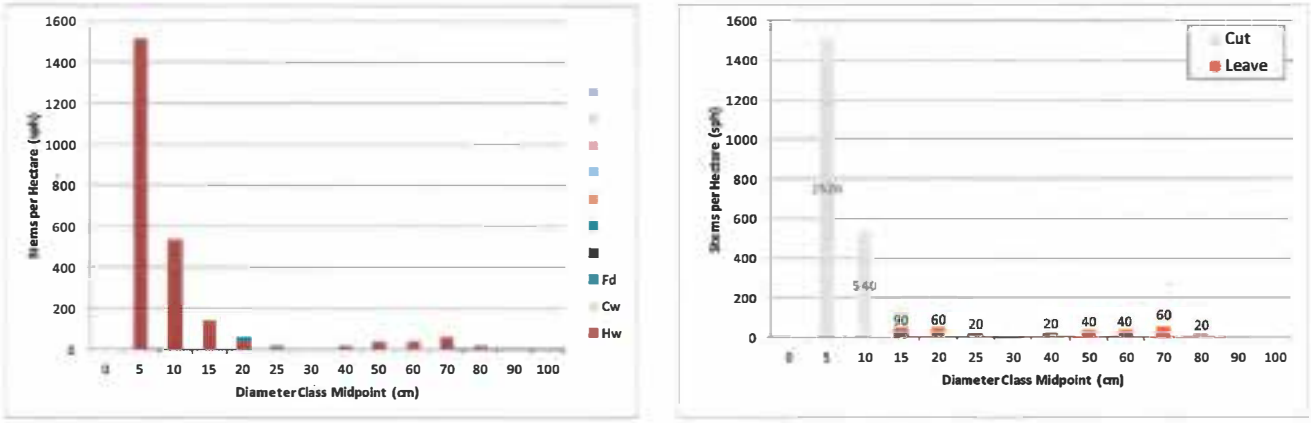


Figure 3. Current diameter distribution by species for TU C (left). Post-treatment density targets by diameter class for TU C (right).

Appendix B: Treatment Area Photographs

Figure 4. TU A, plot 4 looking east.

Figure 5. TU A, overstorey crown closure from plot 3.

Figure 6. TU B, plot 1 looking north, surface and ladder fuels.

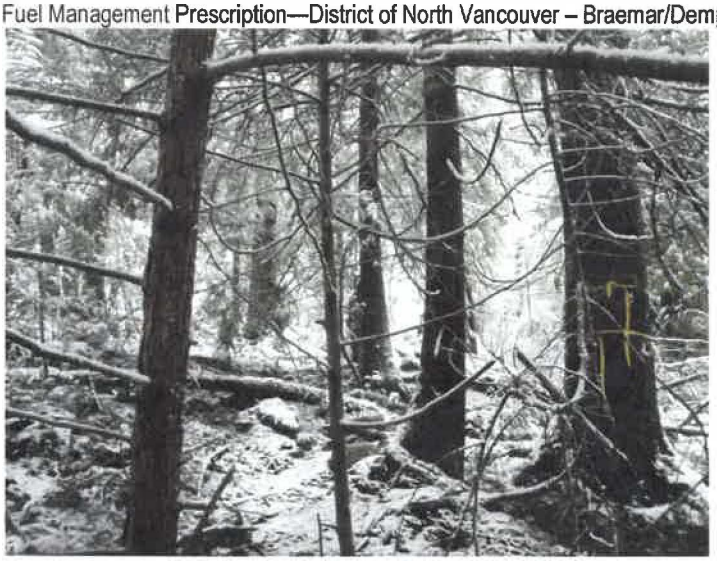
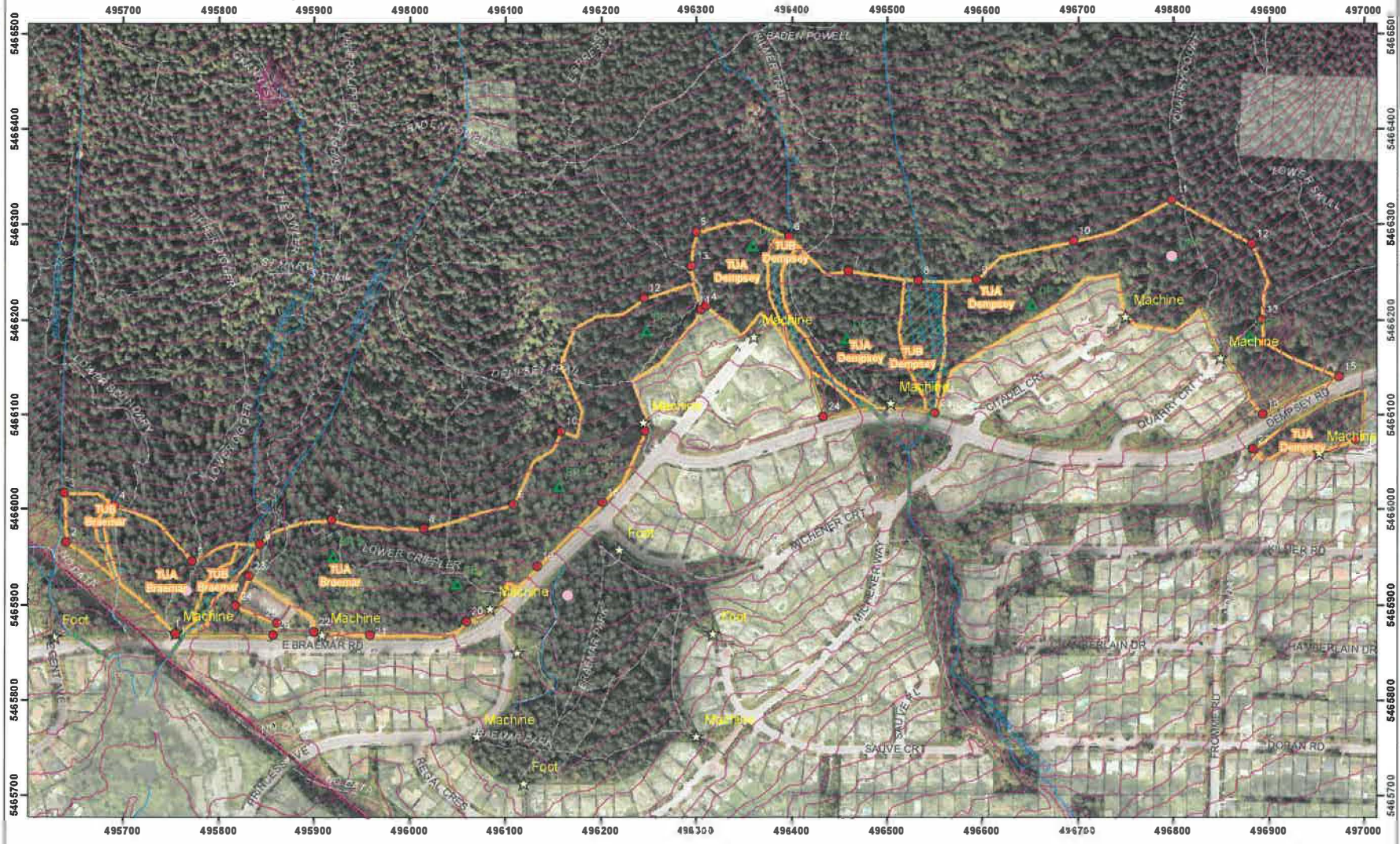


Figure 7. TU B, plot 4 looking north.

Figure 8. TU A, plot 1looking north.

Figure 9. NCD in TU B by ST 5-1.

Fuel Management Prescription Map: District of North Vancouver: Braemar & Dempsey



Forest Region	Coastal
Forest District	Vancouver
Mapsheet	92G035
Locatn	Braemar
UTM Zone	10N
UTM Eastng	496158
UTM Northing	5466008

Legend

- Threat Plot
- Treatment Corners
- DNV plots
- Access Points
- Trails
- Creeks
- Transmission Lines
- Contours
- Storm Culverts
- Parks
- Private Land

Prescription Unit

- TUA
- TUB

1:4,000

N

0 50 100

Meters

Coordinate System:
NAD 83 UTM Zone 10

Mapped by: B.Andrew
Date: March 2013

Fuel Management Prescription - Area Breakdown

Block	TU	Stand Desc.	Treatment	Stream Mgmt (ha)	NP (ha)	Gross Area (ha)	Net (ha)
Braemar/Dempsey	A	FdHwCw	HTR,TFB, SFR,PB			12.0	12.0
Braemar/Dempsey	B	CwHwFd	PB	1.0		1.0	1.0
Total Area (ha)							13.0

Streamside DPA approval is required for all works within 15 m of top of bank or 5 m from the edge of ravines.
No machine work in these areas is permitted without DVN approval. HTR-Hazard tree removal, TFB-Thin from below, SFR-Surface fuel removal. PB-Prune branches, [illegible]

Stream Summary (See Prescription for management strategies)

Stream ID	Class	DPA (m)	Land Ownershi
2-no name	S-6	15	DNV
3-Dyer Creek	S-6	15	DNV
15-Kilmer Creek	S-6	15	DNV
151-Kilmer Creek	S-6	15	DNV

Fuel Management Prescription
Carmaria Court
District of North Vancouver

B.A. Blackwell & Associates Ltd.

NORTH VANCOUVER DISTRICT

Prepared by: Ben Andrew, RPF 270-18 Gostick Place, North Vancouver BC, V7M 3G3 Ph: 604-986-8346 Email: b_andrew@bablackwell.com	**Deliver or Mail to:** Fuels Management Specialist: Derek Lefler RPF District Forester: Mark Brown RPF
Location: West side of Carmaria Court, District of North Vancouver, BC	These units are located on District (Crown Municipal) lands off Carmaria Court adjacent to residential private properties.
Comments: This prescription **may only be implemented** in conjunction with slope stabilization planning. Geotechnical considerations will be given priority over wildfire hazard reduction measures. • External block boundaries adjacent to private land flagged by DNV surveyors before treatment implementation; *As implementation depends on slope stabilization, this treatment unit has not been ribboned in the field.*	

Fuel Management Objectives

The objectives of this prescription are to:

- Enhance the ability of the Wildfire Management Branch, DNV Fire and Rescue Services, and Metro Vancouver Suppression Crews to protect both public and private values at risk;
- Contribute to the provision of landscape scale shaded fuel break along the WUI;
- Demonstrate the principles and practices of vegetation and fuels management to community members and the public;
- Reduce surface fire behaviour potential;
- Reduce the potential for crown fires; and
- Minimize negative impacts to, and where possible enhance, the many values of the treated stand, including recreation, public safety, wildlife habitat, and biodiversity.

Fuel Management Strategies

The fuel management objectives stated above will be achieved using the following strategies:

- Reduce surface fuels to improve suppression crew access to and success at actioning fires in the case of wildfire;
- Maximize retention of dominant and co-dominant canopy trees to maintain a cool, moist, and dark understorey microclimate;
- Thin from below (i.e. smallest trees first) to reduce ladder fuels;
- Retain the healthiest juvenile trees for contribution to the future stand where desirable;
- Reduce surface fuel loading through chipping or removal of debris to reduce the risk, potential behaviour, and intensity of surface fire;
- Minimize the creation of surface fuels by chipping or removing slash created during treatment;
- Retain deciduous tree species and shrubs to reduce fire behaviour and provide wildlife habitat;
- Retain minimum targets of coarse woody debris to contribute to healthy forest ecosystems and biodiversity;
- Protect existing trail networks and ensure post-treatment trail conditions meet or exceed pre-treatment conditions; and
- Engage in community consultation and communication, as appropriate, before and throughout the treatment implementation.

Treatment Longevity

This prescription is expected to achieve the fuel management objectives over of approximately 10 years after implementation. After this time it is expected that understory regeneration may create ladder fuels that are likely to increase the crown fire hazard and overstory mortality and branch loss will create surface fuel accumulations. Maintenance required at this time may involve understorey thinning and surface fuel disposal.

TREATMENT UNIT - AREA BREAKDOWN (ha)				
TU	**Gross Area**	**No Treatment**	**Streamside Management Area**	**Net Area**
A	2.4		0	2.4
			0	
TOTAL	2.4		0	2.4

TREATMENT UNIT - SUMMARY				
TU	**Block**	**Area**	**Treatment Type**	**Access**
A	Carmaria Court	2.4	HTR, TFB, SFR, PB	Carmaria Court

HTR – Hazard tree removal, TFB – Thin from below, SFR – Surface fuel removal, PB – Prune Branches

Field Marking Convention: Photo plots – double yellow ribbon and pink dot at tree base facing plot centre.

CURRENT STAND CONDITION

Treatment units were delineated based upon treatment specifications based on ecosystem characteristics, fuel types, and stand type. Treatment units may be implemented in conjunction with each other, separately, or in part as funding and work window timing allow. Partial implementation of TUs should be done in discrete blocks that can be completed in the allotted funding and/or time.

Carmaria Court: Treatment Unit A: TU A is a mature stand of western hemlock (*Tsuga heterophylla*) with a minor component of western redcedar (*Thuja plicata)* and a fringe of red alder (*Alnus rubra*) located along the road edge. The stand is in the CWHdm and is site series 05 (Cw-Sword fern) and 07 (Cw-Foamflower). Dense patches of western hemlock intermediate and suppressed trees create areas of moderate to high ladder fuels and are interspersed by open patches of well spaced mature trees. Surface fuel accumulations vary between low to extremely high due to tree failure. Height to live crown in the dominant and codominant trees is variable across the TU (5-10 m) and lower branches add to ladder fuels in areas of denser understorey and at the forest edge. TU A is identified as high priority for treatment due to its close proximity to residences. This TU is accessible from Carmaria Court. The data presented here is a summary of 3 plots.

LAYER	Definition	Species % Composition by Basal Area (L1) by density (L2-L3)	Stems per hectare	Basal area (m^2/ha)	DBHq (cm)	Heightq (m)	Crown Closure (% Cover)	Height to Live Crown (m)
L1 Merch	>17.5cm DBH	Hw95Cw5	233	26	49	23	60	5
L1 Submerch	12.5 - 17.5 cm DBH	Hw100	433	8	16	10		
L2	7.5 - 12.5 cm DBH	Hw100	767					
L3	<7.5 cm DBH, >1.3m height	Hw100	100					
L4	<1.3m height	-						

TREATMENT SPECIFICATIONS

Live Thinning – Merchantable Trees (≥17.5cm dbh)	**All Units**: No falling is prescribed, with the exception of danger trees. A wildlife danger tree assessment according to the appropriate Level of Disturbance (LOD) is required. See **Operational Specifications – Wildlife Tree Retention** for details.
Live Thinning – Sub – merchantable Trees (<17.5cm dbh)	**Thinning Specifications** **TU A:** Thin from below (i.e. remove smallest trees first) all western hemlock up to a maximum diameter at breast height of 17.5 cm. All western redcedar, Douglas-fir will retained. **Retention Specifications TU A:** Retain all species other than western hemlock. This includes all deciduous species, western yew (*Taxus brevifolia*) and any rare or unusual trees must be retained unless they pose a safety concern. Douglas-fir should be prioritized for retention where occurring then western redcedar. Retained trees in all layers and of all species should be free of diseases that could result in imminent mortality. Target density guidelines are categorized by diameter class and species by treatment unit and detailed in the tables and graphs in Appendix A: Diameter Distributions and Post-treatment Stand Targets. No cutting of live deciduous trees or any shrubs should occur. All deciduous tree species, western white pine (*Pinus monticola*), and western yew should be retained as "ghost trees" and not contribute to target densities. Minimize scarring on retained trees. Retain all stems with flagging according to the ribboning specifications as described in the treatment unit summary, and/or marked metal tags identifying permanent photo plot location. Stumps must be less than 10 cm tall from the ground surface and cut at an angle less than 10 degrees from level.
Pruning	**All Units:** All retained coniferous trees must be pruned to 3 metres. This is calculated by the minimum distance between surface fuels and the lowest part of a branch (usually the tip). A minimum 40% live crown must be retained on all pruned trees.

Coarse Woody Debris (>12.5 cm diameter)	**TU A:** Leave a minimum of 100 pieces per hectare and a maximum of 200 pieces per hectare of logs > 12.5 cm in diameter and >3 m in length (spacing of approximately 4 – 8 m). Retained coarse woody debris (CWD) should be left unbucked whenever possible. Retained coarse fuels should be evenly spaced and not piled or continuous. CWD that is decay class III or greater can be retained on site. CWD in decay Class V does not count towards coarse woody fuel loading.
Fine Fuels (<12cm diameter)	**TU A:** Post-treatment surface fuels should not exceed the following loadings: • woody debris 7 – 12.5 cm diameter should not exceed 2.5 kg/m^2 (25 tonnes/ha) • woody debris < 7 cm should not exceed 0.5 kg/m^2 (5 tonnes/ha)
Debris Disposal	**TU A:** No chipping is permitted. All debris must be taken off site.
Invasive Plant Removal	**All Units:** Cut and remove all invasive shrub and tree species with woody stems. These include plants such as laurel (*Laurus* spp.) and holly (*Ilex* spp.) species but not species such as Himalayan blackberry (*Rubus discolor*).

OPERATIONAL SPECIFICATIONS

Steep Slopes Areas - Work Procedures
This slope has been identified as having slope instability concerns. No machine use is permitted on these slopes. All material must be brought to roadside using manual labour or cable systems employing high lead yarding. The rationale behind this is to reduce impacts on slope stability associated with the use of heavy machinery. All work must be approved by a qualified professional.

A summary of Landslide Risk Assessments can be found at: http://www.dnv.org/upload/pcdocsdocuments/wp3101!.pdf

Wildlife Tree Retention
Wildlife danger tree assessment must be performed by a registered WDTA assessor (harvesting/Silviculture module) according to the appropriate Level of Disturbance (LOD). Assessments should appropriately balance worker safety, treatment objectives, and wildlife tree retention. As part of the Danger Tree Assessment, the contractor should identify and retain high value wildlife trees with a variety of defects (broken tops, mistletoe, cavities, etc) without unduly reducing the effectiveness of the fuel management treatment. No more than 5% of the treatment area should be designated as No Work Zones. Treatment specifications may be reduced to activities that constitute LOD 1 to allow for modified treatment in the vicinity of large diameter LOD 2 danger trees which are characterized as high value wildlife trees. The precise specifications for LOD 1 treatments must be confirmed with a WCB inspector, but the following specifications may be considered:

- Limbing;
- Use of in-helmet radio communication; and
- Moving debris manually.

Access
Access is from Carmaria Court. The contractor is responsible for determining suitable access points for the type of equipment they propose to use. Consultation with the DNV over access must occur to ensure all values are considered prior to treatment implementation.

Machine Use
Machine use is prohibited on sites with slopes over 35%.

Breeding Birds
A bird survey(s) must be conducted by a qualified biologist prior to any vegetation management activities that may disturb nesting birds if treatment occurs during breeding bird season (April 1 – August 31).

Fire Prevention and Suppression Capabilities
Prevention and suppression capabilities during implementation must be in accordance with the BC Wildfire Act and Wildfire Regulation and follow Wildfire Management Branch fire emergency reporting procedures and protocols.

Safety
The treatment area is adjacent to public roadways and private infrastructure. Appropriate precautions must be taken by the contractor to ensure safety of workers, the public, and residents during operations. Precautionary measures should include signage, crew members posted on roads while working within 1.5 tree lengths (when falling or other hazardous activities are occurring) and contacting the residents to inform them of work to take place, timing, and duration.

Measures to prevent the spread of Invasive Plants
Without proper management, treatment operations have considerable potential to contribute to the spread of invasive plants within the treatment area. There are identified invasive plant sites including but not limited to: English Ivy (*Hedera helix*), silver nettle (*Lamiastrum galeobdolon*), and Himalayan blackberry (*Rubus discolor*) in close proximity to the treatment area. There are likely several unidentified sites near to the treatment area, as well. The following procedures should be used to minimize the spread of invasive plants into and between the treatment units:

1. Ensure that crews are aware of the importance of invasive species management and can identify the species listed above;
2. Ensure that all access routes are free of invasive species; and
3. Avoid driving through or parking on weed infestations.

English holly and laurel should be dealt with as prescribed in **Treatment Specifications – Invasive Plant Removal**.

Public Notification
At least two weeks prior to project start-up, neighbourhood residents should be notified of the project through door to door or by email notification. Information should include a contact name and phone number and details of start-up dates.

LAND STATUS, FOREST PLANNING, MAPPING AND REFERRALS

Appropriate investigations have been conducted to ensure that the area included in the prescription is crown land or land under the direct control or ownership of provincial, federal, or municipal government. The area proposed does not overlap or conflict with private land, an Indian reserve, a park or protected area, and is not encumbered by other tenures or jurisdictional issues.	Yes ☒ No ☐

This application is consistent with a Community Wildfire Protection Plan for the area. If there is no CWPP for the area, MoFLNRO Wildfire Management Branch (WMB) staff must have signed off on the proposed treatment. A CWPP has been completed. **The DNV has been instructed by Fuels Specialist Derek Lefler that they treatments are consistent with fire hazard reduction goals.**	Yes ☒ NA ☐
Map(s) are attached and comply with the standard required.	Yes ☒
The proposal has been referred to the appropriate major licensee and BCTS and documentation of the response is available indicating no significant reasons to prevent the proposed operations.	Yes ☐ NA ☒
The major licensee and/or BCTS have been provided with an accurate location and assessment of potential impact on silviculture from use of trails and landings in plantations.	Yes ☐ NA ☒
A field assessment has been conducted and all resource values that could be materially affected by this fuel management proposal have been appropriately addressed.	Yes ☒ NA ☐
RESOURCE VALUES: *The area has been checked for the following values and appropriate management is described if an issue is noted.*	
Other leases, licences or permits:	Yes ☐ No ☐ NA ☒
Visual Quality (check 'No' if the treatment area is not consistent with visual quality requirements):	Yes ☐ No ☐ NA ☒
Species at Risk:	Yes ☐ No ☐ NA ☒
Old Growth Management Areas:	Yes ☐ No ☐ NA ☒
Recreation resources, features, recreation site, forest interpretive site or recreation trail:	Yes ☐ No ☐ NA ☒
Archaeological Resources:	Yes ☐ No ☐ NA ☒
Cultural Heritage Resources (Referral required to appropriate First Nations):	Yes ☐ No ☐ NA ☒
Wildlife habitat features: [Must comply with FPPR s. 70(2) unless exempted under section 92(2)]	Yes ☐ No ☐ NA ☒
Resource features: [Must comply with FPPR s. 70(1) unless exempted under section 91(1)]:	Yes ☐ No ☐ NA ☒
Comments received from public referral:	Yes ☐ No ☐ TBD ☒

RESOLUTION OF IDENTIFIED RESOURCE ISSUES.	
Invasive Alien Plants	There are documented occurrences of invasive alien plants in the vicinity of the treatment area. **Operational Specifications – Measures to Prevent the Spread of Invasive Plants** should be followed.
Public referral	Public meetings with residents and stakeholders should occur to ensure that public comments and concerns are addressed prior to treatment implementation.

RIPARIAN MANAGEMENT & BIODIVERSITY	
Streams, wetlands and lakes are correctly classified and indicated on the map.	Yes ☐ No ☐ NA ☒
Appropriate timing for removal of skid trail crossings of streams and non-classified drainages is identified. **Machine use is not permitted**	Yes ☐ No ☐ NA ☒
Treatment in Stream DPA has been approved by DNV:	Yes ☐ No ☒ TBD ☐
Treatment is planned in the riparian area identified on the map	Yes ☐ No ☐ NA ☒
Riparian treatment areas have been marked in the field:	Yes ☐ No ☐ NA ☒
Treatment is planned in a Stream DPA area identified on the map	Yes ☐ No ☐ NA ☒
Wildlife tree retention is consistent with the FPPR.	Yes ☒ No ☐ NA ☐

RIPARIAN ASSESSMENTS

TU	Riparian I.D. and Class.	DPA Width (m)	Streamside Management Tree Retention	Comments (Indicate if in a community watershed)

SOIL DISTURBANCE

Treatment Area	Soil Hazard Ratings			Maximum Allowable Soil Disturbance (%)	Sensitive Soils (Y/N)	Texture	Coarse Fragments
	Compaction	Displacement	Erosion				
A	M	H	H	5	N	SL	25

Localized wet soils occur in TU A on a steep slope. Wetted soils are sensitive to compaction, displacement, and erosion. Machine traffic is not permitted on the slope.

SEASONAL CONSTRAINTS AND SLOPE STABILITY	
All season treatment is appropriate (low potential for archaeological resources and suitable soil conditions):	Yes ☒ No ☐
The treatment is to occur only when soil is dry or frozen, or when adequate snow pack exists to ensure minimal soil disturbance to sensitive soils: **Treatment timing must coincide with periods of low**	Yes ☒ No ☐

precipitation when soils are driest.	
Primary forest activities under this fuel management proposal will not materially reduce slope stability on the area or on adjacent areas: **Fuel Treatment activities must be reviewed and approved by a QP and must coincide with slope stabilization work.**	Yes ☐ No ☒
BOUNDARY, ROADS, AND TRAILS	
Treatment boundaries are clearly marked on site and accurately mapped: **Boundaries must be marked prior to treatment.**	Yes ☐ No ☒
The condition of existing trails will be assessed and documented prior to treatment.	Yes ☐ No ☒
Existing roads and landings are in a condition suitable for use without modification. **See Operational Specifications – Access.**	Yes ☒ No ☐
Access trails will be marked in the field prior to treatment after consultation with the contractor. **No Machine use is permitted on slopes > 35%.**	Yes ☐ No ☒ NA ☐
Temporary access trails will be rehabilitated.	Yes ☐ No ☐ NA ☒

FOREST HEALTH			
AGENT NAME	**SPECIES AFFECTED**	**% INCIDENCE**	**MORTALITY**
Western Hemlock Dwarf Mistletoe	Hw	80	<10
Western hemlock in the understorey should be removed, as they will become infected by mistletoe in the overstory. Retention of other species is preferred over western hemlock.			

Windthrow:

There is a moderate to high windthrow hazard due to due to high soil moisture, species composition and disease profile and high consequence of windthrow in TU A due to the proximity treatment area to houses and the road. The treatment will not significantly reduce crown closure in these units and no new edges or openings of significant size will be created. Any reduction in canopy closure will occur in the intermediate and suppressed canopy layers and will not increase wind loading on dominant and co-dominant trees. Hazard tree removals are incorporated as part of the treatment and will reduce the existing windthrow risk. Individual overstorey trees removed as danger trees are not expected to be enough to impact wind loading on dominant and co-dominant trees. Endemic windthrow is expected after treatment, particularly in those trees impacted by root rot, at the same frequency as in the pre-treatment stand. This will not be explicitly managed and will contribute to long-term woody debris recruitment.

RPF PRINTED NAME		**Registered Professional Foresters Signature and Seal**
Ben Andrew	**4666**	
DATE SIGNED		
March 27, 2013		
I certify that I have reviewed this document and I have determined that this work has been done to standards acceptable of a Registered Professional Forester.		

ACKNOWLEDGEMENT BY LOCAL GOVERNMENT REPRESENTATIVE

I certify that I have reviewed this fuel management proposal, all assessments and fieldwork. I agree it is consistent with the recommendations contained within the Community Wildfire Protection Plan, or with the objective of reducing fire hazard in the community interface area.

Signature:

REPRESENTATIVE NAME: DATE SIGNED:

Appendix A: Diameter Distributions and Post-treatment Stand Targets

Post-treatment density targets are below according to diameter class for each TU. These targets are a tool that may be useful during thinning activities and as a guide for the overall end resulting stand. It is understood that natural variation and individual tree health may not allow for strict adherence to these targets.

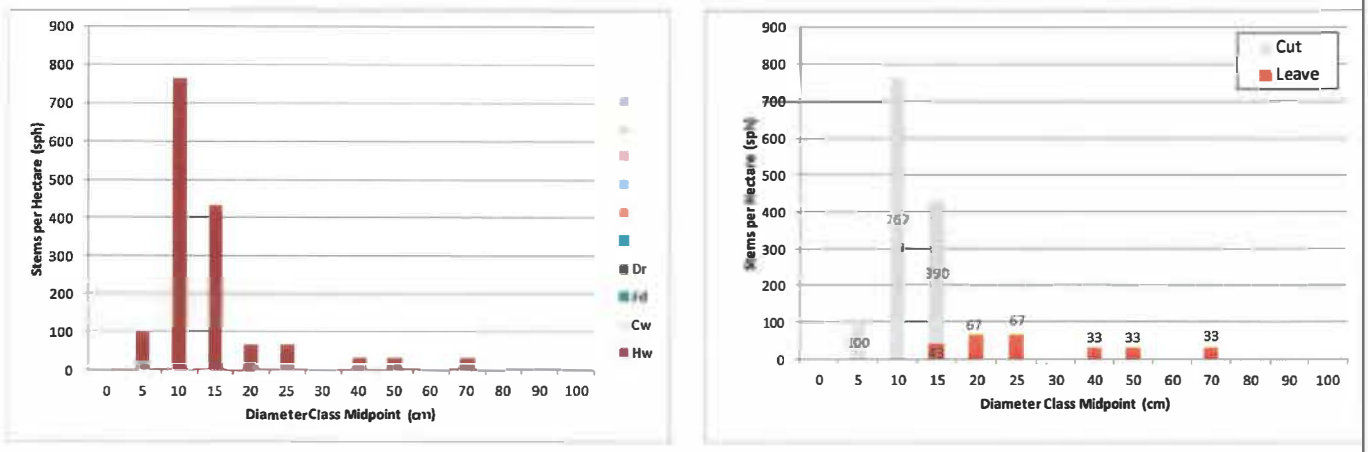


Figure 1. Current diameter distribution by species for Carmaria Court TU A (left). Post-treatment density targets by diameter class for Carmaria Court TU A (right).

Appendix B: Treatment Area Photographs

Figure 2. Carmaria Court TU A, plot 1 looking north.

Figure 3. Carmaria Court TU A, plot 2 looking south.

Figure 4. Carmaria Court TU A, plot 3 looking north.

Fuel Management Prescription Map: District of North Vancouver: Carmaria Court

Forest Region	Coastal
Forest District	Vancouver
Mapsheet	92G035
Locaton	Carmaria Cour
UTM Zone	10N
UTM Eastng	497650
UTM Northing	5464116

Legend

- Threat Plot
- Treatment Corners
- DNV plots
- Access Points
- Trails
- Creeks
- Contours
- Storm Culverts
- Parks
- Private Land

Prescription Unit

- TUA

1:3,000

N

0 25 50

Meters

Coordinate System:
NAD 83 UTM Zone 10

Mapped by: B. Andrew
Date: March 2013

Fuel Management Prescription - Area Breakdown

Block	TU	Stand Desc.	Treatment	Stream Mgmt (ha)	NP (ha)	Gross Area (ha)	Net (ha)
Carmaria Court	A	Hw(Cw)	HTR,TFB, SFR,PB,PL			2.4	2.4
Total Area (ha)						2.4	2.4

Stream Summary (See Prescription for management strategies)

Stream ID	Class	DPA (m)	Land Ownership

This prescription must be carried out in conjunction with slope stabilization work.No machine work in these areas is permitted without DVN approval.
HTR-Hazard tree removal TFB-Thin from below, SFR-Surface fuel removal, PB-Prune branches PL-Plant

ATTACHMENT 2

2019 Community Resiliency Investment Program

FireSmart Community Funding & Supports

Application Form

Please complete and return the application form by December 7, 2018. All questions are required to be answered by typing directly in this form. If you have any questions, contact cri-sw-i@ubcm.ca or (250) 356-2947.

SECTION 1: Applicant Information	**CRI-** *(administrative use only)*
Local Government or First Nation: District of North Vancouver	Complete Mailing Address: 355 West Queens Rd North Vancouver, BC V7N 4N5
Contact Person: Guy Exley	Position: Community Forester
Phone: 604-990-2350	E-mail: exleyg@dnv.org

* Contact person must be an authorized representative of the applicant.

SECTION 2: For Regional Projects Only

1. **Identification of Partnering Communities.** For all regional projects, please list all of the partnering eligible applicants included in this application. Refer to Section 3 in the Program & Application Guide for eligibility.

   N/a

SECTION 3: Project Summary

2. **Name of the Project**:

   Fuel Treatments - Carmaria Crt. 2.4 Ha and Braemar/Dempsey 13 Ha

3. **Fire Centre (use check boxes).** Indicate which Fire Centre the proposed activities are located in (check all that apply)

☐ Cariboo Fire Centre	☐ Northwest Fire Centre
☒ Coastal Fire Centre	☐ Prince George Fire Centre
☐ Kamloops Fire Centre	☐ Southeast Fire Centre

4. **Project Cost & Grant Request:**

Total Project Cost: $359,884.00 Total Grant Request: $100,000.00

Have you applied for or received funding for this project from other sources? If yes, please provide details below.

No

5. **Project Summary.** Please provide a summary of your project in 150 words or less.

The proposed treatment areas are in the District of North Vancouver. These areas extend and tie into the already completed critical infrastructure (Fire Hall and Water Towers) fuel treatment sites and the Grousewoods, Hyannis, Owl, Malaspina/Skyline; Badger, North & South sides of Indian River Road, Braemar Park/St. Mary's and Mountain Highway/Hoskins fuel breaks. The current fuel type is C2, C3 with some C4 due to regeneration under the main canopy. Ladder fuels are high due to the regeneration and crown fuels are contiguous. Surface fuels are moderate to high due to windfall and dumping of woody debris

SECTION 4: Requirements for Funding

6. **Community Wildfire Protection Plan (or other plan).** As outlined in Section 3 of Program & Application Guide, in order to be eligible for funding, applicants must have a current and acceptable CWPP or other acceptable plan that includes assessment and identification of FireSmart priorities.

Please outline how your community meets this requirement. Note: applicants that do not have a current and acceptable plan may apply to develop or update a plan.

Http://www.dnv.org/programs-services/community-wildfire-protection-plan

If not funded under the Strategic Wildfire Prevention Initiative, attach completed plans, and/or assessments, or excerpts from higher-level plans, with the application form.

7. **Consultation in Advance of Submitting an Application.** In order to qualify for funding, applicants must consult with a BCWS Wildfire Prevention Officer and/or a FNESS Fuel Management Liaison/Specialist regarding the proposed project prior to submitting an application.

☒ BC Wildfire Service.
Contact person: Jessica Duncan and Tony Botica

☐ First Nations' Emergency Services Society.
Contact person:

SECTION 5: Wildfire Risk & Rationale

8. **Wildfire Risk.** What is the wildfire risk in your community? This may be evidenced by a wildfire risk class of 1, 2 or 3 for the general area of interest (refer to Appendix 1 of the Program & Application Guide) or local level plan or other information with ground data that shows wildfire threat in proximity to values at risk within and around the community.

Provide specific evidence of wildfire risk (e.g. WUI polygon name from risk class map, reference to appropriate section of a CWPP or other plan, etc.) in your response.

Summary of Threat Ratings for the proposed treatment sites by B.A Blackwell & Associates Ltd. undertaken early 2013

Carmaria Court	Plot:	CM1	Pre WTR:	143	Post WTR:	121
Braemar/Dempsey	Plot:	BR1	Pre WTR:	141	Post WTR:	129
Braemar/Dempsey	Plot:	DP4	Pre WTR:	148	Post WTR:	133

PSTA Public Fire Data indicates a threat rating ranging from Moderate 5 to Low 2 for Carmaria Crt and a threat rating from Moderate 5 to Low 3 for Braemar/Dempsey.

CWPP Section 7.5 Vegetation Fuel Management page 38 WRMS identified 666Ha of high hazard fuel types (C2, C3 & C4).

For the purpose of CRI FireSmart Community Funding & Supports grants, identify the risk category that you are applying under:

☐ Lower risk of wildfire (may apply for grant up of to $25,000)

☒ Higher risk of wildfire (may apply for grant of up to/exceeding $100,000)

9. **Other Rationale.** What other rationale or evidence is there for undertaking the proposed project? This may include local hazards identified in the Emergency Plan; threat levels identified in Hazard Risk & Vulnerability Analysis and/or other risk assessments; demonstrated history of repeated and/or significant interface wildfires and evacuations; or other rationale.

DNV Climate Change Adaptation Strategy July 2017 (https://www.dnv.org/programs-and-services/climate-change-adaptation-strategy) identifies wildfire as one of the primary risks to the community. Required Action (RA) 3.2 states "remaining (CWPP) recommendations should be implemented", This last 15.4Ha of fuel treatment is the remaining area from the 69.7Ha identified and recommended to be treated. Objective RA 5.1. states "The District is reducing the potential for fire to spread rapidly by removing excessive ladder fuels and accumulations of organic materials that build up on the forest floor" and relates directly to these ongoing fuel treatment projects.

Evidence of other rationale (e.g. Local Authority Emergency Plan extract, copies of assessments, etc.) is required to be submitted with the application form.

SECTION 6: Detailed Project Information

10. **Proposed Activities.** Please refer to Section 4 of the Program & Application Guide for eligibility and complete Worksheet 1: Proposed Activities & Budget.

11. **Partnerships & Collaboration.** Please identify any other authorities you will collaborate with on the proposed project (e.g. community or resident organization, First Nation or Indigenous organization or other local government) and outline how you intend to work together.

Fire Department have requested a chainsaw training opportunity. The Braemar/Dempsey site would be most appropriate due to being less steep and away from residential properties. Restoration planting opportunities with the Parks Trail and Habitat Coordinator residents and stakeholders such as North Shore Mountain Bikers Association (NSMBA). Developing a FireSmart and Fuel Treatment door hanger with the District Strategic Communications and Fire Departments for a community outreach program to local residents backing onto the subject sites and broader long term plan for all community within the District Wildfire DP Area by Fire Staff.

12. Additional Information. Please share any other information you think may help support your submission.

The proposed treatment areas tie into the already completed critical infrastructure (Fire Hall and Water Towers) fuel treatment sites and the Grousewoods, Hyannis, Owl, Malaspina/Skyline; Badger, North & South sides of Indian River Road, Braemar Park/St. Mary's and Mountain Highway/Hoskins fuel breaks.

A copy of the "further prescription rationale" by BA Blackwell, a SWPI request for the previous operational fuel management project (SWPI-688) application, is attached as it equally applies to this project too.

SECTION 7: Application Check List

Required Submissions	Related Attachments
☒ Application Form	☒ Completed plans, and/or assessments, or excerpts from higher-level plans as required in Q. 6 ☒ Other rationale as required in Q. 9
☐ Completed Worksheet 1: Proposed Activities & Budget	☐ FireSmart Assessments for structures proposed for demonstration projects as required in Q. 7
☒ For fuels management activities only: Completed Worksheet 2: Proposed Fuel Management Activities	☒ PDF map outlining the area of interest, proposed treatments units, land status and tenure overlaps. ☒ Wildfire threat assessment information for the proposed treatment unit(s) ☒ For fuel management treatment only, a copy of the completed prescription and/or Burn Plan and project boundary spatial layer ☐ For fuel management treatment on Provincial Crown land only: email from land manager indicating information sharing with First Nations has been completed
☐ Council, Board or Band Council resolution, indicating support for the current proposed activities and willingness to provide overall grant management	
☐ For regional projects only: Council, Board or Band Council resolution, from each partnering community that clearly states approval for the applicant to apply for, receive and manage the grant funding on their behalf	

Submit the completed Application Form and all required attachments as an e-mail attachment to cri-swpi@ubcm.ca and note "2019 CRI" in the subject line. Submit your application as either a Word or PDF file(s). If you submit by e-mail, hardcopies and/or additional copies of the application are not required.

SECTION 8: Signature. Applications are required to be signed by an authorized representative of the applicant. Please note all application materials will be shared with the Province of BC and the BC FireSmart Committee.

I certify that: (1) to the best of my knowledge, all information is accurate and (2) the area covered by the approved project is within the applicant's jurisdiction (or appropriate approvals are in place)

Name: Guy Exley	Title: Community Forester
Signature: G Exley *An electronic or original signature is required.*	Date: December 5th 2018

2019 Community Resiliency Investment Program

FireSmart Community Funding & Supports

Worksheet 2: Proposed Fuel Management Activities

This worksheet is only required to be used for applications that include fuel management activities, including fuel management prescriptions, fuel management treatments and prescribed burns.

Please complete and return the worksheet with the full FireSmart Community Funding & Supports application package. If you have any questions, contact cri-swpi@ubcm.ca or (250) 356-2947.

SECTION 1: Applicant Information	**CRI-** *(for administrative use only)*
Local Government or First Nation: District of North Vancouver	Name of Project: Operational Fuel Treatments - Carmaria Crt. 2.4 Ha and Braemar/Dempsey 13 Ha

SECTION 2: General Project Information

1. **Type and Location of Fuel Management Activities.** As outlined in the Program & Application Guide, all activities must be primarily located within the applicant's administrative boundary. Please check all activities that you are applying for funding for:

Local Government or First Nations Land	**Provincial Crown Land**
☐ Fuel management prescription(s)	☐ Fuel management prescription(s)
☐ Fuel management treatment	☒ Fuel management treatment
☐ Prescribed burns primarily for fuel management objectives	☐ Prescribed burns primarily for fuel management objectives

SECTION 3: Detailed Project Information – Fuel Management Prescriptions

Note: *only complete this section if you are applying to develop prescriptions. If not, skip to Section 4*

2. **Description of Proposed Area.** Please provide a description of the proposed treatment area(s) including the hectares to be assessed. If applicable, separate hectares on Provincial Crown land from hectares on First Nations land or local government land.

3. **Rationale & Objectives.** Please provide a rationale for the necessity of the proposed fuel treatment (e.g. improved suppression opportunities along main access corridor) and clearly defined objectives and target conditions for fuel management. This should include fuel reduction loading targets and measures for expected post-treatment fire behaviour outcomes (e.g. reducing crown fire initiation potential by XX and spread by XX from the adjacent stand by reducing surface fuel loading to XX and increasing height to live crown to XX).

Additional information (e.g. fire history, weather trends, prevailing winds, etc.) that support the treatment as a priority to mitigate negative impacts to the identified values at risk is required to be submitted with Worksheet 2.	
4. Cost Estimate.	
Activities related to prescription or burn plan development, including any required assessments, wildfire modeling and information sharing with First Nations. Please describe:	$
Site evaluation, including field reconnaissance, threat plots and data collection, and the evaluation of site access. Please describe:	$
Lay out and traversing of proposed areas for treatments. Please describe:	$
Preparation of all final report requirements, including maps, spatial data and metadata. Please describe:	$
Sub-total:	$
Cost per hectare:	$

SECTION 4: Detailed Project Information – Fuel Management Treatment

Note: *only complete this section if you are applying to undertake a fuel management treatment. Only complete Questions 5 and 6 if the treatment area is different than that described in Question 2 and 3 above.*

5. **Description of Proposed Area.** Please provide a description of the proposed treatment area(s) including the gross and net hectares to be treated. If applicable, separate hectares on Provincial Crown land from hectares on First Nations land or local government land.

   The proposed treatment areas are in the District of North Vancouver.

   1. Carmaria Crt. 2.4 Ha (gross & net area).

   2. Braemar/Dempsey 13 Ha (gross & net area).

6. **Rationale & Objectives.** Please provide a rationale for the necessity of the proposed fuel treatment (e.g. improved suppression opportunities along main access corridor) and clearly defined objectives and target conditions for fuel management. This should include fuel reduction loading targets and measures for expected post-treatment fire behaviour outcomes (e.g. reducing crown fire initiation potential by XX and spread by XX from the adjacent stand by reducing surface fuel loading to XX and increasing height to live crown to XX).

   These areas extend and tie into the already completed landscape scale shaded fuel breaks.

   Additional information (e.g. fire history, weather trends, prevailing winds, etc.) that supports the treatment as a priority to mitigate negative impacts to the identified values at risk is required to be submitted with Worksheet 2.

7. Residual Fibre. Please indicate and describe if you expect the removal of residual fibre from the treatment areas to a processing facility. If so, you will be required to provide a cost estimate for this activity in Question 9 below.	
8. Information Sharing with First Nations. For Provincial Crown Land only, confirmation from the land manager that information sharing with First Nations has been completed. *An email from the land manager indicating that First Nations information sharing has been completed is required to be submitted with Worksheet 2.*	
9. Cost Estimate	
Pre-treatment activities: activities required to obtain authorizations, danger tree assessments, notification to First Nations and stakeholders, and public engagement costs. Please describe: Consultant Activities: Attend public, stakeholder and contractor bid site meeting meetings. Re-flagging treatment areas, pre-work meeting with Contractor to address safety documentation, workplan and project expectations. Projected cost total $5,000 Carmaria Crt unit is within a defined slope hazard area that has had a past history of slope issues with adjacent residential properties. A professional geotechnical assessment will be required to review the prescription activities and make recommendations. The scope will be to review the prescription and any slope failure history; make site visits (potentially multiple), provide a sealed report for staff review and a post treatment restoration and sign off to ensure no residual issues. Please note the projected figure is based on a detailed investigation which may not be required if a preliminary review is satisfactory. Total projected cost = $4,000 to $10,000 In-kind costs associated with the project for District staff time involved in property line survey, access arrangements and signage Community Forester project manager undertaking contractor, staff, public and stakeholder consultations/meetings, access/egress over private and public lands, complaints/concerns etc. 75hrs@ $45/hr = $3,375 Environmental staff x2 for sediment & erosion issues and restoration planting prescription development for Hoskins and Braemar Prk. 11hrs@ $45/hr = $495 Parks Field Arborist x1 to attend pre-treatment meeting to review the work areas and look at additional hazard tree removals outside the contractor's scope of works. 7.5hrs@ $40/hr = $300 Parks Trails & Habitat Coordinator to attend pre-meeting to review the areas of treatment, trail closures required and attend meeting with community groups such as North Shore Mountain Bikers. 7.5@ $35/hr = $262 Parks Staff x3 plus equipment for removal gates and fencing. 3hrs = projected cost $299	$ 26,073.00

Sign maker x1 for 8x to 14x new wildfire public information signs (media department are looking to update the format to be consist with DNV public messaging). Projected cost = $1000 Surveyors for flagging private property lines to treatment areas to ensure no trespassing and removal/pruning of private trees. 227hrs@ $34/hr = $7,707 Applicant administration costs directly related to fuel treatment activities. Purchasing x1 staff tender documents, bid process, addendums and purchase orders. 7.5hrs@ $40/hr = $300 Admin support x1 staff public and stakeholder mail outs, meetings and workshops. 7.5hrs@ $30/hr = $225 Media x2 staff update to wildfire signage, webpage updates, news release and media response. 30hrs@ $37/hr = $1,110 Contractor to employ a qualified Wildlife/Danger Tree Assessor. Field cards to be submitted for review to qualified District staff before undertaking risk mitigation works. Circa 1 day = $1000	
Treatments: pruning, thinning, tree falling, brushing, grazing, debris management and/or prescribed fire. Please describe: All costs based on recent completed fuel treatment Spring 2018. Pruning: Crown raising to minimum 3m above grade to reduce connectivity from structures and ground fuels. 3 to 4 people 8hr work day total 15.4ha treatment @ $933/ha total projected cost = $14,462 Tree Felling: All felling works is by hand due to ground conditions and local topography. Trees between 15cm up to maximum 17.5cm and larger identified danger trees. Certified faller and swamper used for 15cm diameter trees and above @ $4433/ha. Certified Utility Arborist for trees adjacent to transimission lines west end of Braemar/Dempsey unit only. Circa $250 to $300 per hour for truck lift and 2x crew. Braemar/Dempsey 13.0ha = est. total 130 stems. Carmaria 2.4ha = est. total 390 stems Total projected cost 15.4ha = $68,268 Thinning: By hand (smallest trees first) from below to reduce ladder fuels to target densities. Maximum DBH of 17.5cm until target density rates has been achieved as specified in each of the Fuel Management Prescriptions approved for each plot. Tree thinning 15cm to 17.5cm dia already complete as described in line item above. Braemar Park/Dempsey 13.0ha@ $8812/ha 5cm dia = circa 1,240 stems	$ 331,061.00 $ n/a

10cm = circa 80 stems Total projected cost = $114,556 Carmaria Crt 2.4ha@ $8812/ha 5cm dia = circa 100 stems 10cm dia = circa 390 stems Total projected cost = $21,149 Debris Management: Removal of excess debris, chips and slash to Waste Transfer Station. Costs for removal of excess chips and hog fuel in recent contract were low as the Contractor was able to remove and dispose of chips and green waste at an extremely reduced rate when compared to historical projects undertaken by other Contractors for the same work. In this respect projected costs could range from $10,000 to $70,000. Debris chipped across units with the exception of riparian/wetland treatment areas with a 5m buffer using a tracked chipper for increased efficiency. Chips spread by hand to prescribed depths. Small criter piles within riparian/wetland areas to maximum of 5. Braemar/Dempsey 13.0ha@ $6,664/ha projected total = $86,632 Carmaria Crt 2.4ha@ $6,664/ha projected total = $15,994 Removal of residual fibre to a processing facility. Please describe and separate this cost from the overall treatment cost: n/a	
Post-treatment activities: completion of threat assessments (only for local government and First Nation land) and signage. Please describe: Media x1 staff webpage updates, news release and media response. 5hrs@ $50/hr	$ 250.00
Preparation of all final report requirements, including maps, spatial data and metadata. Please describe: Project Wildfire Consultant (B.A. Blackwell) to complete post treatment data requirements for sign off reporting. Projected costs based on recent treatment project sign off report 2018. Project Forester = $65/hr Senior Project Forester = $85/hr	$ 2,500.00
Sub-total:	$ 359,884.00
Cost per hectare:	$ 23,369.00

Total Proposed Cost for Fuel Management Activities:	**$ 359,884.00**

2019 Community Resiliency Investment Program

FireSmart Community Funding & Supports

Worksheet 1: Proposed Activities & Budget

This worksheet is required to be completed for all applications.

Please complete and return the worksheet with the full FireSmart Community Funding & Supports application package. If you have any questions, contact cri-swpi@ubcm.ca or (250) 356-2947.

Instructions:

In Section 2 below, indicate the proposed activities, cost-estimate, outcomes and performance measures for each of the eligible activities (as identified in Table 1 of Section 4 of the Program & Application Guide) that you plan to undertake.

Cost Estimate: Provide a cost estimate for each proposed activity. Include information on how cost estimates were developed (i.e. estimated days of work, hourly/daily rates and types of equipment and estimated hours of use)

Proposed Outcomes: Provide information on the expected outcome of each proposed activity and list any policies, practices, plans or documents that will be developed or amended as a result of your project. As noted in the Program & Application Guide, higher application review scores will be given to projects that clearly increase community resiliency by undertaking community-based FireSmart planning and activities that reduce the community's risk from wildfire

Proposed Performance Measures: Indicate how the proposed activities will be evaluated, including the specific performance measures that will be used.

Worksheet 1: Proposed Activities & Budget

SECTION 1: Applicant Information	CRI- *(for administrative use only)*
Local Government or First Nation: District of North Vancouve	Name of Project: Operational Fuel Treatments - Carmaria Crt. 2.4 Ha and Braemar/Dempsey 13 Ha

SECTION 2: Proposed Activities

1. Education.

Proposed activities:

Cost Estimate:

Proposed outcomes:

Performance measures, such as target attendance and/or number of hours at educational activities, Wildfire Community Preparedness Day and any FireSmart events; estimated completion date of application for FireSmart Canada Community Recognition:

2. Planning

Proposed activities:

Cost Estimate:

Proposed outcomes:

Performance measures, such as list of policies and plans that are proposed for review and/or amendment; target for number of completed assessments:

Note: for CWPPS, include the number of hectares that threat assessments will be completed for. Refer to Appendix 4 for map and spatial data requirements for CWPPs

3. Development Considerations

Proposed activities:

Cost Estimate:

Proposed outcomes:

Performance measures, such as list of plans or development requirements that are proposed for review and/or amendment; number and location of target areas for development permit areas:

4. Interagency Cooperation

Proposed activities:

Cost Estimate:

Proposed outcomes:

Performance measures, such as estimated meeting frequency and attendance at planning tables or fuel management tables:

5. Emergency Planning

Proposed activities:

Cost Estimate:

Proposed outcomes:

Performance measures, such as estimated meeting frequency and attendance at meetings and exercises:

6. Cross Training

Proposed activities:

Cost Estimate:

Proposed outcomes:

Performance measures, such as estimated training frequency and attendance; list of professional development opportunities:

7. FireSmart Demonstration Projects

Proposed activities:

Cost Estimate:

Proposed outcomes:

Performance measures, such as the extent to which the recommendations in the FireSmart assessment will be achieved; the degree to which the hazard level will be reduced for the structure; the number of people informed by the required community education component:

Note: To be eligible for funding, the proposed structure must be designated for emergency response, such as an Emergency Operations Centre or emergency social services facility (i.e. reception centre, group lodging) and have a completed FireSmart assessment. In addition, demonstration projects must include a community education component.

FireSmart assessments are required to be submitted with the application.

8. FireSmart Activities for Private Land

Proposed activities:

Cost Estimate:

Proposed outcomes:

Performance measures, such as target for completed number of assessments; number and location of target areas for planning activities; target number and value for approved rebates; estimated frequency of debris disposal activities and the number of private land owners participating:

Note: Refer to Appendix 2 of the Program & Application Guide for funding requirements for rebate programs (if applicable)

9. Fuel & Vegetation Management

Worksheet 2 is required to be completed but the total cost estimate should be included here.

Cost Estimate: $359,884.00

Note: Refer to Appendix 3 of the Program & Application Guide for funding requirements for fuel management and Appendix 4 for the requirements for maps and spatial data

10. Total Proposed Cost:

$359,884.00

ATTACHMENT 3

UBCM Union of BC Municipalities

March 11, 2019

David Stuart, Chief Administrative Officer
District of North Vancouver
355 West Queens Road
North Vancouver, BC, V7N 4N5

RE: 2019 CRI FireSmart Community Funding & Supports – Approval Agreement & Terms of Conditions of Funding – IN CONFIDENCE

Dear Mr. Stuart,

Thank you for submitting an application under the Community Resiliency Investment program for 2019 FireSmart Community Funding & Supports funding.

I am pleased to inform you **in confidence** that the Technical Review Committee and the BC FireSmart Committee recommended your project, *DNV 2019 Fuel Treatments,* for funding. A grant in the amount of $100,000.00 has now been approved.

As outlined in the Program & Application Guide, grant payments will be issued when the approved project is complete and UBCM has received and approved the required final report and financial summary.

The Ministry of Forests, Lands, Natural Resource Operations and Rural Development has provided funding for this program and the general Terms & Conditions are attached. In addition, in order to satisfy the terms of the contribution agreement, we have the following requirements:

(1) This approval agreement is required to be signed by the CAO or designate and returned to UBCM;

(2) To provide the Province of BC with the opportunity to make announcements of funding approvals under this program, please keep information regarding this funding approval in confidence until April 8, 2019;

(3) The funding is to be used solely for the purpose of the above named project and for the expenses itemized in your approved application;

(4) All expenditures must meet eligibility requirements as defined in the Program & Application Guide;

(5) All project activities must be completed within two years and no later than March 31, 2021;

(6) The Final Report Form is required to be submitted to UBCM within 30 days of project end date and no later than April 30, 2021;

The Community Resiliency Investment program is funded by the Province of BC

(7) Any unused funds must be returned to UBCM within 30 days following the project end date.

(8) Projects that include the development or update of a Community Wildfire Protection Plan or a burn plan must use the templates identified in the Program & Application Guide.

(9) Projects that include the development of a fuel management prescription must meet the minimum requirements identified in the Program & Application Guide.

(10) Where applicable, projects that include fuel management activities on Provincial Crown land must meet the Forest Enhancement Society of BC contract tendering requirements.

(11) A post-grant approval meeting with the local BCWS Wildfire Prevention Officer or FNESS Fuel Management Liaison/Specialist is required to be completed. Please contact Tony Botica at the Coastal Fire Centre to schedule this meeting.

(12) For projects that include prescription development and fuel management treatment for the same treatment unit(s), the completed prescription must be reviewed and supported by a BCWS Wildfire Prevention Officer or FNESS Fuel Management Liaison/Specialist, and the interim reporting requirements identified in Appendix 3 of the Program & Application Guide must be met, prior to initiation of the treatment.

(13) For projects that include a FireSmart rebate program, the requirements identified in Appendix 2 of the Program & Application Guide must be met.

Please note that descriptive information regarding successful applicants will be posted on the UBCM and/or provincial government websites, and all final report materials will be made available to the provincial government.

On behalf of the Technical Review Committee and BC FireSmart Committee, I would like to congratulate you for responding to this opportunity to reduce the risk and impact of wildfires in your community.

If you have any questions, please contact Local Government Program Services at 250 356-2947 or cri-swpi@ubcm.ca.

Sincerely,

Peter Ronald
Program Officer

cc: *Guy Exley, Community Forester, District of North Vancouver*
Tony Botica, Wildfire Prevention Officer, Coastal Fire Centre

Approval Agreement (to be signed by the CAO or designate)

I, DAVID STUART, have read and agree to the general Terms & Conditions and the requirements for funding under the 2019 CRI FireSmart Community Funding & Supports program.

Signature

April 1, 2019
Date

Please return a scanned copy of the signed Approval Agreement to cri-swpi@ubcm.ca

Local Government Program Services

General Funding Terms & Conditions

The purpose of the Terms & Conditions is to provide basic information on grants administered by the Union of BC Municipalities through Local Government Program Services (LGPS). For specific information regarding the requirements of each funding program, please refer to the relevant Program & Application Guide. For information regarding a specific project approved through LGPS, please refer to the approval letter.

1. Definitions

Approved Applicant: In general, LGPS grants are awarded to local governments (regional districts and municipalities) and, in some programs, First Nations. The approved applicant is the primary contact for UBCM and is responsible for overall grant management.

Approved Partner(s): organizations that contribute directly to the approved project, are identified in the application and are approved by UBCM. This may include boards of education, health authorities, First Nations or aboriginal organizations, non-profit organizations and local governments (other than the applicant). Refer to program guides for requirements for partners in regional applications.

Approved Project: the activities described in the application and budget and approved by UBCM.

Cash Expenditures: direct costs properly and reasonably incurred and paid for with money by the approved applicant or approved project partner for the development or implementation of the approved project. For example, catering and consultant fees can be cash expenditures.

Community Contribution: Some LGPS programs require cost-sharing. The community contribution is the portion of the approved project cost that is required to be provided by the approved applicant or an approved partner. This can be in cash or in-kind, but must be an eligible expenditure.

In-Kind Expenditures: the use of resources of the approved applicant or approved project partner for the development or implementation of the approved project. For example, the use of meeting rooms owned by the applicant or approved partner can be an in-kind expenditure.

2. Eligible & Ineligible Expenditures

Eligible expenditures, including community contributions, are direct costs that are properly and reasonably incurred by the approved applicant or approved partner as part of the approved project.

To be eligible for grant funding, these costs must be outlined in the detailed budget submitted by the approved applicant as part of the application process and be approved by UBCM.

3. Grant Management & Applicant Responsibilities

Notice of Decision

All applicants will be informed of the status of their application by letter, generally within 90 days of the application deadline. Approved applicants will be informed of specific conditions of the grant approval and are required to sign and return a copy of the Approval Agreement.

Applicant Responsibilities

Approved applicants are responsible for:

- Ensuring that approved activities are undertaken as outlined in the approved application and within the required timeline

- Providing proper fiscal management of the grant and approved project (see below)
- Submitting final reports as required by the Program & Application Guide (see below)

Accounting Records

Acceptable accounting records must be kept that clearly disclose the nature and amounts of eligible expenditures (cash and in-kind) incurred as part of the approved project. Financial summaries are required to be submitted as part of the final report and must be signed by a representative of the approved applicant.

In all cases, the final project expenditure must be net of any rebates (such as GST/PST) that the approved applicant or approved partner is eligible to receive.

Changes to or Cancellation of Approved Project

Any significant variation from the approved project as described in the approved application must be approved, including any major changes to:

- Start or end dates
- Cash and in-kind expenditures or matching funds (when required)
- Project purpose, goals, outcomes or milestones
- Project partners

If an approved project is cancelled, the approved applicant is responsible for ensuring any grant monies that have been advanced are returned to UBCM within 30 days, or as outlined in the Program & Application Guide.

4. Reporting Requirements

Submission of Reports

Approved applicants are required to submit final reports as outlined in the Program & Application Guide. Please note the following when submitting a report:

- When completing a UBCM report form please ensure that each question is answered and that all attachments are complete. Follow any sample templates that UBCM provides.
- Submit all documents as Word or PDF files. Note: files over 20mb cannot be accepted.
- Submit all digital photos or images as JPEG files. Note: files over 20mb cannot be accepted.
- If a hardcopy of the report is required, do not bind reports or submit in binders or folders.

Extensions and Outstanding Reports

In order for an approved project to continue past the approved end date – or for a final report to be submitted after the established deadline – approved applicants must contact UBCM to request *and be granted* permission for an extension.

Approved applicants that do not request extensions and have outstanding reports may forfeit the final payment of their grant and may not be eligible to apply to future LGPS programs until reports are received.

5. Recognition of Funding and Funders

Approved applicants should contact UBCM for more information on recognizing funding and for information on the appropriate use of logos. Please contact LGPS at (250) 356-2947.

ATTACHMENT 4

NORTH VANCOUVER DISTRICT

Memo

June 06, 2019
File: 13.6780/Infrastructure General/File

TO: Council

FROM: Guy Exley – Community Forester

SUBJECT: CWPP 2007 Wildland Urban Interface (WUI) Fire Risk Management Update

SUMMARY:
To update Council on the progress of implementing the current CWPP 2007 and Operational Fuel Treatment Program.

1. **Management update : Community Wildfire Protection Plan 2007**
   - The 2007 CWPP contained 38 recommendations for management actions for the DNV to minimize risk associated with wildfire. A complete copy of the 96 page 2007 CWPP report is available in the Clerk's office and online at http://www.dnv.org/programs-services/community-wildfire-protection-plan .
   - To date the DNV has completed 36 of the 38 recommendations.
   - The two outstanding items remain, completion of all 70 ha of interface forest with high risk fuel types and the development of a post-fire rehabilitation plan.
   - 54 ha of the total 70 ha of interface high risk forest identified has now been successfully treated through cost-sharing opportunities with UBCM (see Table 1 below).
   - March 2019 DNV was approved for $100,000 CRI funding contribution (Attachment 3) to treat the remaining 15.4 ha of higher risk interface area; Carmaria Crt & Braemar/Dempsey.
   - The remaining fuel treatment area and the post fire plan are scheduled to be completed winter 2019/20.

Table 1. Summary of the DNV operational fuel treatment programme.

UBCM Approval Date	Status	Cost DNV	UBCM Funding	Total Cost	Location	Area (ha)
September 2007	Complete	$19,210	$17,500	$36,710	Grousewoods	6.3
February 2010	Complete	$24,150	$67,500	$91,650	Water Towers & Pumping Stations	5.1
June 2010	Complete	$13,175	$39,524	$52,699	Roche Pt Park	3.6
June 2011	Complete	$11,311	$100,604	$111,915	Hyannis Dr	7.6
July 2014	Complete	$138,700	$184,185	$322,885	Owl, Malaspina & Skyline; Fire Hall #3; Badger & Indian River Cres	11.2

					Water Tower; North & South Sides of Indian River Rd	
October 2017	Complete	$97,377	$292,133	$389,510	Braemar Pk & St. Mary's; Mountain Highway & Hoskins	16.5
n/a	Complete	$94,659	n/a	$94,659	Kirkstone Pk	4.0
March 2019	UBCM Funding Approved	$260,000[1]	$100,000	$360,000[2]	Carmaria Crt & Braemar/Dempsey	15.4
Totals		$658,582	$801,446	$1,460,028		69.7

[1]Final costs to be determined at post treatment sign off report
[2]Cost estimate UBCM application December 6th 2018

2. CWPP Update 2019

- The current CWPP is outdated and requires updating to the current 2017/18 Strategic Wildfire Prevention Initiative Standards CWPP template and Threat Assessment Guides & Worksheets.
- The completed fuel treatment areas and action items will be revisited and reviewed in the new CWPP.
- October 2017 the District received UBCM funding (Attachment 3) for a sum of $21,821.25 or 75% of the total CWPP update costs of $29,095. The District share is $7,274.
- As required by Condition 3 of the approval letter, a meeting with the Province was undertaken February 20, 2018 to discuss the update requirements.
- The bid proposals were received August 23, 2018 and awarded at a cost of $19,940 and funded in the 2018 financial plan.
- The update is underway with a UBCM funding completion date August 2019.

3. Additional projects with CWPP Update: Forest Resilience and Rehabilitation Plans

- Post-fire Rehabilitation Plan: primary objective is to undertake recommendation #36 of the current CWPP *Sections 7.6 Wildfire Rehabilitation Planning* and *8.6 Post Wildfire Rehabilitation Planning* requiring advanced planning for post-fire stabilization and rehabilitation response. This item has been awarded at a cost of $20,020 funded in the 2018 financial plan.
- The Forest Resilience Plan: the objective is to review and expand the contiguous forest area management that fall outside the scope of the UBCM Operational Fuel Treatment funding criteria. The plan will provide recommendations to extended WUI buffer and build forest fire resilience through better health, structure, species composition and functional diversity through assisted regeneration techniques. This item has been awarded at a cost of $10,030 funded in the 2018 financial plan.
- Both plans are deliverable fall 2019.

4. CWPP Update Added Value: Wildfire Development Permit Area

- Since the Wildfire Development Permit Area (DPA) was adopted by Council in 2012 (Schedule B to the current Official Community Plan) approximately 220

Wildfire Development Permits have been issued for the construction of new fire resilient buildings and landscaping.

- As an added value component, the appointed consultants will review and provide recommendations to update the Wildfire DPA.