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Port McNeill Community Wildfire Protection Plan

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PROFESSIONALLY RESOURCEFUL

Introduction

The Community Resiliency Investment (CRI) program is a new provincial program intended to reduce the risk and impact of wildfire to communities in BC through community funding, supports and priority fuel management activities on provincial Crown land.

The Union of BC Municipalities (UBCM), First Nations' Emergency Services Society (FNESS) and the Forest Enhancement Society of BC (FESBC) are working with the Ministry of Forests, Lands, Natural Resource Operations & Rural Development (FLNRORD), represented by the BC Wildfire Service (BCWS), to administer the FireSmart Community Funding & Supports portion of the program for local government and First Nation applicants.



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Terms and Acronyms

AOI	Area of Interest
BCWS	British Columbia Wildfire Service
CFFDRS	Canadian Forest Fire Danger Rating System
CRI Program	Community Resiliency Investment Program
CWPP	Community Wildfire Protection Plan
EMBC	Emergency Management British Columbia
EOC	Emergency Operations Centre
FPPR	Forest Planning and Practices Regulation
FRPA	Forest and Range Practices Act
HCVFD	Hyde Creek Volunteer Fire Department
LFR	Local FireSmart Representative
MFLNRORD	Ministry of Forests, Lands, Natural Resource Operations and Rural Development
NIREP	North Island Regional Emergency Plan
OBSCR	Open Burning Smoke Control Regulation
OCP	Official Community Plan
PMEP	Port McNeill Emergency Plan
PMFL	Private Managed Forest Lands
PMVFD	Port McNeill Volunteer Fire Department
PSTA	Provincial Strategic Threat Analysis
RDMW	Regional District of Mount Waddington
SNRC	Strategic Natural Resource Consultants
SPU	Structure Protection Unit
UBCM	Union of British Columbia Municipalities
WUI	Wildland Urban Interface



Executive Summary

A Community Wildfire Protection Plan is a plan prepared by a qualified forest professional for a community that:

1. Defines risk areas within the community for interface fires;
2. Identifies measures necessary to mitigate those risks; and,
3. Outlines a plan of action to implement these measures.

The local wildfire threat process involved field verification of fuel characteristics, proximity of fuel to the community, local wildfire spread patterns, topographical considerations and local factors. Provincial data provided for the purposes of this report contained inaccurate fuel type data so extensive work was undertaken to improve this data in order to use it as a foundation in the local wildfire risk analysis. Funding for this project was granted by the Union of BC Municipalities (UBCM) through the 2019 Community Resiliency Investment Program (CRI Program). The CRI Program aims to reduce the risk and impact of wildfire to communities in BC through community funding, supports and priority fuel management on crown land. It does not, however, allow any assessments on private land.

The study area encompasses a significant geographic area, within which there are many values at risk, both in terms of natural values and human development: residences, businesses, transmission lines, working forests/commercially valuable timber, transportation corridors, and sensitive ecosystems. Although large wildfires are not a frequent occurrence in the area, weather conditions do produce high and extreme fire danger annually, and wildfires do occur every year in the area. Human-caused ignitions are the most common source of wildfire in this region, which means that most wildfires here are preventable.

A multitude of other factors were reviewed and discussed as part of this CWPP, such as wildfire response capacity, adjacent/previous CWPPs, spatial data, relevant bylaws, and a variety of plans (emergency/evacuation, watershed, parks, official community). Additionally, discussions with stakeholders and government agencies identified some key areas of concern that have guided this study.

Relevant recommendations from the report and findings of the BC Flood and Wildfire Review (Abbot and Chapman 2018) were incorporated in to the recommendations of this CWPP in order to align with this independent review which examined the 2017 flood and wildfire seasons. Recommendations are generally categorized by the seven FireSmart principles of education, legislation and planning, development considerations, interagency cooperation, emergency planning, and cross training.

The table below summarizes risk management and mitigation factors for wildfire response recommendations.



Summary of CWPP Recommendations

#	Recommendation	Next Steps	Funding	Priority
Education				
#1	Identify areas and install signage in areas of high unregulated fire use – known areas of abandoned campfires, unregulated firing ranges, recreation sites (e.g. Beach Camp)	<ul style="list-style-type: none"> - Identify and review areas of unregulated fire use, - Install signage describing fire risk, - Assess effectiveness and monitor any signage damage. 	UBCM Town of Port McNeill RDMW	3
#2	Create a Social Media platform or campaign to make residents more aware of FireSmart and fire safety tools.	<ul style="list-style-type: none"> - Evaluate current social media outlets for the Town of Port McNeill, - Identify targets for Social Media Campaign, - Create a FireSmart Social Media outlet that reaches target audience. - This could be coupled with campaigns and information linked to the BCWS and FireSmart pages. 	UBCM Town of Port McNeill	2
#3	Identify and utilize FireSmart and Wildfire Safety resources available through BCWS and a Local FireSmart Representative.	<ul style="list-style-type: none"> - Contact Local FireSmart Representative to find out what resources are available, - Contact BCWS North Island/Mid-Coast Fire Zone Office to access resources, - Connect with an LFR to help coordinate resources. 	FireSmart BC BCWS Town of Port McNeill	2
#4	Distribute FireSmart materials directly to residents of the community, particularly along Mine Road, Cardena Crescent.	<ul style="list-style-type: none"> - Review priority areas for FireSmart activities, - Contact Local FireSmart Representative to receive materials, - Organize a pamphlet hand-out/mail-out of materials, - Continue to provide access to FireSmart materials in high activity places (recreation 	UBCM FireSmart BC Town of Port McNeill.	3



#	Recommendation	Next Steps	Funding	Priority
		center, medical center, visitors' center).		
Legislation and Planning				
#5	Review and make changes to the policy for attending fires outside fire protection boundary.	<ul style="list-style-type: none"> - Identify locations/ communities outside the fire protection boundary that have requested service, - Assess the burden on resources from out of boundary calls, - Determine the best way to mitigate out of boundary calls and resource use outside of boundary. 	Town of Port McNeill	4
#6	Appoint a salaried Town of Port McNeill Employee, to hold the EOC coordinator position as well as regular emergency management duties, and another as Deputy EOC coordinator.	<ul style="list-style-type: none"> - Review EOC requirements, - Identify a salaried person from the Town who can act as EOC coordinator, - Identify a salaried person who can act as Deputy EOC coordinator, - Provide regular training to both individuals. 	UBCM EMBC Town of Port McNeill	3
#7	Create a private property/backyard burning bylaw and permitting system.	<ul style="list-style-type: none"> - Communicate with PMVFD, HCVFD, and BCWS to identify meaningful guidelines for a backyard burning bylaw - Establish permitting system to ensure effective tracking of local burning activities - Establish a means for enforcing the new bylaw, ensuring PMVFD and HCVFD have the authority to enforce. 	Town of Port McNeill UBCM EMBC	2
Interagency Co-operation				
#8	Representatives from EMBC, RDMW, BCWS and the Town of Port McNeill need to meet yearly to identify and agree upon triggers for Emergency Response Plan activation.	<ul style="list-style-type: none"> - Independently identify Emergency Response triggers and issues, - Pre-schedule yearly meetings among agencies, - Review processes and triggers yearly to ensure they capture up-to-date issues. 	UBCM Town of Port McNeill RDMW EMBC	1



#	Recommendation	Next Steps	Funding	Priority
#9	Representatives from The Town of Port McNeill, RDMW, Mosaic Forest Management, Lemare Lake Logging and Western Forest Products should meet to discuss and identify wildfire safety measures currently in place, and areas of concern among all parties.	<ul style="list-style-type: none"> - Independently identify issues in wildfire safety pertaining to PMFLs, - Pre-schedule yearly meetings among agencies and industry, - Participate in regular, transparent communication between the Town of Port McNeill and PMFLs. 	UBCM Town of Port McNeill RDMW	2
Cross Training				
#10	Provide higher level Wildfire Behavior, and Canadian Forest Fire Danger Rating System training to PMVFD and HCVFD	<ul style="list-style-type: none"> - Identify higher level wildfire behavior courses, - Identify meaningful participants to receive higher level training, - Engage in regular discussion with BCWS to ensure information and courses are up-to-date. 	UBCM EMBC Town of Port McNeill BCWS	1
#11	Schedule two joint training sessions between BCWS and PM/HC Fire Departments that include Advanced suppression tactics	<ul style="list-style-type: none"> - Seek out a wildfire champion within the local VFDs to guide/initiate new training programs Identify gaps in wildfire training, - Pre-schedule training sessions with BCWS. 	UBCM Town of Port McNeill BCWS	1
Emergency Planning				
#12	Engage private land owners (Orca Sand and Gravel, Mosaic Forest Management, Western Forest Products) to establish suppression and equipment sharing agreements.	<ul style="list-style-type: none"> - Establish a list of accessible equipment for each private land owner, - Create equipment sharing agreements including rates, - Ensure these lists are regularly updated. 	UBCM Town of Port McNeill RDMW	1
#13	Conduct annual or biannual emergency drills for Wildfire Evacuations	<ul style="list-style-type: none"> - Plan and coordinate an emergency evacuation drill, - Inform community of the results of the drill, - Encourage all community members to participate. 	RDMW Town of Port McNeill	3
#14	Invest in a Structure Protection Unit for the North Island and provide training to new SPU users.	<ul style="list-style-type: none"> - Identify communities/municipalities 	RDMW	2



#	Recommendation	Next Steps	Funding	Priority
		that would benefit from an SPU, - Engage the RDMW for support in purchasing an SPU, - Provide training to local fire departments .	Town of Port McNeill UBCM	
#15	Install an emergency siren for Wildfire and Tsunami alerts in the town centre, and inform the public on new siren protocols	- Identify location for emergency siren, - Install and test emergency siren, - Inform the public on new siren protocols	Town of Port McNeill EMBC	4
#16	Implement Evacuation Route Signage along Campbell Way, SW Main Road, and to the Port McNeill Ferry Terminal to Alert Bay	- Identify evacuation routes - Install signage, - Inform the public regarding new signage for emergency routes.	UBCM Town of Port McNeill	3
Vegetation Management/Fuel Treatments				
#17	Consider the following areas for Wildfire Operational Fuel Treatments: <ul style="list-style-type: none"> - Port McNeill Sewage Treatment Plant - Regional District of Mount Waddington office - Port McNeill Hospital - Port McNeill Public Works Yard 	- Conduct a detailed Fire Hazard Assessment in these areas, - Have a qualified professional write a Fuel Management Prescription, - Complete an operational fuel treatment per prescription, - Monitor areas for retreatment.	UBCM Town of Port McNeill RDMW	3
FireSmart Demonstration Projects				
#18	Host a FireSmart demonstration project, FireSmart presentations and wildfire awareness training for homeowners and residents in the Town of Port McNeill.	- Identify a local public area to conduct a FireSmart Assessment, - Publicly advertise the FireSmart Assessment and encourage residents to attend, - Host a FireSmart Workshop for local residents.	UBCM Town of Port McNeill	2
FireSmart Projects on Private Lands				
#19	Create incentive programs for FireSmart and fuel treatments on private land for:	- Communicate with private land owners and determine a reasonable incentive, - Initiate incentive program,	UBCM Town of Port McNeill	4



#	Recommendation	Next Steps	Funding	Priority
	<ul style="list-style-type: none"> - Industrial Operations - Private Managed Forest Lands - Residential homes 	<ul style="list-style-type: none"> - Assess the reception effectiveness of the program. 		
#20	Conduct Wildfire Hazard Assessments and FireSmart audits at larger industrial sites.	<ul style="list-style-type: none"> - Identify areas with high-risk industrial activities, - Communicate with private land owner to conduct a FireSmart assessment, - Direct the private land owner on resources and funding for FireSmart projects/activities. 	UBCM Town of Port McNeill	3
#21	Conduct FireSmart Homeowner Assessments on homes and structures in areas deemed high or extreme risk (eg: Cardena Cresc)	<ul style="list-style-type: none"> - Identify homes within high or extreme areas, - Communicate with residents on importance of FireSmart Assessment, - Conduct Assessment, - Direct the property owner on resources and funding for FireSmart projects/activities. 	UBCM Town of Port McNeill Residents	3



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SECTION 1: Introduction

1.1 Purpose

The purpose of a Community Wildfire Protection Plan (CWPP) is to accurately quantify wildfire risks within and surrounding a community, to describe the potential consequences of wildfire, 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, recommend measures necessary to mitigate those threats, and outline a plan of action to implement the measures.

The Town of Port McNeill is relatively remote compared to the southern end of Vancouver Island and many services are not as readily available as in more populous areas. Other than the portion of town facing the ocean, the developed area is surrounded by and expanding into a forest ecosystem where periodic wildfire is a component. Wildfires have impacted the Town in the past, and have the potential to do so in the future.

Climate change modelling indicates the most likely effect on Port McNeill region weather will be longer and/ or more frequent periods of fire-conducive weather during the summer which will correlate to an increase in the frequency and intensity of wildfire in the region over time.

The CWPP planning process will provide the community with a detailed framework to inform the implementation of recommendations that will result in reduced likelihood of a wildfire entering the community. As a result, residents will experience reduced impacts and losses to property and critical infrastructure, and reduced negative economic and social impacts to the community.

1.2 CWPP Planning Process

Strategic Natural Resource Consultants Inc. (SNRC) was retained to undertake the development of this CWPP, with in-kind support from the Town of Port McNeill. There are several key stakeholders identified by the Town of Port McNeill and SNRC. Internal stakeholders included the Port McNeill Volunteer Fire Department (PMVFD), the BC Wildfire Service - North Island/ Mid-Coast Fire Zone, planners, bylaw staff and GIS analysts.

Communication through face-to-face meetings, phone calls, emails and questionnaires occurred throughout the CWPP process to identify values at risk, critical infrastructure, wildland urban interface (WUI) areas, and gaps in the Town of Port McNeill's ability to attend to a wildfire. Information sharing occurred between the Town of Port McNeill, as well as BC Wildfire Service (BCWS) personnel. SNRC reviewed critical items such as wildfire response capacity, emergency plans, watershed plans, management plans, regional growth strategies, official community plans, comprehensive community plans, bylaws, adjacent/ previous CWPPs and spatial data. Historical wildfire information and risk (or, "problem areas") were obtained from the Port McNeill Volunteer Fire Department and Hyde Creek Volunteer Fire Department, Private Managed Forest Land (PMFL) landowners and local BCWS personnel. Provincial Strategic Threat Analysis (PSTA) data was obtained by the Town of Port McNeill through the Union of British Columbia Municipalities (UBCM) and BCWS Staff. Local Wildfire Threat Analysis was performed using the methodologies described in Section 4.

Structure data was received from the Town of Port McNeill and updated using ortho-imagery to verify structure. This data was used to update the wildland urban interface (WUI) boundary.

Risk mitigation strategies, community engagement and education strategies have been determined through a thorough review of all of the above information and numerous discussions with various stakeholders. These can be found in Sections 5 and 6.



SECTION 2: Local Area Description

2.1 CWPP Area of Interest

The Area of Interest (AOI) for this CWPP captures the areas within the Town of Port McNeill municipal boundary that meet and exceed a minimum structure density of six structures per square kilometer. SNRC has created a two-kilometer buffer around this structure density boundary to fully envelop vegetated areas that may be affected by spot fires and indirect ignition. Once a wildfire approaches within two kilometers of a structure, the probability of structural ignitions increases sharply from the ember shower being cast by the fire.

The Town of Port McNeill is located within the Mount Waddington Regional District on the East Coast of Vancouver Island. The 13.77 square kilometer town is considered a hub for communities of the North Island. The town is bordered by the ocean to the North, and on its other three sides by heavily wooded forest lands. Klickseewy Indian Reserve is located West of the Town centre.

Not included as part of this analysis, are privately owned lands. While it is understood that activities and characteristics of privately owned lands can influence fire incidence and behavior, making recommendations for these lands is not within the scope of this project. Unless otherwise noted, the views and recommendations of this project are limited to the aforementioned boundaries. Land ownership in the AOI can be broken down into categories as shown in Table 1.

Table 1. Port McNeill AOI Land Ownership

Owner Type	Area (ha)	Total (%)
Crown Agency	6.09	0.25
Crown Provincial	38.46	1.59
Federal	0.42	0.02
Municipal	57.08	2.36
None	741.10	30.63
Private	1571.02	64.92
Unknown	5.71	0.24
Total area of AOI	2419.89	100.00%

2.2 Community Description

The Town of Port McNeill is a small, natural resource industry-based town, north of Campbell River, and south of Port Hardy. It is an economic hub for the northern region of Vancouver Island.

2.2.1 Local Government

Port McNeill was originally incorporated as a Village in 1966, and then as a Town in 1982. It lies within the Mount Waddington Regional District. The AOI is also situated in the North Vancouver Island Natural Resource District. Council members are Mayor Gabriele Wickstrom, and councillors are Ann-Marie Baron, Shelly Downey, Derek Koel and Ryan Mitchell. Pete Nelson-Smith is Chief Administrative Officer.



2.2.2 Demographics

In 2016, approximately 2,505 people called Port McNeill home. The population has been decreasing slowly, recording a 20% decrease since 2011 (Town of Port McNeill Community Profile, 2020). The age distribution is close to the provincial average, with a median age of 40.7. 12% of residents are over 65 years of age, and 24% are under 20. The age population has been increasing since 2011. The majority of residents live in their own homes, and most residential buildings are owner-occupied, single-detached dwellings built prior to 1981.

2.2.3 First Nations

The AOI overlaps the Traditional Territory of two First Nations; 'Namgis First Nation, and Kwakiutl First Nation.

'Namgis territory encompasses the entire Nimpkish and Kokish River Watersheds on Northern Vancouver Island, as well as several adjacent islands in the vicinity of Johnstone Strait and Queen Charlotte Straights. Today, 'Namgis people are concentrated in 'Yalis (Alert Bay on Cormorant Island). There are 1,923 'Namgis Members, with 573 members living in 'Namgis territory (namgis.bc.ca, accessed January 19, 2021).

The Kwakiutl First Nation are coastal Kwakwaka'wakw people, who have inhabited the region since time immemorial. Kwakiutl First Nation governs eight reserves on 295 hectares of land, allotted through the Douglas Treaties in 1850. IR Klickseewy #7 lies just outside the Town of Port McNeill, and is home to the Cluxewe Resort and Waterfront Cottages. (Kwakiutl.bc.ca, accessed January 19, 2021)

2.2.4 Wildland Urban Interface

Wildland Urban Interface (WUI) is the area where structures (most notably private homes), meet wildland vegetation. There are three main classifications of WUI; interface, intermix and occluded. Interface is where there is a clear edge or boundary between developed lands and non-developed lands. Within the AOI, the starkest example of this is the residential community on the North side of Cardena Crescent and Woodland Drive. Intermix is where dwellings and structures are sprinkled within a vegetated area. In this AOI, there are not a lot of areas that would be considered intermix, as structures in the Town of Port McNeill are concentrated densely in the centre of town. The Port McNeill Airport is in the intermix category. Intermix structures are at a significant risk because there is substantial fuel surrounding them. This leads to an increased risk of embers and flames coming into contact with the building resulting in ignition. Finally, occluded WUI areas refer to vegetated lands imbedded in well-developed lands. In the Town of Port McNeill, the vegetated areas adjacent to the Port McNeill Hospital, and the Mount Waddington Regional District Office are classed as occluded WUI polygons.

2.2.5 Transportation, Evacuation and Egress

Highway 19 connects Port McNeill to Campbell River (approximately 200 km to the south) and to Port Hardy (46 km to the north), connected to the Town of Port McNeill via Campbell Way. Campbell Way runs from Highway 19, through Town to Beach Drive and the Port McNeill Harbour. Mine Road is another large vein for traffic, traveling from Western Forest Products to Cedar Park Resort.

East Main Road is a logging road that connects the western end of Mine Road to Highway 19. Mine Road (at its eastern end) is a one-way gravel road that travels through private land and is the only access for the Cedar Park Resort located at the end of the road (small RV campground and golf course) as well as a number of properties that dot the shoreline.

Another non-paved evacuation road is SW Main Road going south to Highway 19 off of Mine Road. This is a fairly well-maintained logging road, which is used by Western Forest Products, and is not blocked by gate access. Following Broughton Boulevard to the West along the waterfront, leads onto West Main



logging road, which connects to Hwy 19 via Rupert Main Logging Road or SW Main Logging Road. Rupert Main is fairly well-maintained logging road, which is used by WFP and is not gated.

Regular BC Ferry service as well as private water taxi services provide access to Alert Bay (Cormorant Island) and Sointula (Malcom Island). Local flights out of the Port Hardy Airport (36 km from the Town of Port McNeill) to Vancouver and Bella Bella are offered.

2.2.6 Critical Infrastructure

Critical infrastructure are structures, systems, facilities, technologies and services essential to the wellbeing of a community. In the frame of wildfire management and preparation, these structures are vital to ensuring the safety of the community, ability to action a fire, and a community's ability to respond and rebound from a major wildfire event. For a listing of critical infrastructure in the Town of Port McNeill, please refer to Table 3 in Section 3.2 below

2.2.7 Economic Drivers

The Town of Port McNeill's economy is largely driven by the natural resource industry (approximately 26%), where forestry and forestry related jobs represent the majority. Other traditional resource industries like fishing and aquaculture play a significant role in the economy of the North Island. Additionally, there is a major gravel production facility (Orca Sand and Gravel) that employs many residents of Port McNeill. Retail trade (13%), construction (8%), health care and social assistance (8%) and accommodation and food services (8%) are the next largest classifications of workers in Port McNeill. While still the largest economic resource in the Town of Port McNeill, there has been a decrease in the forestry industry since 2001, partly resulting in a shift from a younger population with young children, to an older population of retirees and in need of different services.

2.2.8 Municipal Fire jurisdictions

There are two municipal fire departments within the AOI; Port McNeill Volunteer Fire Department (PMVFD), located within Port McNeill town limits, and Hyde Creek Volunteer Fire Department (HCVFD), located within the subdivision of Hyde Creek, east of the Town of Port McNeill.

The vast majority of the call outs for both departments are motor vehicle accidents and structural fires. The response areas of both departments contain significant wildland fuels. In the past wildfires have occurred within the response areas for both departments. The PMVFD and HCVFD have primary responsibility for all fire suppression within the respective town boundaries, including fires that occur within or migrate to the wildland fuels within the response area. Both departments in the past have responded to wildland fire incidents. The two departments are sometimes engaged through Mutual Aid Agreements to assist BC Wildfire Service (BCWS) resources in suppressing local wildfires, (often this will be in traffic control, evacuation support, structural suppression/ triage). Interface or wildland incidents are uncommon but do occur when weather conditions create dry wildland fuel conditions.

It is beyond the scope of this report to assess the appropriateness of the municipal response capability for structural and motor vehicle incidents. That analysis is the responsibility of local government and the Office of the Fire Commissioner. However, this report does examine the response capability for wildland or WUI incidents.

2.2.9 BC Wildfire Service Jurisdiction

The Town of Port McNeill is enclosed in the Coastal Fire Centre. BCWS has several response officers and one available Initial Attack crew at North Island/ Mid-Coast Fire Zone (located in Campbell River). Additional response officers, initial attack crews and 20-person unit crews are available from the Mid Island Fire Zone – Errington Base. While resources are typically distributed to the closest need, these fire



bases are required to provide support province-wide. It is not uncommon to have distant wildfire bases service a fire anywhere in the Coastal Fire Zone.

While there is no permanent BCWS Zone office in Port McNeill, in 2020 a three-person Initial Attack crew was stationed in Port McNeill. Additionally, a cache of wildfire equipment is located at the Ministry of Forests, Lands, Natural Resource Operations and Rural Developments office on Mine Road.

2.3 Past Wildfires, Evacuations and Impacts

When humans began to populate the North American continent, they deliberately applied fire, (referred to as anthropogenic fire), to the landscape to achieve improvements in natural range productivity for food animals as well as promoting plants valued for food. Through cultural knowledge and history, First Nations understood how fire could be used to manipulate the natural environment to increase productivity.

When Europeans began to settle in North America, they too brought more anthropogenic fire to the landscape. European settlement also altered fuel composition on the landscape from clearing land for settlement, logging, agriculture. Often fire was used to dispose of organic debris resultant from land clearing. Awareness levels of the North American climate and fire's place in the ecosystem were low and many disastrous fires consumed areas full of fuels from logging and land clearing.

Various wildfires have occurred in the region, having different effects on the community, its structures and the residents' understanding of wildfire near their homes. In particular, high fire seasons in 2017 and 2018 shook many residents.

Several fires have impacted Port McNeill over the years however none appear to have caused damage to homes or other structures. Most fires in the region have been detected and actioned at a small size. Periodically there are years where the region gets less rain and lower fuel moisture conditions ensue. On these years fuel conditions facilitate fire spread and fires that can grow beyond the capability of initial attack responders. Even during fuel moisture deficit periods fires in this region rarely exceed a couple of hundred hectares. This is partially due to mountainous topography confining most fires within a drainage system.

Several fire incidents have resulted in key roads being closed or limited in use due to proximal flames or smoke drift limiting visibility and air quality. Previous fire incidents have also threatened key infrastructure such as electrical transmission lines.

Below is listing of wildfires that have impacted people in the region.

Table 2. Recent Historical Fires in the Port McNeill Region

Year	Incident	Impact
2018	Zeballos Fire	This fire was located immediately adjacent the east side of Zeballos and above on very steep terrain. The fire forced short-term evacuation of residents during peak burning activity. The fire also caused soil damage and terrain stability issues immediately above numerous residences which necessitated long term evacuation of those properties until safety could be assessed.
2018	Zeballos FSR fire	Caused temporary closures and restricted use of Zeballos FSR which services a large territory including Zeballos, Ocluje, Fair Harbour, Kyuquot, Ehattesaht as well as significant commercial tourism,



Year	Incident	Impact
		aquaculture and forestry operations. This wildfire also damaged felled and decked timber, as well as standing timber.
2017	Nimpkish/ Port Alice Fire	Temporary highway closure. Wildfire and suppression operations were adjacent on both sides of the Port Alice Road.
2015	Port Hardy fire	Town of Port Hardy put on evacuation alert from an out of control wildfire adjacent to the west side of the community. This fire was extremely close to structures, but none were ignited.
2009	North Island lightning fires	Evacuation of Vernon Lake logging camp and threatened the camp. Several large fires occurred throughout the north island. One of these fires threatened a major electrical transmission line.

2.4 Current Community Engagement

The purpose of this section is to understand how the community has engaged with each other and local emergency personnel to manage the potential effects of a wildfire in their area.

2.4.1 Previous CWPPs

This is the first CWPP written for the Town of Port McNeill.

2.4.2 Local Fire Department Involvement

Port McNeill Volunteer Fire Department and the Hyde Creek Volunteer Fire Department participate in public events such as Orca Days, and regularly attend public schools to encourage structural fire safety. Students are guided through evacuation drills, and encouraged to practice basic fire safety with their families (Pers. Comm Dean Tait, Murray Estlin, 2020)

2.4.3 BCWS Community Involvement

The BCWS is involved in the community both passively and through direct outreach. It is very common to witness media campaigns by BCWS during fire season, cautioning against stray cigarettes and promoting the use of the wildfire reporting hotline (**1-800-663-5555 or *5555**). Fire hazard signs are maintained and serve as a reminder to the community that they may be experiencing high risk weather conditions.

Representatives from the North Island/Mid Coast Fire Zone often attend local public events like Orca Days, farmers' markets and parades to demonstrate equipment and guide residents to look at educational materials on fire safety and FireSmart principles. They also regularly attend schools, teaching youngsters about basic fire safety, and in higher grades, fire ecology and prevention. A FireSmart Education Box is available at the North Island/Mid Coast Fire Zone for public demonstration and on loan for FireSmart representatives.

2.4.5 Fuel Treatments

Fuel treatments are designed to reduce the likelihood of ignition, reduce the intensity of a wildfire, or to slow the progression of a wildfire down and create more defensible space for wildland firefighters (BCWS 2020 Fuel Management Prescription Guidance). Fuel treatments can include a number of activities focused on reducing the volume of fuel on the landscape, for example, clearcutting a section of forest to create a fuel break, thinning the number of trees in a given area to reduce density, prune trees to create



a greater distance between surface fuels and the most flammable part of a tree - the crown. No fuel treatments or fuel demonstrations have occurred within the AOI.

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

Port McNeill Emergency Plan, (updated 2020)

The Port McNeill Emergency Plan, (PMEP) was reviewed within the scope of community wildfire prevention. The PMEP speaks to generic protocols and actions related to the activation and staffing of the town's Emergency Operations Centre, which is physically identified within the PMEP.

The PMEP also has individual sections, broken down by specific emergency events, (Earthquake, Pandemic, etc.), and details what specific impacts the type of emergency will potentially have and what departments or response resources will action, including a section on "Wildfire/ Interface Fire".

The PMEP is more than adequate for the community and local government is exercising appropriate diligence in its emergency response planning as it pertains to community wildfire prevention. Part of this report is assessing wildfire response and EOC activation could be a part of that. The PMEP pre-planning in response to a wildfire event is appropriate for the community.

North Island Regional Emergency Plan (NIREP)

In preparation for natural disasters and community emergencies, the RDMW has prepared a responsive, emergency support and relief action plan for Winter Harbour, Holberg, Coal Harbour, Quatsino, Malcolm Island, Hyde Creek, and Woss under NIREP. This Plan is a generic approach to a large emergency or disaster response; the intent of this plan is to facilitate and coordinate response to and recovery from disaster by implementing common management strategies for both public service and private sector agencies (RDMW, 2019). NIREP includes emergency services, access points, various forms of communication, and evacuation rally sites.

A Hazard, Risk and Vulnerability Analysis (HRVA) has been completed for the entire RDMW area. The purpose of a HRVA is to help a community make risk-based choices to address vulnerabilities, mitigate hazards and prepare for response to and recovery from hazard events. Interface fires and wildfires are included in the list of hazards to which the Town of Port McNeill may be subjected to (NIREP, 2015).

Based on the wildfire concern, one of the following levels of response will be initiated (RDMW 2019):

- Level 1 - Site Response (Readiness and Routine) All ongoing routine response activities by Emergency Services Personnel (Police, Ambulance, Fire) on a daily basis,
- Level 2 - Zone ECC Response (Local Emergency) A situation confined to one location/jurisdiction that does not affect zone-wide services, population or traffic,
- Level 3 - Regional ECC Response (Regional Emergency) A situation affecting multiple-jurisdiction services, populations and geographic areas,
- Level 4 - PREOC Response, Regional ECC (Major Disaster) A region wide disaster that involves widespread damages in addition to the disruption of services. Requires a coordinated response of all-local governments, departments and outside agencies. A Regional ECC will activated to support on-scene activities. Local governments may declare a "Local State of Emergency",



- Level 5 - PECC Response (Major Disaster) A region-wide disaster that involves widespread damages in addition to disruption of services, requiring additional support and resources from Federal Government and/or other Provinces. A "Provincial Emergency Coordination Centre" will be activated and the Attorney General may declare a "State of Emergency".

2.5.2 Affiliated CWPPs

This document will serve as the first CWPP held by the Town of Port McNeill. The Town of Port McNeill currently abides by recommendations and guidance and direction from BCWS, local Fire Departments, , and the Wildfire Act and Regulations.

Throughout the region, CWPPs are being recognized as an important tool for wildfire prevention and management. Many are currently in place, and were reviewed as part of the research for this CWPP. CWPPs funded through the Community Resiliency Investment (CRI) Program can be found on the Union of British Columbia Municipalities (UBCM) Website.

CWPP's serve as a relatively consistent baseline analysis of a community's actual threat from wildfire. BCWS has provided a standardized template for CWPP content, allowing more accurate comparison/ ranking of wildfire risk to communities across various regions. This enables more science-based allocation of finite financial support to expensive fuel modification treatments that often flow from CWPP recommendations.

2.5.3 Local Government and First Nation Plans and Policies

Official Community Plan

The Town of Port McNeill is developing a new Official Community Plan(OCP) (Pers. Comm. Pete Nelson-Smith, 2020). The existing OCP has with no mention of wildfire. Specific efforts have been made to ensure wildfire safety, and wildfire development permit areas will be considered in the upcoming OCP (Pers. Comm. Kevin Brooks, 2020). Wildfire development permit areas are zones slated for development that have a significant wildfire risk, or are in the wildland urban interface (WUI). Each permit is unique, however any development permit applications must have a qualified professional conduct a site visit to assess wildfire risk, and any mitigation tactics that should be included in the future development.

Bylaws

The Town of Port McNeill has several bylaws pertaining to the rights and responsibilities of the local fire departments, as well as the responsibilities of the town in Emergency Management. These bylaws identify a variety of powers and obligations, including (but not limited to):

- The power of the fire chief to enter a private property,
- The power of the fire chief to exercise powers of the fire commissioner,
- The power of the fire chief to order inspections of chimneys, fire places and fuel storage,
- The power of the fire chief to enforce actions of the fire department to prevent, any hazard or risk to human life and safety
- The requirements and obligations of the Town of Port McNeill to initiate the Emergency Plan
- The obligations of the Emergency Operations Center Coordinator

A review of the Volunteer Fire Department Bylaw and the Emergency Plan Bylaw was conducted to assess for coverage of wildfire-related issues. The bylaws confer sufficient authority on the Fire Chief to deal with operational issues related wildfire and wildfire hazards, such as gaining access to areas/ buildings, securing areas in an emergency, conscription of equipment and resources for fire suppression. For a complete listing of bylaws reviewed, please see Appendix 4.



2.5.4 Higher Level Plans and Relevant Legislation

The Vancouver Island Land Use Plan is established by Higher Level Plan Order. It incorporates Vancouver Island's settled land, food production, and natural resource industries (forestry, mining and energy) to establish the island's strategic direction and land use designations (Province of BC 2019).

Crown Lands are subject to the Forest and Ranges Practices Act (FRPA) and Forest Planning and Practices Regulation (FPPR), as well as the Wildfire Act and Regulations, and the Open Burning Smoke Control Regulations (OBSCR).

FPPR includes sections regarding the removal of Crown timber to protect a community from wildfire (Section 4.01(b)), and the restriction of road access to protect a community from wildfire (Section 79.3(1)) (Province of BC, 2004).

The Wildfire Act and Wildfire Regulation define the legal responsibilities and obligations to which everyone in British Columbia is subject with respect to wildfire. When the BC Wildfire Service places bans or restrictions in an area, the Wildfire Act and Regulation makes them enforceable. As such everyone in B.C. is expected to understand and abide by the Wildfire Act and Regulation. The Wildfire act also authorizes a variety of sanctions and enforcement actions that are used to compel safe and responsible fire use as well as fines and monetary penalties intended to curb poor behaviour and recover losses incurred by government or individuals as a result of fire impacts or fire suppression costs. Its key goal is to specify responsibilities and obligations on fire use, wildfire prevention, wildfire control, and rehabilitation (Province of BC, 2019).

The OBSCR governs the burning of vegetative material associated with a range of activities, such as land clearing, forestry operations and agriculture. It sets out the conditions under which open burning of vegetative debris can be authorized. The revised regulation mainly supports the objectives of reducing impacts on human health, enabling and encouraging compliance, and minimizing undue costs to industry. The regulation does not generally prohibit burning but rather aims to ensure that open burning is conducted with minimal risk to air quality. While facilitating some necessary open burning practices, the new regulation also maintains air protection measures and alternatives to burning are strongly encouraged (Province of BC, 2019).

2.5.5 Ministry or Industry Plans

Ministry Plans

Devastation from flood and fires in 2017 and 2018 lead to the creation of the *Government's Action Plan: Responding to Wildfire and Flood Risks* (2019). The goal of this document was to highlight the successes and room for improvement in the current emergency management procedures, and to make recommendations to improve procedures in the future.

- Actions to prepare for climate change,
- Engaging in partnerships with individuals, local authorities, the Provincial Government, First Nations, allied agencies, non-governmental organizations and industry,
- Actions must take a holistic view and balance multiple values; environmental, economic, cultural and risk mitigation.

Industry Plans

Industry plans for wildfire mitigation are in place for privately owned land surrounding the Town of Port McNeill. These plans are often comprehensive, and combine fuel management with resource management and environmental stewardship. While comprehensive, industry plans are typically proprietary information, and are not shared with the public.



SECTION 3: Values at Risk

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

3.1 Human Life and Safety

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 either the fire itself, vehicle congestion leading away from a fire, or firefighting operations. Understanding population density and regularly updating WUI information is critical to preserving a community's safety. It is also important to identify locations that can act as temporary shelters such as schools and community centres.

Layout of the Town

The Town of Port McNeill is a Coastal community. Industrial and commercial activities are generally concentrated in the town centre close to the shoreline. Homes and residences radiate out from the town centre, with the farthest homes located within the WUI. Several industrial operations and offices are located in the WUI, namely Orca Sand and Gravel, Western Forest Products office and Lemare Lake Logging offices. Structures within the WUI are at the greatest risk of being damaged by a wildfire. These locations will be the first requiring evacuation in the event of a wildfire.

Recreation

The Town of Port McNeill is well known to have an active outdoor community. Forested areas around the Town are well vegetated and have abundant trail networks for hiking, mountain biking and dirt biking. While some of these trails are well identified and regulated, there are many that don't receive regular traffic, patrolling or monitoring, thus leading to a higher risk of unregulated fire use. Additionally, these trails are not evaluated for their evacuation capacity.

High Risk Activities

High risk activities are defined as actions on the landscape that have an elevated risk of igniting a wildfire. High risk activities include:

- Pile burning,
- Large equipment operation,
- Chainsaw and brush saw use for trail maintenance and falling,
- Campfires/ beach fires,
- Open residential debris burning within and outside the AOI.

All of these activities occur regularly within and outside the AOI. Industrial and commercial high-risk activities have strict rules and guidelines that operators must follow, however when carried out on private land, residences, or without proper permitting, these activities pose an even more significant risk to wildfire ignition. Education and enforcement of the public is often the most effective way to reduce illicit and unregulated high-risk activities.

Difficult to Evacuate Locations

One-way streets are often desirable to potential homeowners as they are quieter, receive less traffic, and are more private. Unfortunately, one-way access limits options for evacuation in emergency events. In this CWPP, difficult to evacuate locations were identified based on a number of factors:

- Is the location within the WUI?



- What forest fuels are surrounding the egress route?
- How far is the nearest cross street from the dead-end of the road?
- How close is the nearest fire truck turnaround?
- Is access blocked by gates?
- What values is this route providing access to.

The Town of Port McNeill has several cul-de-sacs and short dead-end streets. While not specifically mentioned in this CWPP, these single access routes can be cut off and evacuation slowed. It is important for the Town of Port McNeill to continually identify these locations, document them, and expand activities such as FireSmart education.

Cardena Crescent is a one-way street that is Bordered on one side by vegetation. This is an example of a difficult to evacuate location. Additionally, recreations sites with one-way access are also difficult to evacuate, for example recreation at Ledge Point. Only one road provides access to beach sites and trails throughout ledge point, and if blocked by a wildfire event, make it difficult for recreators to leave.

Broughton Strait Campsite (owned by Mosaic Forest Management, operated by the Town of Port McNeill) located on Broughton Boulevard is surrounded by vegetated lands. There is one short access road that connects to Broughton Boulevard. There is connector to Mine Road to the North, however, this path is surrounded by forest and gated at the campground. At this point, it is not in driveable conditions for emergency vehicles and would only allow access by foot or quad.

Mine Road extends from one end of Town to the other, terminating at its eastern-most point at Cedar Park Resort. Mine Road is almost entirely surrounded by wildland fuels, and is largely a one-way evacuation route for any properties, residences or people recreating on the landscape east of Woodland Drive.

3.2 Critical Infrastructure

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

Critical infrastructure are assets owned by the provincial government, local government, public institution (such as health authority or school district), First Nation or Treaty First Nation that are essential to the health, safety security or economic well-being of the community. Table 3 lists critical infrastructure in the Town of Port McNeill.

Table 3. Critical Infrastructure in the Town of Port McNeill

Category	Structure
Medical Services	<ul style="list-style-type: none"> - Port McNeill Hospital, - Port McNeill Medical Clinic, - BC Ambulance Service.
Evacuation routes and services	<ul style="list-style-type: none"> - Hwy 19, Campbell Way, Mine Road, - Ferry to and from Cormorant Island and Malcom Island, - Port McNeill Harbour, - Port McNeill Airport, - West Coast Helicopters, - Grizzly Helicopters.
Local Fire Department and Equipment locations	<ul style="list-style-type: none"> - Port McNeill Volunteer Fire Department,



Category	Structure
	<ul style="list-style-type: none"> - Town of Port McNeill Public Works Yard, - Western Forest Products, - Lemare Lake Logging, - Orca Sand and Gravel.
Police	<ul style="list-style-type: none"> - RCMP Station.
Sewer, Water, Electricity	<ul style="list-style-type: none"> - BC Hydro Power Transmission Lines, - Communication Towers, - Electrical Transfer Station, - Sewage treatment plant, - Drinking water well sites.
Others	<ul style="list-style-type: none"> - North Island Secondary School (designated Muster Area)

3.2.1 Electrical Power

Electrical power is distributed from Gold River, traveling through distribution and transmission lines overhead along the Gold River Highway and through vegetated forest lands. BC Hydro is responsible for managing and maintaining these lines. An electrical substation lies along the highway to Port Hardy, approximately 1km out of Port McNeill. At this time, the Town of Port McNeill has backup generators for most vital works, including drinking water and also generated electrical power to the public works yard (approximately 48 hours of power available without re-fuel). The Port McNeill Hospital has back-up generators sufficient to support any outages.

3.2.2 Communications, Pipelines and Publicly Owned Buildings

Port McNeill Hospital is located at 2750 Kingcome Place. It serves Port McNeill, Woss, Alert Bay and residents of Sointula. It is located adjacent to an approximately 0.7ha forested strip, and less than 200 meters away from private managed forested lands. In addition to direct risk from ember shower and potential ignition hazards, smoke drift from fires anywhere in the AOI could limit the usability of the hospital's helipad and affect ventilation. The Port McNeill Medical Clinic is located at 2161 McNeill Road. While not directly adjacent to forested areas, this location may still be affected by smoke drift and ventilation issues.

The Town of Port McNeill public works yard is located at 681 Tower Street. The public works yard has a backup 104 kW emergency generator that can power the yard's operations for approximately 48 hours. The yard provides storage for and access to tools and equipment that would be valuable to wildfire suppression efforts, in addition to equipment that will be vital in repairs and restoration of public works following a wildfire event. The public works yard is currently located adjacent to a heavily vegetated area and is located within the WUI.

Fibre optic internet line runs along Highway 19A that services the entire North Island. The cable runs both above and below ground throughout the Town of Port McNeill. In the event of a wildfire, damage to this cable could sever critical communication and information delivery methods between EOC members as well as the public.

Numerous cellular network towers exist throughout the Town of Port McNeill. Many of these towers exist in the heavily developed part of town, and are not significantly exposed to wildfire risk. However, approximately eight towers are located within the WUI boundary (ertyu.org, accessed December 6, 2020)



In the event of a wildfire, seamless cellular service is a benefit to both emergency response members to converse with each other, as well as ensuring the public can be informed of dangers, evacuation notices etc. through their mobile devices.

3.2.3 Water and Sewage Infrastructure

Water for the town is pumped from three aquifer fed wells in the area. To date, there have been no significant shortages in drinking water from these sources (Pers. Comm Julian Allen 2020). Each well site has backup electrical power in the event of an outage. Each well also has an associate reservoir, allowing for supplementary storage of water in times when greater need is anticipated. Two well sites are located outside of town, while one is located within the town limits. The two well sites out of town are surrounded by vegetated woodlands, and therefore are at a greater risk of being affected by wildfire.

The Town of Port McNeill recently completed Phase 7 of their watermain replacement project. There are approximately 120 fire hydrants within the town boundary that are hooked up to this system (Pers. Comm. Julian Allen, 2020).

Sewage treatment plant is gravity fed, with the sewage treatment plant just outside of town, surrounded by vegetated forest. Effluent is treated at the plant, and then pumped into the ocean via three lift stations located on the beach. In the event of an emergency, or issue at the treatment plant, sewage can be diverted directly into the ocean as a last resort.

3.3 High Environmental and Cultural Values

It is important for communities to understand the implications of fire on environmental and cultural values. Environmental and cultural values can be considered valuable resources for the economy; drinking water as an environmental resource, cultural values as tourist locations, and access to trails and parks as recreational areas.

3.3.1 Drinking Water Supply Area and Community Watersheds

There are no community watersheds located within the AOI. Per iMapBC (accessed Nov 18, 2020), the closest community watershed is Port Hardy. Should a community watershed be designated in this region, care should be taken to assess the considerable effects a wildfire may have on the area.

Drinking water supply is aquifer fed from three wells located about town. To date there have been no significant shortage or supply issues from these wells. See Section 3.2.3 for further details on water supply in the Town of Port McNeill.

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 place of “historical, cultural or archaeological significance to British Columbia, a community or an aboriginal people” (Archer, CRM 2009). 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 and Rural Development 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 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.

Various stakeholders were invited to provide knowledge of local culturally significant areas. The list below describes some important, publicly well-known cultural features in the Town of Port McNeill;

- The World's Largest Burl, located outside the Community Hall,
- WFP Burl, located adjacent to the Western Forest Products office off Hwy 19,
- Port McNeill and District Museum,
- Port McNeill Steam Donkey.

Aside from these well known culturally significant sites, further knowledge from stakeholders was not provided. However, local authorities who may need to respond to emergencies near these sites will have access to the information as needed.

3.3.3 High Environmental Values

The Port McNeill AOI is located in the Coastal Western Hemlock biogeoclimatic zone, in the submontane very wet maritime variant (CWHvm1). Predominant tree species are Western hemlock, Western red cedar and Amabilis fir. Surrounding forests are a mix of different age classes and support a variety of animal and plant species. Continuous forested areas on Ledge Point and Lady Ellen Point located across the Bay from Port McNeill also offer habitat for shore-line dependent animal and plant species. Within the Bay many bird species can be observed during low tide.

As per the Conservation Data Centre, in 2005 two adult Northern Red-legged Frogs (*Rana aurora*) have been identified along logging roads about 2km south of Highway 19 south of Port McNeill. Northern Red-legged Frogs are blue-listed within BC.

The Misty Lake Ecological Reserve is located well outside the AOI to the West. It contains the Misty Lake "Lake" Stickleback (*Gasterosteus sp. 18*) which is red-listed in BC. Misty-Lake "Stream" Stickleback (*Gasterosteus sp. 19*) are found in the inlet stream which extends to just outside the AOI. These Sticklebacks are endemic to the Misty Lake Reserve and are red-listed in BC. The Conservation Status Report states that the degree of threats to the population is very high and threats include changes in water quality and hydrological changes from nearby logging. Therefore, a wildfire disturbing its surrounding forest, could possibly affect this population.

As per iMap BC, there are no Ungulate Winter Ranges, Wildlife Habitat Areas or Wildlife Habitat Features within or immediately adjacent the AOI.

3.4 Other Resource Values

The town of Port McNeill is well known for its access to outdoor recreation. Residents are often avid outdoorspeople, taking to bike trails, back roads, hiking trails and fishing holes. In the event of a wildfire, access and egress to and from outdoor recreation sites may be threatened or blocked. Fires can destroy these sought-after values, which means residents must be aware of the risks of accessing recreation sites during high fire weather times.

3.5 Hazardous Values

The intent of this sub-section is to identify hazardous values that pose a safety hazard to emergency responders. Hazardous values within the Town of Port McNeill include:

- Superior Propane Storage,
- Fuel Storage at the Port McNeill Airport,
- Fuel Storage at the Town of Port McNeill Public Works yard,



- CAB Auto parts Fuel Storage,
- Petro Canada and Shell Gas Stations,
- North Island Marina fuel station,
- Non- identified fuel and explosive storage.

This is not an exhaustive list of hazardous values. It is commonplace for industry-based companies to have secure fuel storage for small equipment fuel, marine fuel and vehicle fuel. Industrial operators must conform to WHMIS/GHS requirements. It is under the jurisdiction of the local fire department to ensure that commercial fuel storage adheres to these regulations and local codes. Residents and municipal personnel should always be aware of potential hazardous values, and ensure that these values are properly contained and protected. There are no commercial gas lines running through the Town of Port McNeill.

SECTION 4: Wildfire Threat and Risk

The intent of this section is to summarize the factors that help determine the wildfire risk around the community. These factors include natural fire regime and ecology, Provincial Strategic Threat Analysis, and a local wildfire risk analysis.

A risk-based framework considers the likelihood of an unwanted wildfire event and the consequences to communities and high value resources and assets as the measure of risk, as follows:

- Likelihood is the probability of the unwanted wildfire event occurring,
- Consequence is the amount of damage occurring as a result,
- Risk is measured as the product of likelihood and consequence, but multiple inputs are also required in order to effectively quantify risk, including severity, value type and vulnerability.

Through the identification of risk level, priorities for mitigation as well as opportunities for increasing community resiliency are both enhanced.

4.1 Fire Regime, Fire Weather 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.

Natural fires are almost exclusively ignited by atmospheric lightning. Since the end of the last continental glaciation, natural fires have repeatedly burned and re-burned over the landscape. The size and severity of these fires is dictated by the weather conditions existing when the fire is ignited and how long weather conditions lasted to support combustion. In many areas these fires are the main disturbance agent or renewal agent within the ecosystem.

The majority of natural ecosystems in British Columbia have evolved with re-occurring fire from natural causes as a normal natural disturbance agent. Fire and other natural disturbances, such as severe weather or natural forest pathogens, are agents of renewal and change in the seral stage development of ecosystems.

The term “unwanted” fire is a recognition by wildfire managers that most of BC’s ecosystems have evolved with naturally-occurring fire as a normal site disturbance and is therefore “wanted”. Unwanted fires are either man-caused or naturally occurring but due to conditions might have a detrimental effect on human life or the environment.



The area around Port McNeill, although classed as a temperate rainforest, still has fire as one of the regular disturbance agents that affects the ecosystem, albeit to a lesser extent than warmer, drier regions of British Columbia.

4.1.1 Fire Regime

The Port McNeill AOI lies in the CWH vm1 Biogeoclimatic Ecosystem Classification (BEC) zone, assessed by its topography, vegetation and soils. A brief description of the zone and subzone and their Natural Disturbance Type (NDT) is found below.

Table 4. Coastal Western Hemlock, Very Moist, Sub-montane variant

BEC Zone	CWH vm1, Submontane Very Wet Maritime Variant Coastal Western Hemlock
Distribution	Low elevations on windward slopes south of Kelsey Bay on Vancouver Island and on both sides of Vancouver Island to the North
Elevation	Sea Level to 650 m
Climate	Wet, humid with cool summers and mild winters featuring relatively little snow.
Tree Cover	Western Hemlock (<i>Tsuga heterophylla</i>), Amabilis Fir (<i>Abies Amabilis</i>) and minor amounts of Western red cedar (<i>Thuja plicata</i>). Western red cedar is locally dominant on very old successional stages.
Vegetation	Red huckleberry (<i>Vaccinium parvifolium</i>), Alaskan blueberry (<i>Vaccinium ovalifolium</i>), deer fern (<i>Blechnum spicant</i>), five-leaved bramble (<i>Rubus pedatus</i>), bunch berry (<i>Cornus canadensis</i>) lanky moss (<i>Rhytidiadelphus loreus</i>) and step moss (<i>Hylocomium splendens</i>). Salal (<i>Gaultheria shallon</i>) dominant in very old successional stages dominated by Western red Cedar.

Natural Disturbance type for the CWH vm1 is NDT1, where ecosystems are subject to rare, generally small disturbances such as wind, fire and landslides events every 250 years. (Government of BC Forest Practices Code September 1995) The area encompassing the AOI has been subject to major windthrow events and should therefore be considered to fall within NDT3 (ecosystems with frequent stand-initiating events), however frequent disturbances through wildfires are not applicable to the AOI.

Old growth coniferous forests that persisted over time in the Port McNeill region have largely been replaced by even-aged, second growth conifer stands, a result of over 100 years of logging in the area. Unlike un-even aged old growth forests, these vegetated areas are much more uniform in stand and structure, resulting in a change in fire behavior.

4.1.2 Fire Weather

Wildfire season severity depends on the onset and persistence of drought conditions. Even though the Town of Port McNeill is classified as a temperate rainforest and receives abundant annual rainfall, wildfires still occur in this region.

The fire regime in any area is comprised of a combination of fuels, (vegetation), weather, (temperatures, winds, precipitation) and topography, (influences weather patterns as well as fire behaviour). The climate of the region is heavily influenced by the Pacific Ocean, which moderates local temperatures and increases ambient humidity and precipitation.



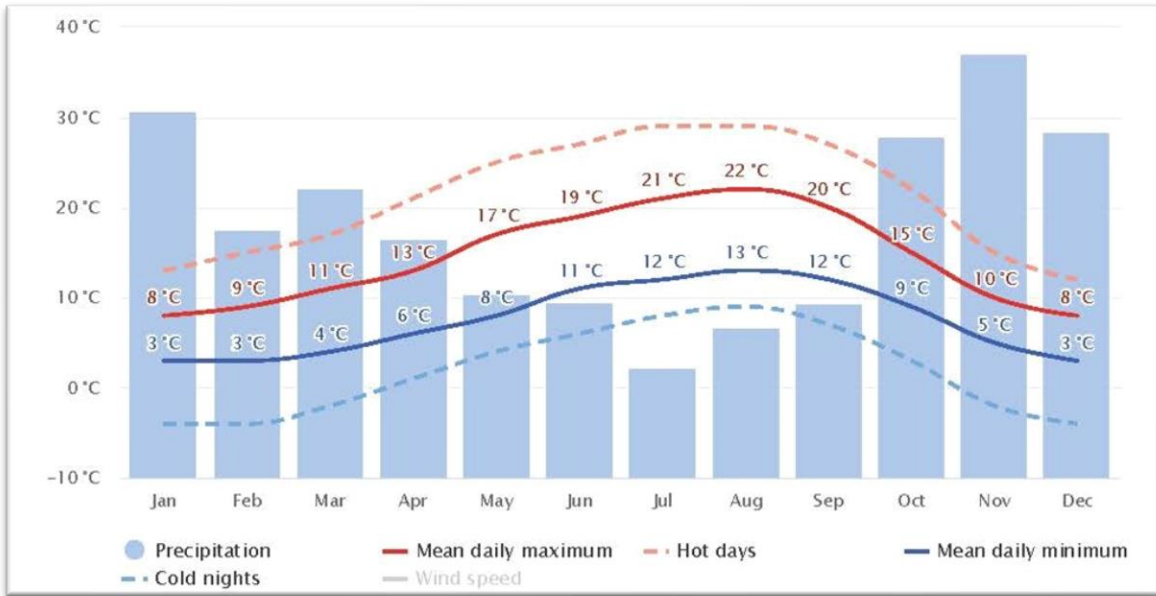


Figure 1. Monthly Weather Averages for Port McNeill

Figure 1 shows monthly weather averages for Port McNeill. Limiting Port McNeill's fire weather severity is the relatively low average summer temperature. As the graph indicates, summer temperatures average in the high teens and low twenties during the April to October traditional wildfire season. The cool temperature limits fuel drying rates as well as the development of lightning in the area.



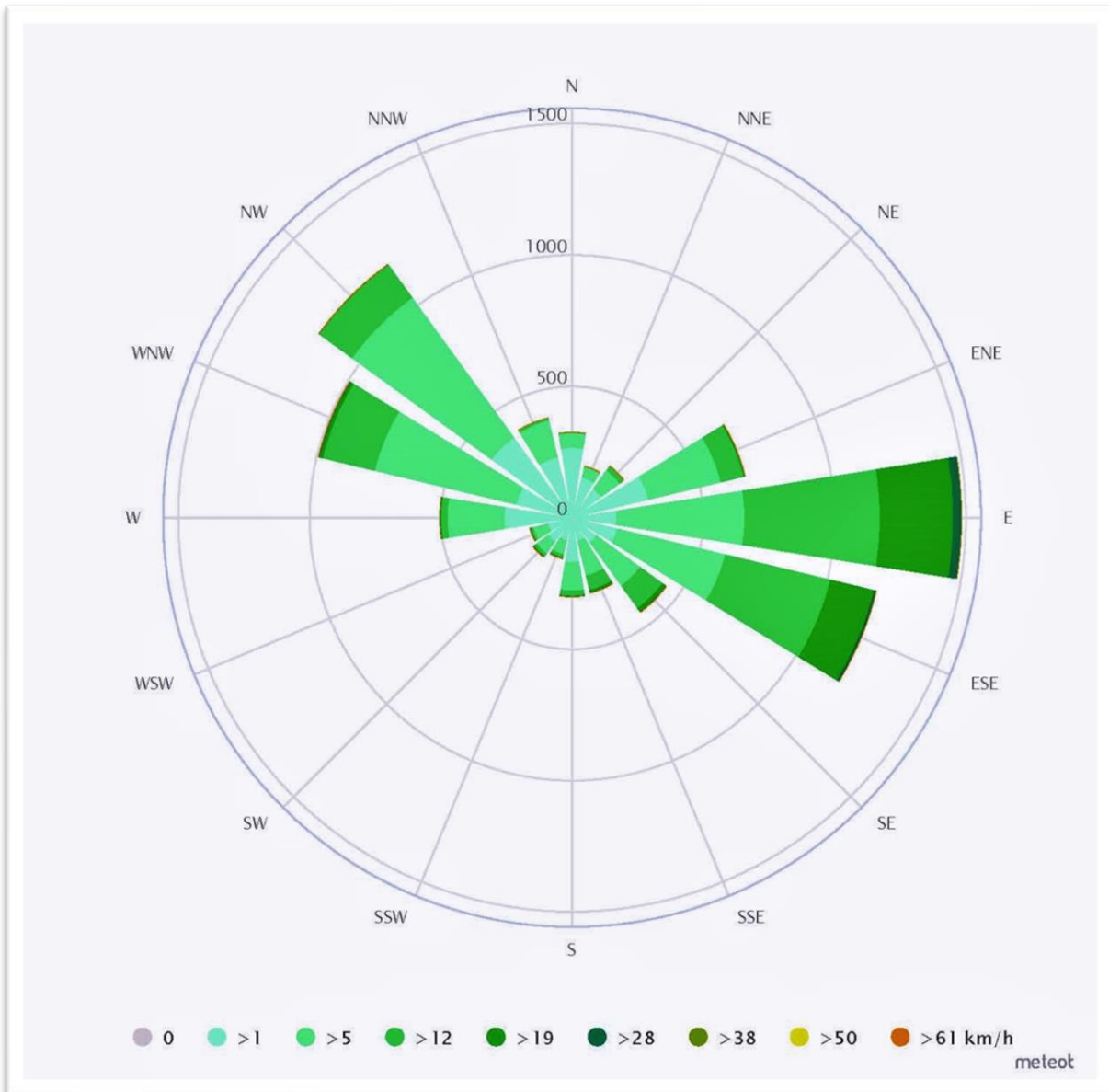


Figure 2. Port McNeill Wind Rose

Figure 2 is a wind rose for Port McNeill and illustrates the frequency that the wind blows from a given direction, as well as the frequency of the wind velocity. On a macro level, air flow past Port McNeill is channeled to mostly come from the E or the NW by mountainous topography of Vancouver Island and the Coastal Mountains. Local winds are also controlled by large air masses, (generally summer time high pressure ridges to the E and winter low pressure systems to the NW). Knowing the prevailing wind speed and direction enables us to see which direction a wind-driven wildfire in the vicinity of Port McNeill might spread. Areas where fuels are located upwind from a “value”, will be a greater risk, should those upwind fuels ignite. Winds rarely blow from the south with any frequency or magnitude. This would be a tempering factor in Port McNeill’s overall wildfire risk, as to the south of the town is a large expanse of wildland fuels.

Figures 3 and 4 detail the average monthly precipitation as well as the average number of days, by month that the station experiences Danger Class 3 or higher, as per Canadian Forest Fire Danger Rating System, from several weather stations, representative of Port McNeill. The Town of Port McNeill does not have a local weather station. Port Hardy weather station data was chosen to represent a sample location close to the ocean. Woss, Naka and Artlish data were also studied to see the difference in precipitation when sampling is done away from the ocean effect. These charts are included to demonstrate that even though the region receives significant annual precipitation, it is generally concentrated in the period outside the traditional April – October wildfire season.

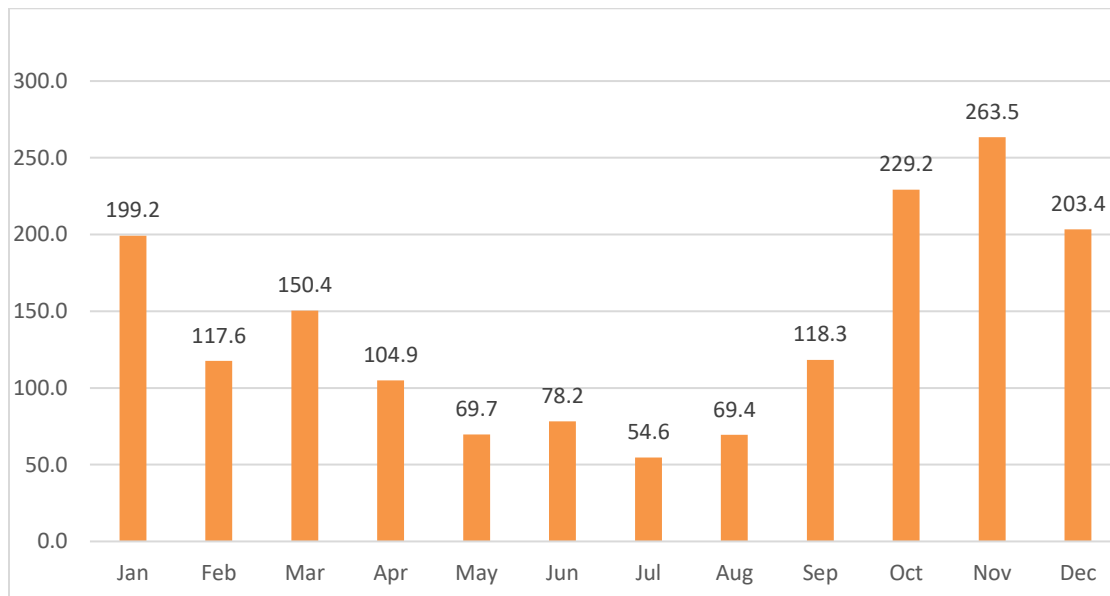


Figure 3. Average Monthly Precipitation (mm) for Port Hardy, 1980-2020

Precipitation is roughly cut in half during the April to October period, with July and August being the most likely time of fuel moisture deficits.



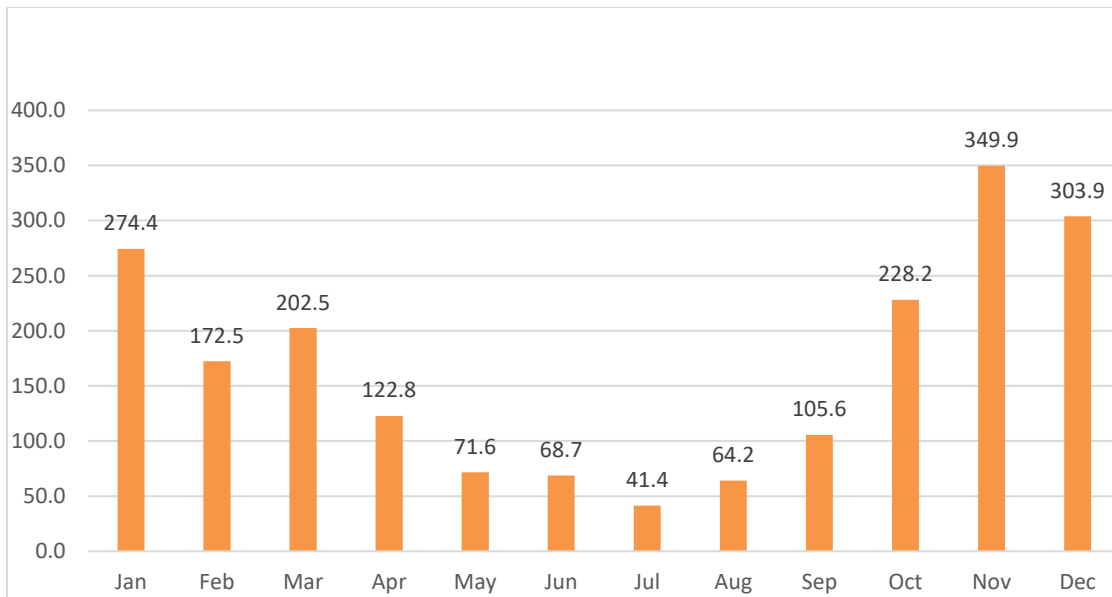


Figure 4. Average Monthly Precipitation (mm) for Woss, 1980-2020

Figure 4 indicates monthly average precipitation at the village of Woss. This data is presented to show the effect of being inland a bit, lessening the effect of the ocean. At Woss the deficit of moisture is somewhat greater than Port McNeill, resulting in more frequent fire hazard development.

Common during the summer months around Port McNeill is the development of inversions overnight in areas adjacent to the ocean. The inversions create ground-hugging fog that inundates the land as well, often lingering until 1200hrs. This sea fog condition commonly envelops most of the townsite of Port McNeill and surroundings approximately up to the elevation of Highway 19A. This fog blanket significantly reduces the solar radiation received on those days, and delays or slows the drying of fuels within these areas. However, at Port McNeill, one only has to go inland a short distance to not experience the almost daily summer sea fog. Areas immediately adjacent to the ocean will have much lower incidence of fire weather.

The following series of charts shows by month, the average number of days where the station is at Danger Class 3 or higher, (as per CFFDRS). The Fire Danger Class is calculated by measuring the daily temperature, relative humidity, wind speed and precipitation. Danger Classes start at 1, (Very Low), to 5 (Extreme). As the fire danger climbs the conditions for wildfire ignition and spread also rise. Historically most wildfires of significance occur during Danger Class 3 – 5. By analyzing how often Moderate to Extreme burning conditions occur we can infer the risk of wildfire threat. The charts also enable us to see *when* the chance of wildfire is greatest.



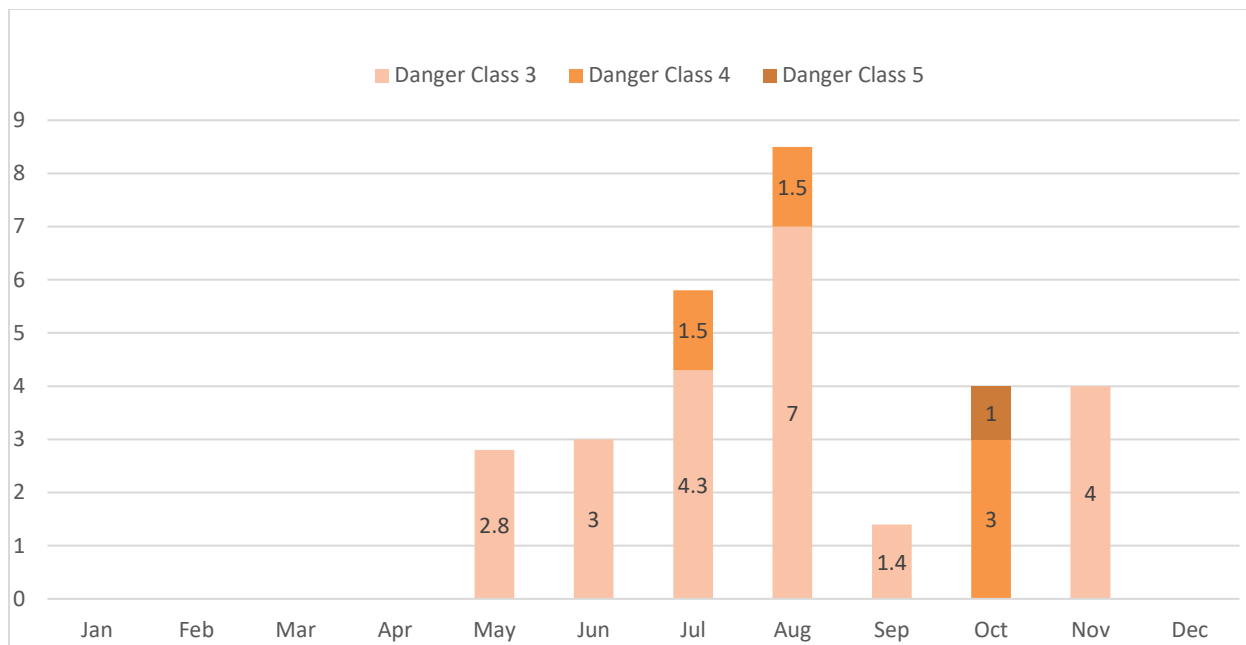


Figure 5. Average number of days at Danger Class 3, 4 and 5 in Port Hardy, 1980-2020

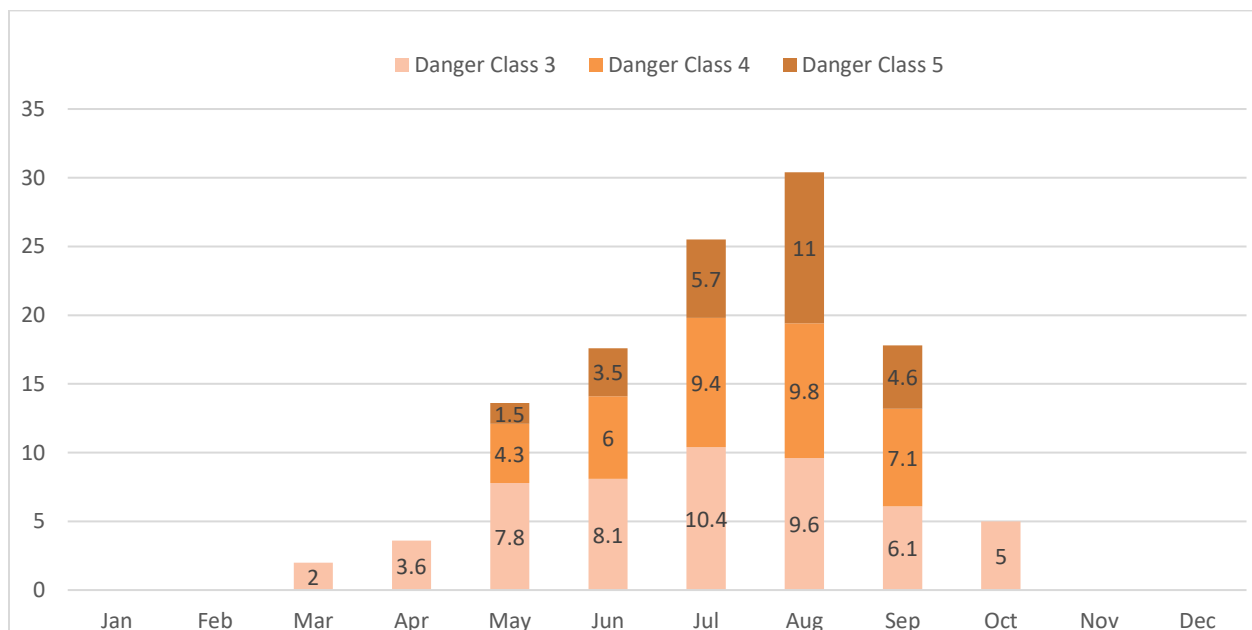


Figure 6. Average number of days at Danger Class 3, 4, and 5 in Woss, 1980-2020



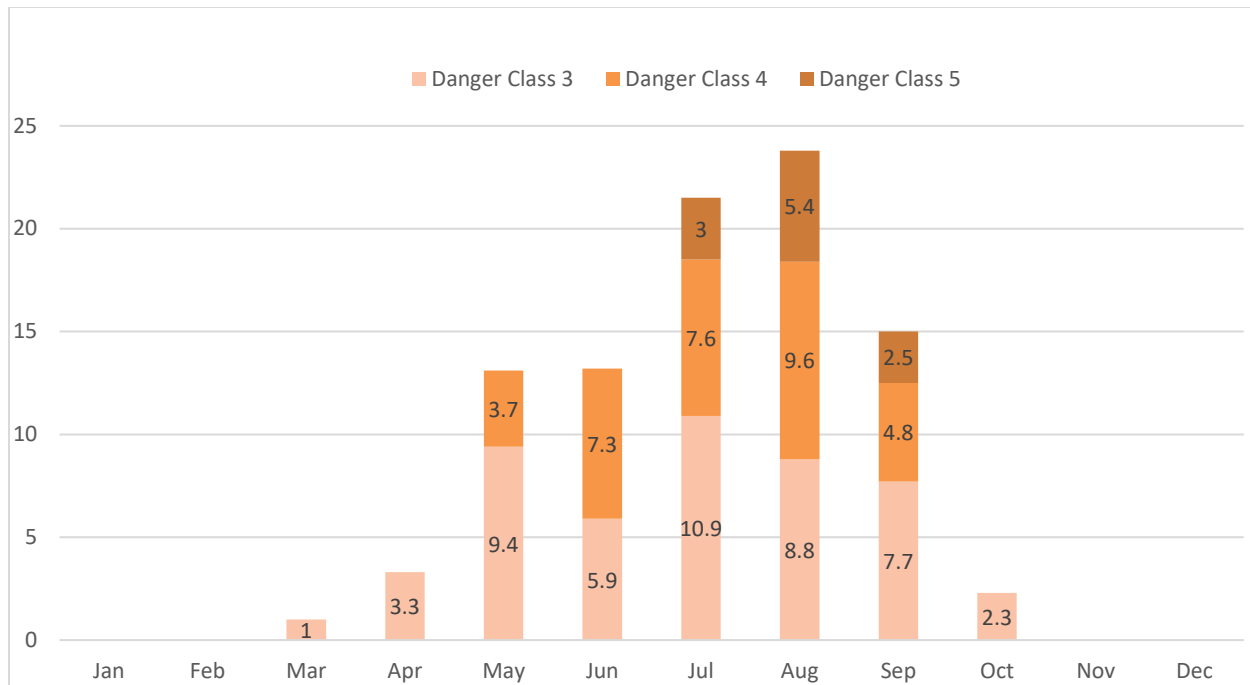


Figure 7. Average number of days at Danger Class 3, 4 and 5 at TS Naka, 2006-2020

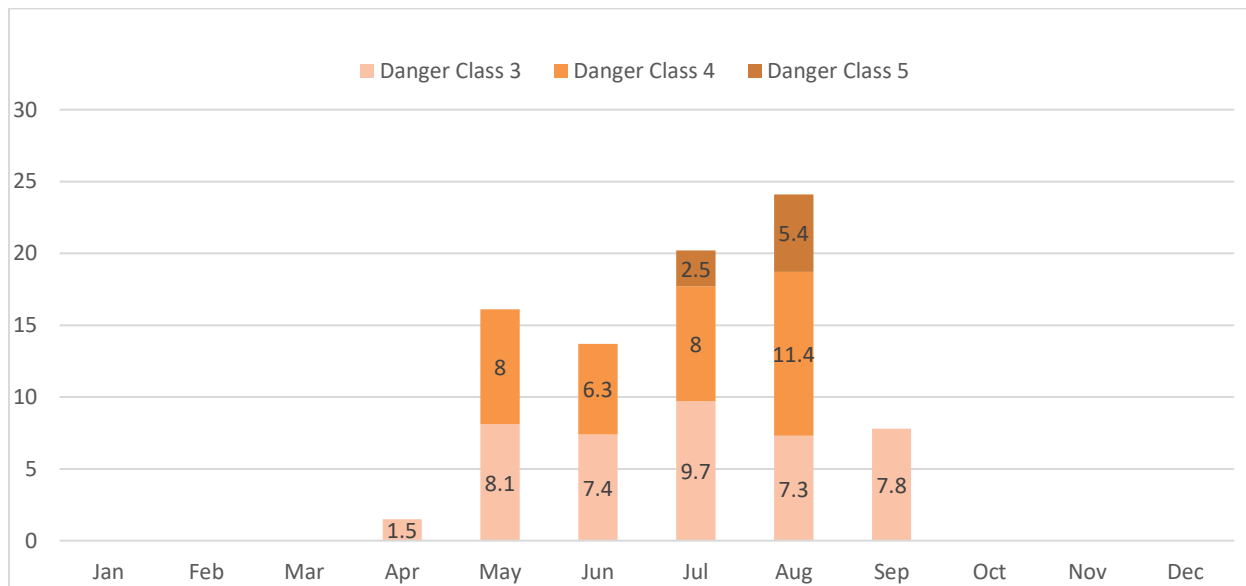


Figure 8. Average number of days at Danger Class 3, 4 and 5 at TS Artlish, 2007-2020



Table 5. Summary of average number of days at Fire Danger Class 3, 4, and 5

Station	Danger Class 3	Danger Class 4	Danger Class 5	Total
Port Hardy	22.5	6.0	1.0	29.5
Woss	53.6	36.6	26.3	115.5
TS Naka	49.3	33.0	10.9	93.2
TS Artlish	41.8	33.7	7.9	83.4

Table 5 summarizes the four weather stations selected to represent Port McNeill. What is clear from the above data is the dramatic effect the ocean has on tempering the onset of more serious burning conditions. The stations listed above that are located away from the ocean have three times more days at Danger Class 3 – 5. The difference is even more pronounced when we compare that at Danger Class 5, (Extreme), where Port Hardy has less than one tenth of the time at Extreme fire danger. The translates directly to less probability of ignition and much lower fire spread rates.

4.1.3 Climate Change

Scientists may debate the full extent of global warming and how much it is responsible for affecting the earth's climate but the world is witnessing ever more regular extremes in weather systems from typhoons and hurricanes to ecosystem destruction (desertification and disappearing glaciers). With projected increases in temperature, the BC government suggests future impacts such as more frequent and severe droughts which will result in higher risk of wildfires (Province of BC 2018). After experiencing several large-scale fire seasons, 2017 and 2018 held records for most area burned and longest provincial states of emergency. These seasons that seemingly were considered anomalies may now be expected to become the norm as BC experiences an increase in forest fire frequency, fire season longevity and numbers of high and extreme fire danger rating days each year

According to the predictive online tool Plan2Adapt (services.pacificclimate.org accessed September 6, 2020) for the Mount Waddington Region, the following changes are projected from the historical data (1961-1990) to 2010-2039

- Increase in temperature by +1.1 Deg C to +1.7 Deg C.
- Change in summer precipitation from -23% to +9.6%
- Less annual precipitation as snow by -43% to -22%

Projected from the historical data to 2040-2069

- Increase in temperature by +1.9 Deg C to +3.6 Deg C.
- Change in summer precipitation from -34% to +7.1%
- Less annual precipitation as snow by -58% to -42%

A combination of increased temperature, less precipitation and snow may result in a higher fire risk for the AOI.

The town of Port McNeill recognizes that global climate change is having a growing impact on the environment and has taken measures to address the town's role in reducing greenhouse gas emissions. In 2010, it has created a bylaw to authorize the addition of a Climate Action Charter addendum to the 1997 Official Community Plan, where the Town of Port McNeill agrees to determine emission levels, review and encourage initiatives and efficient planning to reduce emissions levels and will strive to become carbon neutral.



4.2 Provincial Strategic Threat Analysis (PSTA)

The Provincial Strategic Threat Analysis (PSTA) is a high-level analysis and is a starting point to assess the relative wildfire threat. It uses several layers of GIS data maintained by the Provincial government, including fuel types, historical fire data, historic weather data, and fire behavior information. This data is interpreted to represent wildfire threat and risk in a given area of interest. The PSTA data for this project was provided by BCWS to the Town of Port McNeill as part of the CWPP data package.

4.2.1 PSTA Final Wildfire Threat Rating

The PSTA Wildfire Threat Rating layer provided for the Town of Port McNeill was covered in over 50 percent private land, meaning PSTA layers are limited within the AOI and drawing meaningful conclusions from these data is challenging. Knowing the model uses fuel type data derived from satellite image classification, and the limitations associated with it, limited conclusions can be drawn from PSTA Final Wildfire Threat Rating. Please see Appendix 3 for further details.

4.2.2 Spotting Impact

Research shows that during a fire event within the WUI a high percentage of structure ignitions are caused by embers being transported to and igniting structures (Partners in Protection 2003). Studies of WUI incidents has also shown that once a flaming wildfire “front” is within 2km upwind of structures the volume of embers showering on the structures and the probability of ignition rises. The Spotting Impact Layer estimates the threat of embers impacting a given point on the landscape from the fuel types surrounding it.

4.2.3 Head Fire Intensity

Head Fire Intensity (HFI) represents the energy output of the flaming front of a wildfire, measured in kilowatts per meter (kW/m). It changes based on weather conditions and fuel characteristics. HFI represents potential wildfire intensity during 90th percentile fire weather and associated suppression difficulties. It directly correlates with flame length and fire spread rate and fuel consumption at the leading edge of a wildfire and has been previously correlated to wildfire suppression difficulty as well as ember shower and spotting distance. When HFI surpasses 2000 kW/m, it becomes difficult for wildfire suppression crews to conduct direct attack suppression methods.

4.2.4 Fire History

Although the location of future ignitions is impossible 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 behavior, 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 Provincial historical wildfire data attributes were provided to SNRC as part of the CWPP data package. The historical data was incomplete, however relevant information was extracted to draw conclusions where possible.

Port McNeill has a history of wildfire that have been ignited both by lightning and humans. Older incident data may not be as complete as more recent incident data. It is theorized by the author that older data may not contain a complete record of small fires or remote fires. More recent data indicates more small lightning fires as part of the historical record. The lack of small lightning fire records as we go back in time, is due these small fires being undetected, (due to lack of access or observability) or perhaps deemed of no consequence in the eyes of the data collector at the time.



In general, due to the moderate local climate, conditions to produce atmospheric lightning do not occur very often around Port McNeill. Lightning is more common inland, away from the ocean as well as at higher elevations.

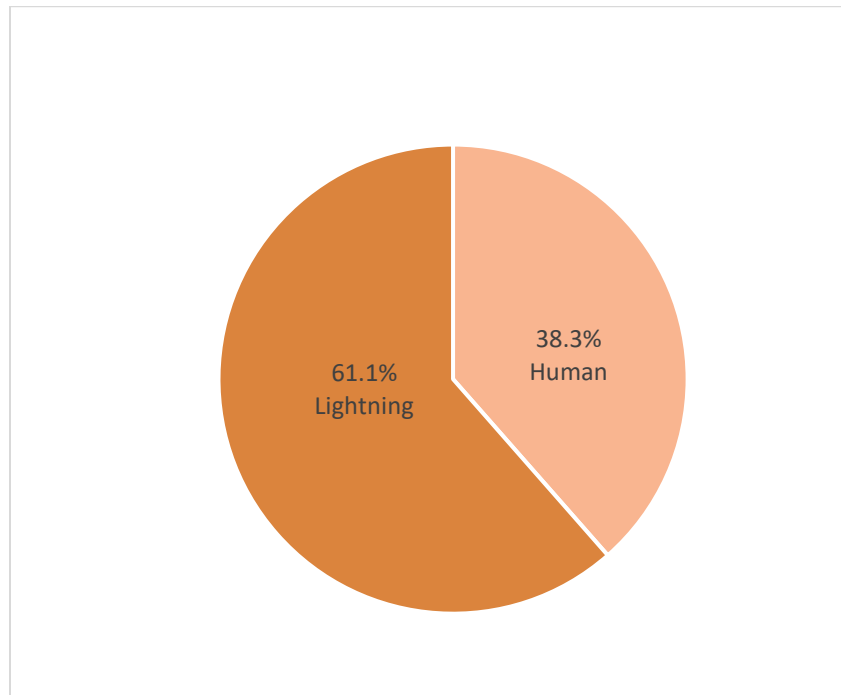


Figure 9. Provincial Average Fire Cause, 2008-2019

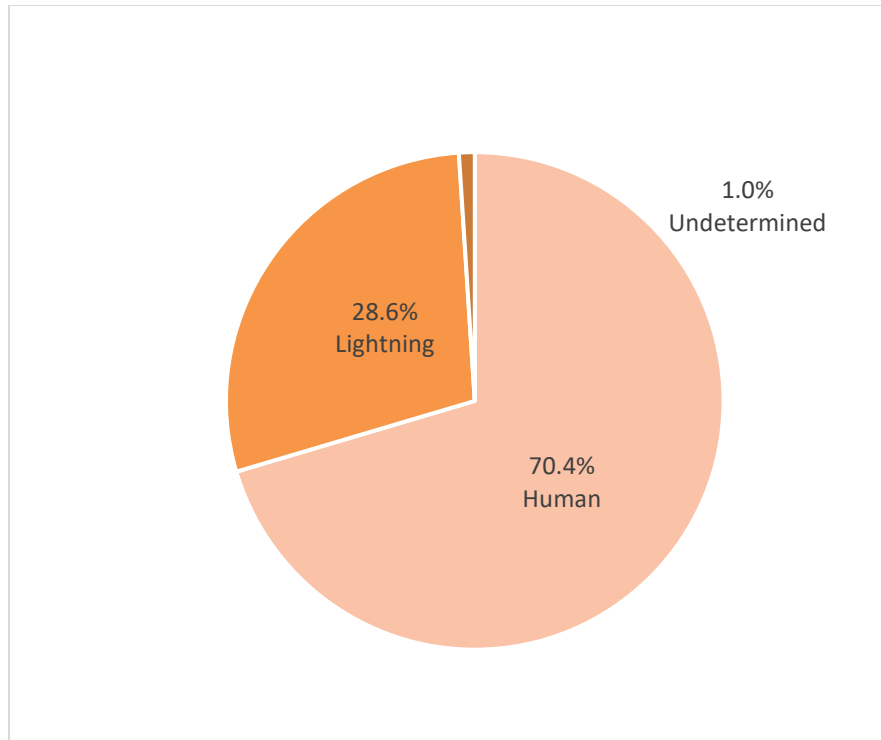


Figure 10. Fire Cause within 20 km of Port McNeill (1922-2019)

General cause of wildfires, that is lightning versus human is a standard metric used to help focus prevention activities. Practically speaking, there is little we can do to prevent the occurrence of lightning ignitions. Technically-speaking all human-caused fires are preventable. The above charts are comparing General Cause for the Province of BC and for a 20km radius around Port McNeill.

Using provincial data from 2008 – 2019, most wildfire are started by lightning, (61.1%), and 38.3% are ignited by humans. In the Port McNeill area only 28.6% are started by lightning, (due to weather), and 70.4% are started by humans. This data does not indicate that humans around Port McNeill are more careless than their counterparts in other areas of BC. It does indicate that 70% of the wildfire incidents around Port McNeill are preventable.

4.3 Local Wildfire Threat Assessment

This section explains the local wildfire threat process used for this CWPP, including field reviewed fuel characteristics, proximity of fuel to the community, local fire spread patterns, topographical considerations and local factors. The key steps necessary to complete the local wildfire threat assessment were:

1. develop a local fuel type map;
2. consider the proximity of fuel to the community;
3. consider fire spread patterns;
4. assess topography;
5. stratify the WUI based on relative wildfire threat;
6. consider other local factors.



This information is combined to create a Local Wildfire Risk Score. Figure 11 shows the variables and how they contribute to the final Local Wildfire Risk analysis.

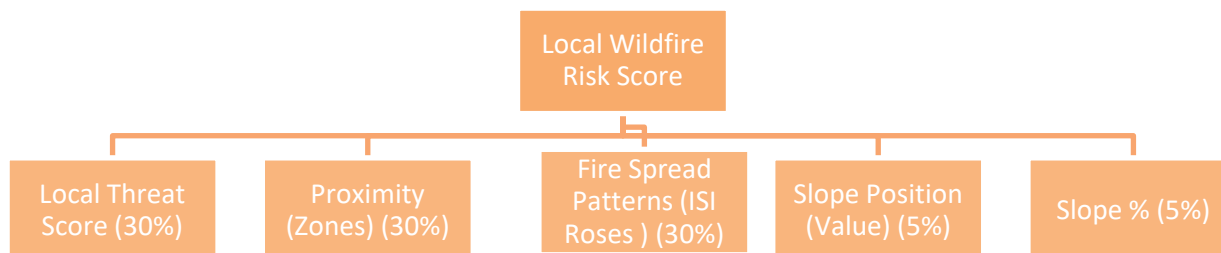


Figure 11. Variables contributing to Local Wildfire Risk Score

4.3.1 Fuel Type Verification

The accuracy of the local wildfire threat determination is directly linked to the accuracy of the fuel type information. If the fuel typing is incorrect, to the degree that the associated fire behavior is significantly different, the corresponding threat information will also be incorrect. BCWS annually produces a comprehensive fuel type layer for fire behavior prediction using the Vegetation Resources Inventory (VRI) data.

An office review of Crown land PSTA fuel types took place, using ortho-photos and local knowledge. Field verification then took place in key problematic areas. These areas were selected based on their proximity to the WUI, presence of critical infrastructure and degree of recreational use. A fuel type change methodology was submitted to BCWS. An official Fuel Type Change Rationale was later submitted and approved on January 15, 2021.

Fuel types were categorized according to The British Columbia Wildfire Fuel Typing and Fuel Type Layer Description (2018). The categories are based on their relevance to a wildfire threat assessment, and weightings were assigned for the final local wildfire risk classification.

There is a tendency for the PSTA fuel type values to over-estimate amounts of deciduous fuels which would produce a lower than actual fire risk rating. Areas that were typed as exclusively deciduous often had well over the required 25% conifer component to be classed as a mixed fuel type. It also became clear that there were many missing logged and developed areas due to the age of the PSTA data provided. For the purposes of this project, five polygons were identified as incorrectly typed. Most cases can be attributed to recently logged areas, or stands which have matured significantly since last surveyed.

4.3.2 Proximity of Fuel to the Community

Fuel closest to the community usually represents the highest hazard. The closer the fuels are to the structure, the greater the influence will be on the structure. Increased separation between combustible vegetation and the structure results in less risk of structure ignition. If fire safety was the only concern, FireSmart activities would recommend no vegetation within the 30m radius of any structure, however FireSmart vegetation management is a compromise in fire safety for aesthetic, which is generally important to home owners. The recommended approach is to treat fuels to achieve a desired level of hazard reduction, from the value or structure outward, ensuring mitigation continuity. FireSmart principles note that a 10m fuel free zone from the structure outward greatly decreases risk of ignition from convection or direct flame contact. 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 away from the structure.

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

The updated structure layer was used to generate WUI buffers by running a Point Density Analysis on structures and identifying those areas with greater than six structures per square kilometer. WUI zones were assigned a weighting for the final local wildfire risk classification.

4.3.3 Fire Spread Patterns (ISI Roses)

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

Within the Canadian Forest Fire Danger Rating System, forest fuels are stratified into three size classes; fine fuels, (pieces <0.5cm in diameter), Medium Fuels, (pieces 0.5– 7 cm in diameter) and Heavy Fuels, (pieces >7 cm in diameter), based on the increasing time required to dry the fuel piece out as it's size increases. As days pass with no rain, the fine fuels are the first stratum of fuels that will reach an “ignitable” state of fuel moisture. As such, fine fuels are used as an indicator of ignition susceptibility and fire spread potential.

The ISI is an index within the CFFDRS that is a synthesis of wind speed and the Fine Fuel Moisture Code, (FFMC). The FFMC represents a running tabulation of fuel moisture within the fine fuel stratum. The ISI is used as an indicator of the probability of fire ignition on a given day as well as fire spread. The ISI roses give us a graphic indication of which direction the wind is most likely to be coming from when the FFMC is higher. This can be used to gauge risk and prioritize hazard abatement. These ISI roses can provide users with a static look at the prevailing wind direction and wind speed for the representative wildfire weather stations. Each ISI rose shows the frequency of counts by wind direction with the frequency of the ISI values during that time period (Province of BC – BC Wildfire Service 2017). The upper limits of the ISI are based on the highest recorded ISI for the station; it should be noted that significant wildfire runs can occur in directions other than predominate spread direction (Province of BC – BC Wildfire Service 2017).

There is not currently a BCWS Weather station located in the Town of Port McNeill, therefore the closest representative weather stations were used to demonstrate the relevant ISI. The ISI roses for the selected representative weather stations show the greatest fire spread indices happen under winds from the North, Northeast or East. Areas around the Town of Port McNeill that have wildland fuels located in this geographic quadrant (North, Northeast, East) would face the greatest statistical risk of a wildfire spreading towards them (Appendix 5)

4.3.4 Topography

Slope percentage and slope position of values were both considered. Slope percentage influence a fire's trajectory and rate of spread. Slope position of the value is the uphill ability of a wildfire to gain momentum moving uphill toward a structure. Buildings and infrastructure uphill of a fire are at an elevated risk as opposed to a structure located downhill from an ignition source because, in the absence of wind, fire will travel uphill.



Slope percent class was determined in a raster analysis 50K TRIM Digital Elevation Model. Percent classes were weighted for the final wildfire risk classification. Slope position of a value was determined using TRIM 20m contours and then digitized at 1:50,000 scale to maintain a view of topography at a landscape level. Slope Position of values were classed and then weighted for the final wildfire risk classification. Table 6 below identifies the slope percent classes, and describes how each class affects wildfire spread.

Table 6. Slope Percent Class and Associated Fire Behavior 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.

The Town of Port McNeill sits along the coastline, and is generally at the bottom of a gentle slope toward the water. The slope plateaus at approximately Mine Road. This is advantageous from a wildfire perspective. Fire will typically spread upslope when there are no other factors affecting the spread direction. When a value of interest is upslope from a fuel source, there is an increased likelihood that that value will be affected by a wildfire that ignites in the downslope fuel source. In this case, fuels are upslope of the WUI boundary. Table 8 shows the classes of Slope position of values, and the associated fire behavior implications to that value.

Table 7. Slope Position of Value and Associated Fire Behavior 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.

4.3.5 Local Wildfire Threat Classification

The WUI was classified into local wildfire threat classes based on the updated fuel type map. Each fuel type has an associated threat class which identifies the threat, intensity and spotting potential associated with that type of vegetation (Table 9).



Table 8. Fuel Type Categories and Associated Threat Classification/ Spotting Impact

Fuel Type Categories	Threat Classification/ Spotting 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, M1-M2 (26-49% Conifer)	Low
4: D1, D2, M1-M2 (<26% Conifer)	Very Low

4.3.6 Local Wildfire Risk Classification

Local Wildfire Threat Classes from Section 4.3.5 were combined with proximity of fuel to the community, fire spread patterns and topography to produce the Local Wildfire Risk Score.

The wildfire risk assessment process used 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. Human fire start history (based on BCWS supplied data), high forest fire risk activities, human use, additional local factors as discussed with local Fire Chiefs and other environmental factors that affect wildfire threat and risk within different areas of the WUI were considered in the assessment process.

The table below summarizes the results of the Local Wildfire Risk Classifications for the Town of Port McNeill.

Table 9. Local Wildfire Risk Class Total Areas

Fire Risk Class	Area
No Risk	1088.9
Low	80.6
Moderate	2160.9
High	46.1
Extreme	0

4.3.7 Summary of Fire Risk Classes

Table 9 shows the Fire Risk Class associated with the final Risk score and its description. The classification of “No Risk” means that the area is either completely paved/void of vegetation, or where the water table is above the surface of organic soil. It is important to keep in mind that “No Risk” does not mean that there will never be any kind of fire in that area, and “Extreme Risk” classes don’t guarantee that a fire will happen in that location. Risk classes are a guide to identify areas and regions that will benefit most from wildfire mitigation activities.



Table 10. Wildfire Risk Classes

Fire Risk Class	Weighting	Description
Low	0 – 3.9	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.
Moderate	4 – 6.9	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 a very high crown base height, and deciduous stands with 26 – 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 per 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	7 – 8.9	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 per minute. Fuel type spot potential is likely to impact values at a long distance (400 – 1,000m).
Extreme	9+	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 per 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 behavior (long range spotting, fire whirls and other fire behavior phenomena)

SECTION 5: Risk Management and Mitigation Factors

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. The mitigation factors described below are followed by specific recommendations for the Town of Port McNeill, as highlighted in the grey boxes.

5.1 Fuel Management

Fuel management typically comes in two parts; a fuel management prescription accompanied by an operational fuel treatment. Fuel management prescription is used to assess the need for, and to prescribe an operational fuel treatment. It is a formal prescription that must be written and signed by a Qualified Professional. An operational fuel treatment is the physical removal of vegetation and fuels, with the objective of reducing the likelihood of ignition, wildfire intensity, or increasing defensible space for suppression tactics. Operational fuel treatments can take a number of forms, including:

- Prescribed burning: burning of surface fuels to reduce surface intensity and likelihood of ignition
- Pile burning: burning of piled large materials to reduce the fuel load



- Pruning: removing the branches of trees around the base to reduce the opportunity for a surface, fire to spread into the crown of the tree,
- Thinning: the removal of whole trees/stems to reduce the density of a vegetated area,
- Clearcutting – removing all vegetation in an area to create a fire break,
- Monitoring – conducting regular assessments on an area to determine if there is an increased fire risk with no removal action taking place.

Recommendation #17: Consider the following areas for Wildfire Operational Fuel Treatments:

- Port McNeill Sewage Treatment Plant,
- MFLNRORD Office,
- Port McNeill Hospital,
- Port McNeill Public Works Yard.

5.2 FireSmart Planning & Activities

The Abbott and Chapman Review (2018) made several comments and recommendations with respect to FireSmart, notably:

- “Fund and foster a revitalized FireSmart program and encourage dynamic partnerships with local and First Nations governments as well as the participation of large private landholders” (critical elements for a new and more successful approach since the *Firestorm 2003: Provincial Review*, or Filmon report);
- “Within wildland urban interface areas, mandate building code and/or development permit requirements for use of fireproof building materials and promote expanded use of sprinkler technology (critical elements for a new and more successful approach since the *Firestorm 2003: Provincial Review*, or Filmon report);
- “Property losses stemming from wildland urban interface fires remain a major vulnerability in BC communities. We must find ways to reward those who follow FireSmart principles and take steps to fireproof their homes and properties” (Recommendation #54); and
- “Canada, BC, and First Nations and local government collaborate to reduce vulnerability and incentivize the building of more resilient structures by adjusting building codes, regulations, bylaws and development permit requirements to encourage the use of fire-resilient building materials. In keeping with FireSmart Principles, we believe governments need to encourage and/or mandate proactive use of such materials.

5.2.1 FireSmart Goals & Objectives

The general goal of FireSmart is to encourage communities and citizens to adopt and conduct FireSmart practices to mitigate the negative impacts of wildfire to assets on public and private property. Findings from a study of the 2016 Horse River wildfire in Fort McMurray indicate that FireSmart principles were one of the main reasons why individual homes survived, regardless of the broader wildfire threat surrounding them. This was true in both the urban and rural areas.

Goals of FireSmart

The goal of FireSmart is to encourage homeowners to conduct FireSmart practices on their property to reduce damages and minimize the hazards associated with wildfire. These practices should aim to:

- Reduce the potential for an active crown fire to move through private land
- Reduce the potential for ember transport through private land and structures



- Create landscape conditions around properties where fire suppression efforts can be effective and safe for responders and resources
- Treat fuel adjacent and nearby to structures to reduce the probability of ignition from radiant heat, direct flame contact and ember transport
- Implement measures to structures and assets that reduce the probability of ignition and loss

This CWPP and the recommendations within are meant to align with the goals of FireSmart; for local governments, emergency response personnel, municipal leaders, residents and visitors to the Town of Port McNeill.

5.2.2 Key Aspects of FireSmart for Local Governments and First Nations

Appendix 1 identifies the key aspects of FireSmart for local governments and First Nations. Additionally, it is recommended that the Town of Port McNeill identify and utilize FireSmart and wildfire safety resources available through BCWS. FireSmart Canada and FireSmart BC have numerous resources available to municipalities, and BCWS has various avenues to assist communities in accessing these resources. Connecting with a Local FireSmart Representative can help an organization find out what tools will be most effective for them, and lead communities towards FireSmart Community Recognition.

Another way the Town of Port McNeill can bolster community support, is to find a way to incentivize FireSmart activities and fuel treatments on private lands. Incentivization can take the form of tax reduction for industrial operations within town boundaries that choose to do a fuel treatment, subsidized fire suppression equipment for industrial operators, and rebates for communities who become Recognized FireSmart Communities.

Recommendation #3: Identify and utilize FireSmart and wildfire safety resources available through BCWS and Local FireSmart Representative.

Recommendation #19: Create incentive programs for FireSmart activities and fuel treatments on private lands for:

- Industrial operations,
- Private Managed Forest Lands,
- Residential homes.

5.2.3 Identify Priority Areas within the Area of Interest for FireSmart

The intent of this sub-section is to use of the information gathered on local wildfire threat and risk assessments (Section 4.0) to best understand the priority areas for FireSmart planning and activities. This is based on the relative level of wildfire risk adjacent to established neighbourhoods, although the application of FireSmart principles to isolated critical infrastructure is also a priority.

Cardena Crescent is a dead-end, residential road that provides access to homes within the WUI. Residents from this area would benefit most from FireSmart activities as their homes are adjacent to heavily wooded areas, and there is only one evacuation Route.

Similarly, Mine Road stretches across town, ending in a dead-end/single access route at Cedar Park camp ground. Any structures east of Woodland Drive on Mine Road are considered a priority area for FireSmart, as these buildings are both surrounded by vegetation, and only have one access/evacuation route outside town.



Recommendation #4: Distribute FireSmart materials directly to residents of the community, particularly along Mine Road and Cardena Crescent.

5.2.4 FireSmart Demonstration Projects

FireSmart demonstration projects both protect a resource from a possible wildfire, as well as inform and educate the public on what FireSmart means. There is a common misconception that following FireSmart principles around one's property yields an unappealing appearance, are expensive, take too much time, and are therefore disregarded. By demonstrating some simple, effective FireSmart activities, such as removing conifer needle buildup from rafters, using fire resistant landscaping methods, and choosing FireSmart products for repairs on a structure, residents of the community can see that FireSmart activities on their own homes is achievable. This coupled with FireSmart presentations and Wildfire awareness training will help bolster wildfire risk reduction in the Town of Port McNeill.

Recommendation #18: Host a FireSmart demonstration project, FireSmart presentations and wildfire awareness training for homeowners and residents in the Town of Port McNeill.

5.2.5 FireSmart Projects on Private Lands

Private land encompasses a large portion of the AOI. To this end, it is important to engage private landowners. In this CWPP, private land ownership is generally broken into two categories; industrial operations and residential. It is in the best interest of both these parties to ensure their assets are protected from wildfire, and therefore are encouraged to participate in FireSmart activities. FireSmart assessments are the first step towards educating and inspiring private land owners to take action. A FireSmart assessment guides the property owner through the benefits of using FireSmart building products, maintaining a FireSmart home, and FireSmart landscaping and property management.

Recommendation #20: Conduct Wildfire Hazard Assessments and FireSmart audits at larger industrial sites.

Recommendation #21: Conduct FireSmart Homeowner Assessments on homes and structures in areas deemed moderate or high risk.

5.3 Community Communication and Education

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.

This CWPP will be made available to the public in a number of ways; it will be posted to the UBCM, Town of Port McNeill and the Regional District of Mount Waddington websites. Additionally, a presentation will be made available to residents and Town of Port McNeill staff that highlights the findings and recommendations of this report. Furthermore, the recommendations below demonstrate how the public will be further engaged/educated.

Encouraging the community to participate in educational programs can often be difficult. It is recommended that the Town of Port McNeill utilize various avenues to educate its residents and staff. Passive education, such as the installation of informative signage in high-risk areas, is a way to let the



public know what risks are present in their favourite recreation areas. It also alerts community members that their activities are increasing the risk of igniting a wildfire. When informational signage is placed in areas of regular prohibited high-risk activities (unregulated firing ranges, abandoned campfire sites, refuse burning) it provides a notice that these sites may be monitored, therefore acts as a deterrent.

Social Media is a useful way of distributing information to a wide range of community members quickly. Through a social media platform, the Town of Port McNeill can provide the community links to FireSmart materials, fire safety updates, fire bans, and links to BCWS.

Recommendation #1: Identify areas and install signage in areas of high unregulated fire use – known areas of abandoned campfires, unregulated firing ranges, and recreation sites.

Recommendation #2: Create a Social Media platform or campaign to make residents more aware of FireSmart and fire safety tools.

5.4 Other Prevention Measures

Interagency Cooperation

Planning for emergency events is the responsibility of several different agencies. Clear communication between these agencies is vital to ensure smooth emergency operations. Each agency needs to have a solid understanding of its responsibilities when an emergency situation is triggered. In the event of an emergency in the Town of Port McNeill, the municipality has an EOC coordinator and an Emergency Plan. Should the event grow in size and complexity, the RDMW would be involved. In the event of a wildfire, BCWS and the local fire departments would be deployed. Each of these agencies need to have transparent communication before, during and after a wildfire event.

In addition to emergency response agencies, it is valuable to have good communication with local industrial corporations who conduct high risk activities on their land which surrounds the Town of Port McNeill. Privately managed forest lands compose the majority of surrounding, on which high ignition risk forestry activities occur. It is in the best interest of these private land owners to protect their forests and thus their commodity. Ways in which private managed forest landowners protect their land from wildfire are often not well communicated to municipal staff, therefore leaving an impression that no management is occurring (when this is not the case). To this end, it is recommended that the Town of Port McNeill engage in regular communication with the RDMW, Mosaic Forest Management, Western Forest Products and Lemare Lake Logging about what wildfire mitigation tactics they use in the WUI. This open communication may lead to a positive understanding of wildfire risk reduction on private land, and eventually to a mutually beneficial plan to protect the Town of Port McNeill from wildfire in the future.

Recommendation #8: Representatives from EMBC, RDMW, BCWS, and the Town of Port McNeill need to meet regularly to identify and agree upon triggers for Emergency Response Plan Activation.

Recommendation #9: Representatives from the Town of Port McNeill, RDMW, Mosaic Forest Management and Lemare Lake Logging should meet to discuss and identify wildfire safety measures currently in place, and areas of concern among all parties.



Legislation and Planning for Local Government

Local fire departments are sometimes called to fires outside of the fire protection boundary. When formalized agreements are not in place with a community outside a fire protection boundary, and a fire event does occur, Fire Chiefs are faced with a difficult dilemma of whether or not they should stretch the resources of their department and reach out to a community that does not have a formalized agreement. Reviewing and making necessary changes to this policy will reduce the liability on the local fire department and ensure there are enough resources available when a fire occurs within the boundary. Possible changes may include creating defined agreements with outside communities, changing the fire protection boundary, or investing in new equipment or staff to support increasing draw on local fire department resources.

Assigning a dedicated EOC coordinator and emergency services coordinator allows for funding and focus for training to be used efficiently, reduces ambiguity of responsibilities in an emergency and ensures follow through of emergency response recommendations (for example CWPP recommendations). Assigning a Deputy ensures that all responsibilities will be covered should the EOC coordinator be unavailable during an emergency event.

Backyard burning of vegetation, leaves, and even campfires are a common practice of residents in communities who live in the WUI. The Town of Port McNeill currently follows provincial guidelines for backyard burning, however these guidelines are difficult for the local fire departments to enforce. Creating a formal bylaw with regulation on backyard burning, and a permitting system to track when backyard burning occurs, will help local authorities enforce safe burning practices.

Recommendation #5: Review and make changes to the policy for attending fires outside the Fire Protection Boundary.

Recommendation #6: Appoint a salaried Town of Port McNeill employee to hold the EOC coordinator position as well as regular emergency management duties, and another salaried employee as Deputy EOC coordinator.

Recommendation #7: Create a private property/backyard burning bylaw and permitting system.

SECTION 6: Wildfire Response Resources

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 B.C. Provincial Coordination Plan for Wildland Urban Interface Fires (revised July 2016).

Firefighting resources are described below, followed by recommendations that will bolster these resources highlighted in the grey boxes.

6.1 Local Government Firefighting Resources

The intent of this sub-section is to identify implications of wildfire that impact firefighting efforts (e.g. 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



6.1.1 Fire Departments and Equipment

Two fire departments service the AOI; Port McNeill Volunteer Fire Department and Hyde Creek Volunteer Fire Department. Tables 10 and 11 detail the equipment currently at their disposal that can support wildfire suppression efforts.

Table 11. Port McNeill Volunteer Fire Department Equipment

Resource Kind	Make/ Model
Tender	2003 Volvo WX64 (500/2000)
Engine – Pumper 3	1992 Volvo FE42 / Anderson (840/600)
Engine – Pumper 4	2005 Freightliner M2 106 / Superior (1050/600/30A)
Engine – Unit 1 (Antique)	1968 Dodge D600 / Thibault pumper (625/500)

Table 12. Hyde Creek Volunteer Fire Department Equipment

Resource Kind	Make/ Model
Tender	1994 Ford, 1,500 gal
Engine	2007 Freightliner M2 106

Both departments have adequate quantities of wildland equipment such as hand tools, portable water pumps, wildfire hoses, and wildfire personal protection equipment.

The Town of Port McNeill has signed onto the Mount Waddington Regional Fire Department's Emergency Services Agreement (2017), along with the Regional District of Mount Waddington, District of Port Hardy, Village of Alert Bay and the Village of Port Alice. This is a regional mutual aid agreement, that allows one local fire department to call on the resources of another within the region. Mutual aid support is important when a local fire department is faced with large scale emergency events that exhaust their resources.

Local industrial companies who engage in high-risk activities are required per the Wildfire Act, to maintain a specific level of readiness should a wildfire come within 1km of their operating area. This means that there are often contract crews, hand tools, water trucks, and large machinery on standby during high fire season. It would be a benefit to the Town of Port McNeill to engage with these companies and create mutual aid agreements and equipment sharing agreements. These prearranged agreements would include rate tables and logistical details, and would ensure quick deployment of equipment when needed.

Recommendation #12: Engage private land owners (Orca Sand and Gravel, Mosaic Forest Management, Western Forest Products) to establish suppression and equipment sharing agreements.



6.1.2 Access to Water for Fire Suppression

Three aquifer fed wells provide substantial water for residential access. Seasonal drought does not typically affect these wells, as they are aquifer fed and are prolific. The Town of Port McNeill is currently in Phase 7 of the Watermain Replacement Project, which has allowed for the installation of new fire hydrants throughout the town. At this time, there are approximately 120 fire hydrants placed throughout town (Pers. Comm. Julian Allen, 2020).

In addition to the abundant water systems within the Town of Port McNeill, there are various lakes, as well as ocean water that would allow for refill of helicopter bucketing and water bombing.

Various industrial operators in the area (Orca Sand and Gravel, Mosaic Forest Management, Western Forest Products) utilize water trucks that could be employed during a wildfire event. It is recommended that Equipment Use Agreements be clearly established to ensure smooth access to this equipment (see Recommendation #11).

6.1.3 Access and Evacuation

At this time, there is only one paved route in and out of the Town of Port McNeill, Campbell Way. Should this access point be cut off by wildfire in either direction, residents would be forced to evacuate using one of three other unpaved access roads. These alternate routes are unpaved forest service roads, and are subject to variable maintenance.

Some risks of traveling along forest service roads include:

- Ongoing active logging,
- Limited cellular service for communications,
- Ongoing blasting and roadbuilding,
- Lack of clear signage,
- Animal activity on roads,
- Poor maintenance,
- Blocked access (gates or deactivated forest service roads)

In addition to limited access in and out of town, two no-through-roads adjacent to wooded areas are located at Mine Road and Cardena Crescent. If cut-off, residents of these communities would be required to shelter-in-place. The Town of Port McNeill should continually identify similar no through roads that are newly developed, or are at high risk of being cut-off in the event of a wildfire.

In the event that all three road access points were blocked, evacuation by marine transport would be necessary. Ferries currently travel to and from Alert Bay (Cormorant Island) and Sointula (Malcom Island). Additionally, several water taxi and marine charter services operate out of the Port McNeill Harbour. A practiced marine evacuation plan would ensure smooth evacuation by water.

At this time, door to door alerts are the only method of evacuation notice for tsunami or wildfire. An alert siren is a valuable tool to alert members of the public that they should prepare and begin to evacuate. Proper training should be provided to residents, and notices posted to alert non residents and visitors to the Town of Port McNeill.



Recommendation #12: Conduct annual or biannual emergency evacuation drills.

Recommendation #14: Install an emergency siren for Wildfire and Tsunami alerts in the town centre, inform the public of new siren protocols.

Recommendation #15: Implement Evacuation Route Signage along Campbell Way, SW Main Road, and to the Port McNeill Ferry Terminal to Alert Bay.

6.1.4 Training

Additional wildland training was mentioned as an incremental improvement in fire department operations and safety. Staff mentioned that CFFDRS information is conveyed to personnel by BCWS, however there is a limited understanding of its purpose and definitions by local Fire Department staff. Many personnel would benefit from a deeper understanding of the CFFDRS itself and how to interpret the index numbers.

Joint training with BCWS operational personnel often focussed solely on basic set-up of Wajax Mark 3 type portable pump. Several PMVFD members have experience as wildland firefighters, and would benefit from more advanced training, for example; more complex attack strategies and water delivery challenges/solutions.

Recommendation #9: Provide higher level wildfire behavior and Canadian Forest Fire Danger Rating System training to Port McNeill Volunteer Fire Department and Hyde Creek Volunteer Fire Department

Recommendation #10: Schedule two joint training sessions per year between British Columbia Wildfire Service, Port McNeill Volunteer Fire Department and Hyde Creek Volunteer Fire Department

6.2 Structure Protection

Structural Protection Units, (SPU) are specialized kits of equipment containing large amounts of sprinkler heads, lightweight hoses and other equipment used to set-up defensive sprinkler systems on structures threatened by an advancing wildfire. They have been proven effective in preventing/ reducing structural ignitions, which in a major interface incident and rapidly overwhelm structural resources.

Neither departments currently have an SPU, and the nearest SPU trailer is located at the Campbell River Fire Department. While it may be hard to rationalize the acquisition of an SPU for Port McNeill or Hyde Creek, it would be prudent to acquire an SPU to share between communities of the Regional District of Mount Waddington. Most trends in this analysis of the Town of Port McNeill indicate that as weather patterns evolve and human activities increase, the demand for specialized interface equipment such as an SPU trailer will increase.

As this is an expensive piece of equipment, it is recommended that communities of the North Island pool funding resources and share the benefits of an SPU. All communities involved in a mutual aid agreement for SPUs should receive training on mobilization and demobilization of the unit.



Recommendation #13: Invest in a Structure Protection Unit for the North Island, and provide training to new SPU users.

6.3 Summary of Recommendations

The intent of this sub-section is to summarize all the recommendations that have been included in this section. Each recommendation has been given a priority score between “1” and 4. This ranking system is designed to consider the need for action, the impact of the action, and the ease of carrying out the action. A priority score of “1” means the task is greatly needed, will have a significant impact, and is relatively easy to carry out. Whereas a rank of “4” is considered less time sensitive, lower impact or difficult to carry out. It is recommended that tasks of a lower rank be addressed before recommendations of a higher rank.

Table 13. Summary of Recommendations and Next Steps

#	Recommendation	Next Steps	Funding	Priority
Education				
#1	Identify areas and install signage in areas of high unregulated fire use – known areas of abandoned campfires, unregulated firing ranges, recreation sites (e.g. Beach Camp)	<ul style="list-style-type: none"> - Identify and review areas of unregulated fire use, - Install signage describing fire risk, - Assess effectiveness and monitor any signage damage. 	UBCM Town of Port McNeill RDMW	3
#2	Create a Social Media platform or campaign to make residents more aware of FireSmart and fire safety tools.	<ul style="list-style-type: none"> - Evaluate current social media outlets for the Town of Port McNeill, - Identify targets for Social Media Campaign, - Create a FireSmart Social Media outlet that reaches target audience. - This could be coupled with campaigns and information linked to the BCWS and FireSmart pages. 	UBCM Town of Port McNeill	2
#3	Identify and utilize FireSmart and Wildfire Safety resources available through BCWS and a Local FireSmart Representative.	<ul style="list-style-type: none"> - Contact Local FireSmart Representative to find out what resources are available, - Contact BCWS North Island/Mid-Coast Fire Zone Office to access resources, - Connect with an LFR to help coordinate resources. 	FireSmart BC BCWS Town of Port McNeill	2
#4	Distribute FireSmart materials directly to residents of the	<ul style="list-style-type: none"> - Review priority areas for FireSmart activities, 	UBCM	3



#	Recommendation	Next Steps	Funding	Priority
	community, particularly along Mine Road, Cardena Crescent.	<ul style="list-style-type: none"> - Contact Local FireSmart Representative to receive materials, - Organize a pamphlet hand-out/mail-out of materials, - Continue to provide access to FireSmart materials in high activity places (recreation center, medical center, visitors' centre). 	FireSmart BC Town of Port McNeill.	
Legislation and Planning				
#5	Review and make changes to the policy for attending fires outside fire protection boundary.	<ul style="list-style-type: none"> - Identify locations/ communities outside the fire protection boundary that have requested service, - Assess the burden on resources from out of boundary calls, - Determine the best way to mitigate out of boundary calls and resource use outside of boundary. 	Town of Port McNeill	4
#6	Appoint a salaried Town of Port McNeill Employee, to hold the EOC coordinator position as well as regular emergency management duties, and another as Deputy EOC coordinator.	<ul style="list-style-type: none"> - Review EOC requirements, - Identify a salaried person from the Town who can act as EOC coordinator, - Identify a salaried person who can act as Deputy EOC coordinator, - Provide regular training to both individuals. 	UBCM EMBC Town of Port McNeill	3
#7	Create a private property/backyard burning bylaw and permitting system.	<ul style="list-style-type: none"> - Communicate with PMVFD, HCVFD, and BCWS to identify meaningful guidelines for a backyard burning bylaw - Establish permitting system to ensure effective tracking of local burning activities - Establish a means for enforcing the new bylaw, ensuring PMVFD and HCVFD have the authority to enforce. 	Town of Port McNeill UBCM EMBC	2
Interagency Co-operation				



#	Recommendation	Next Steps	Funding	Priority
#8	Representatives from EMBC, RDMW, BCWS and the Town of Port McNeill need to meet yearly to identify and agree upon triggers for Emergency Response Plan activation.	<ul style="list-style-type: none"> - Independently identify Emergency Response triggers and issues, - Pre-schedule yearly meetings among agencies, - Review processes and triggers yearly to ensure they capture up-to-date issues. 	UBCM Town of Port McNeill RDMW EMBC	1
#9	Representatives from The Town of Port McNeill, RDMW, Mosaic Forest Management, Lemare Lake Logging and Western Forest Products should meet to discuss and identify wildfire safety measures currently in place, and areas of concern among all parties.	<ul style="list-style-type: none"> - Independently identify issues in wildfire safety pertaining to PMFLs, - Pre-schedule yearly meetings among agencies and industry, - Participate in regular, transparent communication between the Town of Port McNeill and PMFLs. 	UBCM Town of Port McNeill RDMW	2
Cross Training				
#10	Provide higher level Wildfire Behavior, and Canadian Forest Fire Danger Rating System training to PMVFD and HCVFD	<ul style="list-style-type: none"> - Identify higher level wildfire behavior courses, - Identify meaningful participants to receive higher level training, - Engage in regular discussion with BCWS to ensure information and courses are up-to-date. 	UBCM EMBC Town of Port McNeill BCWS	1
#11	Schedule two joint training sessions between BCWS and PM/HC Fire Departments that include Advanced suppression tactics	<ul style="list-style-type: none"> - Seek out a wildfire champion within the local VFDs to guide/initiate new training programs Identify gaps in wildfire training, - Pre-schedule training sessions with BCWS. 	UBCM Town of Port McNeill BCWS	1
Emergency Planning				
#12	Engage private land owners (Orca Sand and Gravel, Mosaic Forest Management, Western Forest Products) to establish suppression and equipment sharing agreements.	<ul style="list-style-type: none"> - Establish a list of accessible equipment for each private land owner, - Create equipment sharing agreements including rates, - Ensure these lists are regularly updated. 	UBCM Town of Port McNeill RDMW	1



#	Recommendation	Next Steps	Funding	Priority
#13	Conduct annual or biannual emergency drills for Wildfire Evacuations	<ul style="list-style-type: none"> - Plan and coordinate an emergency evacuation drill, - Inform community of the results of the drill, - Encourage all community members to participate. 	RDMW Town of Port McNeill	3
#14	Invest in a Structure Protection Unit for the North Island and provide training to new SPU users.	<ul style="list-style-type: none"> - Identify communities/municipalities that would benefit from an SPU, - Engage the RDMW for support in purchasing an SPU, - Provide training to local fire departments . 	RDMW Town of Port McNeill UBCM	2
#15	Install an emergency siren for Wildfire and Tsunami alerts in the town centre, and inform the public on new siren protocols	<ul style="list-style-type: none"> - Identify location for emergency siren, - Install and test emergency siren, - Inform the public on new siren protocols 	Town of Port McNeill EMBC	4
#16	Implement Evacuation Route Signage along Campbell Way, SW Main Road, and to the Port McNeill Ferry Terminal to Alert Bay	<ul style="list-style-type: none"> - Identify evacuation routes - Install signage, - Inform the public regarding new signage for emergency routes. 	UBCM Town of Port McNeill	3
Vegetation Management/Fuel Treatments				
#17	Consider the following areas for Wildfire Operational Fuel Treatments: <ul style="list-style-type: none"> - Port McNeill Sewage Treatment Plant - Regional District of Mount Waddington office - Port McNeill Hospital - Port McNeill Public Works Yard 	<ul style="list-style-type: none"> - Conduct a detailed Fire Hazard Assessment in these areas, - Have a qualified professional write a Fuel Management Prescription, - Complete an operational fuel treatment per prescription, - Monitor areas for retreatment. 	UBCM Town of Port McNeill RDMW	3
FireSmart Demonstration Projects				
#18	Host a FireSmart demonstration project, FireSmart presentations and wildfire awareness training for homeowners and residents in the Town of Port McNeill.	<ul style="list-style-type: none"> - Identify a local public area to conduct a FireSmart Assessment, - Publicly advertise the FireSmart Assessment and 	UBCM Town of Port McNeill	2



#	Recommendation	Next Steps	Funding	Priority
		encourage residents to attend, - Host a FireSmart Workshop for local residents.		
FireSmart Projects on Private Lands				
#19	Create incentive programs for FireSmart and fuel treatments on private land for: <ul style="list-style-type: none"> - Industrial Operations - Private Managed Forest Lands - Residential homes 	<ul style="list-style-type: none"> - Communicate with private land owners and determine a reasonable incentive, - Initiate incentive program, - Assess the reception effectiveness of the program. 	UBCM Town of Port McNeill	4
#20	Conduct Wildfire Hazard Assessments and FireSmart audits at larger industrial sites.	<ul style="list-style-type: none"> - Identify areas with high-risk industrial activities, - Communicate with private land owner to conduct a FireSmart assessment, - Direct the private land owner on resources and funding for FireSmart projects/activities. 	UBCM Town of Port McNeill	3
#21	Conduct FireSmart Homeowner Assessments on homes and structures in areas deemed high or extreme risk (eg: Cardena Cresc)	<ul style="list-style-type: none"> - Identify homes within high or extreme areas, - Communicate with residents on importance of FireSmart Assessment, - Conduct Assessment, - Direct the property owner on resources and funding for FireSmart projects/activities. 	UBCM Town of Port McNeill Residents	3
#	Recommendation	Next Steps	Funding	Priority
Education				
#1	Identify areas and install signage in areas of high unregulated fire use – known areas of abandoned campfires, unregulated firing ranges, recreation sites.	<ul style="list-style-type: none"> - Identify and review areas of unregulated fire use, - Install signage describing fire risk, - Assess effectiveness and monitor any signage damage. 	UBCM Town of Port McNeill RDMW	3
#2	Create a Social Media platform or campaign to make residents more aware of FireSmart and fire safety tools.	<ul style="list-style-type: none"> - Evaluate current social media outlets for the Town of Port McNeill, - Identify targets for Social Media Campaign, 	UBCM Town of Port McNeill	2



#	Recommendation	Next Steps	Funding	Priority
		<ul style="list-style-type: none"> - Create a FireSmart Social Media outlet that reaches target audience. 		
#3	Identify and utilize FireSmart and Wildfire Safety resources available through BCWS and a Local FireSmart Representative.	<ul style="list-style-type: none"> - Contact Local FireSmart Representative to find out what resources are available, - Contact BCWS North Island/Mid-Coast Fire Zone Office to access resources. - Connect with an LFR to help coordinate resources 	FireSmart BC BCWS Town of Port McNeill	2
#4	Distribute FireSmart materials directly to residents of the community, particularly along Mine Road, Cardena Crescent.	<ul style="list-style-type: none"> - Review priority areas for FireSmart activities, - Contact Local FireSmart Representative to receive materials, - Organize a pamphlet hand-out/mail-out of materials, - Continue to provide access to FireSmart materials in high activity places (recreation center, town hall, medical center). - Continue to identify at-risk no-through road communities and provide them with FireSmart materials 	UBCM FireSmart BC Town of Port McNeill.	3
Legislation and Planning				
#5	Review and make changes to the policy for attending fires outside fire protection boundary.	<ul style="list-style-type: none"> - Identify locations/ communities outside the fire protection boundary that have requested service, - Assess the burden on resources from out of boundary calls, - Determine the best way to mitigate out of boundary calls and resource use outside of boundary. 	Town of Port McNeill	4
#6	Appoint a salaried Town of Port McNeill Employee, to hold the EOC coordinator position as well as regular emergency management duties, and another as Deputy EOC coordinator.	<ul style="list-style-type: none"> - Review EOC requirements, - Identify a salaried person from the Town who can act as EOC coordinator, 	UBCM EMBC Town of Port McNeill	1



#	Recommendation	Next Steps	Funding	Priority
		<ul style="list-style-type: none"> - Identify a salaried person who can act as Deputy EOC coordinator, - Provide regular training to both individuals. 		
Interagency Co-operation				
#7	Representatives from EMBC, RDMW, BCWS and the Town of Port McNeill need to meet yearly to identify and agree upon triggers for Emergency Response Plan activation.	<ul style="list-style-type: none"> - Independently identify Emergency Response triggers and issues, - Pre-schedule yearly meetings among agencies, - Review processes and triggers yearly to ensure they capture up-to-date issues. 	UBCM Town of Port McNeill RDMW EMBC	1
#8	Representatives from The Town of Port McNeill, RDMW, Mosaic Forest Management, Lemare Lake Logging and Western Forest Products should meet to discuss and identify wildfire safety measures currently in place, and areas of concern among all parties.	<ul style="list-style-type: none"> - Independently identify issues in wildfire safety pertaining to private managed forest lands, - Pre-schedule yearly meetings among agencies and industry, - Participate in regular, transparent communication between the Town of Port McNeill and PMFLs. 	UBCM Town of Port McNeill RDMW	2
Cross Training				
#9	Provide higher level Wildfire Behavior, and Canadian Forest Fire Danger Rating System training to PMVFD and HCVFD	<ul style="list-style-type: none"> - Identify higher level wildfire behavior courses, - Identify meaningful participants to receive higher level training, - Engage in regular discussion with BCWS to ensure information and courses are up-to-date. 	UBCM EMBC Town of Port McNeill BCWS	1
#10	Schedule two joint training sessions between BCWS and PM/HC Fire Departments that include Advanced suppression tactics	<ul style="list-style-type: none"> - Seek out a wildfire champion within the local VFDs to guide/initiate new training programs Identify gaps in wildfire training, - Pre-schedule training sessions with BCWS. 	UBCM Town of Port McNeill BCWS	1
Emergency Planning				



#	Recommendation	Next Steps	Funding	Priority
#11	Engage private land owners (Orca Sand and Gravel, Mosaic Forest Management, Western Forest Products) to establish suppression and equipment sharing agreements.	<ul style="list-style-type: none"> - Establish a list of accessible equipment for each private land owner, - Create equipment sharing agreements including rates, - Ensure these lists are regularly updated. 	UBCM Town of Port McNeill RDMW	1
#12	Conduct annual or biannual emergency drills for Wildfire Evacuations	<ul style="list-style-type: none"> - Plan and coordinate an emergency evacuation drill, - Inform community of the results of the drill, - Encourage all community members to participate. 	RDMW Town of Port McNeill	3
#13	Invest in a Structure Protection Unit for the North Island and provide training to new SPU users.	<ul style="list-style-type: none"> - Identify communities/municipalities that would benefit from an SPU, - Engage the RDMW for support in purchasing an SPU, - Provide training to local fire departments . 	RDMW Town of Port McNeill UBCM	2
#14	Install an emergency siren for Wildfire and Tsunami alerts in the town centre, and inform the public on new siren protocols	<ul style="list-style-type: none"> - Identify location for emergency siren, - Install and test emergency siren, - Inform the public on new siren protocols 	Town of Port McNeill EMBC	4
#15	Implement Evacuation Route Signage along Campbell Way, SW Main Road, and to the Port McNeill Ferry Terminal to Alert Bay	<ul style="list-style-type: none"> - Identify evacuation routes - Install signage, - Inform the public regarding new signage for emergency routes. 	UBCM Town of Port McNeill	3
Vegetation Management/Fuel Treatments				
#16	Consider the following areas for Wildfire Operational Fuel Treatments: <ul style="list-style-type: none"> - Port McNeill Sewage Treatment Plant - MFLNRORD Office - Port McNeill Hospital - Port McNeill Public Works Yard 	<ul style="list-style-type: none"> - Conduct a detailed Fire Hazard Assessment in these areas, - Have a qualified professional write a Fuel Management Prescription, - Complete an operational fuel treatment per prescription, - Monitor areas for retreatment. 	UBCM Town of Port McNeill RDMW	3



#	Recommendation	Next Steps	Funding	Priority
FireSmart Demonstration Projects				
#17	Host a FireSmart demonstration project, FireSmart presentations and wildfire awareness training for homeowners and residents in the Town of Port McNeill.	<ul style="list-style-type: none"> - Identify a local public area to conduct a FireSmart Assessment, - Publicly advertise the FireSmart Assessment and encourage residents to attend, - Host a FireSmart Workshop for local residents. 	UBCM Town of Port McNeill	2
FireSmart Projects on Private Lands				
#18	Create incentive programs for FireSmart and fuel treatments on private land for: <ul style="list-style-type: none"> - Industrial Operations - Private Managed Forest Lands - Residential homes 	<ul style="list-style-type: none"> - Communicate with private land owners and determine a reasonable incentive, - Initiate incentive program, - Assess the reception effectiveness of the program. 	UBCM Town of Port McNeill	4
#19	Conduct Wildfire Hazard Assessments and FireSmart audits at larger industrial sites.	<ul style="list-style-type: none"> - Identify areas with high-risk industrial activities, - Communicate with private land owner to conduct a FireSmart assessment, - Direct the private land owner on resources and funding for FireSmart projects/activities. 	UBCM Town of Port McNeill	3
#20	Conduct FireSmart Homeowner Assessments on homes and structures in areas deemed high or extreme risk (eg: Cardena Cresc)	<ul style="list-style-type: none"> - Identify homes within high or extreme areas, - Communicate with residents on importance of FireSmart Assessment, - Conduct Assessment, - Direct the property owner on resources and funding for FireSmart projects/activities. 	UBCM Town of Port McNeill Residents	3



Works Cited

- Abbott G., and M. Chapman. 2018. Addressing the New Normal: 21st Century Disaster Management in British Columbia – A report for Government and British Columbians. Available from: <https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/embc/bc-flood-and-wildfire-review-addressing-the-new-normal-21st-century-disaster-management-in-bc-web.pdf>. Accessed 07 October 2020
- Archer, CRM. Ministry of Forest Lands and Natural Resource Operations. 2009. Cultural Heritage Resource Identification and Management in Forestry Developments: A Supplement to the FREP Protocol.
- Duncan, J. 2018. Trends in fire behavior indices and the resulting implications on forest resiliency. Presentation at the Canadian Institute of Forestry Workshop: Questioning the Resiliency of a Changing Forest – Can we prepare the Coast for new wildfire behavior and climate? Nanaimo, BC, Canada. 22 November 2020
- Forest Practices Board. 2015. Fuel Management in the Wildland Urban Interface – Update- Special Investigation. Available from: <https://www.bcfpb.ca/wp-content/uploads/2016/04/SIR43-Fuel-Management-Update.pdf>. Accessed 07 October 2020
- NIREP. 2015. North Island Regional Emergency Plan. September 2015. Available from: <http://www.rdmw.bc.ca/media/September%202015%20Emergency%20Plan%20-%20public%20copy.pdf>. Accessed 07 October 2020
- Pacific Climate Change. 2020. Plan2Adapt Climate Change Tool. Available from: <https://services/pacificclimate.org>. Accessed 06 September 2020
- Perrakis, D.B et al. Natural Resources Canada – Canadian Forest Service. 2018. British Columbia Wildfire Fuel Typing and Fuel Type Layer Description. Available from: <https://cfs.nrcan.gc.ca/publications?id=39432>. Accessed 22 November 2020
- Province of BC. 1995. Biodiversity Guidebook. Government of BC Forest Practices Code.
- Province of BC. 1996. Heritage Conservation Act. Available from: http://www.bclaws.ca/civix/document/id/complete/statreg/96187_01. Accessed 18 November 2020
- Province of BC. 2014. Discussion Paper – Proactive threat Reduction. Wildfire Management Branch. Available from: http://docs.openinfo.gov.bc.ca/d63519414a_response_package_fnr-2011-00274.pdf. Accessed 07 January 2021
- Province of BC. 2016 British Columbia Provincial CoordiNATION Plan for Wildland Urban Interface Fires. Available from: https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/provincial-emergency-planning/bc-provincial-coord-plan-for-wuifire_revised_july_2016.pdf. Accessed 08 January 2021
- Province of BC. 2018. Impacts of Climate Change. Available from: <https://www2.gov.bc.ca/gov/content/environment/climate-change/adaptation/impacts>. Accessed 07 January 2020
- Province of BC. 2018. Vancouver Island Land Use Plan. Available from: <https://www2.gov.bc.ca/gov/content/industry/crown-land-water/land-use-planning/regions/west-coast/vancouverisland-lup>. Accessed 12 December 2020



Province of BC. 2019. Critical Infrastructure Assessment. Available from: <https://www2.gov.bc.ca/gov/content/safety/emergency-preparedness-response-recovery/local-emergency-programs/critical-infrastructure-assessment>. 31 October 2020

Province of BC. 2019. Open Burning Smoke Control Regulation. Available from: <https://www2.gov.bc.ca/gov/content/environment/air-land-water/air/air-pollution/smoke-burning/regulations/openburningregulation>. Accessed 14 October 2020

Province of BC. 2019. Wildfire Act. Available from: http://www.bclaws.ca/civix/document/id/complete/statreg/04031_01. Accessed 14 October 2019

Province of BC. 2019. BC Species & Ecosystems Explorer. Available from: <https://www2.gov.bc.ca/gov/content/environment/plants-animals-ecosystems/conservation-data-centre/explore-cdc-data/species-and-ecosystems-explorer>. Accessed 18 November 2020

Province of BC. 2020. Emergency Program Act. Available from: http://www.bclaws.ca/Recon/document/ID/freeside/00_96111_01. Accessed 14 January 2020

Province of BC – BC Wildfire Service. 2017. Wildfire Threat Assessment Guide and Worksheets: Sub-component and descriptor definitions. Version 2. Available from: <https://www.ubcm.ca/assets/Funding~Programs/LGPS/SWPI/Applications2017/swpi-2017-WTA.guide.pdf>. Accessed 15 November 2020

Province of BC – Partners in Protection 2003. British Columbia FireSmart – FireSmart Begins at Home Manual. Available from: https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/wildfire-status/prevention/prevention-home-community/bcws_homeowner_firesmart_manual.pdf. Accessed 17 January 2021

Province of BC – Ministry of Forests, Lands, Natural Resource Operations & Rural Development. 2019. Government's Action Plan: Responding to wildfire and flood risks. Available from: https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/embc/action_plan.pdf. Accessed 07 January 2020

RDMW. 2019. Regional Services - Emergency Planning. <http://www.rdmw.bc.ca/regional-services/emergency-planning/>. Accessed 24 January 2021

Town of Port McNeill. 2020. Town of Port McNeill Community Profile.

Town of Port McNeill. 2020. Emergency Response Plan for the Town of Port McNeill.



Appendix 1: FireSmart Activities for Local Governments and First Nations

Topic	FireSmart Examples
Education	<ul style="list-style-type: none"> - Develop and/or promote local FireSmart educational activities and tools. Refer to BC FireSmart Resources for FireSmart materials that are currently available; - develop and/or promote education for the reduction of human-caused fires; - encourage active participation in Wildfire Community Preparedness Day; - organize and host a community FireSmart day, FireSmart events and workshops, and wildfire season open houses; - apply for FireSmart Canada Community Recognition.
Planning	<ul style="list-style-type: none"> - Update CWPP; - develop policies and practices for design and maintenance of FireSmart publicly owned land and First Nations land, such as parks and open spaces; - develop policies and practices for design and maintenance of FireSmart publicly owned buildings; - conduct site visits and FireSmart and/or risk assessments for publicly owned lands, First Nation lands and publicly owned buildings.
Development considerations	<ul style="list-style-type: none"> - Amend Official Community Plans, Comprehensive Community Plans and/or land use, engineering and public works bylaws to incorporate FireSmart policies; - revise landscaping requirements in zoning and development permit documents to require fire resistant landscaping; - establish Development Permit Areas for Wildfire Hazard in order to establish requirements for the exterior design and finish of buildings (Local governments should refer to Changes for Local Governments Under Section 5 of the Building Act: Appendix to Section B1 of the Building Act Guide (Revised February 2017) for information on the use of development permits for wildfire hazard); - include wildfire prevention and suppression considerations in the design of subdivisions (e.g. road widths, turning radius for emergency vehicles, and access and egress points); - amend referral processes for new developments to ensure multiple departments, including the fire department and/or emergency management staff, are included; - incorporate defensible space in new WUI subdivisions within the design and layout of the development.
Interagency co-operation	<ul style="list-style-type: none"> - Develop and/or participate in regional or local FireSmart planning tables; - participate in multi-agency fire and/or fuel management tables.
Emergency planning	<ul style="list-style-type: none"> - Develop and/or participate in cross-jurisdictional meetings and tabletop exercises, including seasonal readiness meetings; - Review structural protection capacity (i.e. Fire safety assessments)
Cross training	<ul style="list-style-type: none"> - Cross-train fire departments to include structural fire and interface wildfire training; - provide or attend training for Local FireSmart Representatives and community champions; - support professional development to increase capacity for FireSmart activities.
FireSmart Demonstration Projects	<ul style="list-style-type: none"> - Undertake FireSmart Demonstration Projects for publicly owned buildings or publicly and provincially owned critical infrastructure; - replace building materials (i.e. siding or roofing) with fire-resistant materials; - replace landscaping with fire-resistant plants as outlined in the FireSmart Guide to Landscaping.
FireSmart Activities for Private Land	<ul style="list-style-type: none"> - Planning for private land (only with private property owners' consent); - develop FireSmart Community Plans for specific areas; - conduct FireSmart home and property assessments; - offer local rebate programs to home owners on private land and First Nations land that complete eligible FireSmart activities on their own properties; - provide off-site debris disposal for private land owners who have undertaken their own vegetation management.



Appendix 2: WUI Zones and 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.



Appendix 3: Fuel Type Attribute Assessment

Excerpt from 2019 CWPP Template

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 based on significant disturbance such as harvesting or major fire, to the degree that the associated fire behaviour will drastically change 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: 2017 BCWS Fuel Typing Summary Document
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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 purposes¹; 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 description².

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.

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.

¹ 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.

² 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.



Table 14: 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 attribute information should be verified using current data sources including imagery, new treatments, new developments or updated disturbance data.

As part of this 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 that 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.



Appendix 4: Bylaws Pertaining to Wildfire and Emergency Response

BYLAW 662, 2016 is named the Volunteer Fire Department Bylaw. Wildfire is not specifically mentioned in this bylaw.

Section 5 of the above bylaw lists the scope of the Fire Department which is fire suppression with a fire fighting service level for the Town established as Interior Operations, fire prevention, assistance response, Mutual Aid and public services.

Section 6 describes the powers of the Fire Chief. Subsection 6.3 allows the Fire Chief and member of the Fire Department to enter a property at any reasonable time to ascertain if the regulations and requirements of the Fire Services Act are being observed. Subsection 6.4 gives power to the Fire Chief to request from a real property owner to undertake actions in order to remove or reduce a fire hazard or a condition that increases the danger of fire.

Subsection 6.5 lets the Fire Chief exercise powers of the fire commissioner under section 25 of the Fire Services Act, which is taking steps to remove a hazard or risk that can cause an emergency from fire or explosion arising to an imminent and serious danger to life or property, a hotel or public building, or panic. The fire commissioner may evacuate a building, hotel or area, and may call on the police and fire prevention authorities who have jurisdiction to provide assistance. Wildfire is not specifically mentioned within Section 25 of the Fire Services Act.

Subsection 6.7 gives the authority to the Fire Chief to order an owner to get an inspection for a chimney or other exhaust methods and to follow the professional's recommendation.

As per Subsections 7.2 and 7.4 the Fire Chief shall take measures for the prevention, control and extinguishment of fire and for the protection of life and property. Subsection 7.2 may enforce codes and bylaws respecting fire prevention, life safety and investigations. Subsection 7.4 shall enforce all municipal bylaws respective of fire prevention and exercise the powers imposed by the Volunteer Fire Department and any provincial act or regulation.

Subsection 7.8 encourages the Fire Chiefs' involvement in town on fire related issues pertaining to the development of properties. This gives the Fire Chief the opportunity to comment on property management that decreases the likelihood of being affected by wildfires.

Section 8 describes the power a Fire Chief, officer, or person in charge has at an incident in order to protect persons and properties from fire. This is the power to tear down or demolish a building or structure, to enter a premise or property where an incident has occurred, enter, or pass through adjacent buildings or properties, keep people from entering established areas (to request peace officers to enforce these restrictions), request non-members of the Fire Department to assist and to commandeer privately owned equipment.

As per Section 9, the Fire Departments Services are to be within the boundaries of the Town of Port McNeill unless certain requirements are met.

BYLAW 579, 2006 is the Emergency Measures Bylaw. Wildfire is not specifically mentioned within this bylaw.

Under Section 2.1 of the bylaw, emergency is defined as an event that is caused by fire and that requires coordinated actions and special regulations. A disaster is defined as a calamity caused by fire and that has resulted in serious harm.



Section 4.1 regulates who can implement the emergency plan: The Council or the Mayor or the Administrator or the Emergency Coordinator or the Mount Waddington Regional District Emergency Coordinator, or other person designated by Mount Waddington Regional District.

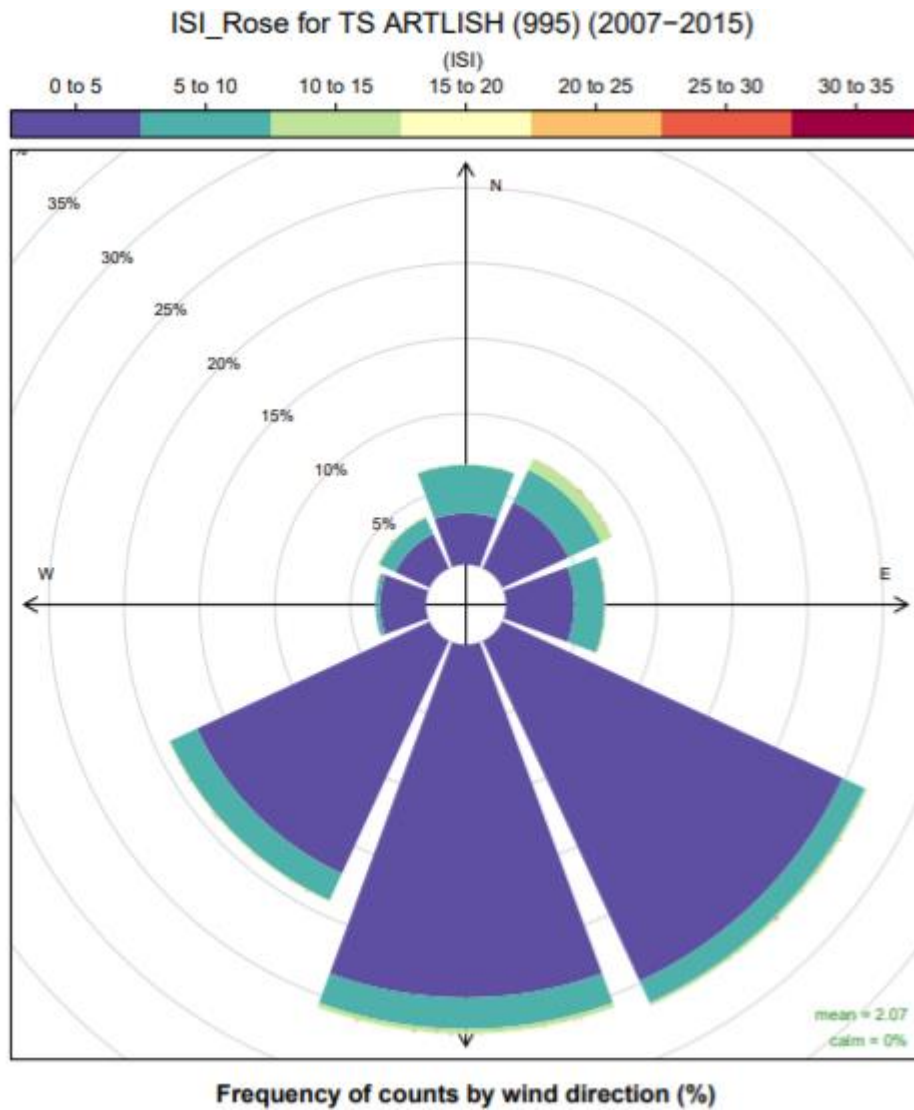
Section 4.2 regulates who can declare a state of local emergency: The Council by bylaw or resolution, the Mount Waddington Regional District by bylaw or resolution or the Mayor by order when time is of the essence.

Section 4.4 lists acts and procedures to be used to prevent, respond to, or alleviate the effects of an emergency or a disaster within the municipality after a declaration of a state of emergency is made. The Council or the Mayor or the Mount Waddington Regional District may do any of the following: acquire or use any real or personal property, authorize or require any person to assist, control or prohibit travel within the municipality, provide for the restoration of essential facilities and services, cause evacuation of persons and removal of livestock, animals and personal property within the municipality, authorize the entry into building or land, the demolition or removal of any trees, structures or crops, construct works, procure, fix prices for or ration food, clothing, fuel, equipment, medical supplies or other essentials, authorize specific powers in any part of the municipality affected by a declaration of a local state of emergency.

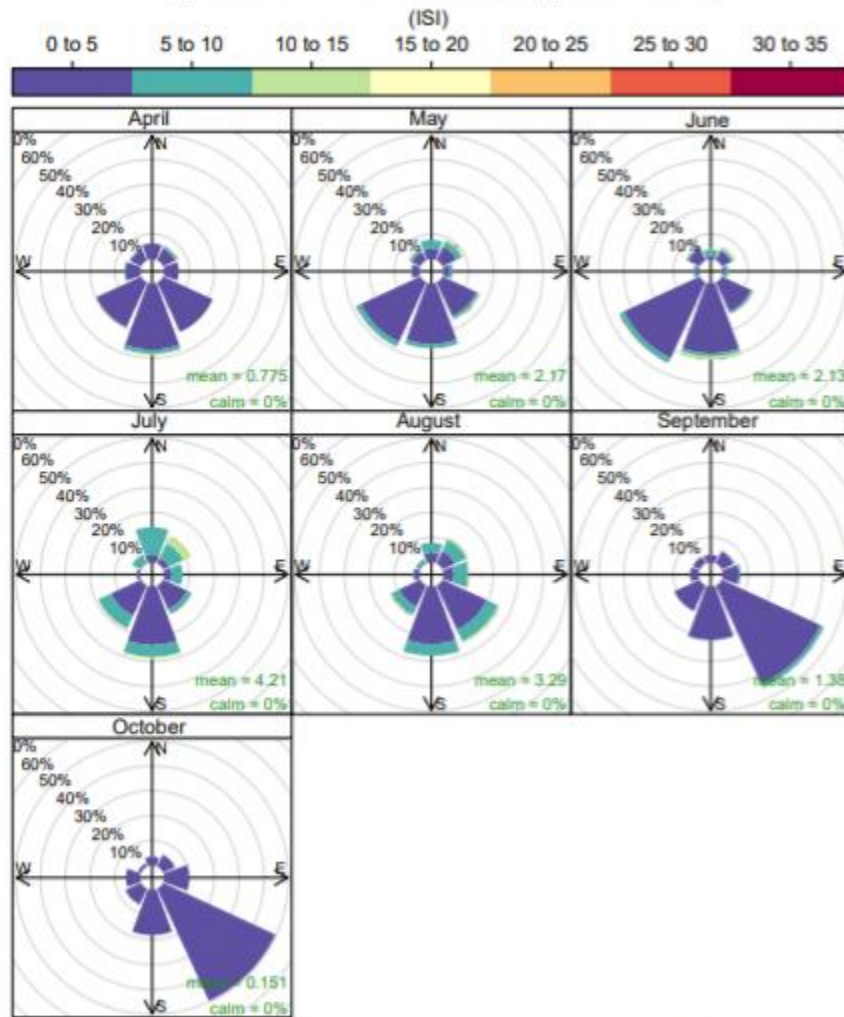
BYLAW 530, 2002, the Water Use Restrictions Bylaw defines when it is deemed necessary to restrict the use of well water from time to time to ensure an adequate supply for human consumption and for fire fighting purposes;



Appendix 5: ISI Roses



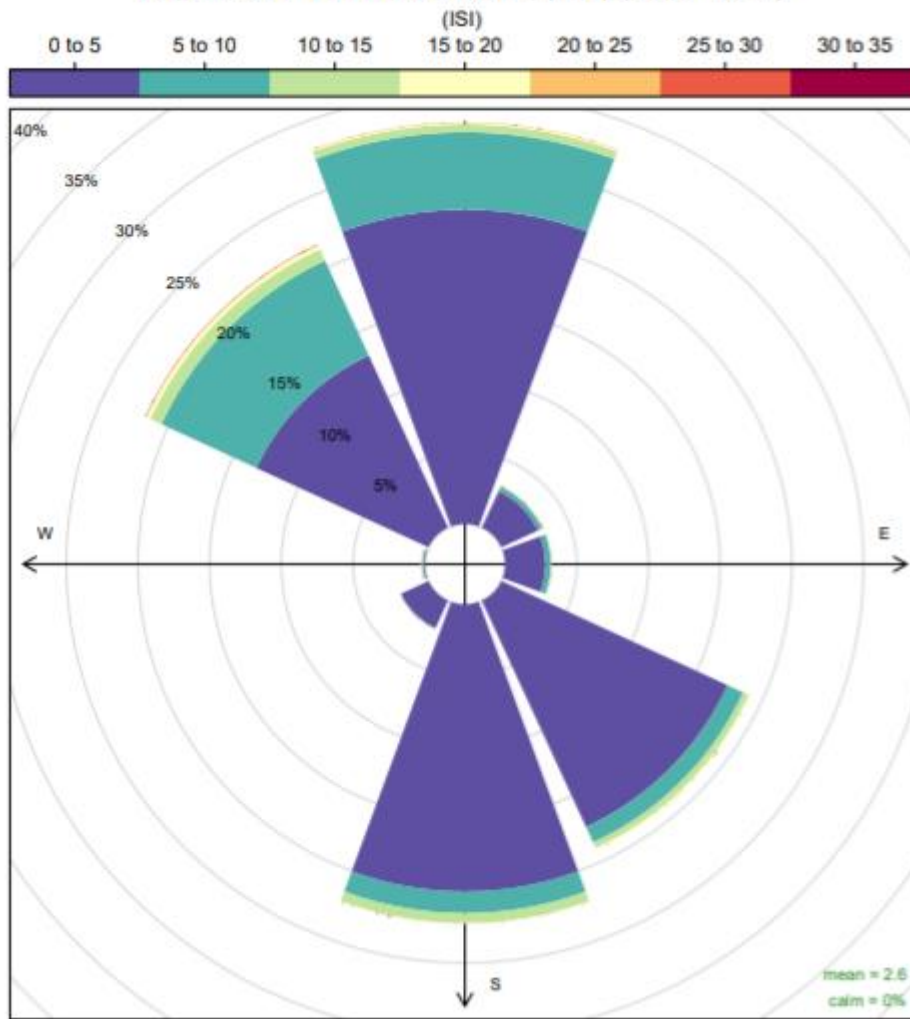
ISI_Rose for TS ARTLISH (995) (2007–2015)



Frequency of counts by wind direction (%)



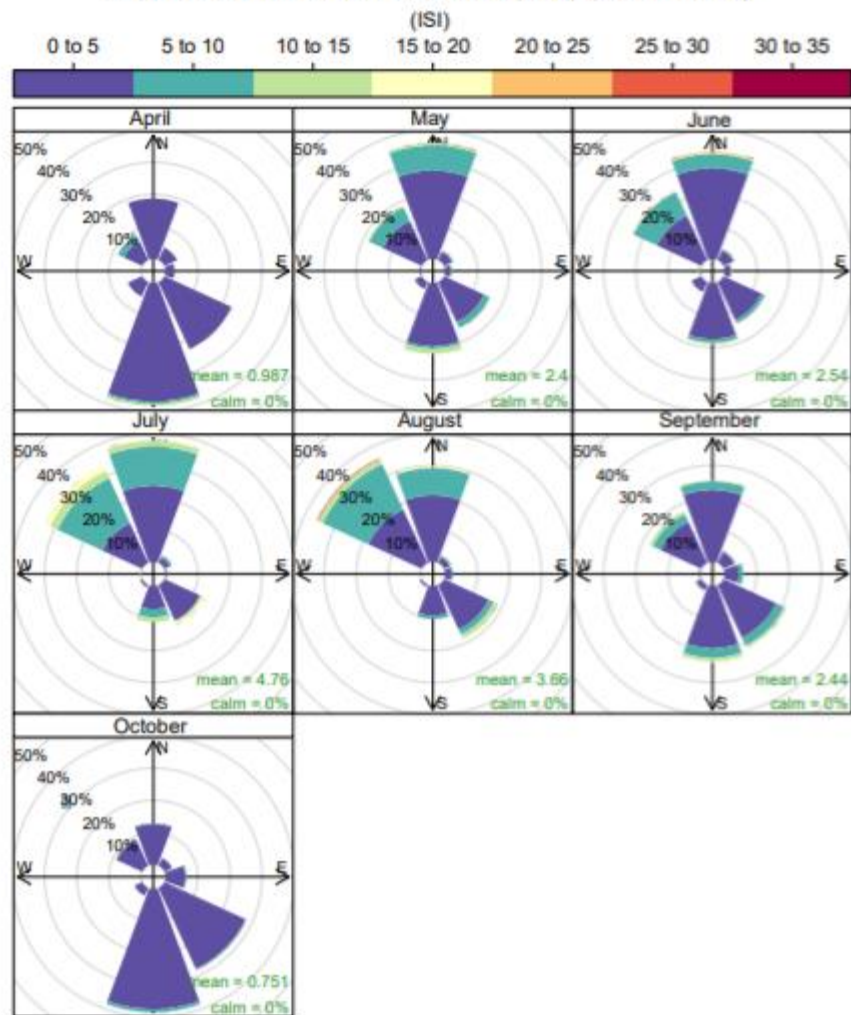
ISI_Rose for TS NAKA CREEK (945) (2006–2015)



Frequency of counts by wind direction (%)

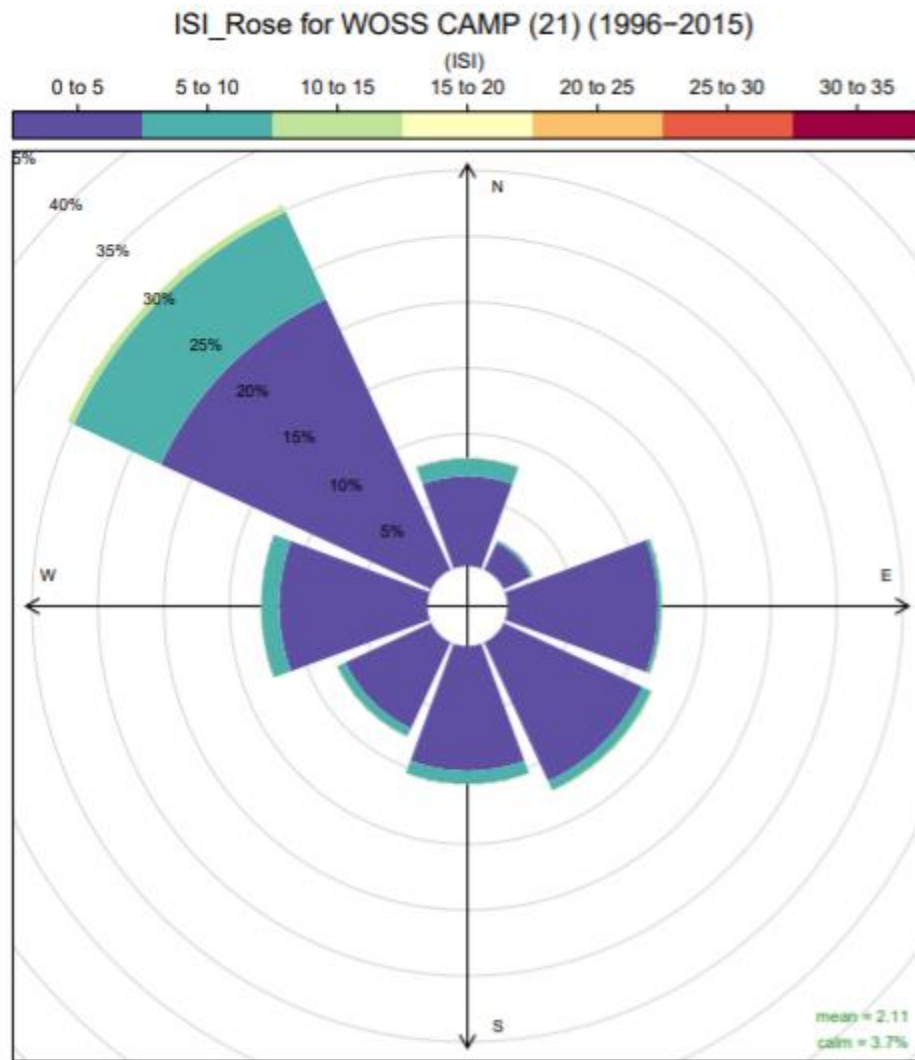


ISI_Rose for TS NAKA CREEK (945) (2006-2015)



Frequency of counts by wind direction (%)

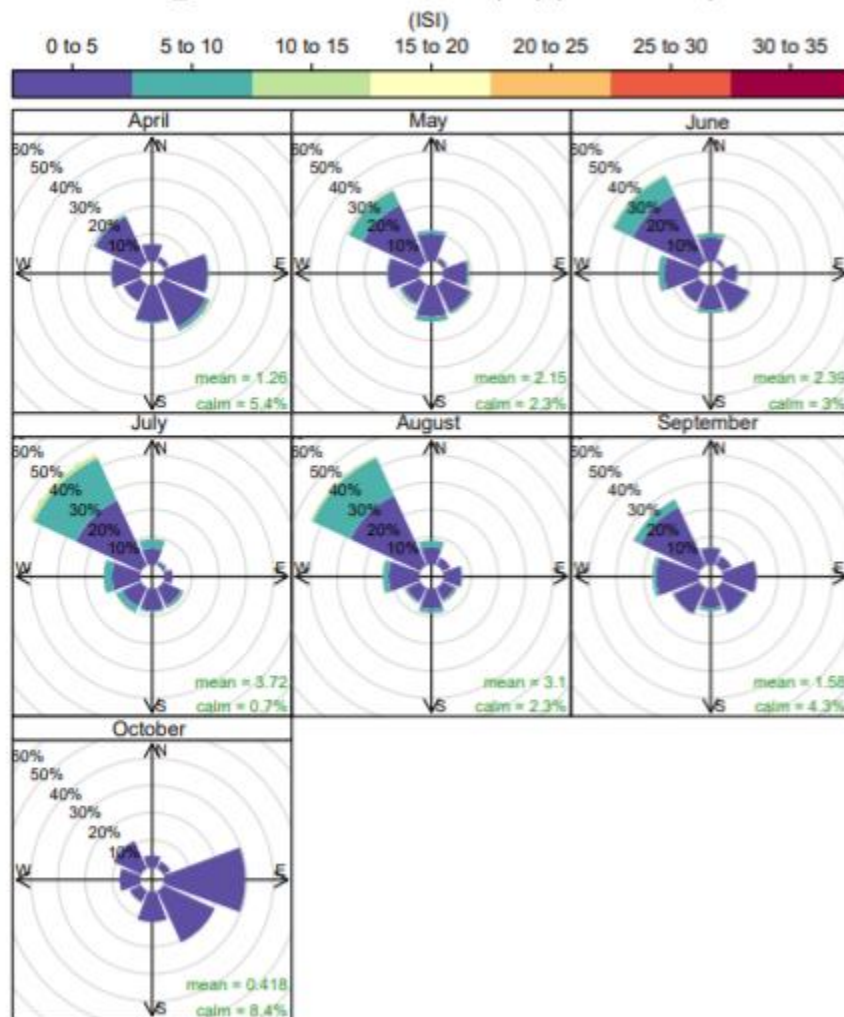




Frequency of counts by wind direction (%)



ISI_Rose for WOSS CAMP (21) (1996-2015)



Frequency of counts by wind direction (%)



Appendix 6: Approved Fuel Type Change Rationale for Town of Port McNeill

1/28/2021

Strategic Natural Resource Consultants Inc Mail - CWPP Port McNeill Fuel Type Change Rationale



Kaitlin Fader <kaitlin.fader@snrc.ca>

CWPP Port McNeill Fuel Type Change Rationale

Hicks, Dana T FLNR:EX <Dana.Hicks@gov.bc.ca>

Fri, Jan 15, 2021 at 2:13 PM

To: Kaitlin Fader <kaitlin.fader@snrc.ca>, "BCWS Prevention FLNR:EX" <BCWSPrevention@gov.bc.ca>, "Botica, Tony

FLNR:EX" <Tony.Botica@gov.bc.ca>

Cc: Aaron Fujikawa <aaron.fujikawa@snrc.ca>, Henry Grierson <henry.grierson@snrc.ca>, Evan Ross <evan.ross@snrc.ca>

Good afternoon Kaitlin,

All these changes are approved. Sorry for taking so long to get back to you.

Dana

From: Kaitlin Fader <kaitlin.fader@snrc.ca>

Sent: January 4, 2021 10:40 AM

To: BCWS Prevention FLNR:EX <BCWSPrevention@gov.bc.ca>; Hicks, Dana T FLNR:EX <Dana.Hicks@gov.bc.ca>;

Botica, Tony FLNR:EX <Tony.Botica@gov.bc.ca>

Cc: Aaron Fujikawa <aaron.fujikawa@snrc.ca>; Henry Grierson <henry.grierson@snrc.ca>; Evan Ross <evan.ross@snrc.ca>

Subject: CWPP Port McNeill Fuel Type Change Rationale

[EXTERNAL] This email came from an external source. Only open attachments or links that you are expecting from a known sender.

Good Morning,

[Quoted text hidden]

<https://mail.google.com/mail/u/0/?ik=fb45a459ba&view=pt&search=all&permmsgid=msg-f%3A1688992521206593268&simpl=msg-f%3A16889925212...> 1/1





Port McNeill CWPP – FUEL TYPE CHANGE RATIONALE

Tuesday, December 8, 2020
Strategic Natural Resource Consultants Inc.
301 – 1180 Ironwood Street
Campbell River BC, V9W 5P7

Ministry of Forest, Lands, Natural Resource Operations and Rural Development
Fuel Management, BC Wildfire Service

To whom it may concern,

Re: Fuel Type Change Rationale for The Town of Port McNeill

Strategic Natural Resource Consultants Inc. (SNRC) has been retained to complete a Union of British Columbia Municipalities – Community Resiliency Investment Program (UBCM – CRI Program) funded Community Wildfire Protection Plan (CWPP) for the Town of Port McNeill. SNRC has received spatial data, including Provincial Strategic Threat Analysis (PSTA) data from the British Columbia Wildfire Service in August of 2020. The town of Port McNeill has requested a final report by January 2020.

The majority of the area of interest is designated as private land. Because the AOI is complex, we focused our study on public locations that were in or close to the Wildland Urban Interface (WUI). Additionally, polygons that received high recreation traffic or included critical infrastructure were given increased consideration. Time and budgetary constraints restricted our project scope, therefore professional judgement guided decisions on precision and detail.

This memo presents SNRC's approach to dealing with these uncertainties and known data gaps, required to extract useful information out of fuel types. It is also meant to satisfy the requirement to use the "Wildfire Treat Assessment – FBP Fuel Type change Rationale" document, required as part of the CWPP Process.

2018 PSTA Fuel Types were overlain and compared to 2019 aerial ortho-photos. Both VRI and national satellite derived PSTA Fuel Types were desktop verified, and confirmed using the BCWS Wildfire Fuel Typing and Fuel Type Layer Working Paper. The Algorithm/parameters in this paper were used to guide all fuel type verification deletions and/or creations. An Updated CWPP Fuel Type Layer was created. Discussion between GIS Analysts and Forestry Professionals further redefined the fuel types, first with desktop review, followed by field visits to verify fuel types. Wildfire Threat Assessment – FBP Fuel Type Change Rationales have been submitted with this letter.

If you have any questions or require any further information, please do not hesitate to contact the undersigned.


Sincerely,

Kaitlin Fader TFT
Assistant Forester
Integrated Environmental Management
South Island - Sunshine Coast

Strategic Natural Resource Consultants Inc.
p: 250.287.2246 ext233
w: snrc.ca

Page | 1
December 08, 2020



Fuel Type Change Rationale – HOSP1			
Location: Port McNeill	Date: November 4, 2020	Assessor/ Professional Designation:	Kaitlin Fader TFT Henry Grierson RFT
Coordinates: PM-CWPP-HOSP1	50.34893, -127.3956	Coordinate System used and format:	NAD 83 BC Environment Albers
PSTA Threat:	HIGH	FBP Fuel Type	D1/2
Assessor's FBP Fuel Type:	C5	Ownership:	Crown
<p>Assessor's Fuel Type Rationale:</p> <p>2018 PSTA Fuel Types were overlain and compared to 2019 ortho-imagery of the Port McNeill CWPP. Plot locations were selected for their representation of their respective polygons as well as accessibility. Plots were assessed on November 4, 2020 to ground truth and provide feedback to the GIS analyst to ensure proper representation of what exists in the field.</p> <p>This stand is composed of over 75% Mature conifer. Crown Closure is approximately 40-60%</p> <p>The field data was compared to the "British Columbia Fuel Typing Layer and Fuel Type Layer Description, 2017"* to determine the updated fuel type.</p> <p>*Perrakis, D.B., Ease, G., Hicks, D. 2017. British Columbia Wildfire Fuel Typing and Fuel Type Layer Description. http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/39432.pdf.</p>  <p>Figure 1. PM CWPP-HOSP1 C5 Fuel Type</p>			

Fuel Type Change Rationale – HOSP1



Figure 2. PM-CWPP-HOSP1 C5 Fuel Type



Figure 3. PM-CWPP-HOSP1 C5 Fuel Type

Fuel Type Change – LEDGE-001			
Location: Port McNeill	Date: November 4, 2020	Assessor/ Professional Designation:	Kaitlin Fader TFT Henry Grierson RFT
Coordinates: PM-CWPP-LEDGE-001	50.36207 -127.5406	Coordinate System used and format:	NAD 83 BC Environment Albers
PSTA Threat:	LOW	FBP Fuel Type	C5
Assessor's FBP Fuel Type:	D1/2	Ownership:	Crown
<p>Assessor's Fuel Type Rationale:</p> <p>2018 PSTA Fuel Types were overlain and compared to 2019 ortho-imagery of the Port McNeill CWPP. Plot locations were selected for their representation of their respective polygons as well as accessibility. Plots were assessed on November 4, 2020 to ground truth and provide feedback to the GIS analyst to ensure proper representation of what exists in the field.</p> <p>Deciduous species dominate this polygon. Composition is less than 25% conifer, therefore the assessor designated this area D1/2.</p> <p>The field data was compared to the "British Columbia Fuel Typing Layer and Fuel Type Layer Description, 2017" *to determine the updated fuel type.</p> <p>*Perrakis, D.B., Ease, G., Hicks, D. 2017. British Columbia Wildfire Fuel Typing and Fuel Type Layer Description. http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/39432.pdf.</p>  <p>Figure 4 - CWPP-LEDGE1 D1/2 Fuel Type</p>			

Fuel Type Change – LEDGE-001



Figure 5. CWPP-LEDGE1 D1/2 Fuel Type



Figure 6. CWPP-LEDGE1 D1/2 Fuel Type

Fuel Type Change Rationale – RDMW-001			
Location: Port McNeill	Date: November 4, 2020	Assessor/ Professional Designation:	Kaitlin Fader TFT Henry Grierson RFT
Coordinates: PM-CWPP-RDMW-001	50.35101, -127.4870	Coordinate System used and format:	NAD 83 BC Environment Albers
PSTA Threat:	MODERATE	FBP Fuel Type	D1/2
Assessor's FBP Fuel Type:	C5	Ownership:	Crown
<p>Assessor's Fuel Type Rationale:</p> <p>2018 PSTA Fuel Types were overlain and compared to 2019 ortho-imagery of the Port McNeill CWPP. Plot locations were selected for their representation of their respective polygons as well as accessibility. Plots were assessed on November 4, 2020 to ground truth and provide feedback to the GIS analyst to ensure proper representation of what exists in the field.</p> <p>This stand is composed of more than 75% mature conifer. Crown closure is between 40-60%.</p> <p>The field data was compared to the "British Columbia Fuel Typing Layer and Fuel Type Layer Description, 2017"* to determine the updated fuel type.</p> <p>*Perrakis, D.B., Ease, G., Hicks, D. 2017. British Columbia Wildfire Fuel Typing and Fuel Type Layer Description. http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/39432.pdf.</p>  <p>Figure 7. PM-CWPP-RDMW C-5 Fuel Type</p>			


Fuel Type Change Rationale – RDMW-001



Figure 8. PM-CWPP-RDMW CS Fuel Type



Figure 9. PM-CWPP-RDMW CS Fuel Type

Fuel Type Change Rationale – WFP-003 and WFP-004			
Location: Port McNeill	Date: November 4, 2020	Assessor/ Professional Designation:	Kaitlin Fader TFT Henry Grierson RFT
Coordinates: PM-CWPP-WFP-003 and 004	50.33971 -127.6903	Coordinate System used and format:	NAD 83 BC Environment Albers
PSTA Threat:	Low-Moderate	FBP Fuel Type	M1/2
Assessor's FBP Fuel Type:	S3	Ownership:	Crown
<p>Assessor's Fuel Type Rationale:</p> <p>2018 PSTA Fuel Types were overlain and compared to 2019 ortho-imagery of the Port McNeill CWPP. Plot locations were selected for their representation of their respective polygons as well as accessibility. Plots were assessed on November 4, 2020 to ground truth and provide feedback to the GIS analyst to ensure proper representation of what exists in the field.</p> <p>No standing trees exist in this polygon. Area was logged less than 6 years ago. Slash is abundant on site.</p> <p>The field data was compared to the "British Columbia Fuel Typing Layer and Fuel Type Layer Description, 2017"* to determine the updated fuel type.</p> <p>*Perrakis, D.B., Ease, G., Hicks, D. 2017. British Columbia Wildfire Fuel Typing and Fuel Type Layer Description. http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/39432.pdf.</p>  <p>Figure 10. PM-CWPP-WFP-003 and 004, S3 Fuel Type</p>			

Fuel Type Change Rationale – WFP-003 and WFP-004



Figure 11. PM-CWPP-WFP-003 and 004, S3 Fuel Type



Figure 12. PM-CWPP-WFP-003 and 004, S3 Fuel Type


Fuel Type Change Rationale – WFP-003, WFP-004			
Location: Port McNeill	Date: November 4, 2020	Assessor/ Professional Designation:	Kaitlin Fader TFT Henry Grierson RFT
Coordinates: PM-CWPP-WFP-003 and 004	50.33971 -127.6903	Coordinate System used and format:	NAD 83 BC Environment Albers
PSTA Threat:	Low-Moderate	FBP Fuel Type	M1/2
Assessor's FBP Fuel Type:	S3	Ownership:	Crown
<p>Assessor's Fuel Type Rationale:</p> <p>2018 PSTA Fuel Types were overlain and compared to 2019 ortho-imagery of the Port McNeill CWPP. Plot locations were selected for their representation of their respective polygons as well as accessibility. Plots were assessed on November 4, 2020 to ground truth and provide feedback to the GIS analyst to ensure proper representation of what exists in the field.</p> <p>No standing trees exist in this polygon. Area was logged less than 6 years ago. Slash is abundant on site.</p> <p>The field data was compared to the "British Columbia Fuel Typing Layer and Fuel Type Layer Description, 2017"* to determine the updated fuel type.</p> <p>*Perrakis, D.B., Ease, G., Hicks, D. 2017. British Columbia Wildfire Fuel Typing and Fuel Type Layer Description. http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/39432.pdf.</p> 			

Figure 13. PM-CWPP-WFP-003 and 004, S3 Fuel Type


Fuel Type Change Rationale – WFP-003, WFP-004



Figure 14. PM-CWPP-WFP-003 and 004, S3 Fuel Type



Figure 15. PM-CWPP-WFP-003 and 004, S3 Fuel Type

Fuel Type Change Rationale – WFP-001			
Location: Port McNeill	Date: November 4, 2020	Assessor/ Professional Designation:	Kaitlin Fader TFT Henry Grierson RFT
Coordinates: PM-CWPP-WFP-001	50.33551 -127.7466	Coordinate System used and format:	NAD 83 BC Environment Albers
PSTA Threat:	High	FBP Fuel Type	D1-2
Assessor's FBP Fuel Type:	C3	Ownership:	Crown
<p>Assessor's Fuel Type Rationale:</p> <p>2018 PSTA Fuel Types were overlain and compared to 2019 ortho-imagery of the Port McNeill CWPP. Plot locations were selected for their representation of their respective polygons as well as accessibility. Plots were assessed on November 4, 2020 to ground truth and provide feedback to the GIS analyst to ensure proper representation of what exists in the field.</p> <p>This polygon is over 80% coniferous. This stand is immature, greater than 55% crown closure, between 4-12m in height.</p> <p>The field data was compared to the "British Columbia Fuel Typing Layer and Fuel Type Layer Description, 2017"* to determine the updated fuel type.</p> <p>*Perrakis, D.B., Ease, G., Hicks, D. 2017. British Columbia Wildfire Fuel Typing and Fuel Type Layer Description. http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/39432.pdf.</p> 			
<p>Figure 16. PM-CWPP-WFP-001</p>			

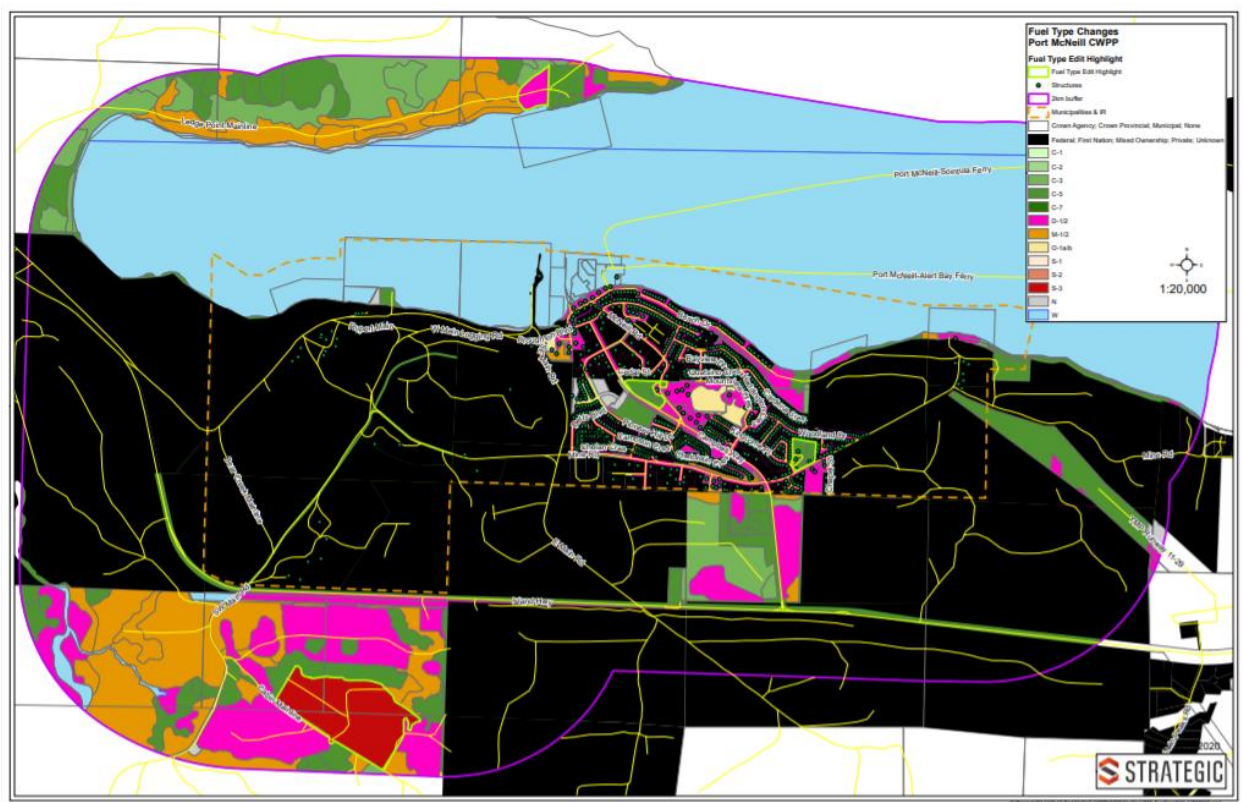
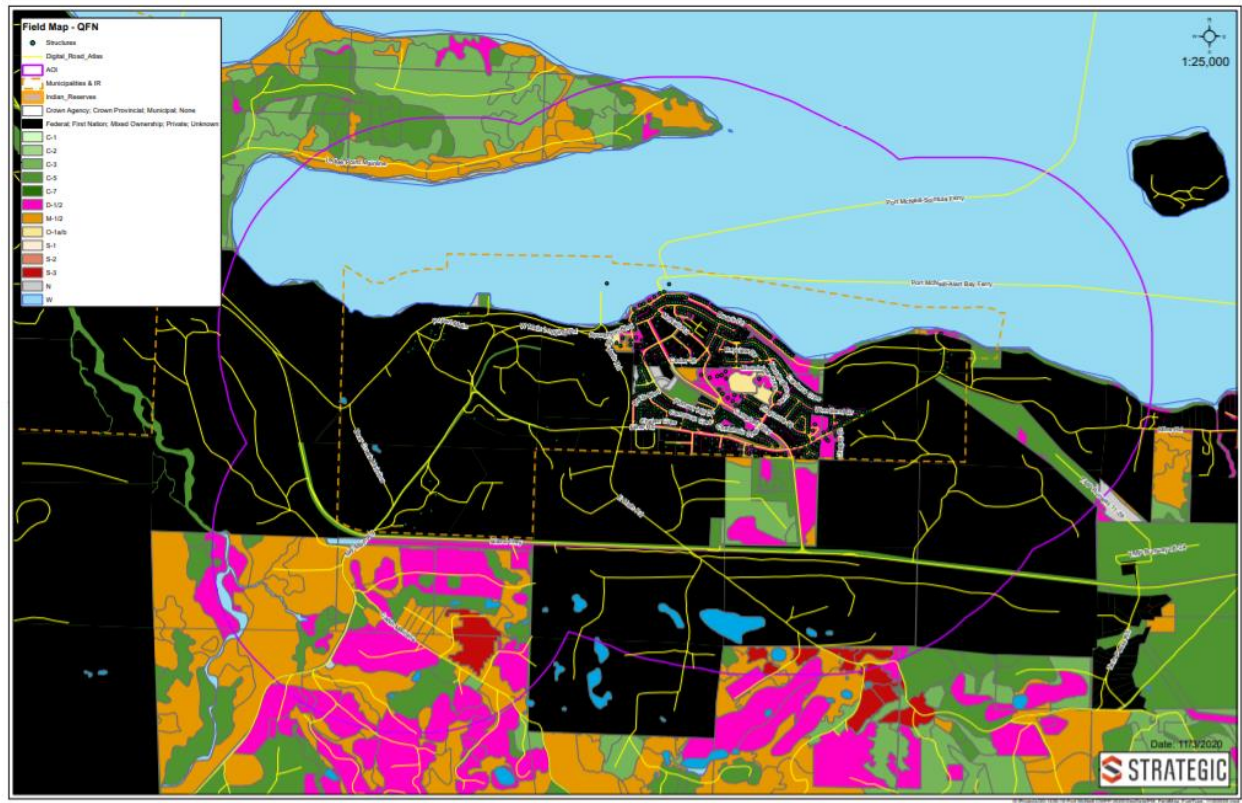
Fuel Type Change Rationale – WFP-001

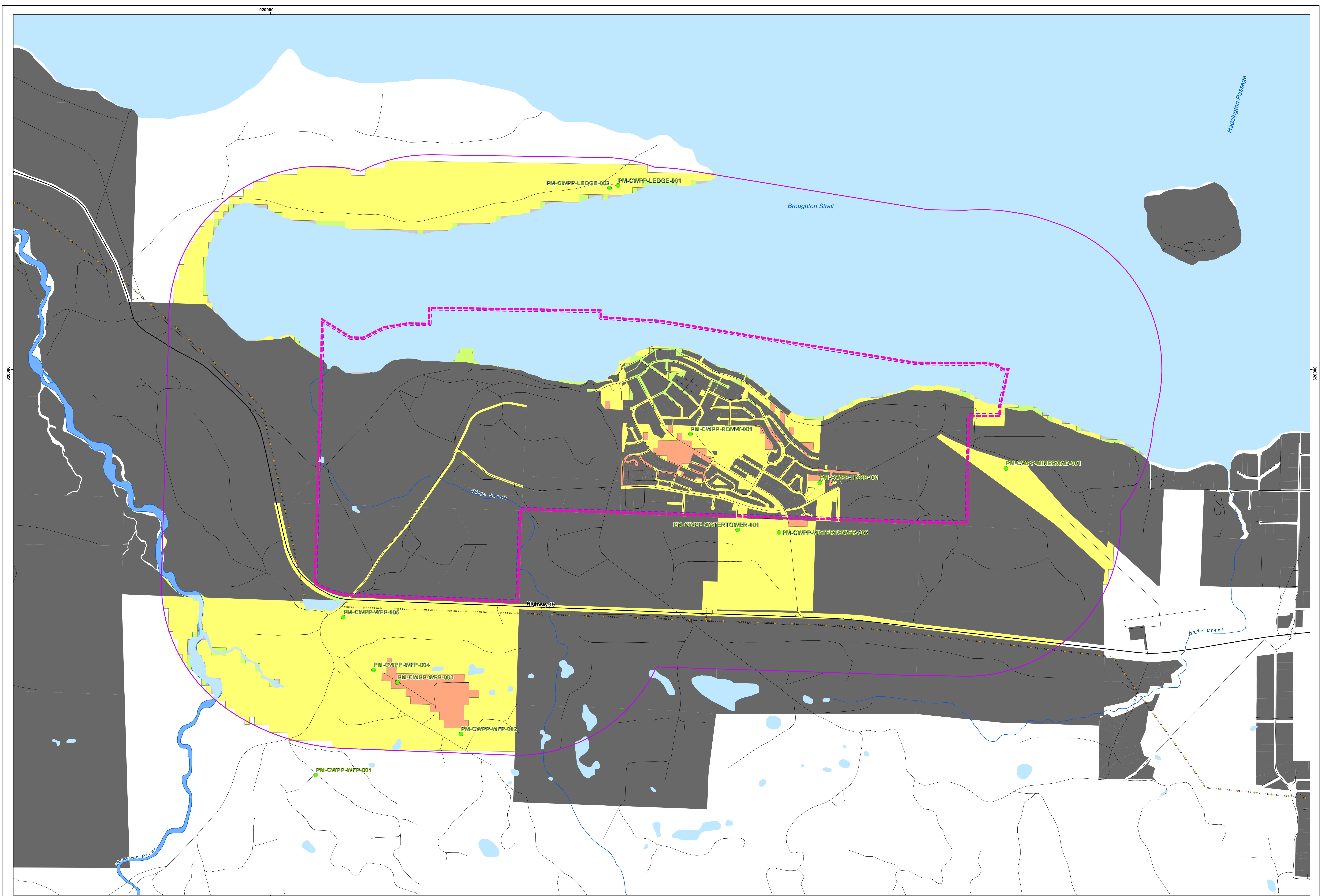


Figure 17, PM-CWPP-WFP-001



Figure 18, PM-CWPP-WFP-001, from the roadside,





Port McNeill Community Wildfire Protection Plan

Map 2: Local Fire Risk

Town of Port McNeill, CRI #235

Map Projection: NAD 83 BC Albers
Version Date: 1/26/2021
GIS Consultant: E. Ross
CWPP Consultant: Kaitlin Fader, TFT

STRATEGIC

NATURAL RESOURCE CONSULTANTS

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Fuel Assessment Plots

2km AOI

Municipal Boundary

WUI Buffer 100

Power Transmission Line

Highway

Water Feature

FWA RIVERS

FWA Streams

Digital Road Atlas

Non Eligible Land

First Nation Reserves

No Risk

Low

Moderate

High

Extreme

Local Wildfire Risk Score	Hectares
No Risk	1088.9
Low	80.6
Moderate	2160.9
High	46.1
Extreme	0

PORT MCNEILL

This product is for informational purposes. Although great care was taken during the creation of this map, data shown on these drawings are compiled from numerous sources and may not be complete or accurate. Strategic is not responsible for any errors, omissions or deficiencies in this drawing.

Fuel Type Changes Port McNeill CWPP

Fuel Type Edit Highlight

- Fuel Type Edit Highlight
- Structures
- 2km buffer
- Municipalities & IR
- Crown Agency; Crown Provincial; Municipal; None
- Federal; First Nation; Mixed Ownership; Private; Unknown
- C-1
- C-2
- C-3
- C-5
- C-7
- D-1/2
- M-1/2
- O-1a/b
- S-1
- S-2
- S-3
- N
- W

1:20,000

