

June 23, 2017

The Regional District of Nanaimo (RDN) is seeking responses to the following Request for Proposal (RFP):

Regional District of Nanaimo Transportation and Emergency Services Department - Community Wildfire Protection Plan (CWPP) Cedar/Cranberry/Extension - 2017 – Request for Proposal:

RFP No. 17-07

This RFP is for one Supplier selection to research and prepare one **Community Wildfire Protection Plan (CWPP)** for the combined areas as follows: North Cedar Improvement District, Cranberry Improvement District as well as the Extension Fire Protection Area, **which is to be completed by the end of February 2018.**

Copies of the Proposal form can be downloaded from our website www.rdn.bc.ca on or after **June 26, 2017**. **Copies will be mailed upon request.** All Suppliers are requested to reply to jwilson@rdn.bc.ca to ensure inclusion in any and all addenda that may arise.

Proposals sent by facsimile (fax) or e-mail will not be accepted.

There will be no public opening for this RFP.

Proposals are to be in sealed envelopes clearly marked with:

1. Name and address of the Supplier.
2. RFP number.
3. *'Proposal for Community Wildfire Protection Plan Cedar/Cranberry/Extension – 2017'*
4. Closing **2:00 pm**, (Pacific Time) **July 14, 2017.**

and submitted by hand or courier service only to:

Regional District of Nanaimo
Main Reception (2nd Floor) Administration Building
6300 Hammond Bay Rd.
Nanaimo BC V9T 6N2

Up until 2:00 pm, (Pacific Standard Time) Friday, July 14, 2017.

Proponents are required to respond to **all specifications** in order to be considered a valid Proposal.

Proposals may be withdrawn before the deadline upon written notice (facsimiles of notice will be accepted) to the Manager of Emergency Services, at the address noted herein or at fax number 250-390-2757.

Alternative proposal(s) may be submitted; however, please complete a separate specification form for each alternate proposal and attach behind the primary Proposal.

Proposals must remain valid for 90 days following the closing time and date. Proposals are irrevocable after the closing time and date.

The RDN reserves the right to reject any and all Proposals for any reason or to accept any Proposal that the RDN, in its sole unrestricted discretion, deems most advantageous to itself. The lowest priced or any proposal may not necessarily be accepted at the sole discretion and choice of the RDN. The Proponent acknowledges the rights of the RDN under this clause and absolutely waives any right of action against the RDN for failure of the RDN to accept its proposal whether such right of action arises in contract, negligence, bad faith or any other cause of action. The acceptance of any proposal is subject to funds being legally available to complete this transaction and/or approval by the Board of the RDN or the officer or employee of the RDN having authority to accept the Proposal.

Unless otherwise requested in writing by the herein designated RDN employee, a proponent must not contact or communicate with any elected or appointed officer or employee of the RDN other than the designated employee in relation to the Proposal prior to the award of such Proposal as outlined herein. This is inclusive of the North Cedar Improvement District (NCID), Extension Fire Department and Cranberry Fire Department. Any such communication will result in disqualification of the Proposal from further consideration.

The RDN is subject to the provisions of *The Freedom of Information and Protection of Privacy Act*. As a result, while Section 21 of the *Act* does offer some protection for third party business interests, the RDN cannot guarantee that any information provided to the RDN can or will be held in confidence.

Information regarding the specifications in this solicitation may only be obtained from:

Jon Wilson, Manager of Emergency Services

Regional District of Nanaimo – Transportation and Emergency Services

(250)390-6557 (tel.) or toll free in BC 1-877-607-4111

(250)390-2757 (fax)

Email: jwilson@rdn.bc.ca

PROPOSAL FORM
TRANSPORTATION and EMERGENCY SERVICES
COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) CEDAR / CRANBERRY/ EXTENSION – 2017

SCOPE OF WORK:

The purpose of this Proposal is to obtain a consultant service to execute and provide a CWPP for the Area of Interest (AOI) within the allotted timeframe and within the parameters set by SWPI. Project AOI includes the North Cedar Improvement District, Cranberry Fire Improvement District, and the Extension Fire Protection Area (See Attachment “A”).

The RDN was approved for Union of BC Municipalities’ (UBCM) Strategic Wildfire Prevention Initiative (SWPI) funding to update and unify a Community Wildfire Protection Plan (CWPP) for the North Cedar, Cranberry, and Extension Fire Service Areas. The SWPI is a suite of funding programs managed and provided to support communities to mitigate risk from wildfire in the wildland urban interface.

Previous CWPP’s were completed for these Fire Service Areas between 2006 and 2008, and an updated plan is required due to development and requirement changes. Proponents should be familiar with the CWPP process as well as the Provincial Strategic Threat Analysis (PSTA) datasets, which are available online at the Government of British Columbia website: <http://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/wildfire-management/prevention/fire-fuel-management/fire-management-planning>. Full details of the 2017 SWPI program, including the CWPP template can be found on the UBCM website: <http://www.ubcm.ca/EN/main/funding/lgps/strategic-wildfire-prevention/2017-swpi-program.html>. For the following Proposal, a detailed description of the project is provided. This is intended to guide responses to this Proposal. The RDN requests that the cost and availability of Alternative Options be provided, if available.

THE PRIMARY OBJECTIVES FOR THE CWPP UPDATE IS TO:

- establish and update a current CWPP that meets the 2017 SWPI program guidelines;
- obtain required spatial data and maps;
- identify wildfire risk to the AOI;
- describe potential concerns and consequences of a wildfire in AOI; and
- examine potential ways to reduce wildfire risk.

COMPONENTS AND DELIVERABLES

PROJECT DELIVERABLES INCLUDE:

1. Preparation of the CWPP must be conducted in cooperation and consultation with the BC Ministry of Forests Fire Center Fuel Management Specialist and local Fire Chiefs within the AOI, and First Nations Chiefs within the AOI where applicable to provide a complete and comprehensive report;

2. The completed CWPP must cover all sections and content identified in the SWPI 2017 CWPP template including GIS Mapping, Wildfire Threat Assessment Worksheets and Photos, and Wildfire Threat Assessment – FBP Fuel Type Change Rationale (see Attachment “B”).
3. The completed CWPP shall be provided to the RDN with:
 - a. Three (3) hard copies of the CWPP; and
 - b. Three (3) USB drives with electronic copies of the CWPP; and
 - c. A powerpoint Executive Summary presentation of the CWPP which is to be added to the USB drives (noted above), and which will be prepared and presented by the consultant to the RDN’s Emergency Management Select Committee and/or Electoral Area Select Committee once, at the discretion of the RDN.

BACKGROUND INFORMATION:

The Regional District of Nanaimo (RDN) is one of 27 regional governments in BC, and has a population of more than 155,698 people (2016 census data). The RDN is made up of four municipalities: Nanaimo (90,504), Parksville (12,514), Qualicum Beach (8,943) and Lantzville (3,605) and seven (7) unincorporated electoral areas (39, 097). The electoral areas cover Cedar/Yellowpoint/Cassidy/Nanaimo airport (Area ‘A’), Extension/Mt. Benson/Nanaimo River (Area ‘C’), Nanoose Bay peninsula and surrounding area (Area ‘E’), Coombs/Hilliers, Errington/Meadowood (Area ‘F’), French Creek (Area ‘G’) and Dashwood/Bowser/Deep Bay (Area ‘H’).

PROPOSED SCHEDULE:

The RDN has been approved for funding and work can commence as soon as a contract is awarded. Submitted Proposals must outline a reasonable timeframe in which the work will be completed. If awarded the contract a final draft of the CWPP must be submitted on or before December 15, 2017 for RDN review; thereafter any required changes must be executed and the CWPP completed and provided to the RDN in the prescribed manner, on or before February 28, 2018.

FORM OF CONTRACT:

The successful proponent will be required to enter into a contract in the form attached to this request for proposal (Attachment “C”). By submitting a proposal, a proponent accepts without amendment the terms and conditions of the contract.

BUDGET:

A maximum budget of \$22,500 is available for this work. The Proposal must stay within the allocated budget, and should as much as possible break down the work / costs for each of the project areas consistent with the SWPI 2017 CWPP template sections and subsections.

INSTRUCTIONS FOR MAKING A SUBMISSION:

Consultants are to complete a submission for the CWPP proposal quoted by completing a Proposal and addressing how the CWPP will be executed both methodically and financially. Please include the proposed costs for each aspect of the CWPP update. This will provide the RDN a comprehensive understanding of the proposed CWPP.

Consultants are strongly encouraged to address each section outlined in the SWPI 2017 CWPP Template (see Appendix B). Failure to respond to a specification may result in a lower evaluation because the RDN may not have sufficient information to make a conversant decision.

To facilitate the evaluation of proposals, proponents should submit the following information in the following order:

1. A single cover page on letterhead introducing the proponent and outlining your understanding of this project.
2. A description of your proposed approach to this project, including timelines for anticipated stages and final completion.
3. A list of three references including contact name and information of organizations for which you have provided a similar service.
4. A single page outlining your fee proposal showing separately your fee and estimated expenses, broken down by project areas consistent with the SWPI 2017 CWPP template sections and subsections.

PROPOSAL EVALUATION:

Proposals will be evaluated for suitability of the CWPP for the stated purposes, i.e. meeting the standards of the SWPI 2017 CWPP Template.

It should also be noted that the RDN has met, or had discussions, with the BC Wildfire Service, Coastal Fire Center, Fuels Management Specialist in the past few months to develop a concept and guide for this Request for Proposal.

ENQUIRES:

Questions are to be submitted in writing within three (3) business days of the closing date quoting the RFP name and number and sent to email: jwilson@rdn.bc.ca

ADDENDA:

To receive addenda's Consultants are required to submit their email addresses and send to email: jwilson@rdn.bc.ca

ATTACHMENTS:

ATTACHMENT "A"- CEDAR, CRANBERRY, AND EXTENSION CWPP AREA OF INTEREST

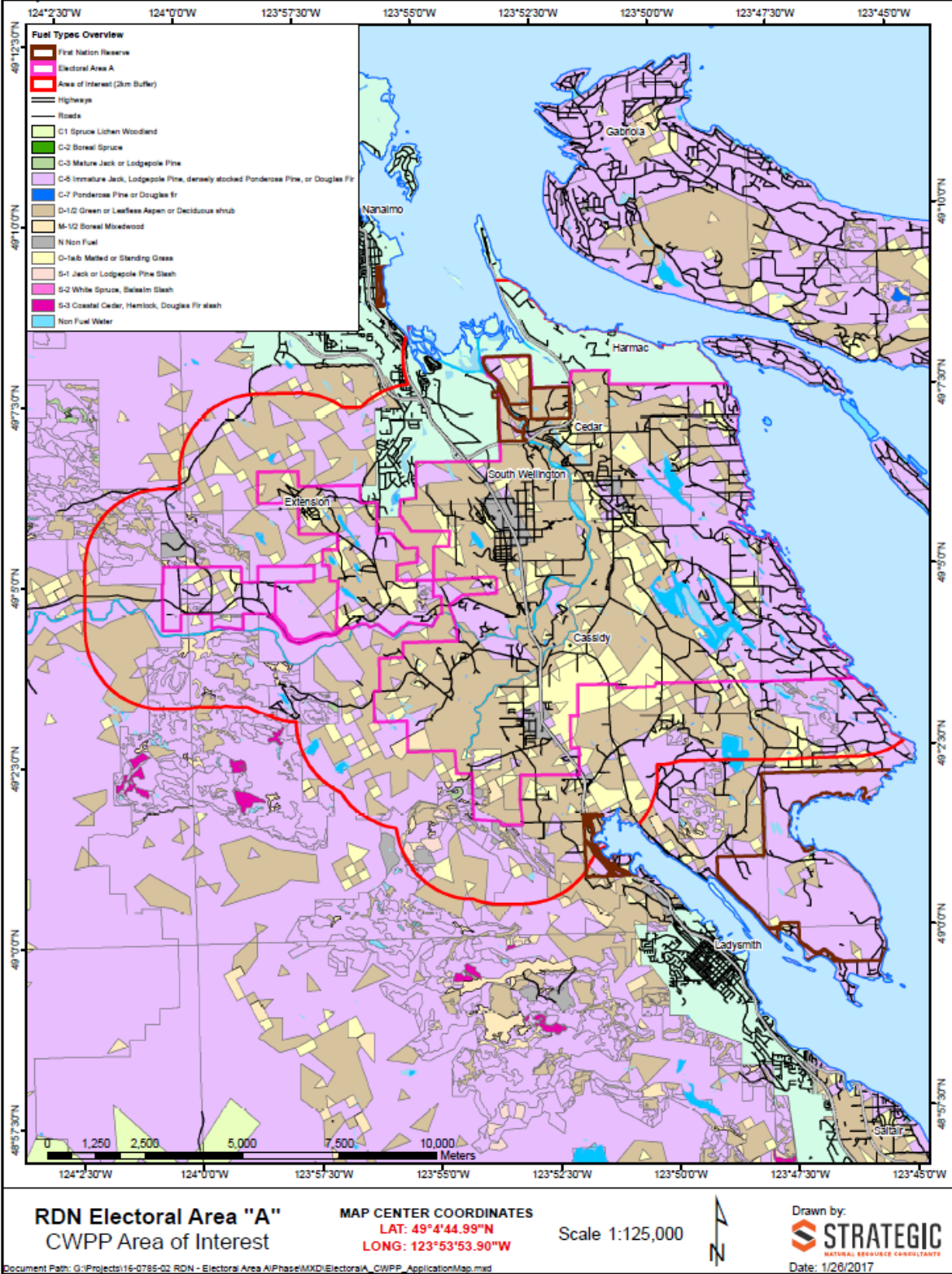
ATTACHMENT "B" – COMMUNITY WILDFIRE PROTECTION PLAN TEMPLATE

ATTACHMENT "C" – CONSULTING CONTRACT

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ATTACHMENT "A" - CEDAR, CRANBERRY, AND EXTENSION CWPP AREA OF INTEREST

Map A: RDN Electoral Areas 'A' & 'C': CWPP Area of Interest



Supplier's Initials _____

PROVINCE OF BRITISH COLUMBIA

Community Wildfire Protection Plan Template

Strategic Wildfire Prevention Initiative 2017



Strategic Wildfire Prevention Working Group

November 7, 2016

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Introduction

The Strategic Wildfire Prevention Initiative (SWPI) is a suite of funding programs managed through the Strategic Wildfire Prevention Working Group, including the BC Wildfire Service (BCWS) of the Ministry of Forests, Lands and Natural Resource Operations, the First Nations' Emergency Services Society (FNESS) and the Union of BC Municipalities (UBCM). Since 2004, the SWPI has supported communities to prepare for and mitigate wildfire risk in the wildland urban interface (WUI).

Instructions for Using the CWPP Template

Wildfire is an integral part of British Columbia's ecosystems and landscapes, including areas where citizens settle and communities grow. Due to an increasing population and expanding rural development, more communities in B.C. are located in areas of potentially increased wildfire risk.

This CWPP Template is designed to assist local governments and First Nations in the preparation of a plan that will determine the level of, and steps to manage, wildfire risk within their jurisdictional boundaries. It provides background information and links to supplementary information required to ensure that factors contributing to wildfire risk are well understood.

The CWPP Template provides an outline of the topics to be addressed in order to effectively plan for the mitigation of wildfire risk, but allows for flexibility in the addition of text, photos and other supporting documentation, as required.

This is the minimum mandatory content and structure requirement for a CWPP in BC under the Strategic Wildfire Prevention Initiative. However, each local government and First Nation will have unique situations and circumstances that should also be addressed and expanded upon in the template, as required. This may include additional sub sections, maps and photos that highlight specific actions, challenges, etc.

The CWPP Template is organized into the following major sections:

Section 1 Introduction: introduces the purpose of a CWPP and the CWPP planning process

Section 2 Local Area Description: defines the Area of Interest (AOI) for the CWPP; provides a description of the community (or communities) within the AOI; summarizes current community engagement, and; identifies linkages to other plans that provide valuable information to reduce the threat of wildfires

Section 3 Values at Risk: introduces the extent to which wildfire has the potential to impact values within a community

Section 4 Wildfire Threat: describes the process that was undertaken to identify and summarize the fuel hazard and other factors that contribute to the wildfire threat around a community

Section 5 Risk Management and Mitigation Factors: outlines the strategies the community can put into practice to reduce the risk and the impact of a wildfire in four subsections

5.1 Fuel Management: identifies and prioritizes operational fuel treatments within the WUI

5.2 FireSmart Planning and Activities: summarizes the current level of FireSmart implementation and identifies priority areas within the WUI for future FireSmart activities

5.3 Community Communication and Education: describes the key steps required to build engagement and support within the community for the CWPP. This includes education and outreach and local community prevention programs

5.4 Other Preventative Measures: identifies local actions and strategies that reduce the threat of wildfires

Section 6 Wildfire Response Resources: provides a high level overview of the resources that are available to local governments in the case of a wildfire.

Appendix One_Wildfire Threat Assessment – FBP Fuel Type Change Rationale

Appendix Two_Wildfire Threat Assessment Worksheets and Photos.

Appendix Three_Maps

The CWPP Template includes italicized instructions highlighted in red that are to be deleted in the final documents (including these initial pages) with embedded suggestions for map locations and content. Additional detail regarding the spatial requirements is located in the 2017 CWPP Program & Application Guide - Appendix 3: Final Report Mapping & Spatial Data Requirements. The CWPP Template is intended to be used in tandem with the 2017 CWPP Program & Application Guide.

CWPP Cover Page

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Acknowledgments

This is where any acknowledgements to members of the CWPP planning team, stakeholders or partnership in the development of the CWPP are summarized. Include any letters of endorsement from the Board or Council.

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Executive Summary
Summary of CWPP Recommendations

Complete Table 1 by including all CWPP recommendations. Add in sub-headings and details as required.

Table 1: Summary of CWPP Recommendations

	Objective/Priority	Recommendation/ Next Steps	Responsibility/Funding Source
Section 4: Wildfire Threat			
Section 5: Risk Management and Mitigation Factors			
Section 6: Wildfire Response			

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SECTION 1: Introduction

The intent of this section is to introduce the purpose of a CWPP and outline the CWPP planning process.

1.1 Purpose

The intent of this sub-section is to describe the overall purpose and goals of the CWPP.

The purpose of a Community Wildfire Protection Plan is to identify the wildfire risks within and surrounding a community, to describe the potential consequences if a wildfire was to impact the community, and to examine possible ways to reduce the wildfire risk. The goal is to define the threat to human life, property and critical infrastructure from wildfires in an identified area, identify measures necessary to mitigate those threats and outline a plan of action to implement the measures.

The CWPP planning process will provide the community with a detailed framework to inform the implementation of specific actions that will result in:

- 1. Reduced likelihood of a wildfire entering the community*
- 2. Reduced impacts and losses to property and critical infrastructure*
- 3. Reduced negative economic and social impacts to the community*

1.2 CWPP Planning Process

The intent of this sub-section is to describe the planning process/approach that was used, including presentations to Board or Council, stakeholder engagement, plan review and approval, and key steps undertaken during the plan's development.

Preparing a CWPP will be based on the needs of the local government, First Nation and community members involved in its development. To properly prepare for a wildfire, a community is required to develop a plan that involves key stakeholders, incorporates land use plans and clearly describes the wildfire risk. The CWPP should complement any policies, plans, legislation or multi-party agreements that are currently in place. There are generally four phases to developing a CWPP.

- 1. Build your team. Assemble a team of specialists and identify review and approval responsibilities. Planning for wildfire risk mitigation is a shared responsibility requiring the involvement of community planners, public and government organizations and the residents themselves.*

Core planning teams typically include representatives of the local government and First Nation Council or Board, local emergency management coordinator, a local fire services representative (with structural protection knowledge) and a registered professional forester with advanced understanding of wildfire (who may act as the project lead). BCWS representatives from the local Fire Zone (with fire behaviour knowledge) and Fire Center (Fuel Management Specialist) are also available to provide support, as requested.

Identify additional key stakeholders and their roles or responsibilities associated with the CWPP plan development. These stakeholders include the Natural Resource District staff, representatives from adjacent communities, forest tenure holders, owners of high value infrastructure located within the AOI (e.g. Fortis, BC Hydro), and owners of large areas of private land. The key is to engage key community members, leaders and stakeholders to determine priorities and develop plans for fire risk mitigation.

2. *Identify the values at risk and assess the local wildfire threat. The risks associated with wildfire need to be understood before a CWPP can define actions or activities to mitigate those risks. The wildfire threat is assessed through a combination of several approaches, including: Natural Fire Regime and Ecology, Provincial Strategic Threat Analysis, and Local Wildfire Threat Analysis.*

The relationship between hazard, threat, and risk is described in the following sentence: If the fuel (the hazard) ignites and the fire spreads towards the community, the wildfire can become a threat to life and property, with an associated risk of loss (probability x consequence).

3. *Develop a risk mitigation strategy that may include: prioritized fuel treatments, FireSmart activities, and local wildfire response recommendations that will reduce the wildfire threat. This is a critical component of the CWPP. This is the guide for mitigating risk to values, and developing the appropriate strategies that will reduce an identified significant risk.*
4. *Build your community engagement and education strategy. Presenting the CWPP to the Board or Council and engaging individual community members, key stakeholders and local government or First Nation staff in specific activities will ensure successful implementation of the CWPP.*

SECTION 2: Local Area Description

The intent of this section is to define the Area of Interest (AOI) for the CWPP, provide a description of the community (or communities) within the AOI, summarize current community engagement, and identify linkages to other plans that provide valuable information to reduce the threat of wildfires.

Understanding the relationship of the community to its surrounding environment, and what that means in terms of the wildfire hazard, threat and risk of loss, is critical to help the community plan for mitigation activities and respond to wildfire events.

To support this understanding, the BCWS has conducted a Provincial Strategic Threat Analysis (PSTA) that will aid in the identification of the Wildland Urban Interface, wildfire threat, and potential fire behaviour. The outputs of the PSTA are available as a data package clipped to the AOI with a 20 kilometer buffer. This information is intended to help inform the community's wildfire prevention planning process. Specific instructions on using individual components of the PSTA are described in subsequent sections of this document.

BCWS will provide the following data for all CWPPs:

- *The Provincial Strategic Threat Analysis (PSTA)*
 - *BC Fuel Type*
 - *Wildfire Threat*
 - *Head Fire Intensity, Spotting, Fire History*
 - *Wildland Urban Interface (Structure Density Classes, Structures)*
 - *Proposed and completed fuel treatments post-2013*
 - *Initial Spread Index (ISI) Roses*

Other relevant data will need to be acquired from the local government(s), captured through other means (e.g. digitized from imagery), or downloaded from DataBC, the Integrated Cadastre Society or other sources.

2.1 CWPP Area of Interest

The intent of this sub-section is to define the Area of Interest (AOI).

Often the AOI will be defined by the Wildland Urban Interface (WUI). The WUI is any area where combustible wildland fuels (vegetation) are found adjacent to homes, farm structures, other outbuildings or infrastructure. This may occur in the interface where development and fuels meet at a well-defined boundary or the intermix, where development and fuels intermingle and have no clearly defined boundary¹.

In B.C. the WUI is the area within 2 kilometers of a community with a minimum density of 6 structures per square kilometer. Fire hazard, fuel mitigation planning and FireSmart activities will be focused primarily within the WUI, consistent with fire behaviour principles.

The AOI can be extended to encompass a local government's legal boundary, or First Nation's reserve boundary, plus a 2-kilometer buffer when this differs significantly from the WUI. This extension of the AOI should reflect how the community is organized and how it approaches other similar planning projects.

For the purpose of the CWPP, the AOI is a SWPI boundary meant to support local government or First Nation planning and it is expected that not all CWPPs will identify an AOI that is different from the WUI.

When communities are located close together and are geographically aligned, a "regional" approach may be most effective. For regional districts this could be the boundary of an electoral area that encompasses multiple communities. This has been successful in some areas of the province to gain efficiencies and mimics a municipal boundary approach.

To define the AOI, start with the PSTA data and any other local information to identify the area that makes the most sense from a structure density, administrative, and community wildfire protection perspective.

A land ownership assessment is required to determine jurisdiction and property boundaries. Private land often extends past local government boundaries and adjacent parcels of private land can extend outwards for many kilometers. In some cases, not all of the adjacent private land will be included, particularly when the land is vacant, structure density is below the threshold, and extending the AOI boundary would result in large amounts of fuel on private land between the boundary and the community.

Provide a summary of the Area of Interest, including total hectares of private, local government, federal Crown and provincial Crown land. Ownership data may be available from the local government or First Nation and is also available for download from DataBC.

MAP 1: Area of Interest (AOI)

- CWPP AOI
- Land ownership and administrative boundaries (private, local government, federal Crown and provincial Crown land.)

¹ Partners in Protection. 2003. Firesmart: Protecting Your Community from Wildfire. Second edition. Partners in Protection. Edmonton, AB.

- Relevant tenures such as range, woodlots, community forests and/or Tree Farm License areas
- Firefighting jurisdictions
- Proposed and completed fuel treatments
- Other, such as FireSmart areas or Wildfire Hazard Development Permit Areas

2.2 Community Description

The intent of this sub-section is to identify the key characteristics of the community related to wildfire threat.

Provide an overview of the people and places within the AOI, including a general description of:

- *Local government(s) and First Nation(s), including gross area of the community/non-fuel area, gross area of AOI and a general overview of land use*
- *Local infrastructure and services*
- *Economic drivers*
- *Clear delineation of land ownership (private, municipal, federal Crown, provincial Crown land)*
- *Firefighting jurisdiction*
- *Existing evacuation/egress routes*

2.3 Past Wildfires, Evacuations and Impacts

The intent of this sub-section is to describe past significant wildfires and the impact on the community.

Provide an overview of past wildfire events, including a description of the fire behavior, and a review of the weather conditions for the day (if available and relevant). Describe how the event(s) impacted the community, including the number of evacuation orders, evacuation alerts, smoke impacts and damage to property and infrastructure (powerlines, bridges, homes etc.). Describe any key learnings from post-fire reviews and any activities the community has undertaken as a result. Describe any additional consequences including impacts to the local economy, social impacts on citizens (including evacuations), and other consequences.

2.4 Current Community Engagement

The intent of this sub-section is to summarize current level of wildfire prevention measures in the community, including previous CWPPs, local government or First Nation planning, fuel treatments or FireSmart activities and the identification of community organizations that are participating in activities to reduce the threat of wildfires.

Describe how the community has been engaged in wildfire prevention activities, including previous CWPP(s) and updates, FireSmart plans and other relevant local government or First Nation planning efforts. Identify any fuel treatments that have been completed in interface area, and any measures that have advanced FireSmart implementation.

2.5 Linkages to Other Plans and Policies

The intent of this sub-section is to identify the sources and linkages to other documents in order to minimize duplication while identifying other plans or legal requirements that are relevant to the

CWPP planning process. It also discusses the relevance of objectives, strategies and policies that will influence the development of the CWPP.

2.5.1 Local Authority Emergency Plan

Under the Emergency Program Act, local governments must prepare local emergency plans that include preparation for, response to, and recovery from, emergencies and disasters. The plan must cover all potential emergencies and disasters that could affect all or any part of the local government, (including wildfire) and may contain essential information for the CWPP.

Review the Local Authority Emergency Plan and identify sections that are relevant to the CWPP (e.g. response maps, evacuation routes, critical infrastructure reviews), provide a link to the plan as well as ensure there is consistency, but not redundancy, between it and the CWPP.

Refer to: [Emergency Management BC Local Authority Emergency Management Programs](#)

Insert any relevant maps or information from Local Authority Emergency Plans that supports the CWPP.

2.5.2 Affiliated CWPPs

Discuss any adjacent or overlapping CWPPs that exist and their relevance. Discuss strategies on how to integrate these to avoid duplication and identify any plan for potential joint projects.

2.5.3 Local Government and First Nation Plans and Policies

Review all relevant local government and First Nation plans, policies and bylaws and identify sections that are relevant to the CWPP. This may include—but is not limited to—First Nation Comprehensive Community Plans, Official Community Plans (including Development Permit Areas), zoning and subdivision bylaws, parks, recreation and/or open space plans, and local bylaws that restrict the use of fire within local government and First Nation boundaries.

Describe any specific requirements related to wildfire risk mitigation activities and highlight any major gaps and key recommendations for the community.

2.5.4 Higher Level Plans and Relevant Legislation

Review all relevant Provincial legislation and regulations and identify sections that are relevant to the CWPP. List all relevant higher level plans for the area, including Land and Resource Management Plans, Higher Level Plan Orders and any legal land management objectives. Discuss the relevance of these legal requirements to the community as it plans for potential treatments areas.

2.5.5 Ministry or Industry Plans

Additional forest management planning activities may be underway in the AOI. Integrating existing planning initiatives is critical to ensuring efficient and effective wildfire risk mitigation activities. Review any available Ministry of Environment, BC Parks or Ministry of Forests, Land and Natural Resource Operations Fire Management Plan information or BCWS Fire Prevention Plans, and identify sections that are relevant to the CWPP, including any planned or completed fuel treatments and/or proposed Fuel Treatments Opportunities Summaries (FTOS) that may be available for the AOI.

Additional plans to consider include Forest Stewardship Plans, Forest Health Plans, Range Management Plans, Ecological Restoration Plans, Parks and Protected Area Management Plans, Integrated Silviculture Strategies, and forest harvesting plans.

SECTION 3: Values at Risk

The intent of this section is to introduce the extent to which wildfire has the potential to impact values within a community.

Values at risk (VAR) are the human or natural resources that may be impacted by wildfire. This includes human life, property, critical infrastructure, high environmental and cultural values, and resource values.

Updating VAR data is critical for effective mitigation planning. This can be achieved through the use of high quality imagery to identify areas of new development and values such as critical infrastructure. Additional guidance on the definition and categorization of, and spatial requirements for, VAR is provided in the 2017 CWPP Program & Application Guide - Appendix 3: Final Report Mapping & Spatial Data Requirements.

MAP 2: Values at Risk

- CWPP boundary with updated WUI
- Updated structure density and Wildland Urban Interface (WUI)
- Values at risk (critical infrastructure, as outlined in 3.2 below)
- High environmental and cultural values (as outlined in 3.3)
- Hazardous values at risk (as outlined in 3.5)
- Optional: other resource values

3.1 Human Life and Safety

The intent of this sub-section is to clearly identify and understand where people and structures are located within the AOI in order to effectively determine the wildfire risk and identify mitigation activities.

In the event of a wildfire approaching a community, the first priority is human life and safety, including the evacuation of at-risk areas. Wildfire can move quickly and unpredictably. It takes time for people to evacuate an area and safe egress can be blocked by the fire itself or by vehicle congestion or accidents.

Updating structure locations and key attributes is critical to developing the appropriate mitigation strategies and recommendations. It is also critical to fire response planning. Review the BCWS structure data and WUI information and provide feedback regarding errors, omissions and potential new development locations and any missing isolated structures. If missing structures are identified that would trigger a change to the WUI (e.g. > 6 structures per hectare), a revised WUI boundary should be provided.

Describe the population distribution within the AOI using the most recent data available. Review and update information on campgrounds, picnic areas and other locations in the AOI that have high use during fire season.

3.2 Critical Infrastructure

The intent of this sub-section is to clearly identify and understand where critical infrastructure is located within the WUI in order to effectively determine the wildfire risk and identify mitigation activities.

Critical infrastructure assets— or CI —are those physical resources, service and information technology facilities, networks and assets which, if disrupted or destroyed, would have a serious impact on the operation of an organization, sector, region or government². Review the PSTA, Local Authority Emergency Plan or any available infrastructure data (DataBC) and update for key errors and omissions.

Describe critical infrastructure and the risk that wildfire poses to the infrastructure (this requires working with the asset owners). Outline the services related to critical infrastructure (electricity, communications, water supply, waste treatment, hospitals, schools, etc.), and the impacts and implications of disruption of these services, during and after a wildfire.

3.2.1 Electrical Power

Provide updated information regarding transmission and distribution lines and what they supply (e.g. identify if a power line supplies other communities); locations of transformers and towers; types of poles (metal vs. wood); substation or generating station locations, loads, and what they supply. Detail any linkages to water supply (e.g. water system requires electricity to function).

3.2.2 Communications, Pipelines and Municipal Buildings

Provide updated information regarding the type and locations of communication towers or repeaters, gas lines, hospitals, airports and municipal buildings.

3.2.3 Water and Sewage

Provide updated information regarding water supply infrastructure elements, such as intake dams and locations, pipelines, water treatment plants, sewer facilities, etc. Describe water availability for firefighting and the potential for drought conditions during fire season.

3.3 High Environmental and Cultural Values

The intent of this sub-section is to clearly identify and understand where high environmental and cultural values are located within the WUI in order to effectively determine wildfire risk and identify mitigation activities.

3.3.1 Drinking Water Supply Area and Community Watersheds

Communities that depend on surface water from a specific watershed should be aware that wildfire has the potential to cause significant damage to soils, high rates of sedimentation and/or landslides that can degrade water quality for many years. In worst-case scenarios, the water supply may have to be abandoned (temporarily or permanently) or new water treatment infrastructure may need to be built, which can take several years and substantial funding.

² Emergency Management BC. 2016. <http://www2.gov.bc.ca/gov/content/safety/emergency-preparedness-response-recovery/local-emergency-programs/critical-infrastructure-assessment> High Value.

Provide updated information on the water supply(s) on which the community relies. When a community relies partially or completely on surface water, describe the location of the watershed and its vulnerability to wildfire.

Describe the current water reservoir and/or drinking water supply capacity, its relevance and vulnerability, and provide any initial analysis of potential wildfire impacts.

3.3.2 Cultural Values

Indigenous cultural heritage resources include archaeological sites, traditional use sites, historic buildings and artifacts, and heritage trails, or any other objects or places of “historical, cultural or archaeological significance to British Columbia, a community or an aboriginal people³”.

Archaeological sites in British Columbia that date to 1846 or earlier are protected from alteration of any kind by the Heritage Conservation Act (HCA) (1996). The provisions of the HCA apply to archaeological sites located on both public and private land, known and unknown, and are binding on government. The Archaeology Branch of the Ministry of Forests, Lands and Natural Resource Operations administers the provisions of the HCA and are responsible for making final decisions concerning the management of archaeological resources. Day-to-day planning, research and fieldwork are conducted by professional consulting archaeologists.

Non-archaeological cultural heritage in BC is generally not protected by statute, but the use of and access to these resources is enshrined as a constitutionally-protected Aboriginal right. Locally identified cultural heritage values that may be impacted by wildfire or suppression efforts can be included, if agreed to by the local First Nation.

3.3.3 High Environmental Values

Provide updated information on any high environmental values, such as significant species at risk and established legal objectives and orders.

3.4 Other Resource Values

The intent of this sub-section is to describe significant additional resource values (such as timber, water or high-value wildlife habitat, etc.) that are present within the AOI and/or values that may constrain fuel treatment opportunities.

Provide updated information on other resource values (such as the timber harvesting land base and its contributions and impacts on short-, mid- and long-term timber supply), if relevant.

3.5 Hazardous Values

The intent of this sub-section is to identify hazardous values that pose a safety hazard to emergency responders.

Provide updated information on hazardous values, such as large propane facilities, landfills, rail yards, storage facilities containing explosives. Outline any mitigation measures.

³ Archer, CRM. 2009. Cultural Heritage Resource Identification and Management in Forestry Developments: A Supplement to the FREP Protocol. Ministry of Forest Lands and Natural Resource Operations.

SECTION 4: Wildfire Threat and Risk

The intent of this section is to summarize the factors that help determine the wildfire threat around the community. These factors include natural fire regime and ecology, Provincial Strategic Threat Analysis, and a local wildfire risk analysis. Risk assessment for wildfire and its impacts to communities considers both the likelihood of a wildfire and the potential consequence associated with that likelihood. For example, if the fuel (i.e. the hazard) ignites and the fire spreads towards the community (probability), the wildfire can become a threat to life and property (consequence) with an associated risk of loss.

Many aspects of wildfire threat assessment fall under the practice of professional forestry as outlined in the ABCFP [Interim Guidelines- Fire and Fuel Management](#). This section of the CWPP is required to be prepared by a forest professional that possesses a sound understanding of fire threat analysis, fire behaviour and suppression, and resource management. Due to the complex nature of wildfire threat assessment, planning for, and implementation of, fuel treatments in BC, the BCWS and its SWPI partners have updated and developed a set of tools to aid in determining the wildfire threat, fuel treatment design and implementation, in addition to the detailed guidance in this section of the CWPP Template.

*The 2016 Wildfire Threat Assessment Guide and accompanying worksheets provide a fuel stratum assessment for the wildland urban interface. The Fuel Management Practices Guidebook (**to be available in 2017**) describes in more detail the steps/tools required, as well as designing fuel treatments to mitigate the risk and reduce the threat. Practitioners should be aware of and consider this guidebook in developing this section of the CWPP [when it becomes available](#).*

4.1 Fire Regime, Fire Danger Days and Climate Change

The intent of this sub-section is to provide the ecological context of wildfire for the community and to describe the role of fire (frequency and intensity) in the local ecosystem under historical conditions, and the potential implications of future conditions, caused by the interruption of the natural fire cycle and/or climate change.

4.1.1 Fire Regime

Determine the [Biogeoclimatic zone \(BEC\)](#) and [Natural Disturbance Type \(NDT\)](#), as well as current forest structure and describe any forest health issues that may exist for the community and the WUI area.

Describe the historic fire regime and any changes to that regime that have occurred in part due to fire exclusion. In B.C., NDT4 areas have been assessed using condition class mapping by the [Ecosystem Restoration Program](#) and may be available. Describe forest health issues (insects and disease) that are present and have contributed to changes in the fire regime and forest attributes. Describe human development (e.g. land clearing and forest harvesting, grazing, ecosystem restoration, fuel treatments) and natural events that have altered the fuel hazard around the community. Describe the implications regarding wildfire behaviour that may result from all of the factors described above.

4.1.2 Fire Weather Rating

Wildfire threat exposure to the community will vary throughout the fire season based on the fuels present, the moisture content of fuels, and fire weather conditions. Consequences of a threat may be realized when an ignition occurs during high or extreme wildfire conditions, as represented by Fire

Danger Rating. A general indication of the likelihood of high fire threat to the community can be assessed by reviewing the level and frequency of high and extreme fire danger ratings typically experienced in the local area during the fire season.

Refer to: (Requires BCEID):

<https://bcfireweatherp1.nrs.gov.bc.ca/Scripts/Public/Common/Report.asp?Report=WxHistory>

Contact BCWSPrevention@gov.bc.ca

State the average number of extreme fire danger days per year and the average number of high fire danger days per year from information in the BCWS Wx report for representative weather station(s) near the community. Discuss the implications to the community in regards to wildfire threat related to the local fire history, climatology, and fuel conditions around the community.

4.1.3 Climate Change

Climate change projections point to a warmer and drier environment and shifts in vegetation with the following implications in some areas of the province:

- *Increased disturbances due to insects and disease*
- *Shifts in vegetation. Potential ranges of species will move northward and upward in elevation*
- *Increased forest fire frequency*
- *Longer and more intense wildfire seasons*
- *Increased number of high and extreme fire danger days for an average year*

As a result, some existing forests have an increased probability of more frequent, intense and more difficult to control wildfires that are likely to result in increased tree mortality, detrimental impacts to soils and hydrology, and increased threat to the community and interface areas. Describe relevant potential climate change impacts that are applicable to the community from local or provincial level information. The following sources are available: [Climate Change Adaptation](#) and the [Pacific Climate Impacts Consortium](#).

MAP(s) 3: Fire Regime, Ecology and Climate Change

- CWPP boundary with updated WUI
- NDT TYPE
- Forest Health (e.g. MPB)
- Major harvesting patterns, completed fuel treatments or ecological projects
- Historical Fire Perimeters
- Climate Change scenarios relevant to the community (Future BEC zones)

4.2 Provincial Strategic Threat Analysis (PSTA)

The intent of this sub-section is to describe fire threat ratings from the PSTA and its key inputs relevant to the community.

The PSTA is a high level analysis and is a starting point to assess the relative wildfire threat. It utilizes provincial fuel type mapping, historical fire occurrence data, topography, and historic weather station data; and interprets this data. Note that the PSTA is conducted at the provincial level and has a number of limitations. The PSTA information is complemented with a local wildfire threat analysis that considers local factors to improve the wildfire threat assessment (see Section 4.3). The PSTA

includes information and maps that describe fuel types, historical fire density, and the potential for embers to land in an area (spotting impact), head fire intensity, and the final wildfire threat.

Wildfire threat is directly related to the likelihood of hazardous fuel igniting and fire spreading into the community either directly or through ember transport. The PSTA provides information to help evaluate the 3 conditions necessary for a wildfire to threaten a community:

- 1. an ignition occurs (Fire History)*
- 2. the resulting fire generates sufficient intensity (Head Fire Intensity) and spreads rapidly, and*
- 3. the fire spreads into and/or transports embers into the community (Spotting Impact)*

Provide a description of the Provincial level PSTA products and maps available for the local area and their relevance to characterizing fuel hazard and wildfire threat. Provide an overview of the final PSTA wildfire threat rating and the three inputs (spotting impact, head fire intensity, and historic fire density) that are weighted to determine the rating.

Refer to: [Provincial Strategic Threat Assessment](#).

MAP(s) 4: Provincial Strategic Threat Analysis

- Threat Rating
- Spotting Impact
- Head Fire Intensity
- Historical Fire Density

As required in the relevant sections below, Fire History may have a separate map.

4.2.1 PSTA Final Wildfire Threat Rating

To determine the overall PSTA Threat Rating, fire density, head fire intensity (HFI) and spotting impact were combined using a weighted averaging process. Weights were assigned as 30% fire density, 60% HFI (90th percentile) and 10% spotting impact. These weighted values were added together to produce a final fire threat rating and assigned to 10 classes to produce a detailed map of fire threat rating throughout British Columbia.

The 10 Fire Threat Classes represent increasing levels of overall fire threat (i.e. the higher the number, the higher the threat). PSTA Threat Class 7 is considered to be a threshold and the most severe overall threat classes are Class 7 and higher. Areas of the province that fall into these higher classes are most in need of mitigation.

Areas rated as Class 7 or higher are locations where the fire intensity, frequency and spotting can be severe enough to potentially cause catastrophic losses in any given wildfire season, where those ratings overlap with significant values at risk.

Due to the variability in the data sources within BC, areas rated as Class 6 should be reviewed for mitigation potential. These areas are considered to be particularly prone to wildfires (fire density equates to approximately 30 or more escaped fires since 1950), are susceptible to crown fires (head fire intensity greater than 10,000 kW/m), and are most likely to be affected by spotting impacts.

Provide a description of the overall PSTA Wildfire Threat Ratings in the WUI area surrounding the community and the relevance regarding wildfire threat.

4.2.2 Spotting Impact

Research shows that a high percentage of structure losses are from embers being transported to and igniting structures and subsequent structure-to-structure ignitions⁴. The Spotting Impact Layer estimates the threat of embers impacting a given point on the landscape from the fuel types surrounding it. Describe the spotting impact in relation to fuel and structures within the AOI and potential impacts to the community.

4.2.3 Head Fire Intensity

Provide a description of the Head Fire Intensity (HFI) in the WUI, the associated potential wildfire intensity during 90th percentile fire weather, and associated suppression difficulties. HFI represents the energy output of the flaming front of a wildfire, measured in kilowatts per metre (kW/m). HFI is related to fire spread rate and fuel consumption at the leading edge of a wildfire, and has been previously correlated with fire suppression difficulty.

As the general audience is unlikely to understand the implications of fire intensity measured in kW/m or the fire intensity classes used in the PSTA, the following table has been provided that relates the HFI and intensity classes to flame length, and likely fire behaviour. Provide a discussion of what this means to the community.

Table 2: Head Fire Intensity Classes and Associated Fire Behaviour

PSTA - HFI Class	Fire Intensity kW/m	Fire Intensity Class ⁵	Flame Length (meters) ⁶	Likely Fire Behaviour ⁷
1	0.01 – 1,000	2	< 1.8	Smouldering surface fire
2	1,000.01 – 2,000	3	1.8 to 2.5	Moderate vigour surface fire
3	2,000.01 – 4,000	4	2.5-3.5	Vigorous surface fire
4	4,000.01 – 6,000	5	3.5 to 4.2	Vigorous surface fire with occasional torching
5	6,000.01 – 10,000	5	4.2 to 5.3	Vigorous surface fire with intermittent crowning
6	10,000.01 – 18,000	6	12.3 to 18.2	Highly vigorous surface fire with torching and/or continuous crown fire
7	18,000.01 – 30,000	6	18.2 to 25.6	Extremely vigorous surface fire and continuous crown fire
8	30,000.01 – 60,000	6	>25.6 ⁸	Extremely vigorous surface fire and continuous crown fire, and aggressive fire behaviour

⁴ Partners in Protection. 2003. Firesmart: Protecting Your Community from Wildfire. Second edition. Partners in Protection. Edmonton, AB.

⁵ Head fire intensity should be classified by intensity class not fire rank. Fire rank is a visual description of conifer fires for air operations.

⁶ For calculating Flame Length, Bryam (1959) was used for surface fire (<10 000 kW/m) and Thomas (1963) was used for crown fire situations (>10 000 kW/m).

⁷ These characteristic will be different in open and closed forest fuel.

⁸ With HFI over 30 000 kW/m the function of the equation are stretched beyond the expectation of the equation, fire is under the influence too many other factors.

9	60,000.01 – 100,000	6	>25.6	Blowup or conflagration, extreme and aggressive fire behaviour
10	≥ 100,000	6	>25.6	Blowup or conflagration, extreme and aggressive fire behaviour

NB: The descriptions in this table will vary by fuel type and should only be used as guidance for expected fire behaviour.

4.2.4 Fire History

Although the location of future ignitions is difficult to predict with accuracy, a review of historic fire ignitions and spread can reveal patterns that have a greater likelihood of occurring in the future.

Fire history tells the story of the relationships between fire behaviour, landscape ecology, management policy (including fire suppression), human development and other land-use changes throughout the area. The potential for very large, destructive and landscape-altering fires is related to the historical fire and fire response patterns within a given planning unit. The PSTA fire density layer was analyzed using fires with final sizes greater than 4.0 hectares. These were given a weight of one (1) in the analysis, while large fires (> 500 ha) were given a weight of 5, in order to reflect the much greater cost and damage usually associated with larger fires. The complete set of BCWS fire perimeters are also included on the fire history layers.

Describe the implications of the historical fire for the community. Include any relevant local fire history (start location, numbers and perimeters) in the discussion. Examine the ignition location and the final fire perimeters to determine if there are fire spread patterns with respect to prevailing winds and topography. Describe the implications of fire spread patterns for the community. Describe the number of fires, and any patterns regarding the direction of fire spread, high occurrence areas, etc., and the implications for the community.

Note any major fires near the community that were a threat or resulted in impacts. Discuss the implications of the historic fire incidence in terms of the likelihood of future wildfires and, if applicable, discuss any patterns that indicate that specific areas surrounding the community are likely to pose a greater threat.

INSERT MAP 5: Fire History

- CWPP boundary with updated WUI
- PSTA Human and Lightning Fire starts maps with fire perimeters
- Include local fire incident history if relevant
- Other Relevant info such as WUI, structures, or VAR

4.3 Local Wildfire Threat Assessment

The intent of this sub-section is to provide a detailed assessment of the local wildfire threat, including field reviewed fuel characteristics, proximity of fuel to the community, local fire spread patterns, topographical considerations and local factors.

Provide an introductory paragraph that outlines the local wildfire threat assessment process that considers the following key weighted local wildfire threat factors, stratifies the WUI area based on relative wildfire threat and risk, and identifies priority areas for field assessment. The key steps necessary to complete the local wildfire threat assessment are:

1. *Develop local fuel type map.*
2. *Consider the proximity of fuel to the community.*

3. Consider fire spread patterns (i.e. ISI Roses).
4. Consider topography.
5. Stratify the WUI based on relative wildfire threat.
6. Consider other local factors.
7. Identify priority wildfire risk areas for field assessment as outlined in the document below.

Refer to: [Threat Assessment Factors information is provided in the 2016 Wildfire Threat Assessment Guide and Worksheets Sub-component and Descriptors Definitions](#)

4.3.1 Fuel Type Verification

The accuracy of the local fire threat determination and fuel treatment design is directly linked to the accuracy of the fuel type information. If the fuel typing is incorrect, to the degree that the associated fire behaviour is significantly different, the corresponding threat information will also be incorrect. BCWS annually produces a comprehensive fuel type layer for fire behaviour prediction using the Vegetation Resources Inventory (VRI) data which is summarized in the following reference document.

Refer to: [BCWS Fuel Typing Summary Document](#)

There are limitations to the provincial scale approach when it comes to examining fine-scale variations in fuel structure on the landscape and modeling the behaviour of individual fires. Examples of VRI attributes that could be readily verified in the field (by properly trained technicians) include tree species composition, tree height, tree density, tree age, and canopy cover. Stand attributes can be determined from individual tree attributes with proper sampling.

Ground-truthing of fuel structure characteristics specific to fire behaviour prediction can also be undertaken. This involves assessing attributes that have been found to be particularly significant in affecting fire behaviour and may or may not be part of general forest stand characteristics: fuel loading (fine and coarse woody debris, litter and duff depth, and crown fuel load), crown base height, canopy bulk density (difficult to measure directly), and tree height. Crown attributes (especially crown base height and canopy bulk density) can also be assessed by combining measured stand attributes with modeled crown fuel characteristics.

Various tables and calculators can be used for such purposes⁹; predictions based on these studies would also benefit from field validation, although these efforts often consist of significant research projects (e.g. destructive sampling and measurement of entire tree crowns) rather than simple field measurements. These characteristics can be used to inform the selection of the best fit FBP fuel type; however, it is not always obvious how to do so. For example, surface fuel loading or canopy bulk density are not described quantitatively for FBP fuel types in the technical system description¹⁰.

Ground-truthing of FBP fuel types, however, is more problematic. Assigning a FBP fuel type to a particular stand or vegetation polygon is a complex, somewhat subjective process, often described as a blend of 'art' and science. Evaluating FBP fuel types in the field requires specialized training and experience in a particular vegetation type, and is not readily done by most field technicians unless performed by personnel who have locally relevant fire behaviour skills and experience.

⁹ Cruz et al. 2003a. Assessing canopy fuel stratum characteristics in crown fire prone fuel types of western North America. International Journal of Wildland Fire 12(1), 39-50. AND Alexander and Cruz. 2014. The general nature of crown fires. Fire Management Today 73(4):8-11.

¹⁰ Forestry Canada Fire Danger Group. 1992. Development and Structure of the Canadian Forest Fire Behavior Prediction System. Forestry Canada Fire Danger Group. Information Report ST-X-3.

The following table shows the fire behaviour potential of the FBP fuel types grouped into 4 categories based on their relevance to a wildfire threat assessment.

Table 3: Fuel Type Categories and Crown Fire Spot Potential

Fuel Type Categories	Fuel Type - Crown Fire/ Spot Potential
1: C1, C2, C4, M3-M4 (>50% C/DF)	High
2: C3, C7, M3-M4 (<50% C/DF) M1-M2 >50% Conifer	Moderate
3: C5, C6, O1a/b, S1- S3 ¹ M1-M2 (26-49% Conifer)	Low
4: D1, D2, M1-M2 (<26% Conifer)	Very Low

As part of the CWPP planning process the BCWS fuel type layer should be verified using current data sources including imagery, new treatments, new developments or updated disturbance data.

As part of this validation process all changes should be documented and rationale provided, using Appendix 1 Wildfire Threat Assessment_FPB Fuel Type Change Rationale. This worksheet must be submitted to (BCWSPrevention@gov.bc.ca) for review and when approved incorporated into the CWPP.

Determine any areas where fuel type mapping appears to be potentially inaccurate and develop a quality assurance process to validate. This process will likely require field work which should be focused on areas that present the greatest potential inaccuracy, such as those listed below:

1. Areas with fuel management treatments (including Prescribed Fire) that are not mapped.
2. Recent silviculture treatments such as spacing and pruning.
3. Coniferous mapped as deciduous.
4. Grasses or shrubs mapped as forest.
5. Areas of non-fuel mapped as a fuel type.
6. Major disturbances (harvesting, wildfires, or land clearing for industrial purposes).
7. C7 fuel types with high Crown Closure.

In addition, this work should be focused on/ but not limited to, the areas of highest level of threat (e.g. higher hazard fuels C1, C2, C4, M2>50% conifer, upwind and/or closest to the community).

Ensure that any deficiencies noted and approved in the fuel type mapping and associated information is corrected to produce an "Updated Fuel Map". Provide a description of the fuel types (hectares of each fuel type) and their relevance to the wildfire threat assessment.

MAP(s) 6: Updated Fuel Type

- CWPP boundary with updated WUI
- Corrected fuel type with hectares
- Verification fuel type lot locations and labels
- WUI Zones
- Field Verified Overview of fuel typing plot locations and hectares of each fuel type
- If significantly different, show original PSTA fuel type map

4.3.2 Proximity of Fuel to the Community

Fuel closest to the community usually represents the highest hazard. The recommended approach is to treat fuels to achieve a desired level of hazard reduction, from the value or structure outward, ensuring mitigation continuity. Untreated areas between treatment areas and the value or structure may allow a wildfire to build in intensity and rate of spread, which can increase the risk to the value.

To capture the importance of fuel proximity in the local wildfire threat assessment, the WUI is weighted more heavily from the value or structure outwards. Fuels adjacent to the values and/or structures at risk receive the highest rating followed by progressively lower ratings moving out.

The local wildfire threat assessment process subdivides the WUI into 3 areas – the first 100 meters (WUI 100), 101 to 500 meters (the WUI 500), and 501 to 2000 meters (the WUI 2000). These zones provide guidance for classifying threat levels and subsequent priorities of treatments.

Table 4: Proximity to the Interface

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

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

Apply the zoning principles to the WUI. Discuss the relevance and importance of the proximity of fuels to the values at risk, including a discussion of the non-linear relationship between hazard, fire behaviour, and distance as it related to the community.

4.3.3 Fire Spread Patterns (i.e. ISI Roses)

Wind speed, wind direction, and fine fuel moisture condition influences wildfire trajectory and rate of spread, and is summarized in the ISI Rose(s) from the local representative BCWS weather station(s). Wildfire that occurs upwind of a value poses a much more significant threat to that value than a fire that occurs downwind.

Analyze the predominant summer fire spread patterns during the peak burning period using [ISI Roses provided by BCWS](#). These were generated using the hourly ISI data and grouped into four daily time periods and displayed in a monthly graphical format. If the weather station data is not representative, consider local input from the community rather than using un-representative data. Consider the prevailing wind direction during periods of higher ISI values and associated fire behaviour

implications, and stratify the WUI into areas that tend to be downwind, upwind, or off-set, to these fire spread patterns. As an example, if the ISI Rose has the greatest spread potential from southwest winds, then it would be prudent to assign a higher level of risk (and to treat higher threat forest stands) to the SW quadrant of the community. The fire perimeter history for the area should also be reviewed for significant fire spread direction patterns. If no predominant wind pattern exists, this should also be discussed.

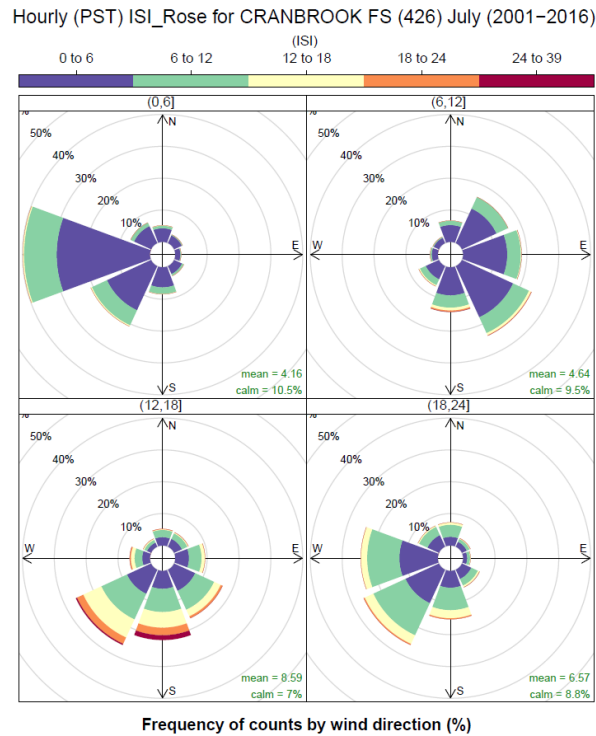


Figure 1: Initial Spread Index (ISI) Roses

4.3.4 Topography

Slope percentage and slope position of the value are both considered. Slope percentage influence a fires' trajectory and rate of spread. Slope position of the value relates to the ability of a wildfire to gain momentum during an uphill run and affects the potential impact to the value.

Slope Class

Determine slope percentages/classes for the WUI area. General fire behaviour implications of slope classes are summarized in the following table:

Table 5: Slope Percentage and Fire Behaviour Implications

Slope Percent Class	Fire Behaviour Implications
<20%	Very little flame and fuel interaction caused by slope, normal rate of spread.
21-30%	Flame tilt begins to preheat fuel, increase rate of spread.
31-45%	Flame tilt preheats fuel and begins to bathe flames into fuel, high rate of

	spread.
46-60%	Flame tilt preheats fuel and bathes flames into fuel, very high rate of spread.
>60%	Flame tilt preheats fuel and bathes flames into fuel well upslope, extreme rate of spread.

Slope Position of the Value

Slope position of a value relates to the ability of a wildfire to gain momentum during an uphill run. A value at the bottom of the slope is equivalent to a value on flat ground; a value on the upper 1/3 of the slope would be impacted by high preheating and faster rates of spread than a value on flat ground.

Determine the values' location relative to the slope (bottom, mid-slope on a bench, mid-slope on a continuous slope, upper 1/3 of slope). When different portions of the community are in different relative slope positions, assess the portions separately. General fire behaviour implications of slope position to the value are summarized in the following table:

Table 6: Slope Position of Value and Fire Behaviour Implications

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

4.3.6 Local Wildfire Threat Classification

Classify the WUI into Local Wildfire Threat Classes based on the updated fuel map (Section 4.3.1). The following explains the process to be used in determining local wildfire threat:

- 1. Acquire the Provincial Strategic Threat Analysis and metadata from BCWS clipped to the area of interest.*
- 2. Using the previously corrected fuel type map for the area of interest, find areas where the fuel types have been changed. Areas where there is no fuel type change use the PSTA threat score.*
- 3. Look for a similar fuel type in the local area, crosswalk the HFI value from the similar fuel type to the corrected fuel type polygon and place into a table to recalculate the wildfire threat for the corrected polygon. Fire density and spotting impact numbers should not change due to any input at a local level. If the fire density seems to be misrepresentative of the local fire history, this can be captured in the rationale at the treatment design stage.*

Table 7: PSTA Inputs Cross Walk Table

	Head Fire Intensity (60%)	Fire Density (30%)	Spotting Impact (10%)	Wildfire Threat Score (100%)
Original PSTA Score	8/10	6/10	6/10	
Weighted Value	4.8	1.8	0.6	7.2/10 (High)
Corrected Threat (based on fuel type change)	7/10	6/10	6/10	
Weighted Value	4.2	1.8	0.6	6.6/10 (Moderate)

NB: This example shows that the locally corrected fuel type has lower head fire intensity than the PSTA fuel type and a lower wildfire threat score (6.6 vs. 7.2).

4.3.7 Local Wildfire Risk Classification

As part of the CWPP analysis, local wildfire risk will need to be determined. The following factors are assessed to determine the local wildfire risk score.

- 1. Corrected wildfire threat (based on locally verified fuel type changes) is described in Section 4.3.6 – Local Wildfire Threat Calculation. This category is weighted at 30% of the total risk score.*
- 2. Proximity is described in Section 4.3.2 – Proximity of Fuel to the Community. This weighs the risk of fuel based on distance from the community, giving a higher score for risk nearest to the values at risk in the community. This is described as “working from the value outward to mitigate risk”. This category is weighted at 30% of the total risk score.*
- 3. Fire spread patterns (Section 4.3.3) use ISI roses and fire perimeter history to forecast the most likely potential fire spread direction for an approaching wildfire to the relative position of the community. Stratify the WUI into areas that tend to be downwind, upwind, or off-set, to these fire spread patterns. Due to the high variability of this information from community to community, generic relative weightings are not provided here, and local evaluation and weightings based on the strength of the local wind direction and intensity patterns is required. This category is weighted at 30% of the total risk score (when clear patterns are evident).*
- 4. Topography (Section 4.3.4) is an important factor in increasing the rate of spread and the resulting head fire intensity of a wildfire. Slope may have little influence depending on the area of the province where the community is located. This category is weighted at 10% (5% for position and 5% for slope class) of the total risk score.*

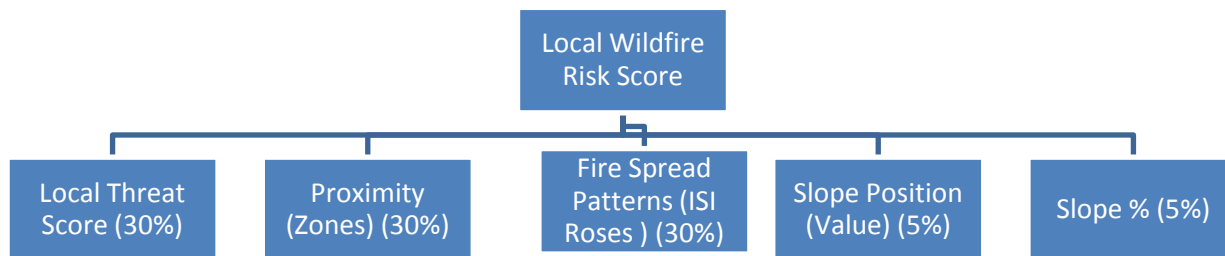


Figure 2: Local Wildfire Risk Inputs

Table explaining the weightings used in determining local wildfire risk are provided below:

Table 8: Local Wildfire Risk Summary

Local Threat Score (30%)	Proximity (30%)	Fire Spread Patterns (30%)	Slope Position (5%)	Slope Percent (5%)	Wildfire Risk Score (100%)
6.6/10	10/10 (within 100 m of value)	8/10 (west of community with predominant SW to NE wildfire spread pattern)	2/10 (lower part of the slope)	5/10 (30% slope)	7.73/10 (High)

Weighted Values

1.98	3	2.4	0.1	0.25	7.73
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NB: Example of the process, not actual values used.

The wildfire risk assessment process outlined above provides a means to determine the wildfire risk as it applies to forest fuel hazard, proximity of fuel to the community, fire spread patterns and topography. These factors all influence how a wildfire could impact the community if ignition was to occur. It is also important for Professionals to consider and assess high forest fire risk activities, human use, and other environmental factors that affect wildfire threat and risk within different areas of the WUI. Note any additional local factors that influence (increase or decrease) the wildfire threat information that is unique to the community. For example, a review of human fire start history based on BCWS supplied data and BCWS Fire Centre Prevention Plans may identify high fire start areas that present a higher level of local wildfire threat. Contact the local Fuels Management Specialist for this information.

Discuss local factors with the fire services department to determine unique situations within the community that may have higher human ignition potential based on the historical fire response. This could include high use areas, reoccurring annual events, and known problem areas. Where local factors are sufficient to justify changes to the wildfire risk values determined above, document the rationale and provide a map of any alterations, as part of the CWPP. Considering all of the factors noted above should allow the Professional to provide a comprehensive assessment of the wildfire hazard and risk.

Summarize the Relative Local Wildfire Risk Weighting in the following table:

Table 9: Local Wildfire Risk Weighting

Relative Risk	Weighting
Low	0 - 3.9
Moderate	4 - 6.9
High	7 - 8.9
Extreme	9+

NB: The scoring system is based on a maximum score of 10.

4.3.8 Summary of Fire Risk Classes

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

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

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

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

MAP(s) 7: Local Fire Risk

- CWPP boundary with updated WUI

- Risk Polygons labelled by Extreme, High, Moderate, and Low
- Hectares of polygons on map
- WUI Zones
- Assessment plot locations / labelled
- Critical Infrastructure and other relevant VAR

SECTION 5: Risk Management and Mitigation Factors

The intent of this section is to outline the strategies the community can put into practice to reduce the risk and the impact of a wildfire. Risk mitigation choices can vary by community, fuel type, ecology, hazard, terrain factors, land ownership, other unique local risk factors, Local Government and First Nation capacity, and/or public acceptance.

Mitigating wildfire risk is a proactive approach to reducing potential impacts and subsequent losses from devastating wildfires, and is best conducted in a coordinated fashion amongst applicable land managers/owners that may include provincial and federal governments, local governments, First Nations, and private landowners. Understanding and assessing all of the risks that apply to a given community is a key consideration when determining actions that local governments or First Nations can undertake to mitigate and manage the wildfire risk within and adjacent to their respective jurisdictions.

There are many different risk mitigation options available. Three have been identified for this section:

1. *Fuel Management – reduce fire behaviour potential*
2. *FireSmart – reduce fire spread into community and impacts to values*
3. *Communication and Education – reduce fire occurrence*

It is important for forest professionals to look beyond forest fuels when assessing the risk and threat. High risk activities, human use and other environmental factors should also be assessed within the WUI or AOI. Considering these other factors should allow the Professional to design fuel treatments and other recommendations that pragmatically meet the needs of the community and build resilience to the potential impacts of wildfire. Additional options should be discussed where relevant that pragmatically meet the needs of the community and build resilience to mitigate the potential impacts of a wildfire.

5.1 Fuel Management

The intent of this section is to conduct more detailed work on the highest local risk areas of the WUI identified in Section 4.3.7 and design logical treatment units for future prescription development and operational fuel treatments within the highest risk areas.

A key change in approach in the CWPP going forward is to move from designing fuel treatments based on hazard and threat at the fuel polygon level, to strategically identifying the highest wildfire threat areas within the WUI and designing logical fuel treatment units that are functional from fire behaviour and fire suppression perspectives. Identify strategically located interface fuel breaks and primary fuel breaks where opportunities exist. Where available, the Fuel Treatment Opportunities Report and existing CWPP's are the starting point for CWPP fuel treatment planning.

Within the highest threat priority units that are likely to be treated during the lifespan of the CWPP, design logical fuel treatment units for operational fuel treatments. Consider all potential options including: commercial timber harvesting, ecosystem restoration program, Forest Enhancement Program, land based investments, habitat conservation, SWPI, and other potential partners.

Design logical fuel treatment units to modify fire behaviour and create options for fire suppression. Key principles to be considered in the development of fuel treatment units (FTU's) include: continuity, relatively linear, anchored to non-fuel areas, accessible, defensible, and designed to be effective in changing fire behaviour from a crown fire to a surface fire during 90th percentile fire weather conditions for the local area. Proposed treatments should be sufficient in size, sufficiently treated, and strategically located with boundaries that can be effectively utilized for wildfire response. Boundaries should be consistent with logical burn unit planning principles including: utilizing topographical breaks and manmade and natural features (roads, railways, hydro transmission lines, gas pipelines, wetlands, lakes, irrigated fields, non-fuel areas, etc.). Fuel treatment design should also consider constrained areas (i.e. private land, constraints that preclude treatment), and treatment method (commercial timber harvest, mechanical, prescribed fire, etc.). Other considerations include recommendations in existing CWPP's (that meet current standards), completed fuel management prescriptions, and completed fuel treatments, when they are compatible with the design standards noted above.

For each fuel treatment unit (uniquely identified) specify the fire management objectives related to the desired change in fire behaviour that will guide future fuel treatment prescription development. For example:

- Conduct fuel treatments in the WUI to create residual stands characteristics that do not support active crown fire,*
- Apply prescribed fire under suitable conditions to provide ecological benefits, reduce fuel loading, and reduce the probability of catastrophic fire in the future.*

For each fuel treatment unit: complete one Wildfire Threat Assessment Worksheet #1 – Priority Setting Scoring, stratify each fuel treatment unit based on fuel type, and complete the necessary number of Wildfire Threat Assessment Worksheet #2– Plot Level Fuel Characteristics to accurately reflect the fuel characteristics and provide a summary (if >1 plot).

Interface Fuel Break:

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

Primary Fuel Break:

Primary Fuel Breaks are located on Crown Land in strategic locations beyond the Interface Fuel Break. The location of Primary Fuel Breaks depends on land ownership (Crown vs. private), existing natural and man-made features, fuel types, and wind patterns. Primary Fuel Breaks are designed to modify fire behaviour and create fire suppression options that reduce the risk of a crown fire reaching a community and/or adjacent private lands. Primary Fuel Breaks may be located to completely surround a community, or be strategically placed upwind of communities and perpendicular to fire season winds. Primary Fuel Breaks have sufficient width and appropriate fuel reduction measures to

break the crown fire threshold and reduce fire intensity such that overstory fire moves to the ground surface and spread rates are reduced. While there are no absolute standards for fuelbreak width or fuel manipulation in the literature and fuel break width will vary based on fuel type, topography, and expected fire behaviour¹¹. Fuel breaks should be designed to take advantage of natural and man-made fire resilient features and topography to enhance effectiveness. Surface fire spread across, and spotting over the fuel break are both concerns, and depend on the application of suppression resources to be effective. Provide a summary table and map any high priority areas where operational constraints limit the ability to complete fuel management activities, such as access, soil conditions, topography, land ownership and other local issues.

Summary Table as specified below:

Table 9: Fuel Treatment Summary Table

FTU # and Stratum	Total Area (ha)	Treatment Unit Type / Objective	Local Fuel Threat (Hectares)			Overlapping Values / Treatment Constraints	Treatment Rationale
			Extreme / High	Mod	Low		

MAP 8: Fuel Treatment

- CWPP boundary with updated WUI
- Land Status and tenure overlaps eg range, woodlots, wildlife habitat areas
- Proposed fuel treatment units (unique identifier, ha, priority (1, 2, 3.....))
- Previously completed treatments(labelled by year)
- Hectares of polygons on map
- Assessment plot locations / labelled

5.2 FireSmart Planning & Activities

The intent of this section is to summarize the current level of [FireSmart](#) that have been completed, are under implementation, and to identify areas that are FireSmart, or have received FireSmart recognition through the FireSmart Canada Recognition Program, and to identify future FireSmart activities within the AOI.

5.2.1 FireSmart Goals & Objectives

The intent of this sub-section is to identify the general goals and objectives of FireSmart.

Refer to: The FireSmart manual ([FireSmart Protecting Your Community from Wildfire](#)) provides detailed guidance.

The general goal of FireSmart is to encourage private land holders to adopt and conduct FireSmart practices to reduce the fuel hazard and implement other measure to minimize damages to assets on their property from wildfire:

¹¹ Mooney, Colleen. 2010. Fuel Break Effectiveness in Canada’s Boreal Forests: A synthesis of current knowledge. FP Innovations.

1. *Reduce the potential for an active crown fire to move through private land.*
 2. *Reduce the potential for ember transport through private land and structures.*
 3. *Create landscape conditions around properties where fire suppression efforts can be effective and safe for responders and resources.*
 4. *Treat fuels adjacent and nearby to structures to reduce the probability of ignition from radiant heat, direct flame contact, and/or ember transport.*
 5. *Implement measures to structures and assets that reduce the probability of ignition and loss.*
- Research has shown that a value that has been treated in accordance with FireSmart principles has a much larger chance of survival in a wildfire situation¹². Treatment of adjacent fuels further enhances survival probability - "Work from the value out to the wildfire threat".*

5.2.2 Key Aspects of FireSmart for Local Governments

The intent of this sub-section is to provide a summary of FireSmart activities that can be used to measure current level of implementation and to recommend next steps. There are many different ways that members of the community and stakeholders can provide options to mitigate the risk (FireSmart, 2003).

1. *Elected officials approve bylaws that promote FireSmart principles related to infrastructure and safety.*
2. *Municipal planners design green belt and other open space areas in strategic locations.*
3. *Developers design and build FireSmart buildings*
4. *Private land owners and residents modify fuels around their property and buildings and follow FireSmart principles.*
5. *Industrial managers and business with interface values ensure that facilities are constructed and maintained following FireSmart guidelines.*

Refer to Table 10 below for a summary FireSmart practices and activities that could be adopted by a Community.

Table 10: FireSmart Practices and Activities

Topic	FireSmart Examples
Communication, Education & Partnerships	<ul style="list-style-type: none"> • <i>Host a FireSmart day</i> • <i>Use local government and First Nation newsletters and social media</i> • <i>Undertake FireSmart Local Representative or Community Champion training</i> • <i>Apply for FireSmart Community Recognition</i> • <i>Form a FireSmart committee</i> • <i>Encourage homeowners and/or neighborhoods to undertake FireSmart site assessments and area assessments</i>
Vegetation management	<ul style="list-style-type: none"> • <i>Develop policies and practices for FireSmart maintenance of public spaces, such as parks and open spaces</i> • <i>Use landscaping requirements in zoning and development permits to require fire resistive landscaping</i> • <i>Provide access to a chipper or dumpster for debris drop-off from pruning or thinning on private properties</i>

¹² Partners in Protection. 2003. Firesmart: Protecting Your Community from Wildfire. Second edition. Partners in Protection. Edmonton, AB.

Planning & Development	<ul style="list-style-type: none"> • Develop policies and practices for FireSmart construction and maintenance of public buildings • Establish Development Permit Areas for Wildfire Hazard in order to require FireSmart exterior finishing • Consider wildfire prevention and suppression in the design of subdivisions (e.g. road widths, turning radius for emergency vehicles, and access and egress points) • Coordinate the reviews of new developments across multiple departments, including the fire department • Consider mutual-aid fire control agreements
Increasing local capacity	<ul style="list-style-type: none"> • Develop and maintain Structural Protection Units (SPU) and/or learn how Emergency Management BC deploys SPUs for interface fires • Provide sprinkler kits (at cost) to residents • Cross-train fire departments to include structural fire and wildfire training

5.2.3 Identify Priority Areas within the Area of Interest for FireSmart

The intent of this sub-section is to use of the relative wildfire risk in the WUI (Section 4.0 above) to best understand the priority areas for FireSmart planning and activities. This could be based on the relative level of wildfire risk adjacent to established neighborhoods, although the application of FireSmart principles to isolated critical infrastructure could also be a priority.

Complete the table below to identify relative priority areas for FireSmart in relation to the level of wildfire risk, the current level of implementation in those areas, and next steps for increasing FireSmart activities. At a minimum, CWPP planners should identify, at a very high level, general priority areas within AOI that may benefit from FireSmart assessment(s). This overview could utilize local knowledge, aerial image interpretation, and/or information assimilated from previous FireSmart assessments.

Table 11: Summary of FireSmart

Area ID	Wildfire Risk Rating (E/H/M/L)	FireSmart Y/N	FireSmart Canada Recognition Received Y/N	Recommended FireSmart Activities
Priority Area # 1: [insert name of neighborhood, zone, critical infrastructure, etc.]				

Map of areas that are FireSmart. (Optional)

5.3 Community Communication and Education

The intent of this section is to describe the key steps required to build engagement and support within the community for the CWPP in a concise format. This includes education on fire prevention practices, outreach and community programs.

The CWPP will only be successful if the community is engaged, informed and supportive of the process and the recommendations. Moving from the CWPP to implementation of specific activities requires that the community is well informed of the reasons for, and the benefits of specific mitigation activities. The following steps should be described in this section:

1. *Specify how the CWPP will be made accessible/available to the general public (posted, public meetings, etc.).*
2. *Develop a communication strategy regarding wildfire risk and priority mitigation measures that are being undertaken by the community.*
3. *Outline a process to encourage stakeholders in the natural resource sector to identify opportunities for mutually beneficial forest/fuel treatments.*
4. *Develop a public education strategy designed to reduce human caused fires. Evaluate BCWS Fire Cause data provided by the fuel Management Specialist and identify local historical patterns of human caused fires.*
5. *Develop a FireSmart communication plan.*
6. *Others*

5.4 Other Prevention Measures

This intent of this section is to identify local actions and strategies that reduce the threat of wildfire ignitions.

Fire prevention can be achieved through communication and education initiatives, as well as through the development and implementation of policies and regulations, including operational guidelines and restrictions. Fire prevention can be addressed at the community level through various avenues. Danger class rating signs within fire protection zones, public communication, industrial work restrictions and fire bans are examples of public fire prevention measures.

Provide a list of any other actions or strategies that are being undertaken within the AOI to reduce the threat of wildfire ignitions.

5.5 Summary of Recommendations

The intent of this sub-section is to summarize all the recommendations that have been included in this section.

<i>Recommendation</i>	<i>Responsibility/Funding Source</i>	<i>Next Steps</i>
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SECTION 6: Wildfire Response Resources

The intent of this section is to provide a high level overview of the resources that are available to local governments in the case of a wildfire.

Interface fires are complex incidents that typically involve both wildland and structural fires. During times when many fires are burning in the Province and threatening multiple communities at the same

time, resource requests can exceed the resources available. In B.C. these resources are deployed according to [BC Provincial Co-ordination Plan for Wildfire Revised July 2016](#).

6.1 Local Government and First Nation Firefighting Resources

The intent of this sub-section is to identify implications of wildfire that impact firefighting efforts (eg. loss of electrical power and water pressure and supply), the contingencies that have been put in place, and any recommended measures that would help to make community firefighting more effective. Include a high level summary of mutual aid agreements.

6.1.1 Fire Departments and Equipment

Wildfire can also affect the fire departments' ability to effectively fight the fire due to safety issues, loss of water pressure, excessive smoke, etc. Provide a description of local fire department capacity and limitations. This should include a review of training, equipment, evacuation and volunteer fire departments. Outline any additional measures that have been undertaken including the development of a wildfire preparedness plan.

6.1.2 Water Availability for Wildfire Suppression

Provide a description of local water supply and limitations, including the capacity of water for both structural and within the AOI. Consider that water needs to be available for the entire fire season and during an event that may disrupt electricity delivery. Describe any developed contingencies regarding the possibility of losing power and the associated implications regarding water pressure. Fire department engines also have the capacity to draw water from alternative water sources that have been pre-identified and tested. Describe any alternative water sources, and access requirements. Provide a brief description of local fire hydrant capacity and limitations including any industrial sites (work with applicable stakeholders).

6.1.3 Access and Evacuation

Provide a brief description of the access constraints and opportunities for local equipment to respond. Include a discussion on adverse grades, curves, and potential bridge weight considerations, and a summary of the areas with and without quality access for emergency fire fighting vehicles. Provide a description of the potential issues using local emergency planning or other relevant information.

Access routes may often double as evacuation routes as well. Identification of emergency evacuation routes within the community boundary is a local government or First Nation responsibility. Fuel condition adjacent to evacuation routes should be considered in relation to potential fire behaviour and potential impediments to safe evacuation. Of most concern are areas where evacuation routes are limited. Fuel treatments necessary to ensure safe evacuation should be identified and prioritized in relation to other risks identified in the CWPP.

6.1.4. Training

Identify training options to build capacity within the suppression and emergency management area. Maintain the current level of structural protection training for response staff. Increase focus in interface training in S100 Introductory and S215 Advanced wildfire suppression training and mock exercises in partnership with BCWS.

6.2 Structure Protection

The intent of this section is to provide a summary of what is available to the community for SP, and provide any recommendations.

Describe the current capacity of the local government and first Nation for sprinkler deployments or any Structure Protection Unit (SPU) deployment plan recommendation the CWPP planning process has identified. Provide recommendations for the community to fill in any identified gaps. In addition, building or retrofitting structures and managing vegetation to FireSmart standards ahead of time, is recommended.

6.3 Summary of Recommendations

The intent of this sub-section is to summarize all the recommendations that have been included in this section.

<i>Recommendation</i>	<i>Responsibility/Funding Source</i>	<i>Next Steps</i>
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Appendix One: Wildfire Threat Assessment – FBP Fuel Type Change Rationale

DRAFT

Appendix Two: Wildfire Threat Assessment Worksheets and Photos

DRAFT

Appendix Three: Maps

Additional guidance is provided in the 2017 CWPP Program Application Guide Appendix 3: Final Report Mapping & Spatial Data Requirements.

DRAFT

ATTACHMENT "C" – CONSULTANT AGREEMENT

**REGIONAL DISTRICT OF NANAIMO
CONSULTING SERVICES AGREEMENT**

THIS AGREEMENT made the _____ day of _____.

BETWEEN:

REGIONAL DISTRICT OF NANAIMO
6300 Hammond Bay Road
Nanaimo, BC V9T 6N2

(hereinafter called the "Regional District")

AND:

(hereinafter called the "Consultant")

NOW THIS AGREEMENT WITNESSETH:

THAT in consideration of the terms, conditions and covenants hereinafter set forth, the Regional District and the Consultant covenant and agree each with the other as follows:

1. Appointment

The Consultant has been selected to perform work in accordance with their submission to the request for proposal titled **Cedar/Cranberry/Extension Community Wildfire Protection Plan (CWPP) - 2017**, a copy of which is attached hereto and forms part of this agreement and which is hereafter referred to as the "Services".

2. Term

The Consultant will provide the Services during the period (hereinafter called the "Term") commencing on _____, 2017 and ending on February 28, 2018, unless sooner terminated as hereinafter provided.

3. Payment

Supplier's Initials _____

The Regional District will pay to the Consultant, for the Services, the amount, in the manner and at the times set out in Schedule 'A' attached hereto. The Consultant agrees to accept the amount as full payment and reimbursement. No additional amounts may be charged by the Consultant.

4. Independent Contractor

The Consultant will be an independent contractor and not the servant, employee or agent of the Regional District.

5. Assignment and Sub-contracting

The Consultant will not, without the prior written consent of the Regional District, assign or subcontract this Agreement or any portion thereof.

6. Ownership of Documents and Confidentiality

- (a) The Consultant agrees to keep in strictest confidence all confidential information which the Consultant may acquire in connection with or as a result of divulge or disclose to any unauthorized third Party or Parties any information at any time without the prior written consent of the Regional District. The term "confidential information" includes but is not limited to information emanating from the Regional District, its affiliates, agents, customers, either conceived or developed by the Consultant concerning research, development, patent, copyright, systems and procedures.
- (b) The Consultant acknowledges that any digital map data that is provided for the purposes of this assignment belongs solely to the Regional District and the Consultant shall not alter, change, distribute, publish, transfer, loan, lease or otherwise make the information available in any form in whole or in part to any person or body without the prior written consent of the Regional District.
- (c) On the termination of this Agreement for any reason, the Consultant shall deliver to the Regional District all documents, notebooks, charts, files and records relating to the provision of the Services including copies, summaries and notes in the possession or control of the Consultant.

7. Conflict

The Consultant shall not, during the term, perform a service for or provide advice to any person, firm or corporation where the performance of the service or the provision of the advice may or does, in the reasonable opinion of the Regional District, give rise to a conflict of interest between the obligations of the Consultant to the Regional District under this Agreement, and the obligations of the Consultant to such other person, firm or corporation.

8. Indemnity

The Consultant will indemnify and save harmless the Regional District from any and all losses, claims, damages, or expenses arising from or due to the negligence of the Consultant in performing the functions and responsibilities of the Consultant under the terms of this Agreement or the Consultant's breach of the terms of this Agreement.

9. Insurance

The Consultant shall, on demand, provide a policy of general commercial liability insurance coverage for property damage, personal injury or death in the amount of \$2,000,000 per occurrence.

10. Work Safe Coverage

The Consultant understands and agrees that they are not covered by or through the RDN's Work Safe BC coverage for any injuries or death sustained while completing this assignment.

11. Termination

Notwithstanding any other provision of this Agreement:

- (a) If the Consultant fails to comply with any provision of this Agreement, then, and in addition to any other remedy or remedies available to the Regional District, the Regional District may, at its option, terminate this Agreement by giving written notice of termination to the Consultant.
- (b) Either Party may terminate this Agreement at any time upon giving the other Party seven (7) days written notice of such termination.

If either such option is exercised by the Regional District, the Regional District will be under no further obligation to the Consultant except to pay the Consultant such amount as the Consultant may be entitled to receive, pursuant to Schedule 'A', for services provided and expenses incurred to the date the said notice is given or delivered to the Consultant. The Consultant will refund to the Regional District any payment already made to the Consultant not yet earned.

12. Prior Dealings

All prior negotiations and agreements between the parties relating to the subject matter of this Agreement are superseded by this Agreement. There are no representations, warranties, understandings or agreements other than those expressly set forth in the Agreement or subsequently agreed to in writing, which writing shall be executed by a duly authorized officer of the Party to be bound thereby.

13. Waiver

The failure of either Party at any time to require the other Party's performance of any obligation under this Agreement shall not affect the right to require performance of that obligation in the future. Any waiver by either Party of any such breach or any such provision hereof shall not be construed as a waiver or modification of this provision itself, or a waiver or modification of any other right under this Agreement.

14. Miscellaneous

All provisions of this Agreement in favor of the Regional District and all rights and remedies of the Regional District, either at law or equity, will survive the expiration or sooner termination of this Agreement.

IN WITNESS WHEREOF the parties hereto have executed this Agreement the day and year first above written.

For the Regional District of Nanaimo)
)
)
_____)
)
_____)
)

For the Consultant)
)
_____)
Name)
)
_____)
Title)