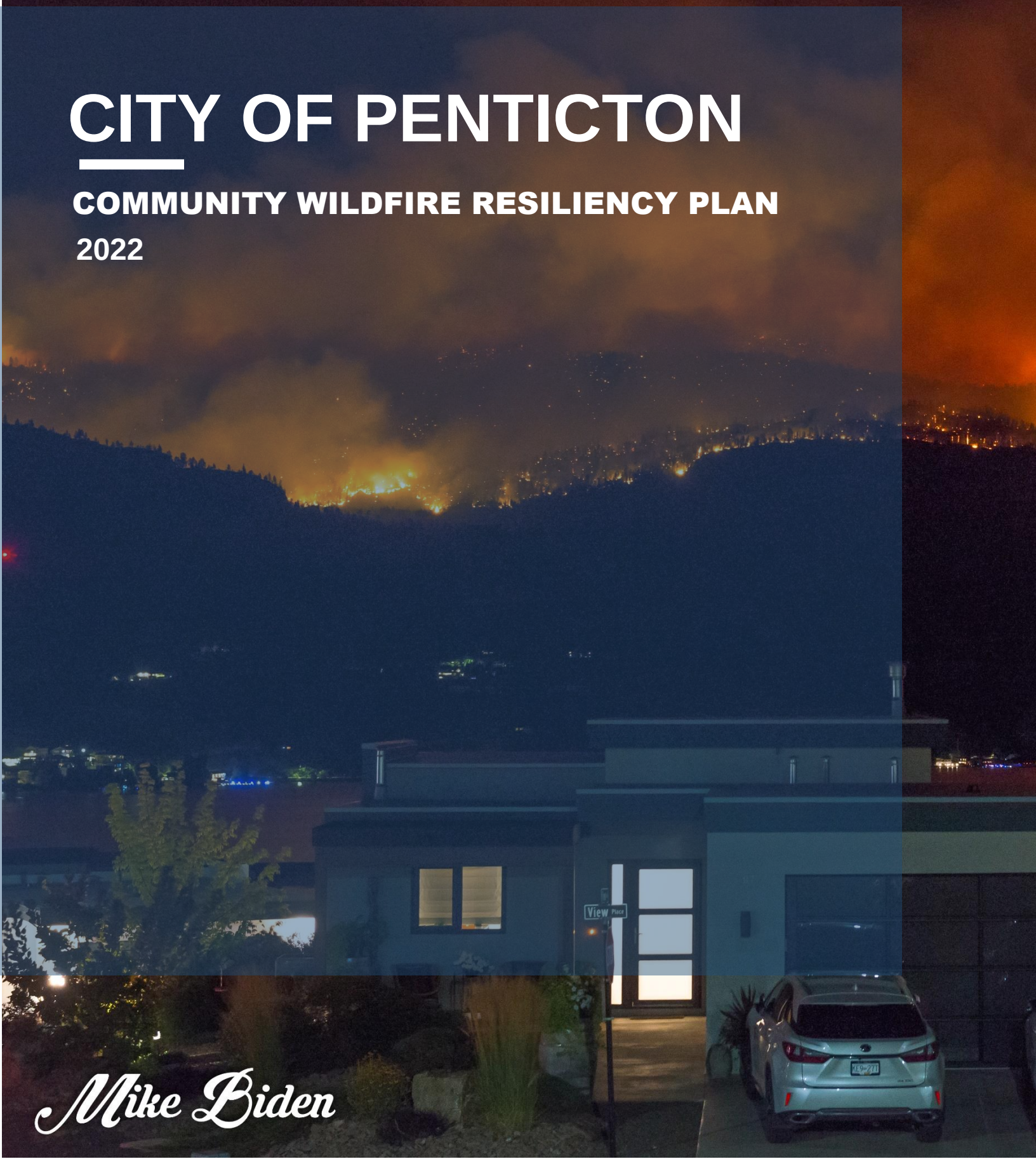
BRITISH COLUMBIA FireSmart™

CITY OF PENTICTON

COMMUNITY WILDFIRE RESILIENCY PLAN

2022



Mike Biden

COMMUNITY WILDFIRE RESILIENCY PLAN

Signature Page



July 7th, 2023

John Davies
Register Professional Forester
Forsite Consultants Ltd.

Date

July 7th, 2023

Brittany Seibert
Emergency Program Coordinator
City of Penticton

Date

July 7, 2023

Rob Trousdell
Acting Fire Chief
City of Penticton

Date

Acknowledgements

The City of Penticton respectfully acknowledges the traditional, and unceded territory of the Sylix people within the Okanagan Nation where this project has taken place.

The development of the Community Wildfire Resiliency Plan (CWRP) was jointly managed by the City's FireSmart Coordinator, Miyoko McKeown, and the City's Emergency Program Coordinator, Brittany Seibert. The City of Penticton would like to thank all those who have contributed to this CWRP by providing guidance, direction, and feedback. This has included the project consulting team of:

- Forsite Consultants Ltd.[1]
  - John Davies, RPF
  - Andy Low, RPF
  - Liam Grant, RPF
  - Hunter, German Pointer
- Geographica Group
  - Nick Zukanovic, GISP
- Penticton Fire Department
  - Miyoko McKeown, FireSmart Coordinator
  - Brittany Seibert, Emergency Program Coordinator
- City of Penticton
  - Steven Collyer, Planning Department
  - Rumneek Padda, GIS
  - Ron Galos, GIS

This document would not have been possible without the contributions and support of staff and representatives from the following organizations:

- Fire Department (CoP)
- Planning & Development Services (CoP)
- Parks (CoP)
- Information technology & GIS (CoP)
- FireSmart BC
- Penticton Zone (BC Wildfire Service)

This City would also like to thank Union of British Columbia Municipalities (UBCM) for the Community Resiliency Investment (CRI) funds that provided the financial support for the creation of this document.

[1] Contract was awarded to Frontline Operations Group Ltd.; amalgamated with Forsite Consultants in February 2023

Executive Summary

After the devastating 2003 wildfire season, the Community Wildfire Protection Plan (CWPP) was created to assisted communities in understanding their risk to wildfire. Through the various lessons learned over the past few decades, the CWPP has evolved to become a more comprehensive document that encompasses the 7 disciplines of FireSmart; the Community Wildfire Resiliency Plan (CWRP). These disciplines include: Education, Legislation and Planning, Development Considerations, Interagency Cooperation, Cross-Training, Emergency Planning, and Vegetation Management. The CWRP follows the template set out by the Union of British Columbia Municipalities, but encompasses information specific to the City of Penticton and its Wildfire Urban Environment.

The CWRP is a framework design to understand wildfire risk. Risk is defined a hazard x vulnerability; risk does not exist without one or the other. It is now known that fire plays an integral part in forest health and bio-ecology. Therefore, there is a need for a paradigm shift from the removal of the hazard (fire) to the reduction of vulnerability. Vulnerability can be thought of as a quantitative balance between susceptibility (i.e., the likelihood of occurrence/exposure) and resiliency (i.e., the capacity to adapt). By increasing resiliency communities are able to achieve a reduction in vulnerability, thus increasing the protection of their built environments.

The CWRP will help guide Penticton Mayor and Council, City staff, the Penticton Fire Department, local residents, tourists, and stakeholders in becoming more resilient through actionable items to be taken within the municipal boundary, and on private land. With climate change, the ever increasing wildfire threat demands that all levels of community engage in risk reduction initiatives. The CWRP provides a comprehensive road map to achieving risk reduction (see Section 12).

Many achievements have already been accomplished by the City of Penticton in its efforts to reduce risk to wildfire impacts. This includes various fuel management and treatments on municipal land, the establishment of a FireSmart education program and fulltime FireSmart coordinator, a completed Wildfire Urban Response Plan with pre-incident mapping, and continuous cross-training in wildland suppression tactics and strategies. However, there still remains opportunity for further risk reduction through treatment maintenance, resident engagement in FireSmart, and adoption of bylaws and Wildfire Development Permit Areas (DPA)

As the City and the wildfire environment is an ever changing landscape, the CWRP shall be considered a living document and reviewed within 5 years of adoption. Currently, as of 2023, the responsibility shall lie with the Penticton Fire Department within the role of the FireSmart Coordinator.

Contents

Acknowledgements i
Executive Summary ii
Contents iii
Tables, Figures & Maps v
Acronyms vi
1 Introduction 1
1.1 Overview 1
1.2 Plan Goals 2
1.3 Plan Development Summary 4
2 Relationship to Other Plans 5
3 Community Description 7
3.1 Area of Interest 7
3.2 Wildland-Urban Interface 9
3.3 Community Information 9
4 Wildfire Risk Assessment 11
4.1 Local Wildfire Environment 12
4.1.1 Topography 12
4.1.2 Fuel (Vegetation) 12
4.1.3 Weather 14
4.2 Local Wildfire History 20
4.3 Provincial Strategic Threat Analysis 26
4.4 Local Wildfire Threat Assessment 27
5 Education 31
5.1 Information Sessions 32
5.2 Community Events 33
5.3 FireSmart Canada Neighbourhood Recognition Program 33
5.4 FireSmart Home Partners Program 37
5.5 Social Media 37
5.6 FireSmart Education for Youth 38
6 Legislation and Planning 40
6.1 Municipal Bylaws 40

6.1.1 FireSmart Open Burning 41
6.2 Provincial Acts and Regulations 41
6.3 Community Action Planning 43
7 Development Considerations 45
7.1 Wildfire Development Permit Areas 45
7.2 Evacuation Routes 46
8 Interagency Cooperation 47
8.1 Mutual Aid Agreement 48
8.2 Emergency Operations Center 49
8.3 South Okanagan Wildfire Advisory Group 49
8.4 Regional FireSmart Committee 50
8.5 Penticton Indian Band 50
9 Cross-Training 51
9.1 Penticton Fire Department 51
9.2 Emergency Operations Center 52
9.3 FireSmart Training 52
9.4 Neighbourhood Champions 52
10 Emergency Planning 53
10.1 Pre-Incident Planning 53
10.1.1 Wildland Urban Interface Fire Flow Chart 54
10.1.2 Prep Levels 55
10.1.3 Pre-Incident Mapping 55
10.1.4 Penticton Fire Department Resources 55
10.2 Recovery 56
10.2.1 Disaster Financial Assistance 56
11 Vegetation Management 57
11.1 Residential Scale FireSmart Landscaping 57
11.1.1 FireSmart Rebates & Bins 61
11.1.2 FireSmart Plants & BC Plant Tagging Program 61
11.2 Fuel Management Treatment in the Community and Landscape Zones 62
12 Action Plan & Implementation 68
Appendices 74
Appendix A Glossary of Terms 74

Appendix B FireSmart Education 75
Appendix C FireSmart Tips 76
Appendix D Resources 76
Appendix E Threat Assessments 78
References 104

Tables, Figures & Maps

Table 1 CWRP Goals 4
Table 2 Relationship to Other Plans 5
Table 3 Summary of AOI by Land Ownership 9
Table 4 City of Penticton Demographics 10
Table 5 Natural Disturbance Regime Classification Types Recognized in BC 12
Table 6 Breakdown of Fuel Types within the AOI 13
Table 7 Breakdown of BEC Zone, Subzone and Variant within the AOI 13
Table 8 BC Wildfire Service Active Fire Weather Station Particulars 14
Table 9 BUI & FWI Ranges by Fire Danger Class Category and Danger Region 16
Table 10 Summary of Fire Danger Class 4 & 5 Days 17
Table 11 Summary of Projected Changes in Average Temperature and Precipitation in Central Okanagan to the 2050s 20
Table 12 Wildfire Burned Area Summary within 2km of Penticton 21
Table 13 Notable Wildfires within the Surrounding Area of Penticton 22
Table 14 PSTA Threat Rating Category Areas and Percentages for the AOI 26
Table 15 Local GIS-Based Analysis of Potential Fire Behaviour Category Areas and Percentages for the AOI 27
Table 16 Current and Previously Recognized FireSmart Neighbourhoods 34
Table 17 Potential Neighbourhoods for FireSmart Planning and Initiatives 36
Table 18 City of Penticton Schools 38
Table 19 Proposed fuel treatment unit (FTU) summary table 62
Table 20 CWRP Recommendations and Action Table 69

Figure 1 The 7 Disciplines of FireSmart 2
Figure 2 CWRP Mission Statement 3
Figure 3 Wildfire Threat Components 11
Figure 4 Fire Danger Class methodology flowchart from the Canadian Forest Fire Danger Rating System (CFFDRS) 15
Figure 5 Danger Class 4 & 5 days at Penticton RS Fire Weather Station 16
Figure 6 Seasonal severity rating for Penticton RS weather station (1988-2019) 18
Figure 7 Annual wildfire occurrence within the AOI, from 1953-2017 24
Figure 8 Annual area burned from wildfire within the AOI, from 1921 to 2022 25
Figure 9 2021 Public Education Stats 31
Figure 10 Penticton 2021 FireSmart Stats 32

Figure 11 Penticton FireSmart Social Media Handles 38
Figure 12 FireSmart WDPA Process 45
Figure 13 Penticton Fire Department Org Chart 48
Figure 14 FireSmart Canada Home Ignition Zones 58
Figure 15 Penticton FireSmart Plant Tagging 61

Maps 1 City of Penticton Land Ownership 8
Maps 2 BC Wildfire Service fire weather station for the Penticton area **(⊗)** 14
Maps 3 Fire Behaviour on Non-Private Land Surrounding the City (2016) 28
Maps 4 Local Fire Risk within Municipal Boundaries – Municipal Land Ownership 29
Maps 5 Threat Assessment Score for Polygons in the South end of Penticton 30
Maps 6 Penticton Wildfire Development Permit Area Recommendation (2016) 40
Maps 7 Penticton Fire Department Service Boundaries 47
Maps 8 Location of all priority treatment polygons within the City. 59
Maps 9 Aerial View of the Landfill (Priority Sequence Designated by Numbers) 60

Acronyms

AOI	Area of Interest
BCWS	British Columbia Wildfire Service
BEC	Biogeoclimatic Ecosystem Classification
BUI	Build Up Index
CCAP	Community Climate Action Plan
CEA	Community Energy Plan
CFFDRS	Canadian Forest Fire Danger Rating System
CFS	Community Funding and Support
CIFFC	Canadian Interagency Forest Fire Centre
CRI	Community Resiliency Investment
CoP	City of Penticton
CWRP	Community Wildfire Resiliency Planning
DFA	Disaster Financial Assistance
(W)DPA	(Wildfire) Development Permit Area
DSR	Daily Severity Rating
EMCR	Emergency Management and Climate Readiness
EMP	Emergency Management Plan
EOC	Emergency Operations Centre
EPA	Emergency Program Act
ERP	Emergency Response Plan
FBP	Fire Behavior Prediction System
FCFS	FireSmart Community Funding and Supports
FSCNRP	FireSmart Canada Neighborhood Recognition Program
FTUS	Fuel Treatment Units
FWI	Fire Weather Index

HIZ	Home Ignition Zone (also see Structure Ignition Zone)
HRVA	Hazard Risk and Vulnerability Analysis
HVRA	High Value Resources and Assets
IDF	Interior Douglas Fir
LFR	Local FireSmart Representative
MFLNRORD	Ministry of Forests, Lands, Natural Resource Operations and Rural Development
MOF	Ministry of Forests
MOTI	Ministry of Transportation and Infrastructure
NDT	Natural Disturbance Type
PCIC	Pacific Climate Impacts Consortium
PIB	Penticton Indian Band
PFD	Penticton Fire Department
PP	Pondarosa Pine
PSTA	Provincial Strategic Threat Assessment
OCP	Official Community Plan
OFC	Office of the Fire Commissioner
RDOS	Regional District of Okanagan Similkameen
SOLE	State of Local Emergency
SSR	Seasonal Severity Rating
SWPI	Strategic Wildfire Prevention Initiative
UBCM	Union of British Columbia Municipalities
VAR	Values at Risk
WRR	Wildfire Risk Reduction
WUI	Wildland Urban Interface

1 Introduction

1.1 Overview

The City of Penticton, and the Okanagan Valley in general, has long been familiar with the challenges associated with living in a fire-prone environment. Major wildfire events such as the Garnet Fire in 1994, Okanagan Mountain Park Fire in 2003, Mt. Christie Fire in 2020, as well as numerous other fires, have left their indelible marks upon the landscape and the local residents. Catastrophic wildfire incidents elsewhere in western North America, including Ft. McMurray in 2016 and, most recently, Lytton in 2021, serve as reminders of the challenges that communities can face in the wildland urban interface.

Wildfires are certainly not a new phenomenon in BC, or Canada, given that they are a historical and integral natural disturbance trend in our ecosystems. However, several natural resource management policies have, over time, led to increases in both wildfire risk and behaviour. Policies and management philosophies such as fire exclusion through aggressive suppression, as well as the virtual elimination of traditional First Nations ecological burning, has contributed to an increase in forest fuel loading in ecosystems that had otherwise been fire-maintained. The interruption of periodic natural disturbance from wildfire, coupled with the effects of climate change, has had significant effect on certain ecosystems in BC – including those within the Okanagan valley.

There has been a growing trend since the late 1990s, with more provincial traction in the last 15 years, to analyze the risk of wildfire through risk and consequence mapping. This has become known as Wildfire Risk Analysis. The value of this analysis is that it maps outs the potential wildfire behaviour of an area, as well as the consequences or impacts of a wildfire on values (natural or structural). The resultant mapping products allow for risk to values to be reduced through appropriate management decisions based on the analysis. This analysis and the associated management recommendations can be incorporated into a Wildfire Risk Management Plan that allows for the land manager to take appropriate actions to reduce wildfire risk over time. For communities, historically this analysis and management plan has taken the form of a Community Wildfire Protection Plan (CWPP) and, as of 2021, a Community Wildfire Resiliency Plan (CWRP).

The City of Penticton first aligned its efforts for wildfire risk reduction and resiliency in 2006 with the completion of its first CWPP. After a decade of changes to the Wildland Urban Interface (WUI), including urbanization growth and changes in fuel characteristics, the City sought an update in 2016 to review its current threat and strategic initiatives. As landscapes continue to change it is necessary that strategic plans are reviewed on a cyclic timeframe in order to adapt to hazards and vulnerabilities. To ensure that CWPPs take a comprehensive approach towards wildfire risk reduction and resiliency building, the BC Wildfire Service (BCWS) and BC FireSmart Committee developed a new framework of the CWRP in 2021. The intention

was to have a CWRP help align communities with the seven disciplines of FireSmart in conjunction to wildfire risk analysis:



Figure 1 The 7 Disciplines of FireSmart

Additionally, in order to apply for FireSmart and fuel management funding through the Union of BC Municipalities (UBCM) Community Resiliency Investment (CRI) fund, the City was in need of an updated CWRP that conformed to current CRI criteria.

1.2 Plan Goals

As with any plan, there should be an ongoing organizational process to identify realistic and achievable goals that align with strategic vision. In the development of this CWRP, an effort was made to align with the City's 2023-2027 strategic goal of: Safe & Resilient (City of Penticton, 2023).

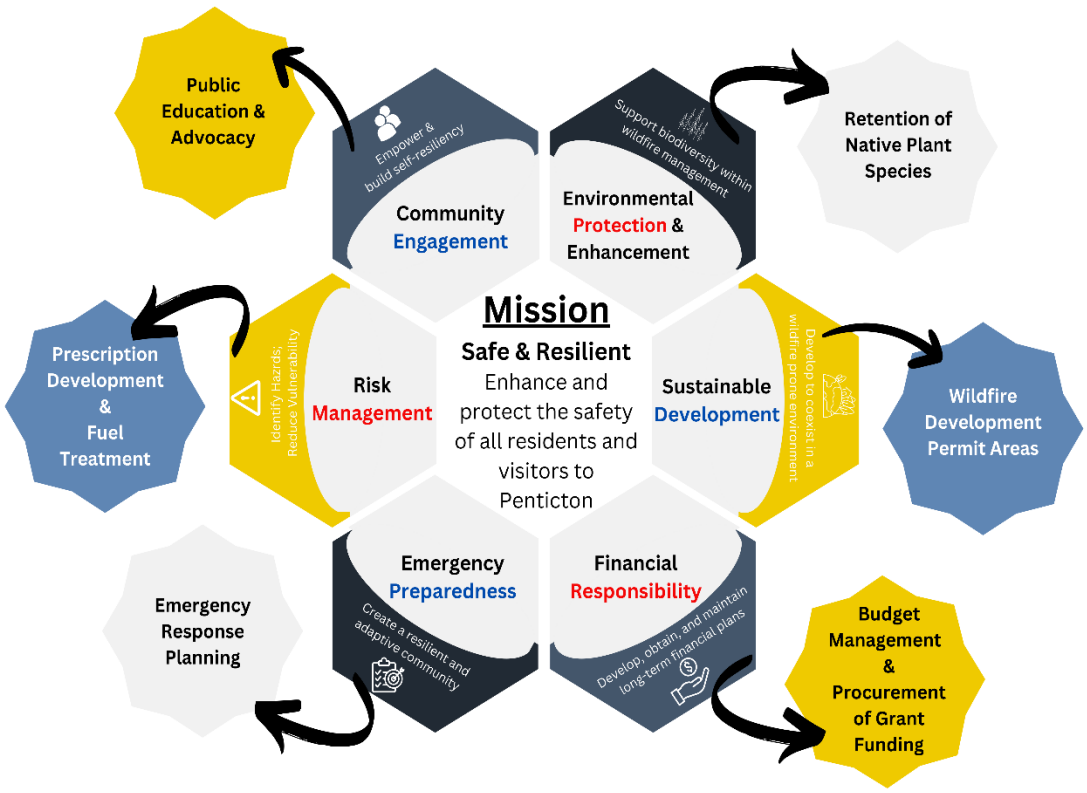


Figure 2 CWRP Mission Statement

Wildfire is a natural component to the landscape and a vital necessity to the health of local ecology. Learning to adapt and coexist with fire will not only strengthen a community's resiliency, but also, provide the necessary allowance for fire to fulfill its renewal and maintenance role.

Resiliency means the ability to withstand and recover from disaster. Disaster is the when a hazard (i.e., fire) intersects with a vulnerability (i.e., non-FireSmart neighbourhood) in a way that exceeds or overwhelms the community's ability to respond and avert negative impacts (i.e., loss of homes).

The purpose of the CWRP is to propose pathways toward a FireSmart future for the City, focusing on actions that are within scope, authority, and capacity. Wildfire resiliency is not a single destination with a defined roadmap. It is an ongoing process of evaluation and adaptation; and recommendations made in the plan to improve upon wildfire resiliency. Some actions may involve multiple values, or long timeframes, which deserve consideration for future planning.

Table 1 outlines the mission for wildfire risk reduction within the City of Penticton, through objective and vision by identifying actionable items.

Table 1 CWRP Goals

COMMUNITY WILDFIRE RESILIENCY PLAN GOALS			
Mission	**Objective**	**Vision**	**Tactics**
Safe & Resilient Enhance and protect the safety of all residents and visitors to Penticton	Community Engagement	Empower residents & build self-resiliency by reducing barriers and providing supports	Public Education
			Rebates & Grants
			Neighbourhood FireSmart Programming
	Risk Management	Identify hazards; Reduce vulnerability	Prescription development & fuel treatment
			Protect critical infrastructure, including access & egress routes
			Promote FireSmart development considerations within defined WUI
	Emergency Preparedness	Create a resilient and adaptive community that is able to prepare, respond to, and recover from all types of emergencies and disasters.	Wildfire emergency response planning
			Cross-training
			Mutual aid agreement, interagency cooperation & relationship building
	Financial Responsibility	Develop, obtain, and maintain long-term financial plans that support our strategic goals and address the challenges of the changing economic environment.	Procurement of grant funding
	Sustainable Development	Develop and build a resilient city that is able to coexist in a wildfire prone environment.	Adoption of Wildfire Development Permit Areas
	Environmental Protection & Enhancement	Support biodiversity within wildfire management practices	Retention and incorporation of native plant species
			Engagement with First Nation partners and incorporation of local, traditional indigenous knowledge
			Climate Action Planning

1.3 Plan Development Summary

The Penticton CWRP was an update to the 2016 Community Wildfire Protection Plan (CWPP) and funded by the 2022 UBCM's Community Resiliency Investment grant. Upon confirmation of

approval for grant funding, the City issued a request for proposals in the spring of 2022 for the development of this plan, primarily in the risk analysis and vegetation management plan, in accordance to the Province's current standards. The contract was awarded to Frontline Operations Group Ltd[2]., who had extensive experience in wildfire risk management and development of CWPPs. Much of the document was also developed by the City's FireSmart Coordinator and Emergency Program Coordinator. Field assessments took place in the summer of 2022. Engagement with City departments, research and consultation was also undertaken throughout the summer of 2022 into the winter/spring of 2023.

A roundtable stakeholder's meeting was held in the spring of 2023 to facilitate conversation and feedback on the relevant findings, and recommendations made in the plan. The hope was to align the CWRP with other City department initiatives, in addition to provincial partners such as the Penticton Wildfire Zone. Final draft of the plan was completed in April 2023, and will be made available to the public online.

2 Relationship to Other Plans

Table 2 Relationship to Other Plans

KEY PLANS AND RELATIONSHIP TO CWRP			
Plan Type	**Description**	Relationship to CWRP	**Additional Information**
Official Community Plan/ Comprehensive Community Plan	The City of Penticton has developed an Official Community Plan (OCP) in 2019 under the Local Government Act. The OCP provides the long-term vision for the community by stating the objectives and policies that guide decisions on planning and land use management.	❖ Has addressed the need to mitigate against wildfire as the city grows and develops. ❖ Includes building and natural environment considerations to create a city more resilient to wildfire. ❖ References the CWRP in that there should be an implementation of the recommendations in the CWRP.	City of Penticton's Official Community Plan Bylaw
Emergency Management Plan	The BC Emergency Program Act requires local authorities to prepare a local all-hazard Emergency Management Plan	❖ The Provincial Strategic Threat Assessment (PSTA), WUI Risk Class Assessment maps, and	

[2] Later amalgamated with Forsite Consulting Ltd. as noted in the acknowledgments

KEY PLANS AND RELATIONSHIP TO CWRP			
Plan Type	**Description**	Relationship to CWRP	**Additional Information**
	(EMP). The foundation of the plan is a Hazard Risk and Vulnerability Analysis (HRVA), which determined the hazards affecting a community.	the WUI Wildfire Threat Assessment can be used to support identifying the wildfire risk to the local area of responsibility for input into both the HRVA, as part of the EMP, and the wildfire risk assessment within the CWRP.	
Neighbourhood / Area Plan	Neighbourhood plans provide direction for future development of specific areas in the City of Penticton within the framework of the goals and policies of the Official Community Plan.	❖ Neighbourhood plans recommend building and landscaping measures to mitigate the risks to life and property from a wildfire.	City of Penticton's Neighbourhood Plans
FireSmart Neighbourhood Community Assessments and Plans	As of 2022 there are five neighbourhoods within the City of Penticton with completed FireSmart Neighbourhood Community Assessments and Plans.	❖ These small-scale plans help inform a community-wide CWRP.	City of Penticton's FireSmart Canada Neighbourhood Recognition Program
Urban Forest Management Plan	Urban Forestry Plans are created to guide the sustained planning, planting, protection, maintenance, and care of trees, forests, and green spaces within the City of Penticton's Boundary. Currently the City does not have a Urban Forestry Plan but is working to have one completed in 2023	❖ Currently there are plans, bylaws, and policies in place governing trees across different departments. ❖ Recommendations for trees and plants should be select appropriate vegetation in wildfire hazard areas.	

KEY PLANS AND RELATIONSHIP TO CWRP			
Plan Type	**Description**	Relationship to CWRP	**Additional Information**
Community Climate Action Plan	The Community Climate Action Plan (CCAP) was developed by the City of Penticton in collaboration with the Community Energy Association (CEA) in 2021.This plan outlines a path towards a low carbon future, where residents experience the benefits of this plan while taking action to adapt to climate impacts.	❖ Recommendations have been suggested with thought to adapt for fire interface area management and enhance resiliency and adjust for potential impacts of wildfire. ❖ Suggesting landscaping choices that consider urban tree canopy and FireSmart.	

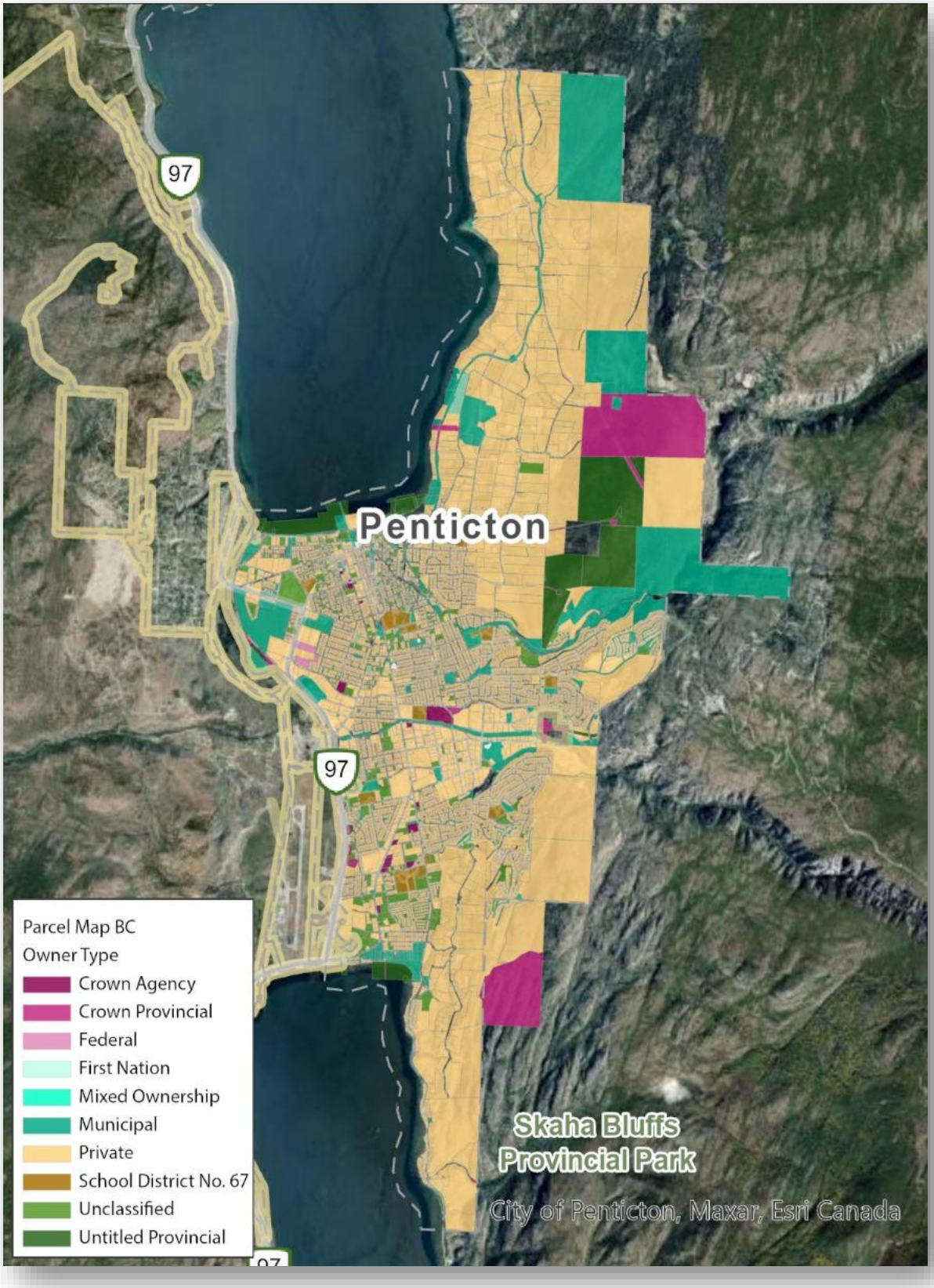
3 Community Description

This section defines the Area of Interest (AOI), the Wildland-Urban Interface (WUI) within the AOI, and the community profile for the City of Penticton. It also identifies the values at risk.

3.1 Area of Interest

The City of Penticton ('the City') is located in the southern interior of British Columbia, or as it's also known, the Okanagan Valley. As per the Penticton Official Community Plan (OCP), the City has a total land area of 42 square km (4200 hectares; (City of Penticton, 2019). Within its boundaries, there is a mix of residential, commercial, industrial, agriculture, and waterfront properties, as well as large areas of wildland including Campbell Mountain, Munson Mountain, Three Blind Mice, and Wiltse. Additionally, Skaha Provincial Park is located adjacent to the southeastern boundary of the City.

The AOI is illustrated in Map 1. The AOI is bounded by the Penticton Channel to the west, Okanagan Lake to the North, and Skaha Lake to the south. The breakdown of the AOI's land ownership is provided in Table 3.



Maps 1 City of Penticton Land Ownership

Table 3 Summary of AOI by Land Ownership

SUMMARY OF AOI BY LAND OWNERSHIP	
Land Ownership	**Hectares**
Crown Agency	17.20
Crown Provincial	222.42
Federal	7.66
Mixed Ownership	0.12
Municipal	604.64
Private	2611.19
School District No. 67	42.42
Unclassified	155.80
Untitled Provincial	212.88
Total	**3874.33**[3]

3.2 Wildland-Urban Interface

The WUI can be defined any area where combustible wildland fuels (vegetation) are found adjacent to homes, farm structures, other outbuildings, or infrastructure. This may occur in the interface, where development and wildland fuels meet along a well-defined edge, or the intermix, where development and wildland fuels intermingle amongst each other (Vicars et al., 2003). Additionally, the WUI can be thought of as a set of conditions, rather than a given location, in which a home is pre-disposed to combustion as a result of an ignition source (i.e., firebrand transport) during a wildfire event.

For the purpose of the CWRP, the WUI is defined as a maximum of one (1) kilometer from the structure density class greater than 6. Utilizing the Provincial Strategic Threat Analysis (PSTA) and WUI risk class maps provided by the BC Wildfire Service (BCWS), the determined WUI area for the City of Penticton encompasses 46.1km^2 (4, 610.65 ha).

3.3 Community Information

During the summer months, the City of Penticton is a popular destination for its service and tourism industry. The City, and surrounding area, is renowned locally and internationally for its pleasant summer weather and access to a variety of wineries, outdoor recreation, and water sports. The City, as a corporation, provides many services to its residents including fire protection, water treatment, waste water collection, and bylaw development and enforcement. The City generates revenue through its four main utilities including electric, water, sewer, and storm water. It is the largest incorporated community within the Regional District of the Okanagan Similkameen, with a growing population of ~37,000 residents (Census Canada, 2021). It also serves as a hub for surrounding communities by providing amenities such as large grocer and retail outlet, domestic airport, and a regional hospital.

[3] Taken December 5th, 2022 from ParcelMap BC; authoritative source LTSA

Table 4 City of Penticton Demographics

CITY OF PENTICTON DEMOGRAPHICS	
Community Information	
Total Population (year)	36, 885 (2021)
Population Density (people per sq. km)	857.3
Median Age (years)	52
Housing Units	17, 360
Median Household Income	$31,335
Unemployment Rate	8.4
Data Sources:	*StatsCan: Census Profile*

The City is located on the traditional and unceded territories of the Sylix people in the Okanagan Nation. The Sylix People of the Okanagan Nation are a trans-boundary tribe separated at the 49th parallel by the border between Canada and the United States. It is comprised of seven (7) member communities in the southern interior of British Columbia. The Penticton Indian Band (PIB) borders the City to the west.

4 Wildfire Risk Assessment

Wildfire risk assessment is a decision support tool intended to determine wildfire risk reduction activities and opportunities that will increase resiliency to wildfire. Results of the wildfire risk assessment are categorized into the seven FireSmart disciplines presented in sections 5-11 in this CWRP. An action plan based on the results of the wildfire risk assessment and analysis are presented in section 12.

It is important to understand the difference between wildfire risk and wildfire threat, along with their context for the wildfire risk planning process.

A wildfire risk-based framework considers the likelihood of an unwanted wildfire event, combined with the consequences to communities and high value resources and assets. Overall **wildfire risk** can be defined as a combination of the following:

- Likelihood (or probability) of an unwanted wildfire event occurring;
- Associated fire behaviour; and
- Consequence – the resulting impact or damage to values.

Risk is measured as the product of likelihood and consequence, but multiple inputs are also required in order to effectively quantify risk, including potential wildfire behaviour severity, value type, and value vulnerability. Identifying wildfire risk levels through the wildfire risk assessment results in a wildfire mitigation priority list, while presenting opportunities to enhance community resiliency.

Wildfire threat refers to the potential for a wildfire to ignite, spread, and consume organic material, such as trees, shrubs and woody debris, across the landscape. Three main components are used to define **wildfire threat**, as follows:



Figure 3 Wildfire Threat Components

This section is broken down into key subsections that contribute to an overall understanding of wildfire risk in the city: local wildfire environment (4.1), local wildfire history (4.2), Provincial Strategic Threat Analysis (4.3), and local wildfire threat analysis (4.4).

4.1 Local Wildfire Environment

Fire behaviour is influenced by the local wildfire environment: topography (4.1.1), fuel (4.1.2), and weather (4.1.3). This subsection provides general descriptions of all three components in the city.

4.1.1 Topography

The city is situated between the south end of Okanagan Lake and north end of Skaha Lake with elevations ranging from 340 m to around 600m. Western aspects are prevalent within the WUI areas, with secondary aspects facing east. Northern or flat aspects are prevalent on the valley bottom between the lakes.

Terrain is generally moderately steep to steep, with benched sections.

Two main creeks dominate the city (Penticton and Ellis Creeks) and the Okanagan Channel dissects the valley bottom as it connects Okanagan Lake with Skaha Lake.

4.1.2 Fuel (Vegetation)

The majority of the CWRP AOI is located within the Ponderosa Pine (PP) Biogeoclimatic (BEC) Zone, with Interior Douglas-fir (IDF) BEC Zone occurring at higher elevations of the City boundary. Tree species in the PP include ponderosa pine, minor Douglas-fir and inclusions of black cottonwood surrounding low lying riparian features. Small, open forest grasslands occur within this zone as it gains elevation on the slopes. The IDF BEC Zone, is commonly characterized by dry, open canopy Douglas-fir forests, intermixed with grasslands. Some ponderosa pine persists within the IDF especially where it interfaces with the PP BEC zone.

Historically, the PP and IDF ecosystems were maintained by frequent low-intensity surface fires, classifying them into the Natural Disturbance Type 4 (NDT4) regime (Province of British Columbia, 1995). As the climate continues to change, these BEC zones will experience drought, and be subject to a higher-severity fire regime.

Table 5 presents the natural disturbance regime classification types and descriptions for wildfire, windstorm, insect, and landslide disturbance agents. The entire AOI falls into the NDT4 category.

Table 5 Natural Disturbance Regime Classification Types Recognized in BC

NATURAL DISTURBANCE REGIME CLASSIFICATION TYPES RECOGNIZED IN BC	
Natural Disturbance Type (NDT)	**Description**
NDT1	Ecosystems with rare stand-initiating events
NDT2	Ecosystems with infrequent stand-initiating events

NDT3	Ecosystems with frequent stand-initiating events
NDT4	Ecosystems with frequent stand-maintaining events
NDT5	Alpine Tundra and Subalpine Parkland ecosystems

In terms of fire type and intensity, stand-maintaining events in NDT4 tend to be frequent low-intensity surface fires that keep ecosystems in a steady state (Province of British Columbia, 1995). Surface fires historically occurred in NDT4 every 4 to 50 years; however, over 70 years of fire suppression and forest protection efforts have reduced the frequency of surface fires in NDT4, resulting in denser forest stands, with understory build-up (shrubs and ingrowth). Consequently, stand-initiating events are occurring more often within NDT4, due to higher intensity fires that become crown fires in forests that have not been maintained by frequent surface fires. This trend causes firefighting to be more dangerous and to require more suppression effort and cost. Prior to wildfire exclusion activities, destructive crown fires were seldom observed within the IDF, occurring every 150 to 250 years or more. Understanding and reducing the wildfire risk is imperative within these NDT4 ecosystems.

Nearly all of the natural areas within the Penticton municipal boundary are broadly classified as the Ponderosa Pine Zone, very dry hot variant (PPxh1). The Interior Douglas-fir, very dry hot (IDFxh1) occupies less than 0.5% of the area.

Over half of the area inside the Penticton boundary is classified as Non-fuel, characterized primarily by hard surfaces, landscaped areas, rock etc.

Table 6 Breakdown of Fuel Types within the AOI

BREAKDOWN OF FUEL TYPES WITHIN THE AOI		
Fuel Type	**Area (ha)**	**%**
Non-fuel	2,557.0	54.0%
C-7 - Ponderosa Pine/Douglas-fir	912.5	19.3%
O-1a/b - Grass (matted/standing)	807.5	17.1%
Water	407.3	8.6%
M-1/2 - Boreal Mixedwood (leafless/green)	27.2	0.6%
D-1/2 - Aspen (leafless/green)	22.7	0.5%
Totals	4,734.2	100.0%

Table 7 Breakdown of BEC Zone, Subzone and Variant within the AOI

BREAKDOWN OF BEC ZONE, SUBZONE AND VARIANT WITHIN THE AOI		
BEC label	**Area (ha)**	**%**
IDFxh1	9.24	0.2%
PPxh1	4724.94	99.8%
Totals	4734.18	100.0%

4.1.3 Weather

One BCWS weather station was selected for review and analysis – Penticton, which provides a summary of fire weather for the plan area. Map 2 presents the locations of the weather stations in relation to the city. Table 8 provides details for the analyzed weather station, including latitude and longitude in decimal degrees, elevation, and recorded installation date.



Maps 2 BC Wildfire Service fire weather station for the Penticton area (⊗)

Fire weather patterns for the station are presented in terms of Fire Danger Class. The Wildfire Regulation (B.C. Reg. 38/2005) defines Fire Danger Class as a derivative of Danger Region and indices from the Canadian Forest Fire Weather Index (FWI) System. The Canadian Forest FWI System is the primary subsystem of the Canadian Forest Fire Danger Rating System (CFFDRS), which uses weather observations to derive various ratings based on fuel moisture content and wind speed (Stocks et al., 1989; Van Wagner, 1987). Fire Danger Class is normally used to restrict high risk activities; however, its use has been extended to the CWRP fire weather analysis to provide insight into relative risk of a fire start in the region.

Table 8 BC Wildfire Service Active Fire Weather Station Particulars

BC WILDFIRE SERVICE ACTIVE FIRE WEATHER STATION PARTICULARS				
Station Name	**Latitude**	**Longitude**	**Elevation (m)**	**Install Date**
Penticton RS	49.52	-119.55	427	8/15/88

In BC, three Danger Regions have been defined in Schedule 1 of the Wildfire Regulation (B.C. Reg. 38/2005). Schedule 2 provides tables for each Danger Region, which categorize Fire Danger Class 1 through 5 using numerical ratings for Buildup Index (BUI), and FWI (Wildfire Regulation, B.C. Reg. 38/2005). Figure 4 depicts how fire weather observations feed into the FWI System to derive the BUI, and FWI, eventually combining with Danger Region to determine Fire Danger Class.

The entire CWRP AOI falls into Danger Region 3, along with the weather station. Fire Danger Class bar graphs present summaries of the number of days per year when Fire Danger Class rating was 4 or 5, as well as 4+5 combined, as recorded by the Penticton weather station (see Figure 5). The potential BUI and FWI ranges for each analyzed Fire Danger Class category are presented in Table 9 (adapted from Schedule 2, Wildfire Regulation, BC Reg 38/2005).

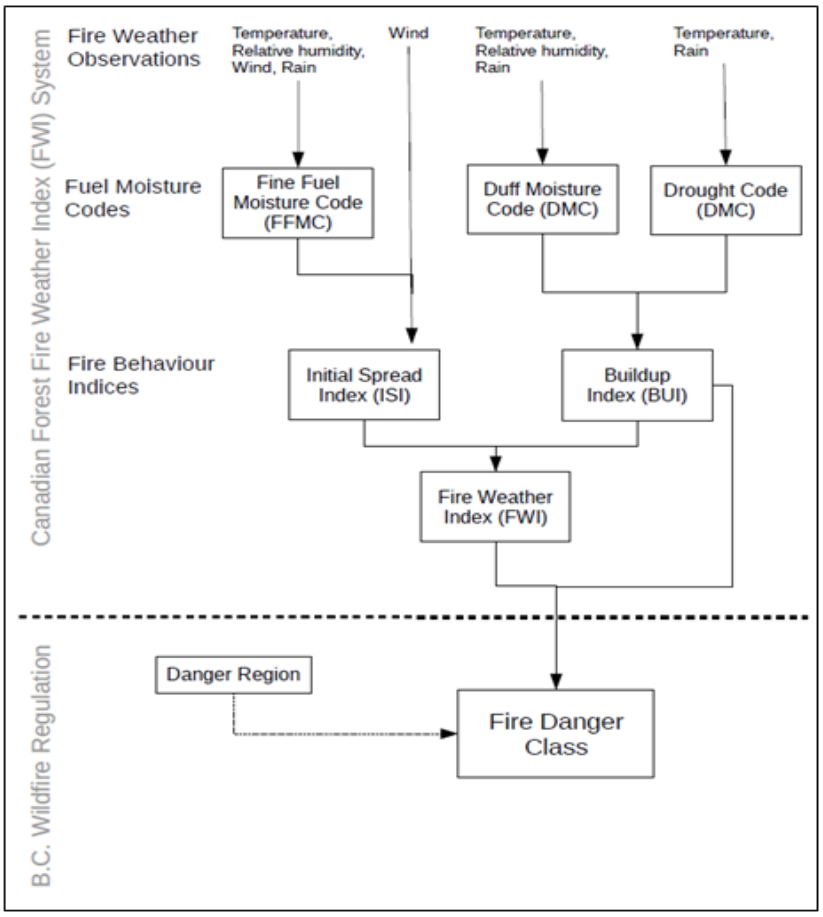


Figure 4 Fire Danger Class methodology flowchart from the Canadian Forest Fire Danger Rating System (CFFDRS)

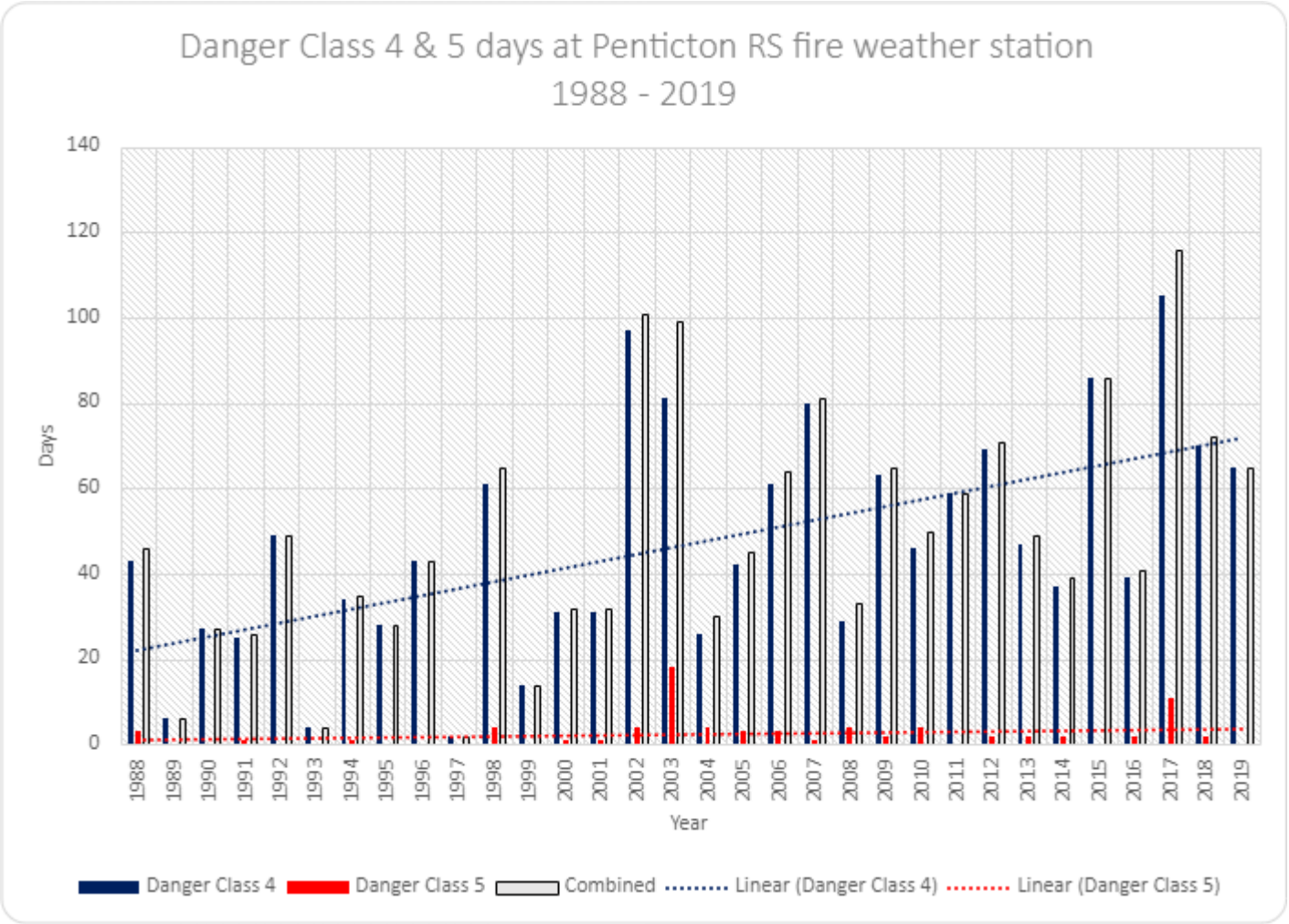


Figure 5 Danger Class 4 & 5 days at Penticton RS Fire Weather Station

In addition to the bar graphs, summary Table 10 provides an overall summary of Fire Danger Class ratings for each weather station, in terms of average, median, and maximum days, as well as the year of maximum Fire Danger Class days.

Table 9 BUI & FWI Ranges by Fire Danger Class Category and Danger Region

	BUI & FWI RANGES BY FIRE DANGER CLASS CATEGORY AND DANGER REGION					
	Fire Danger Class 4		Fire Danger Class 5		Fire Danger Class 4+5	
	BUI	FWI	BUI	FWI	BUI	FWI
Danger Region 3	141 - 201 +	17 - 27	91 - 201 +	47 +	51 - 201 +	17 - 47 +
	91 - 201 +	28 - 46				
	51 - 90	47 +				

Average Fire Danger Class 4 days was 47, median was 43 and the maximum days were 105 (in 2017). Average Fire Danger Class 5 days was 2 days, median was 1 and maximum days was 18 (in 2003). Average combined Fire Danger Class 4 and 5 days was 49 days, median was 45.5 and maximum days was 116 (in 2017).

Table 10 Summary of Fire Danger Class 4 & 5 Days

SUMMARY OF FIRE DANGER CLASS 4 & 5 DAYS FROM BC WILDFIRE SERVICE WEATHER STATION						
Station Name / Danger Region	**Period**	**Danger Class**	**Days**			**Year of Maximum**
			Average	Median	Maximum	
Penticton RS	1988-2019	Danger Class 4	47	43	105	2017
		Danger Class 5	2	1	18	2003
		Danger Class 4+5	49	45.5	116	2017

To gain a further understanding of fire weather trends, the daily severity rating (DSR) was calculated for all weather observations using the following formula from Harvey et al. (1986):

$$DSR = 0.0272*(FWI)^{1.77}$$

where FWI is the daily value.

The DSR values have been summed and averaged to calculate the seasonal severity rating (SSR) for the Penticton weather station. In order to obtain meaningful results, the dataset of the weather station was reviewed to define the Fire Season, based on the completeness of records. The Fire Season dates are May 15th to October 15th, and April 1st to October 15th for the Penticton RS. Only DSR data collected during the defined Fire Seasons was used in the SSR analysis. Graphs depicting SSR trends are presented in Figure 6.

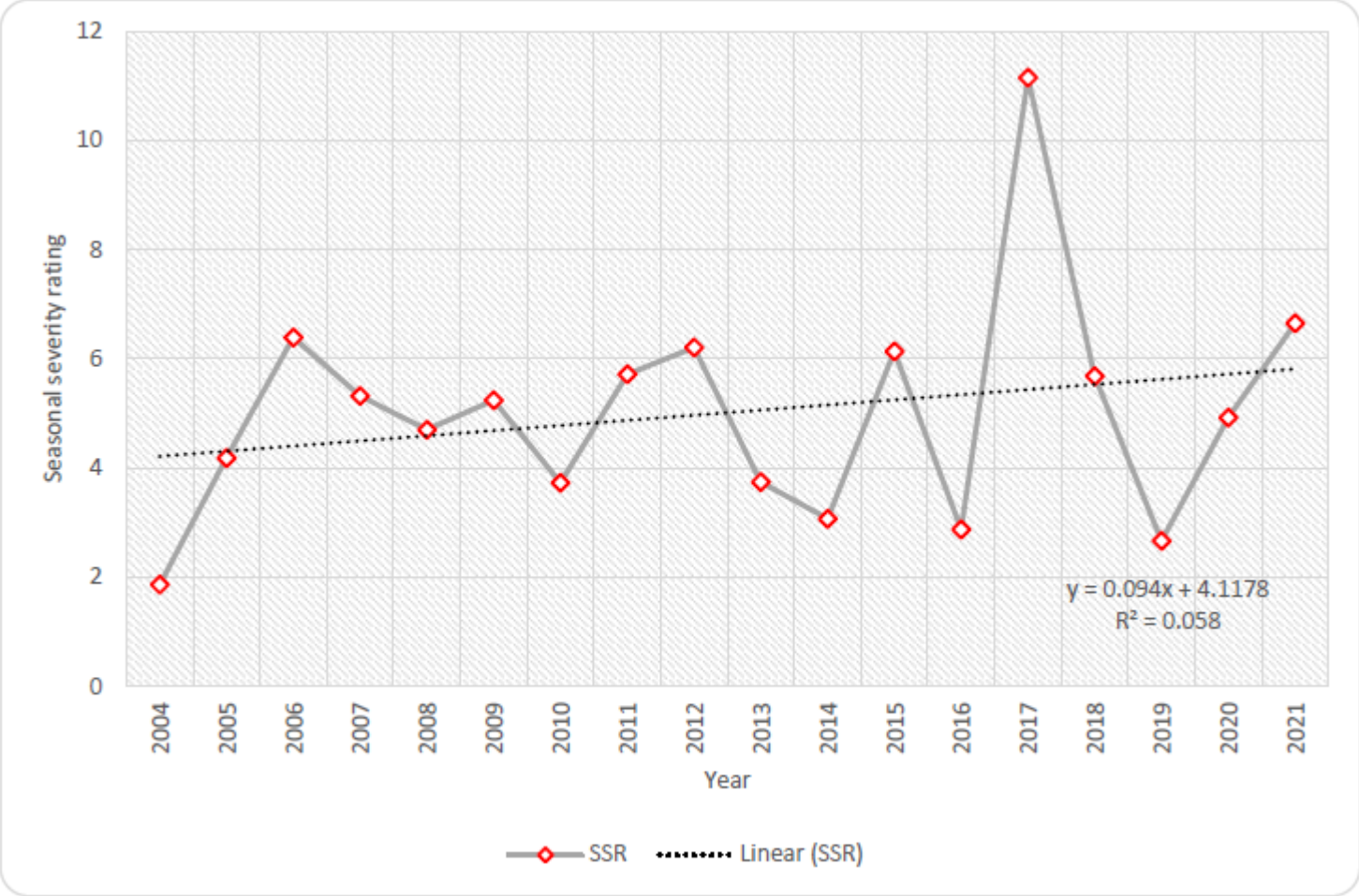


Figure 6 Seasonal severity rating for Penticton RS weather station (1988-2019)

Climate Change

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

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

As a result, some existing forests have an increased probability of more frequent, intense, and more difficult to control wildfires that are likely to result in increased tree mortality, detrimental impacts to soils and hydrology, and increased threat to community and interface areas.

The regional climate service centre for the Pacific and Yukon Regions, located at the University of Victoria, is called the Pacific Climate Impacts Consortium (PCIC). This non-profit corporation "conducts quantitative studies on the impacts of climate change and climate variability" (PCIC, n.d.-a). Findings from these studies are incorporated into practical tools for end-user application. For example, the PCIC website offers a map-based data portal for downloading information, analysis tools for the various regions in BC (Plan2Adapt, Climate Explorer, and seasonal anomaly maps), downloadable publications, and software for climate data interpretation.

Projected climate change data available from the PCIC present a comprehensive view of potential climate change risks and impacts, due to inputs from a multitude of raw data sources. The Plan2Adapt tool lists potential climate impacts for Central Okanagan in the 2050s, including the following key points (PCIC, n.d.-b):

- Overall increase in hot and dry conditions
- Considerable increase in frequency and occurrence of high temperatures
- Longer dry season, affecting availability of water sources for fire fighting
- High intensity precipitation
- Decrease in snowpack
- Possible changes in vegetation productivity
- Potential increase in forest damage from pests and insects

Table 11 presents a summary of projected changes in average temperature and precipitation for Central Okanagan (PCIC, n.d.-b). This illustrates the likely increase in annual temperature, with less precipitation in summer, and more in winter. Penticton, being further south of the Central Okanagan, may experience higher temperatures and lower precipitation shown in the table.

Climate change impacts will likely result in more frequent, and more intense wildfires. Higher temperatures, with reduced precipitation during the wildfire season, may cause dry ecosystems to become drier, as well as move to higher elevations and further north. Increased forest damage and tree mortality also increase the fuel loading available to burn. Furthermore, some forests may gradually shift to grasslands. Long term effects of this shift could cause high-intensity fires to burn further upslope, away from communities in the valley bottom. In the short term, forest mortality would likely increase fire hazard, due to increased dead and downed fuel loading.

Table 11 Summary of Projected Changes in Average Temperature and Precipitation in Central Okanagan to the 2050s[4]

SUMMARY OF PROJECTED CHANGES IN AVERAGE TEMPERATURE AND PRECIPITATION IN CENTRAL OKANAGAN TO THE 2050s			
Climate Variable	Season	Projected Change from 1961-1990 Baseline	
		Ensemble Median	Range (10th to 90th percentile)
Temperature (°C)	Annual	+3.2 °C	+2.1 °C to +4.3 °C
Precipitation (%)	Annual	+1.5%	-2.9% to +7.4%
	Summer	-5.0%	-3.4% to +3.9%
	Winter	+3.5%	-1.0% to +7.4%

4.2 Local Wildfire History

Fire history tells the story of the relationships between fire behaviour, landscape ecology, management policy (including fire suppression), human development, and other land-use changes throughout the area. The potential for very large, destructive, and landscape-altering fires is related to historical fire characteristics and fire response patterns within a given planning unit. Although the location of future ignitions is difficult to predict, a review of historical fire ignitions and spread can reveal patterns that have a greater likelihood of occurring in the future.

Fire history data was obtained from the BC Geographic Warehouse, as collected and maintained by the BCWS; however, there are problems with how fire cause (person or lightning, or unknown) was attributed to each record. Most fire history points between the year 2000 to present have causes attributed to 'unknown,' which is not the case. As fire cause is a key attribute used for fire history analysis, the author enquired with BCWS regarding this issue, and was advised that BCWS had recently changed to a new database and were experiencing problems. The fire history analysis for this CWRP was completed using point data from 1953-2022, and polygon data from 1921-2022, although prior to 1950, polygon data is limited to fires with large perimeters. Historic wildfire data in vicinity of the city shows a regular pattern of

[4] *This table shows projected changes in average (mean) temperature, precipitation, and several derived climate variables from the baseline historical period (1961-1990) to the 2050s (2040-2069) for the North Okanagan region. The ensemble median is a mid-point value, chosen from a PCIC standard set of Global Climate Model (GCM) projections (see the 'Notes' tab in (PCIC, n.d.-b) for more information). The range values represent the lowest and highest results within the set. This table has been adapted from the Pacific Climate Impacts Consortium, Plan2Adapt suite of climate change and adaptation tools, available here: https://www.pacificclimate.org/*

occurrences across the entire landscape. Data analysis included all point and polygon data within the AOI.

Although the AOI includes a 2 km buffer from the city boundary, the fire history analysis for the CWRP is limited, because large fires outside the WUI often impact communities with evacuation alerts or orders, and stronger concentrations of harmful smoke.

The fire history dataset provides a general idea of trends in an area; although, there are often discrepancies between the information for wildfire points and perimeters, and sometimes there are errors in location. Regardless, the data paints a picture of overall fire history of the 2km WUI zone surrounding the city.

Fire history data indicate that from 1919 to 2019, a total area of 126,954.3 ha burned within the electoral areas surrounding the City. Of these, 71,217 ha (45.1%) were lightning-caused, 55,617.6 ha (47.1%) were person-caused, and 119.7 ha (0.1%) were listed as unknown causes. Table 12 summarizes area burned by fire causes, annual average, percent total fire in each cause category, maximum area burned and in what year it occurred.

Table 12 Wildfire Burned Area Summary within 2km of Penticton[5]

WILDFIRE BURNED AREA SUMMARY WITHIN THE 2KM SURROUNDING AREA OF PENTICTON				
Cause	**Lightning**	**Person**	**Unknown**	**All**
Burned Area (ha)	71,217.0	55,617.6	119.7	126,954.3
Annual Average	712.7	556.18	1.2	1,269.5
% of Cause	56.1	43.8	0.1	-
One Year Max.	18,789.7	5,835.9	116	18,79
Max. Year	1925	1932	2018	1925

Table 13 shows by comparison some of the more recent notable wildfires, including their size and impacts.

[5] Total Fire numbers do not include fire types of nuisance, smoke chase, duplicate, etc

Table 13 Notable Wildfires within the Surrounding Area of Penticton

NOTABLE WILDFIRES WITHIN & OUTSIDE THE SURROUNDING AREA OF PENTICTON					
Fire Name	**Year**	**Fire Number**	**Final Size(ha)[6]**	**Structure Losses**	**Cause**
Garnet Mountain	1994	K50087	5,500	18	Person
Okanagan Park	2003	K50628	25,600	238	Lightning
Christie Mountain	2020	K51287	2,122.5	1	Unknown
Thomas Creek	2021	K51794	10,597	-	Person
Keremeos Creek	2022	K50863	7,019.1	-	TBD

Annual wildfire occurrence within the AOI was graphed from 1953 to 2017 (Figure 7). Generally, there have been between 1 and 5 wildfires each year, with spikes in 1966, 1979, 1987, and 2015. Person-caused wildfires are trending upward in this plan area, with lightning-caused wildfires trending downward. The unknown trend line is not meaningful due to the BCWS database problems.

Annual area burned within the AOI was graphed from 1921 to 2017 (Figure 8). There are spikes in person-caused fires in 1924, 1944, 1946, 2012, 2015 and 2017. The largest spike is in 1924, depicting that 574 ha were burned from human causes. There are three clear spikes in lightning-caused fires in 1921, 1940, and 2010. Within the AOI, the graph clearly shows that over the last century, total area burned from human causes is much higher than total area burned from lightning causes.

Throughout history, the Penticton area has regularly experienced wildfires as a natural disturbance agent. Although 2019 and 2020 were relatively quiet wildfire seasons, the 2021, 2018, and 2017 fire seasons saw numerous life-threatening fires throughout the province. The 2017 wildfire season set a provincial record for the most hectares burned during a single wildfire season, but the 2018 wildfire season surpassed that record, setting the current record for BC (BCWS, n.d.). Due to wildfire, many regions of BC have been subject to extensive loss of homes. It is imperative that mitigation measures continue to be enacted to reduce the overall wildfire risk to the city.

[6] Data taken from BC Wildfire Government Website – Wildfire History

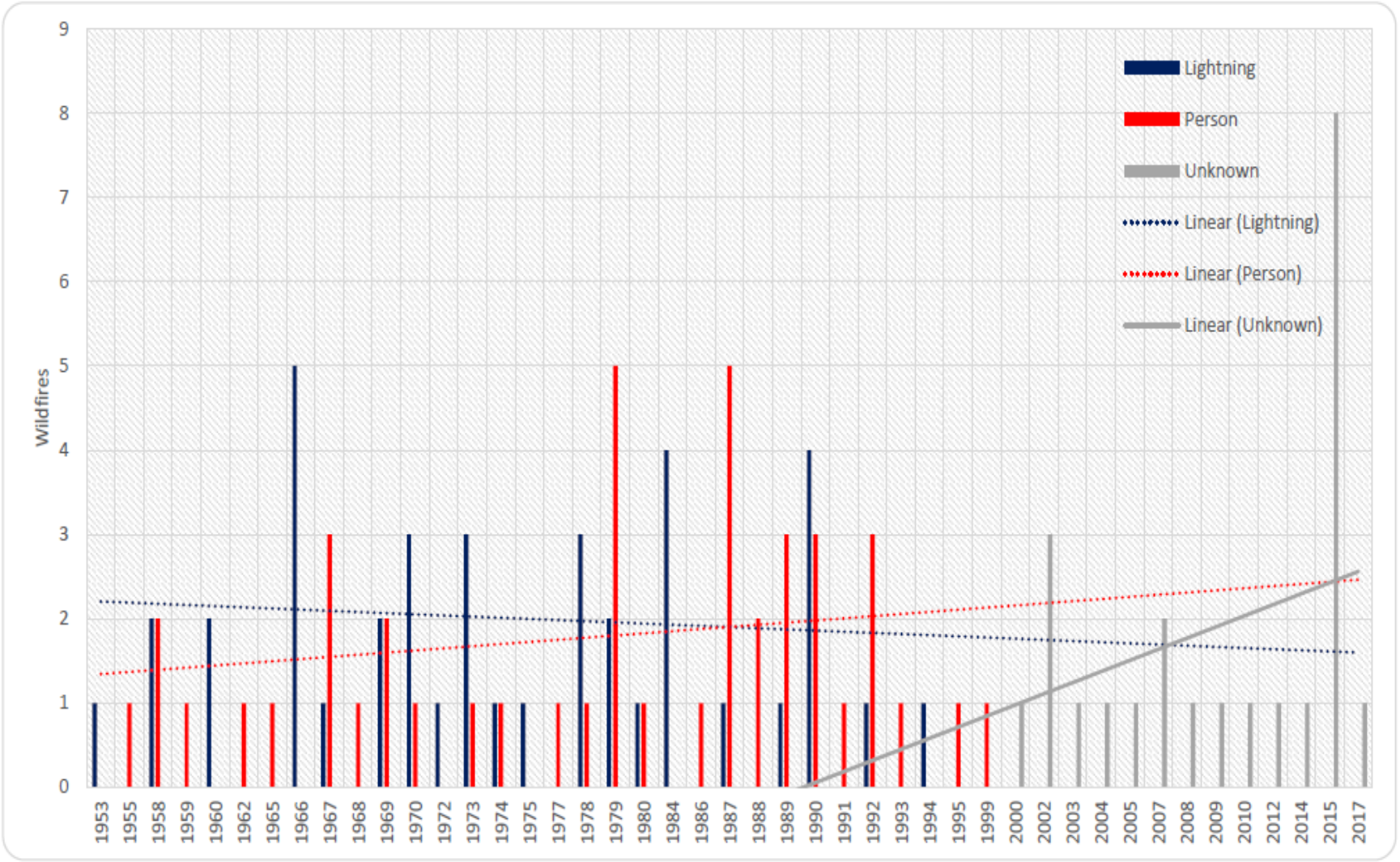


Figure 7 Annual wildfire occurrence within the AOI, from 1953-2017

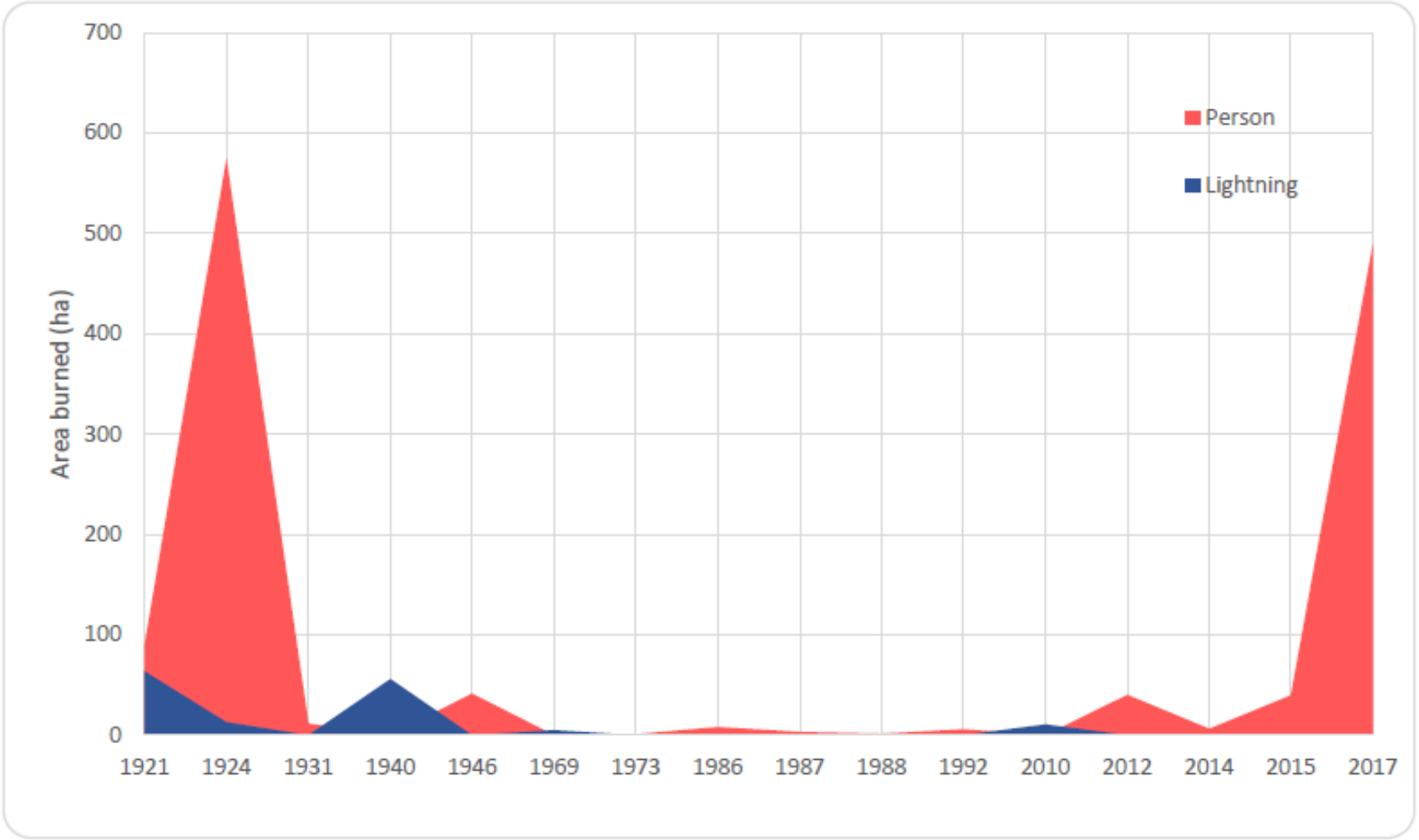


Figure 8 Annual area burned from wildfire within the AOI, from 1921 to 2022

4.3 Provincial Strategic Threat Analysis

The PSTA and Risk Class framework are provincial level GIS analyses which provide a starting point to assess local wildfire threat. The PSTA utilizes and interprets provincial fuel type mapping, historical fire occurrence data, topography, and historical weather station data to produce a wildfire threat score. Outputs of the PSTA include information and maps describing fuel types, historical fire density, potential for embers to land in an area (spotting impact), head fire intensity, and the final wildfire threat. Details regarding how the PSTA dataset was derived can be found thought the BCWS, and BC Government Warehouse Data Catalogue websites (BCWS, 2020; 2021a).

Due to the large-scale limitations of the PSTA, a local GIS-based potential fire behaviour/threat analysis was also conducted, utilizing local factors that improve modelled fire behaviour accuracies. Wildfire threat is directly related to the likelihood of hazardous fuel igniting (fire history factors), and wildfire spreading directly into the community (head fire intensity), or through ember transport (spotting impact). The wildfire threat assessment described in subsection 4.4 was carried out based on results from the PSTA, and the local analysis to produce better quality results.

The PSTA wildfire threat ratings for the AOI were analyzed, and results are summarized in Table 14. The total PSTA area is slightly higher than the CWRP AOI due to overlaps in the spatial data analysis. Most of the PSTA threat ratings were in the extreme (23%) and high (42%) categories.

The potential fire behaviour data, derived from the local GIS-based analysis, were also analyzed for the AOI, and are summarized in Table 15. The total potential fire behaviour area is slightly higher than the CWRP AOI due to overlaps in the spatial data analysis. According to this local analysis, the most common fire behaviour categories fell into extreme (37%), high (18%), and moderate (15%).

PSTA Threat Rating	Area (ha)	%
Extreme	4,117.5	23%
High	7,412.2	42%
Moderate	1,722.7	10%
Low	618.4	3%
No Data (Private Land)	3,863.2	22%
Water	106.0	1%
Total:	**17,840.1**	**100%**

Table 14 PSTA Threat Rating Category Areas and Percentages for the AOI

A comparison between the PSTA data, and the local analysis shows that the local analysis resulted in 14% more extreme, 24% less in high, 5% more in moderate, and 6% more in low.

The PSTA has a water category, rather than a very low category. When categories of extreme and high are added together, the percentages are similar, with 65% for the PSTA, and 55% for the local analysis. This implies that the local analysis was able to highlight the areas with extreme fire behaviour, primarily due to local weather conditions affecting the AOI.

Table 15 Local GIS-Based Analysis of Potential Fire Behaviour Category Areas and Percentages for the AOI

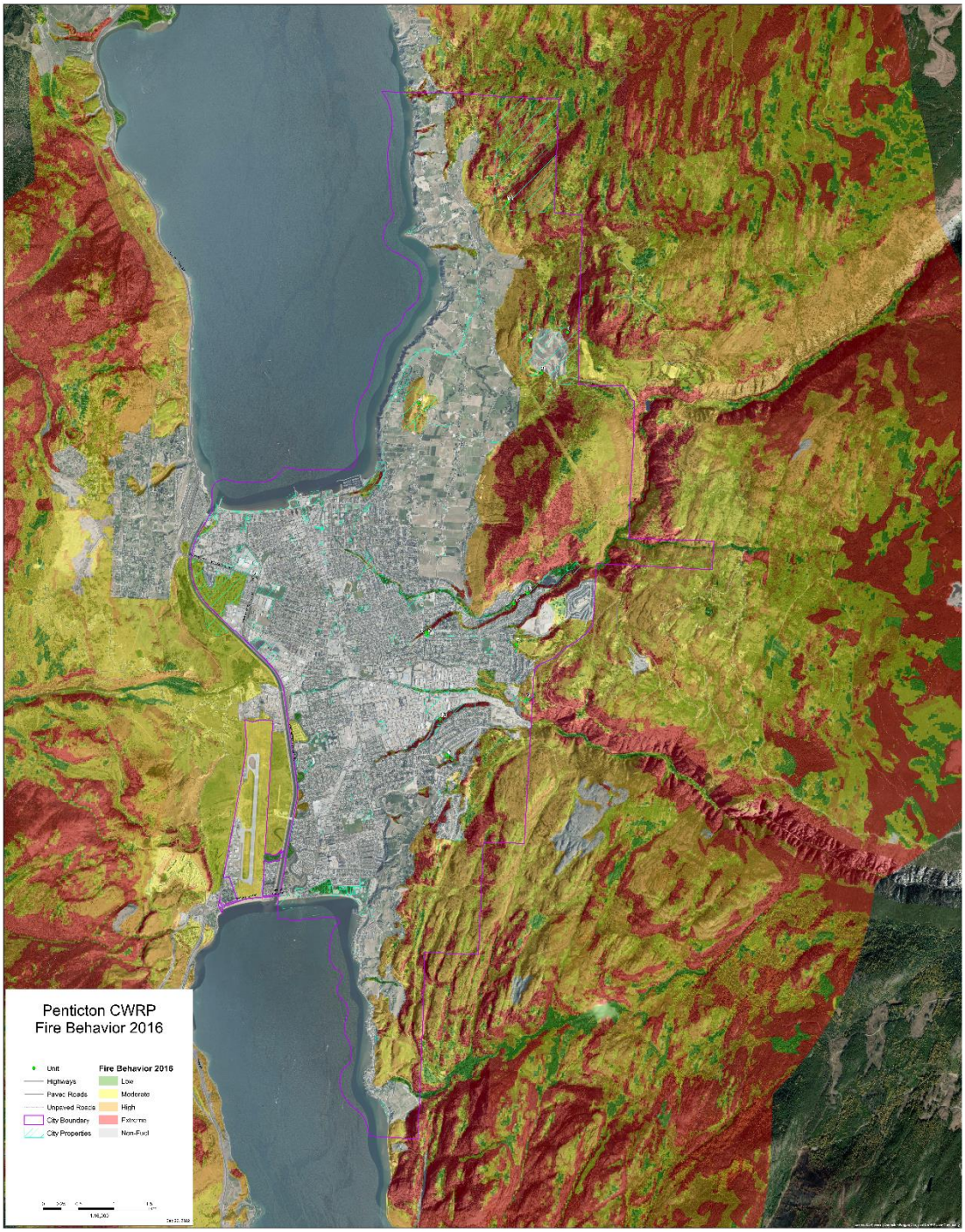
LOCAL GIS-BASED ANALYSIS OF POTENTIAL FIRE BEHAVIOURS CATEGORY AREAS AND PERCENTAGES FOR THE AOI		
Fire Behaviour	**Area (ha)**	**%**
Extreme	6,656.7	37%
High	3,174.4	18%
Moderate	2,627.5	15%
Low	1,528.3	9%
Very Low	92.4	1%
No Data (Private Land)	3,761.1	21%
Total:	17,840.4	100%

4.4 Local Wildfire Threat Assessment

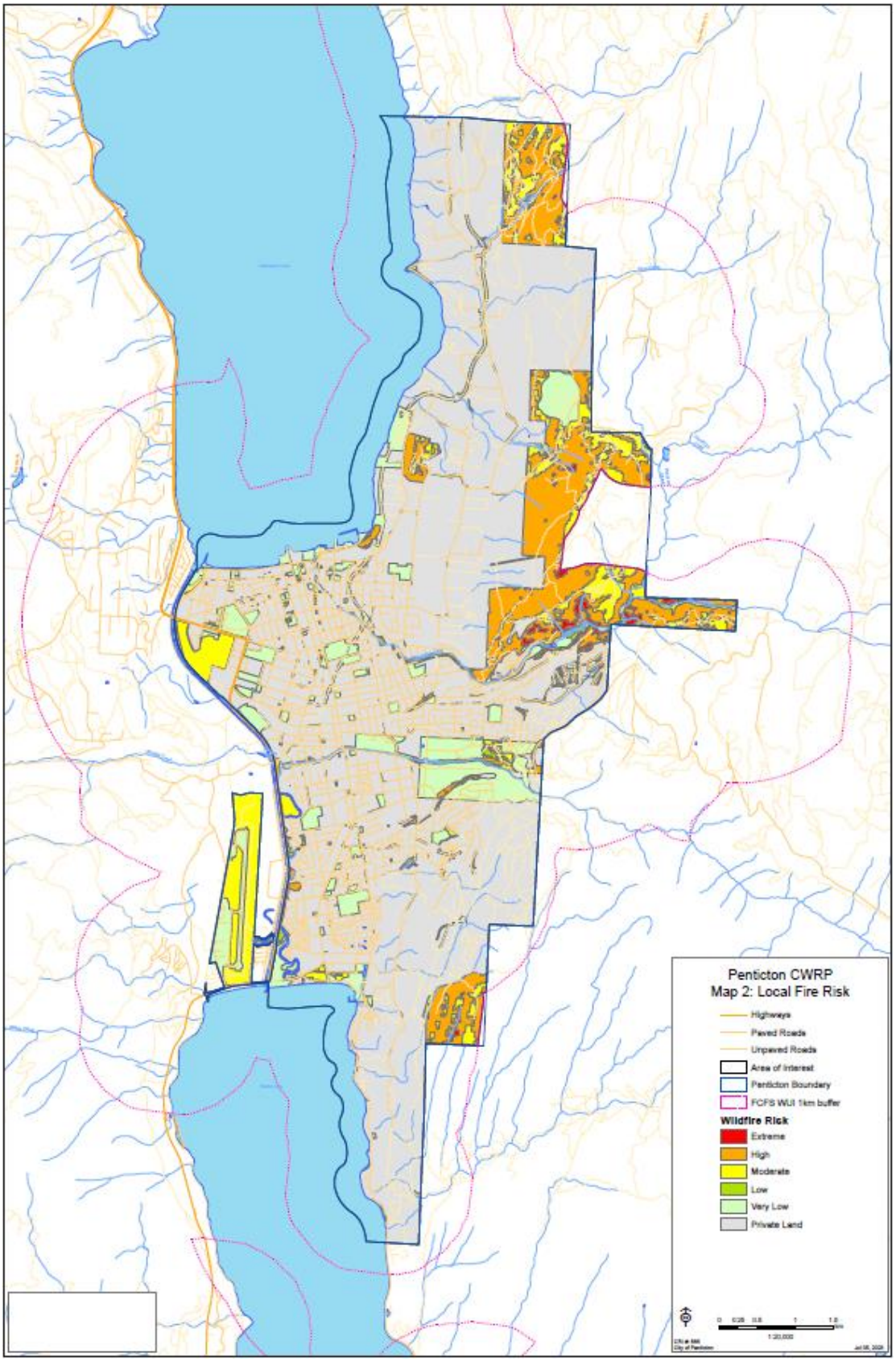
The local wildfire threat assessment for this CWRP AOI was based on the 2020 Wildfire Threat Assessment Guide and Worksheets (MFLNRORD & BCWS, 2020). Plot locations were selected through GIS analysis, and fire behaviour prediction (FBP) modeling of the provincial fuel type layer. Polygon outputs were filtered to identify the highest priority areas for field assessment. Specific criteria selected polygons with a modelled fire behaviour rating of Moderate or higher that were within 100 m of a structure within the city boundaries. This produced almost 20 polygons that were further examined on Google Earth prior to conducting field work with 13 of these sites have assessments completed on them.

Detailed methodology and results of the local wildfire threat assessment is provided in Table 19 (see Section 11). This includes field reviewed fuel characteristics, proximity of fuel to the community, local fire spread patterns, topographical considerations, further classifications, local factors, and further summaries. The Wildfire Threat Assessment Worksheets are provided in Appendix E.

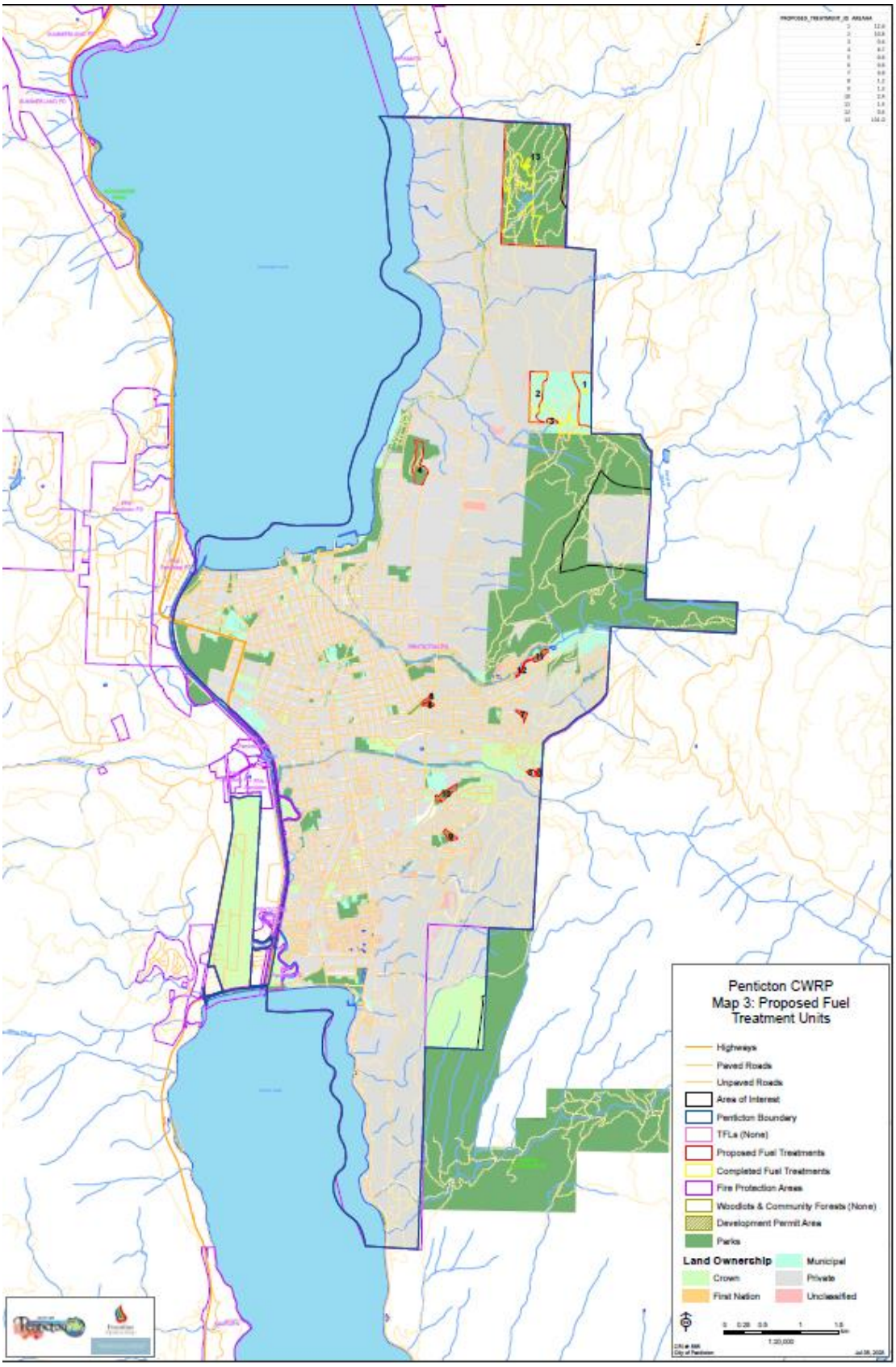
Refer to Map 3 to see the Local Fire Risk on public land, as categorized into fire behaviour threat classes, and the FCFS 1 km eligible WUI. Refer to Map 4 & 5 to see the field polygons and field plots.



Maps 3 Fire Behaviour on Non-Private Land Surrounding the City (2016)



Maps 4 Local Fire Risk within Municipal Boundaries – Municipal Land Ownership



Maps 5 Threat Assessment Score for Polygons in the South end of Penticton

5 Education

Public education and outreach efforts help community members learn about wildfire and its potential impacts to their communities. In addition, these efforts should be designed to help individuals understand their role in taking action to reduce risk. Education and outreach activities are designed for all groups to benefit, including elected officials, community planners, residents, visitors, businesses, land managers, first responders, and more.

The idea for a Penticton FireSmart Team was conceived by Fire Chief Larry Watkinson. After completing several fuel management treatments throughout the City, Chief Watkinson recognized the need to take the next step in wildfire risk reduction. His vision to have a dedicated team was based off of a similar concept he had witnessed in his time in Colorado, USA, which had employed successful wildfire mitigation teams. He was also intrigued by the educational FireSmart programs, headed by FireSmart Educator Lindsay King, for the Regional District of Bulkley-Nechako and its applicability for Penticton.

The Penticton FireSmart Team established in the spring of 2021, which was made possible through the Community Resiliency Investment (CRI) funding program from the Union of BC Municipalities (UBCM). Two funding streams were utilized: (a) the FireSmart Community Funding & Supports, and (b) the FireSmart Economic Recovery Fund (FERF). Funding from both provided for four (4) positions, however, since the ceasing of FERF the team has been altered to include a FireSmart Coorinator and a Wildfire Mitigation Specialist. The Penticton FireSmart Program operates as part of the City's Fire Department, and reports to the Captain of Prevention.

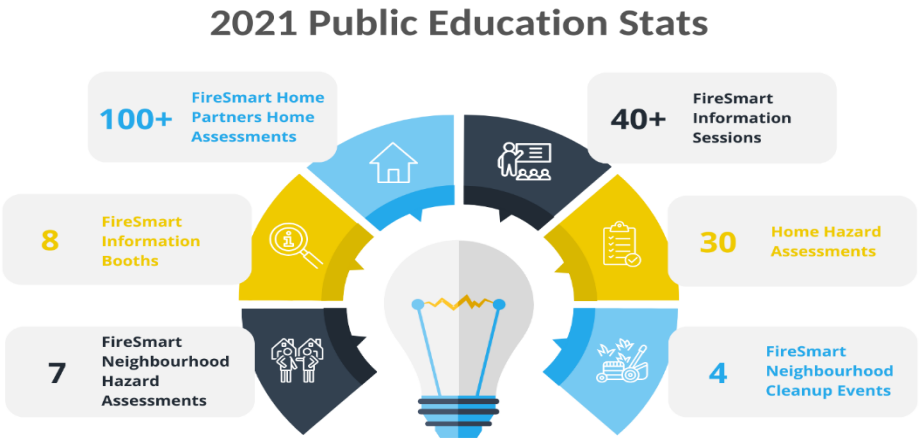


Figure 9 2021 Public Education Stats

FireSmart education and outreach plays a critical role engaging Penticton residents to participate in wildfire risk reduction activities by promoting a sense of empowerment and shared responsibility. Using a variety of outreach tools and tactics, FireSmart messaging and education has been distributed to target various audiences throughout the City. The Penticton FireSmart team provides ongoing FireSmart education to residents through: information

sessions/booths, including at community events; administering the Neighbourhood Recognition Program, and the Home Partners Program; and utilizing various social media platforms.

5.1 Information Sessions

Information sessions allow for engagement with various targeted audiences, such as school students, retirement groups, gardening clubs, landscapers, builders/developers, and neighbourhoods. The team was able to share their knowledge on wildfire, FireSmart best practices, and FireSmart programs available in the City.

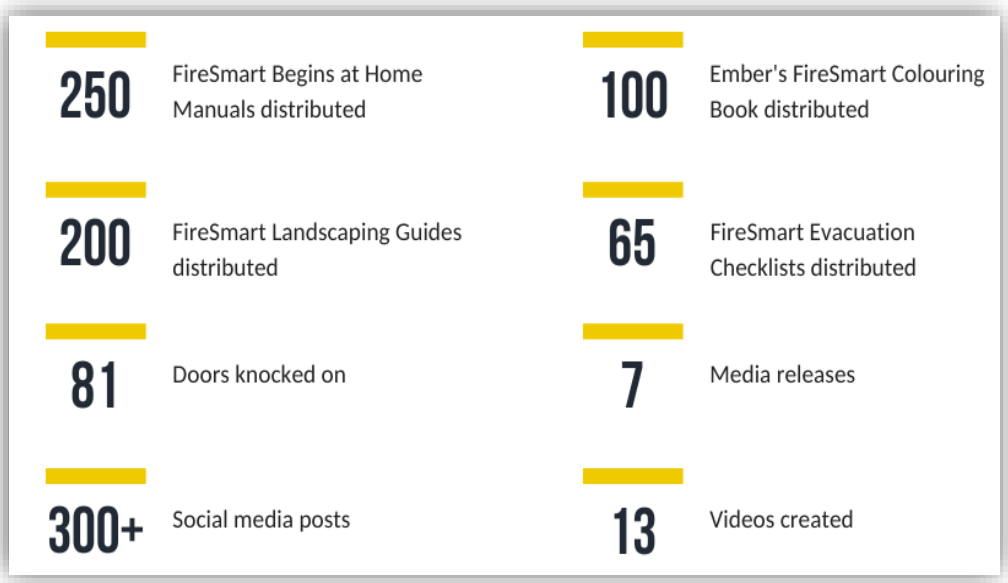


Figure 10 Penticton 2021 FireSmart Stats

Information sessions allow for in-depth conversations around FireSmart key messaging. Examples of messaging targeted at homeowners to take action on their property included, but are not limited to:

- Removing combustible surface material in the area within 1.5m of your home;
- Avoiding flammable plants (ie. cedar, juniper, pine, and tall grasses) within 10m of the home;
- Clearing roof and gutters of combustible materials; and,
- Using non-combustible building materials for the home's roofing, siding and decking.

Information and education sessions can be held at a variety of public forums and community groups. To date, the Penticton FireSmart program has targeted:

- Brown Bag Lecture Series
- OC Speaker Series
- Penticton Gardening Club
- Rotary Club
- Women in Business
- Cubs & Scouts
- Senior's Week
- Various neighborhoods
- SD67 (see section 5.6)

The Penticton FireSmart Team has hosted one in-person session and one webinar for local builders & developers on FireSmart building principles and FireSmart landscaping. Additionally, the team hosted an open house interview series for the public in 2022, covering four topics: (1) wildfire response, (2) wildfire prevention, (3) cultural burning, and (4) emergency preparedness. These events involved subject matter experts to provide more in-depth knowledge to inquiries.

5.2 Community Events

Pre-existing local events are great opportunities to target high foot traffic areas to conveniently promote FireSmart branding and distribute materials. Information booths can be easily and readily set up to attract local residents to inquire about FireSmart.

Each community is unique in which events are popular for resident attendance. In the City of Penticton, previously targeted community events have included:

- Penticton Farmer's Market
- Penticton Vees Games
- Penticton Home & Reno Show
- IronMan Canada
- Public holidays (i.e., BC & Canada Day)
- Penticton Safety Village

Information booths are also ideal for promoting the visibility of local FireSmart programming, as FireSmart continues to gain ground on becoming a house-hold term.

In 2023, the FireSmart Team hosetd a large scale FireSmart Event – known as Ember Stomp – for the residents in Penticton. The event brought together residents to interact with several Rightsholders and stakeholders involved in the FireSmart and wildfire risk reduction programming.

2023 Ember Stomp: https://vimeo.com/832333949

5.3 FireSmart Canada Neighbourhood Recognition Program

The FireSmart Canada Neighbourhood Recognition Program (FCNRP) provides the opportunity for neighbours to work together to reduce their risk to wildfire impacts. The program encourages residents to take action within their neighbourhood by engaging in FireSmart activities. Through these actions, neighbourhoods can achieve FCNRP recognition status and receive a FireSmart Neighbourhood designation sign for their area. Benefits of the program includes:

- Creation of defensible space for firefighters from an advancing wildfire
- Reduces probability of home ignitions from wind-driven firebrands (embers)
- Improves property value through risk reduction
- Improves neighbourhood relationships between residents and fire services
- Encourages collaboration and resiliency between neighbourhood residents
- Provides peace of mind knowing one's home is prepared for a wildfire

The FCNRP involves 5 main components:

1. Site assessment conducted by a Local FireSmart Representative (LFR)
2. Formation of a FireSmart Neighbourhood Committee
3. Development of a FireSmart Neighbourhood Plan with assistance from the LFR

4. Host a FireSmart Event
5. Apply/Renewal for recognition

It should be noted that FCNRP is completely voluntary and enforcement is not an option. More information can be found on FireSmart Canada's website, as well as the Penticton FireSmart web page: www.penticton.ca/firesmart

The City of Penticton currently has recognized neighbourhoods that are actively engaged in FireSmart activities, in addition to those who were historically active (see Table 16). The Penticton FireSmart Team also recognizes several neighbourhoods that are likely suitable for and would benefit from the FCNRP (see Table 17).

Table 16 Current and Previously Recognized FireSmart Neighbourhoods

CURRENT AND PREVIOUSLY RECOGNIZED NEIGHBOURHOODS			
Name	**Year(s) of Recognition**	**Area Description**	**Neighbourhood Plan / Notes**
Sendero Canyon	2016-2019	Sendero Canyon is located along the eastern boundary of the City, south of Campbell Mountain. To the east of Sendero Canyon there are scattered homes within the forest that eventually becomes crown land.	Sendero Canyon was developed following FireSmart Guidelines. As years went on, neighbours found it difficult to find FireSmart activities and events that would maintain their recognition. Ultimately leading to the end of recognition after 2019.
Spiller Road	2017-2020	Spiller Road is an intermix neighbourhood that is located to the east of Naramata Road, just north of Campbell Mountain. Within city boundary there are sixteen homes along Spiller Road. Spiller Road continues onto Regional District with more homes residing along the road.	Before the creation of the FireSmart Program in Penticton, Spiller Road was a recognized neighbourhood with residents that resided in the City and within RDOS. Due to the change in programing and key residents moving away, recognition did not continue beyond 2020.
Riddle Road	2017-*current*	Riddle Road runs west to east as a spur off of Naramata Road. This neighbourhood is surrounded by sparse forest	Riddle Road continues to complete yearly events to maintain recognition. With a large amount of time spent in the spring cleaning

		stands to the north and south with some agricultural land present. Directly to the east the neighbourhood is bordered by a large parcel of City owned land commonly known as the Three Blind Mice.	up debris from within 10m of the home.
Juniper Drive	2019-2021	Juniper Drive is located between Valleyview Road and Evergreen Drive South. Many lots have homes nestled in trees. Juniper Drive is less than 0.5km west from the forested, privately owned, Wiltse parcel.	Previously Juniper Drive help FireSmart clean up events where neighbours could remove debris from around their homes. There was also a focus to keep the roadway clear of debris, low-lying branches, and small coniferous trees/shrubs.
Ashbury Place	2020-*current*	Ashbury Place is located atop a small, but steep slope next to Wiltse Nature Park. Ashbury Place is located less than 0.5km from the forested, privately owned, Wilste parcel.	The Ashbury has completed events that focused on fuel conversion within their strata complex, and events to clean up the slope between the homes and Wiltse Elementary School.
Dewdney Crescent	2021-*current*	Dewdney Crescent is located near the eastern border of the City, in between Cleland Drive and Holden Road. To the south and southeast beyond Holden Road is a mix of private, city, and crown land.	Dewdney Crescent has completed events to increase their FireSmart knowledge and to clean up around their homes and in common neighbourhood spaces.
Lakewood Estates	2021-*current*	Lakewood Estates is located on the south end of town on the east side of South Main Street. Directly east of the neighbourhood is a steep slope with sage and grass that leads to agricultural land atop the slope. Lakewood Estates is just over 1km from forested areas to the east.	Lakewood Estates started their recognition with a FireSmart information session that promoted fuel conversion on individual properties. Since then Lakewood has removed coniferous trees around the neighbourhood, while continuing to clean up on individual properties.

Valleyview Road	New 2022	Valleyview Road is located along the east border of the City. Homeowners have large parcels of land with homes nestled within forested areas. To the east and southeast of this neighbourhood is private, city and crown land.	Valleyview Road has completed two major FireSmart clean up events at this point in time. The first clean up focused on and around homes, where the second cleanup focused along the road.

Table 17 Potential Neighbourhoods for FireSmart Planning and Initiatives

POTENTIAL NEIGHBOURHOODS FOR FIRESMART PLANNING AND INITIATIVES			
Name	**Wildfire Risk Rating**	**Area Description**	**Recommended FireSmart Activities**
Sutherland Road	Mod-High	Sutherland Road is located at the northern border of the City of Penticton. This neighbourhood is interface and backs onto forested lands that are city and crown land. The Kettle Valley Rail (KVR) Trail intersects Sutherland Road and is directly to the west of the neighbourhood. Naramata Road is located below the KVR Trail.	The creation of FireSmart neighbourhood plans is recommended in these areas to support neighbourhoods in pursuing recognition. This plan will be led by the neighbourhood committee with support from the Local FireSmart Representative. Ongoing maintenance should focus on ensuring no debris build up is present on or around the immediate surrounding of homes. Long term planning should be in place for fuel conversion to FireSmart landscaping, and home renovations to be completed following the FireSmart guidelines.
Spiller Road	Mod-High	Spiller Road is an intermix neighbourhood that is located to the east of Naramata Road, just north of Campbell Mountain. Within city boundary there are sixteen homes along Spiller Road. Spiller Road continues onto Regional District with more homes residing along the road.	
Ridgedale Avenue, Glen Place, Adams Crescent	Mod-High	Ridgedale Avenue, Glen Place, and Adams Crescent are all located to the South of Campbell Mountain at the	

		top of a steep forested slope. The slope is located between Penticton Avenue and these neighbourhoods. Land ownership is a mixture of private and city owned.	
Westview Drive, Corbitt Drive	Mod-High	Westview Drive and Corbitt Drive are located along the eastern border of the City of Penticton, at the top of the Dartmouth Green Belt.	
Evergreen Drive North and South	Mod-High	Evergreen Drive North and South are located along the eastern border of the City of Penticton and back directly onto privately owned forested lands.	

5.4 FireSmart Home Partners Program

The FireSmart Home Partners Program (HPP) is a relatively new avenue for BC residents to engage in FireSmart. It is a voluntary property assessment that helps residents identify specific actions they can take on their property to reduce wildfire risks. These in-depth assessments allow for one-one-one conversation and education between the Wildfire Mitigation Specialist and the resident(s). Additionally, those who meet the FireSmart guidelines and recommendations may be eligible for FireSmart HPP Certification and insurance discounts.

Residents interested are able to book an assessment for free through the Penticton FireSmart HPP online application at www.penticton.ca/firesmart, or by directly emailing firesmart@penticton.ca. The assessment is administered to residents at no cost to them, and information gathered in the assessment is safely uploaded to the FireSmart Canada server. As FireSmart Canada is a non-government organization, assessments are protected from Freedom of Information requests and cannot be shared without the residents' approval.

Penticton FireSmart Home Assessment: https://vimeo.com/834484593

5.5 Social Media

Social Media is a medium that provides the ability to reach a large range of people. The Penticton FireSmart program utilizes FaceBook, Instagram, Twitter, and TikTok. These social media accounts have been used to provide updates on local FireSmart initiatives, and promoting FireSmart material.



The FireSmart Program will be working to collaborate and coordinate messaging with partnered agencies and organizations local to the area. The intent is to ensure residents are not overwhelmed and inundated with multiple or conflicting messaging. Education and outreach is most effective when all platforms and organizations are delivering the same message.

Figure 11 Penticton FireSmart Social Media Handles

5.6 FireSmart Education for Youth

FireSmart does not only apply to adult residents. FireSmart can and should be introduced to children and youth as a way to educate younger populations on the value of wildfire, and how communities can co-exist.

Delivery of FireSmart material and subject matter can be catered for different age groups. Table 18 provides a list of schools within the City of Penticton, and provides recommendations for topics.

Table 18 City of Penticton Schools

CITY OF PENTICTON SCHOOLS – FIRESMART EDUCATION		
School Name	**Grades**	**Proposed Topics**
Carmi Elementary	Grade K-5	Kindergarten: Introduce FireSmart concepts and campfire safety. Grade 1-3: Introduce FireSmart building materials and plants and their resiliency Grade 4-5: Introduce FireSmart priority zones and how a wildfire moves into these zones.
Columbia Elementary	Grade K-5	
Parkway Elementary	Grade K-5	
Queen's Park Elementary	Grade K-5	
Uplands Elementary	Grade K-5	
Wiltse Elementary	Grade K-5	
KVR Middle	Grade 6-8	Introduce the basics of wildfire science and the role of fire in local ecology.
Skaha Lake Middle	Grade 6-8	
Penticton Secondary	Grade 9-12	Introduce the history of wildfire in BC, including First Nation cultural burning and western prescribed fire. Discuss the role of BC Wildfire.
Princess Margaret Secondary	Grade 9-12	

In 2022, FireSmart BC launched the FireSmart BC Library Program – with the pilot project taking place in the Thompson-Nicola Regional Library. It is the first children's literacy program

dedicated to wildfire resiliency. The purpose is to help children understand what it means to live with wildfires, and their role in mitigation. The 2023 UBCM CRI funding will allow for expansion of the program into other communities. The Penticton FireSmart Program is currently evaluating implementing FireSmart BC Library Program locally.

Penticton FireSmart and School Education: https://vimeo.com/821838966

6 Legislation and Planning

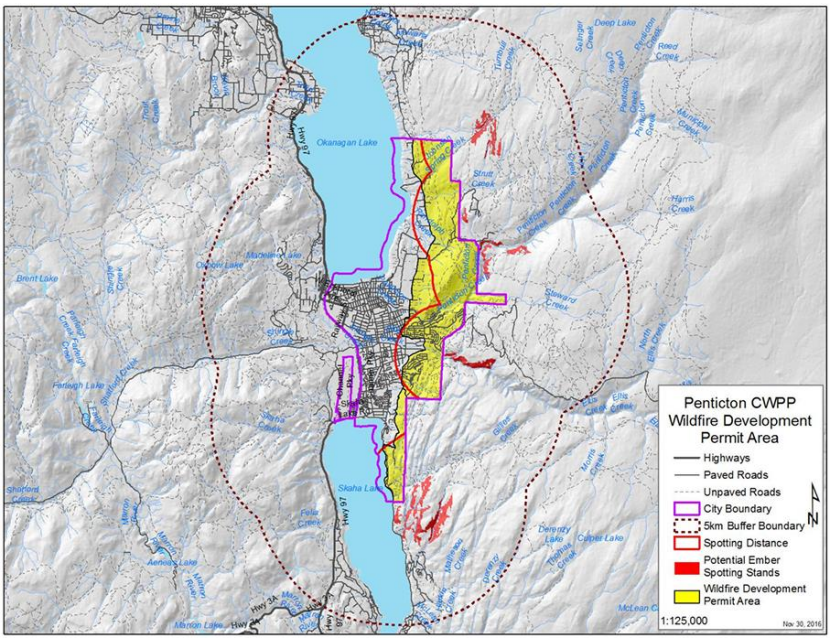
Legislation and Regulation can be a very effective tool for reducing wildfire risk on provincial crown lands and within the administrative boundaries of a local government or First Nation communities. Provincial acts and regulations provide the means for local governments and First Nation communities to implement wildfire risk reduction actions through by-laws.

Wildfire prevention is a community effort. It starts with proven FireSmart practices for land-planning and building legislation that focuses on fire safety. This includes the development of policy and legislation related to forestry management practices; integrated land use planning; compliance and enforcement programs; and legal orders. To facilitate an understanding of how provincial and federal legislation can either support or restrict the ability of the city of Penticton to implement local bylaws and other wildfire risk reduction activities to drive responsible, FireSmart focused development.

6.1 Municipal Bylaws

In the 2016 Community Wildfire Protection Plan it was recommended that the City establish bylaws to guide future development within the Wildfire Development Permit Area (WDPA). The WDPA was recommended as shown in the map below. This area was derived by delineating the potential spotting distance from high fire behaviour stands (red polygons) within the 2km buffer zone (purple line outside the City boundary). The potential spotting distance was illustrated by the red line within the boundary. The spotting distance line was then modified to follow the closest roadway or other logical feature where possible (Davies, 2016).

Currently the Penticton FireSmart Program is working to create standards for developments in the wildfire development permit area, but no standards have been adopted yet. These standards will address requirements for developments such as: construction materials and techniques, landscaping, vegetation use and management, and standards for access/egress.



Maps 6 Penticton Wildfire Development Permit Area Recommendation (2016)

It is recommended that Penticton adopt standards in line with the FireSmart program and the *National Guide for Wildland-Urban-Interface Fires,* published by Natural Resources Canada (2021).

6.1.1 FireSmart Open Burning

The purpose of the FireSmart Burning Permit is to promote the removal of fuel from wildland and urban interface properties. The permit is issued for a specific period and for a specific site.

There is no cost for the permit or site inspection. After applying for the permit, a site inspection will be completed by the Fire Department's Fire Prevention Division. If the permit is approved, burning can occur during the period specified.

Residents utilizing the FireSmart Open Burning Permit must still comply with the Fire & Life Safety Bylaw 2004-57. Requirements include:

- Burning may only occur on parcels one (1) hectare or greater
- Burn piles must not exceed the size of 3m x 3m
- Fire suppression equipment and water must be readily accessible
- Burn piles must be monitored by a competent adult
- Burn piles must be extinguished by dusk
- Ignition of burn piles may only occur on days of a Venting Index of 55 or greater

It is the responsibility of the permit holder to understand the rules and regulations of the bylaw. It is also the responsibility of the holder of the permit to account for weather changes, particularly increases in wind speed and direction. It is also recommended they register for free with BC Wildfire Service by calling the burn registration line 1-888-797-1717 or email hpr.1800@gov.bc.ca.

6.2 Provincial Acts and Regulations

The following is a summary of key provincial and federal acts and regulations that have been considered in the CWRP planning process and should be reviewed through implementation measures undertaken as result of this CWRP.

BC Building Act and Building Code

The BC Building Code (BCBC) is a provincial regulation that governs how new construction, building alterations, repairs and demolitions are completed. This code establishes minimum requirements for safety, health, accessibility, fire and structural protection of buildings and energy and water efficiency.

The Building Act allows local governments to create Development Permit Areas (DPA's) that can include wildfire risk reduction measures, including technical building requirements.

BC Emergency Program Act

The Emergency Program Act (EPA) and the associated regulations provide the legislative framework for the management of disasters and emergencies in BC. Associated regulations include:

- Emergency Program Act 1996
- Emergency Program Management Regulation 1994
- Compensation and Disaster Financial Assistance Regulation 1995
- Local Authority Emergency Management Regulation 1995

The BC EPA requires local authorities to prepare a local "all hazard" Emergency Management Plan (EMP) that addresses the preparation for, response to and recovery from emergencies and disasters. The EPA also provides the authority for the local authorities to declare a state of local emergency and exercise specific powers while under a local state of emergency.

BC Local Government Act

The Local Government Act provides the legal framework and foundation for the establishment and continuation of local governments to represent the interests and respond to the needs of their communities, including the powers, duties, functions, and flexibility necessary for fulfilling their purpose. Specifically related to wildfire risk reduction, this act provides direction on adopting by-laws and administering new development, including the designation of DPAs through the official community plan for protection of development from wildfire.

BC Open Burning and Smoke Control Regulations (OBSCR)

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 regulation aims to ensure that open burning is conducted with minimal risk to air quality.

BC Wildfire Act and Wildfire Regulations

The Wildfire Act and Wildfire Regulation define the legal responsibilities and obligations to which everyone in British Columbia is subject. When the BC Wildfire Service places bans or restrictions in an area, the Wildfire Act and Regulation makes them enforceable. Its key goal is to specify responsibilities and obligations on fire use, wildfire prevention, wildfire control, and rehabilitation.

BC Forest & Range Practices Act (FRPA)

The FRPA outlines how all forest and range practices are to be conducted on Crown land in B.C., while ensuring protection of everything in and on them, such as plants, animals,

and ecosystems. FRPA standards and requirements ensure elevated levels of protection for resource values while streamlining planning processes for both government and industry.

Professional Governance Act

The Act is intended to provide a consistent framework for governance of self-regulated professions, and to ensure those professions are regulated to protect the public interest. The Act sets the parameters of professional forestry and who can undertake professional forestry. The FCFS program requires that all activities that fall under the practice of forestry (including WRR activities), be developed, and where applicable signed/sealed, by a forest professional that is accredited by the Association of BC Forest Professionals and operating within their scope of practice.

Canada Federal Fisheries Act

The Federal Fisheries Act applies to fish and fish habitat associated with freshwater rivers, streams, creeks, and ditches as well as seasonally wetted habitat such as flood plains and intermittent streams. The Act prohibits any work or undertaking which results in the harmful alteration, disruption, or destruction of fish habitat. The removal of vegetation, including shrubs and trees in areas that can affect fish habitat fall within the legal reach of the Federal Fisheries Act. By-laws, DPA requirements and vegetation management are the primary WRR activities that could be under the legal requirements of the Federal Fisheries Act.

Canada Federal Species at Risk Act

The purpose of the Species at Risk Act (SARA) is to prevent wildlife species in Canada from disappearing and to provide for the recovery of wildlife species that are impacted because of human activity and prevent other species from becoming endangered or threatened. Bylaw implementation, DPA requirements and vegetation management planning must consider the requirements and prohibitions of the SARA.

Canada Migratory Bird Convention Act

The Migratory Bird Act implements a convention for the protection of migratory birds in Canada and the United States. The Act protects and conserves migratory bird populations and their nests.

6.3 Community Action Planning

It is recommended that any residents participating through a FireSmart committee familiarize themselves with the policies and guidance to understand the overarching legislation applicable to FireSmart activities.

Further to this, it is recommended that FireSmart Critical Infrastructure Assessments are conducted for all city-owned infrastructure which could be needed in the event of an emergency. With this information it will be up to the city to mitigate identified hazards and continue to monitor for risks as they arise.

7 Development Considerations

Development decisions, such as land use types, structure density, road patterns, and other considerations, shape the built and natural environments. These decisions can bring lasting impacts to the WUI and wildfire risk by affecting public and first responder safety and survivability of homes, critical infrastructure, and other community features. Considering these factors early in the development process can reduce wildfire risk to life safety and property.

Whether in the design stage, building, or performing renovations, there are many ways land use planning and development standards can help protect homes and communities from wildfires. Effective local government land use planning can support community wildfire resiliency and infrastructure survivability.

As communities expand and build out new subdivisions, increased interface between urban and wildland landscapes is expected. The goal in development of new subdivisions should focus on managing risk from wildfire and protecting the most important values at risk, specifically people and their homes. Methods to encourage this include implementing bylaws relating to landscaping on private property, which should be developed with FireSmart guidance in mind. Particularly important is the management of vegetation and other combustibles within home ignition zones. Provisions to require fire resistant construction materials can also help improve the overall resilience of a structure if threatened by wildfire.

7.1 Wildfire Development Permit Areas

The adoption of standards for development through a Wildfire Development Permit Area (WDPA) would assist the City in becoming more resilient to wildfire and provide a structured framework for the City and residents to follow. Following FireSmart home development guidelines have been proven effective in reducing the likelihood of structure ignition and community conflagration (Cohen & Westhaver, 2022; Westhaver, 2017). Studies have also shown the cost effectiveness of utilizing FireSmart building materials, with costs being similar to



Figure 12 FireSmart WDPA Process

using non-FireSmart materials but reducing costs required for re-builds (Quarles & Pohl, 2018). The WDPA should address requirements for new developments to minimize wildfire risk at both the household and neighborhood scales.

When planning and drafting bylaws or WDPA standards, engaging with builders and developers is recommended to ensure businesses have time to offer input and prepare their businesses for incoming changes.

Several factors influence the susceptibility of development, effectiveness of response and level of public safety during a wildfire. These factors should be addressed in the WDPA and include:

- Location of the development in relation to steep slopes and other geographical features that contribute to extreme fire behaviour,
- Access and egress routes for residents and first responders,
- Type of construction materials for construction and attachments, and
- Acceptable landscaping and fuel management.

The current 2016 OCP addresses wildfire resiliency through implementation of wildfire best management practices, such as ecologically-appropriate FireSmart guidelines in new neighbourhood and infrastructure design, building construction and the management of individual properties.

Should an adoption of a WDPA standards be implemented the City's Official Community Plan (OCP) will require an update to include this permit.

7.2 Evacuation Routes

Ensuing that adequate access and egress routes are established are critical for both evacuation and emergency response. Recent wildfire history suggests the need for evacuations may become more common as wildfire activity exhibits increasingly aggressive behaviour. Ensuring the ability of a neighborhood to evacuate in an orderly manner requires adequate traffic flow for an expected population needing to evacuate, as well as the ability for emergency response teams to enter at the same time to assist evacuations and conduct fire suppression activities.

8 Interagency Cooperation

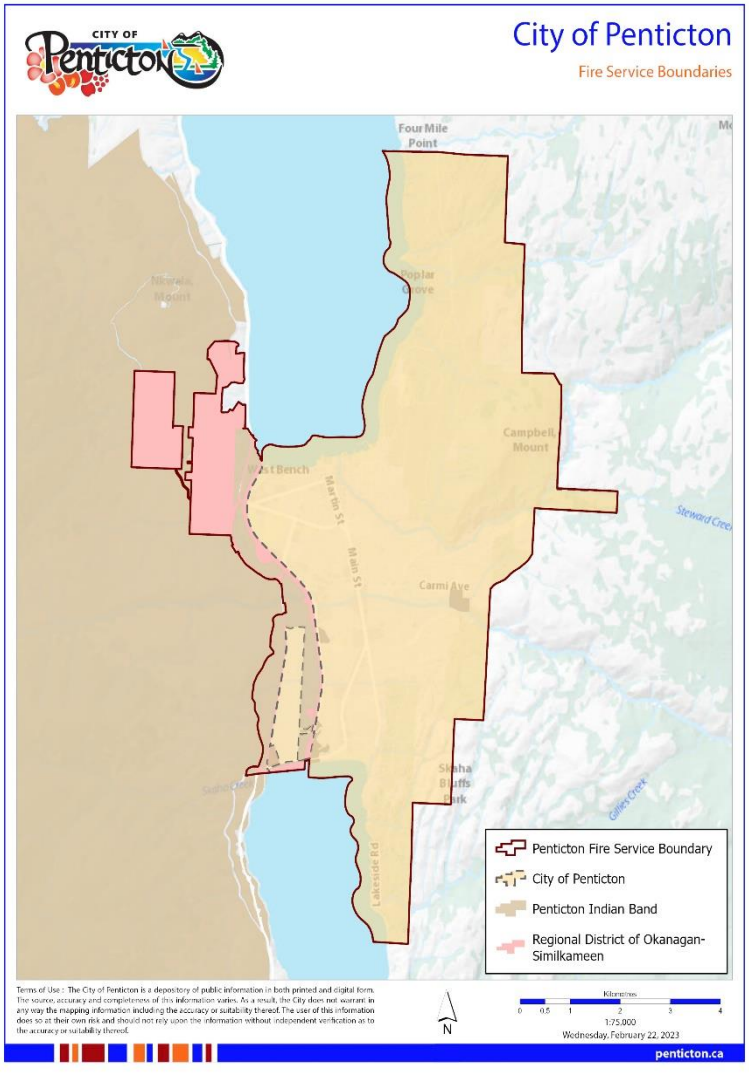
It takes the collaborative efforts of multiple stakeholders working together to achieve a fire resilient community. These people include the local fire departments, local government staff, elected officials, First Nations representatives, industry representatives and provincial government residents in your area. Individually they are responsible to their own organizations, but all of the stakeholder organizations are dependent upon each other to develop an effective Community Wildfire Resiliency Plan and undertake a successful wildfire response.

Fire service protection within the AOI is the responsibility of the Penticton Fire Department ('The Department' or PFD). Established in 1911, the department currently is staffed by:

- 3 Command Staff (Chief, Deputy Chief, Assistant Chief)
- 2 Fire Prevention Staff (Fire Prevention Officer, Fire Inspector)
- 1 Training Officer
- 4 x 10-person Companies
- 2 FireSmart Staff (Coordinator, Wildfire Mitigation Specialist)
- 1 Emergency Program Coordinator
- 1 Confidential Administrative Assistant/ESS Coordinator
- 30 Auxiliary Firefighters
- 50 Emergency Support Services Team Members

The Department maintains a full service status, and provides several services including – but not limited to:

- Structural fire and wildfire suppression
- High and low angle rescue
- Water, ice and swiftwater rescue
- Vehicle Extrication
- Medical Response
- Fire prevention and education
- Fire investigation



Maps 7 Penticton Fire Department Service Boundaries

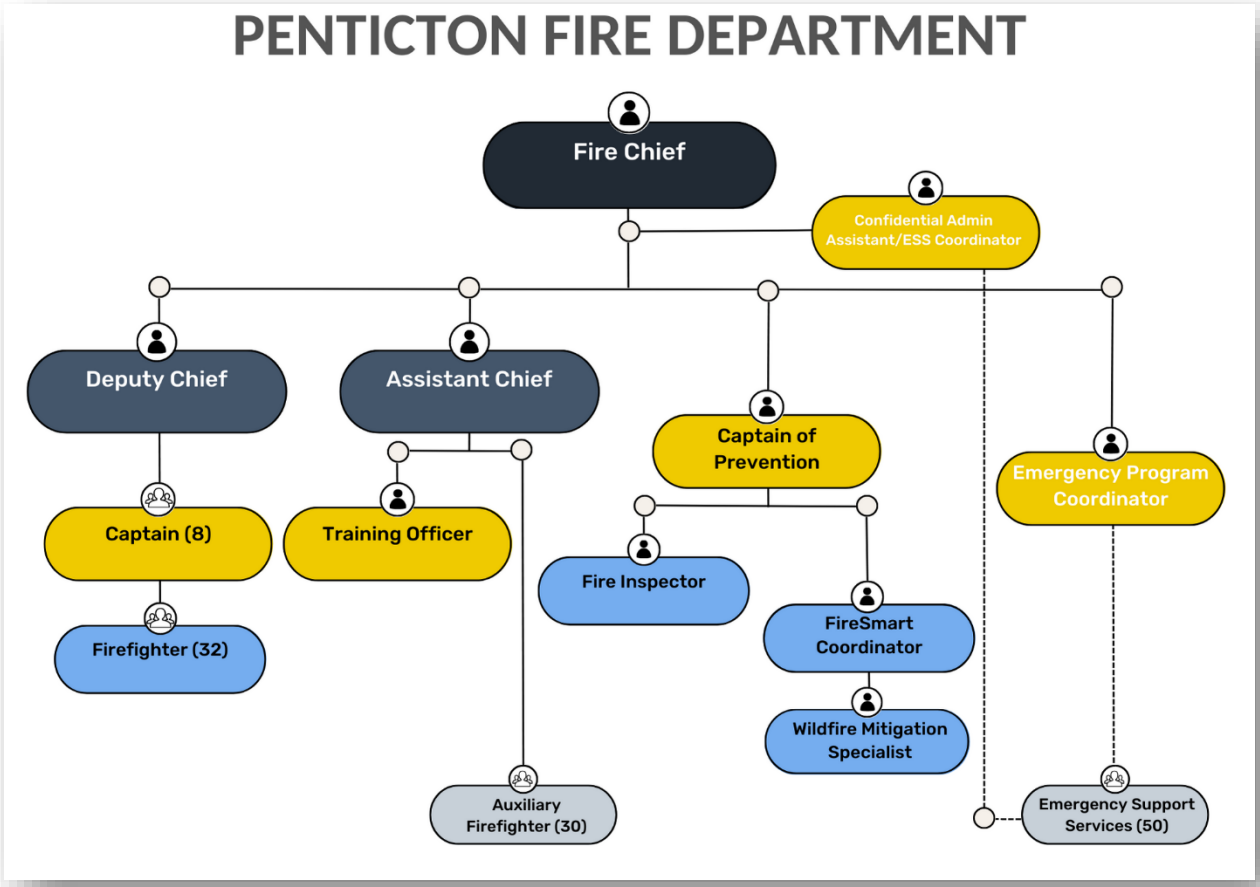


Figure 13 Penticton Fire Department Org Chart

8.1 Mutual Aid Agreement

The RDOS Bylaw No. 2426, 2007 provides the agreement between Parities to provide fire service emergency resources to be deployment to any Parties requiring assistance during an emergency.

Participating fire departments include:

- City of Penticton
- Town of Oliver
- Town of Princeton
- District of Summerland
- Anarchist Mountain
- Kaleden
- Naramata
- Okanagan Falls
- Willowbrook
- Keremeos and District
- Hedley Improvement District
- Oliver Fire Protection District
- Osoyoos Fire Protection District
- Tulameen and District

The bylaw outlines request for mutual aid and the provision of mutual aid. Under the bylaw it is agreed that no charge shall be levied for services rendered by any of the assisting agencies, with the exemption for consumables, damage and/or loss of equipment.

Additionally, the Penticton Fire Department has a good working relationship with the Penticton BC Wildfire Zone. Wildfires within in jurisdictional boundaries of the City are the responsibility of PFD. However, request for BC Wildfire support may be requested. Conversely, encroaching wildfires on jurisdictional boundaries may require support from PFD to BCWS.

8.2 Emergency Operations Center

Wildfires do not adhere to borders, and therefore often cross over several jurisdictions boundaries. The City of Penticton operates their own emergency program and Emergency Operations Center (EOC) under the Penticton Fire Department. The City also contributes to the Regional Emergency Management Program under RDOS Bylaw No. 2375, 2006, and provides a representative to both the Emergency Program Coordinator Committee and the Emergency Support Services Committee.

Through the Regional Emergency Management Program the City participates in regional exercises. Often the focus is to strengthen collaboration on resource sharing, consistent messaging, and alignment of strategic and advanced planning during an emergency.

8.3 South Okanagan Wildfire Advisory Group

The South Okanagan Wildfire Advisory Group (SOWAG) was established to assist local authorities and land managers in developing and setting strategic direction for the South Okanagan-Similkameen wildfire prevention and mitigation activities.

Currently chaired by the Regional District of Okanagan Similkameen (RDOS), the SOWAG is comprised of various partners including, but not limited to:

- RDOS
- Penticton Indian Band
- Osoyoos Indian Band
- Town of Osoyoos
- Town of Princeton
- Village of Keremeos
- Town of Oliver
- City of Penticton
- BC Wildfire Services
- BC Timber Sales
- BC Hydro
- BC Parks
- Lower Similkameen Indian Band
- Upper Similkameen Indian Band
- District of Summerland
- Ministry of Forests
- Gormans
- Ministry of Transportation Infrastructure

The group currently meets annually, with a goal of increasing frequency.

8.4 Regional FireSmart Committee

The Regional FireSmart Committee was formed in the fall of 2022 to provide a forum for neighboring fire departments to coordinate and collaborate on FireSmart projects and initiatives. Current and future projects include the collaboration on FireSmart advertisements, and the purchasing and sharing of an Ember FireSmart mascot.

The committee is currently chaired by the Peachland Fire Department. Current membership includes:

- Penticton Fire Department
- Summerland Fire Department
- Peachland Fire Department
- Regional District of Central Okanagan
- West Kelowna Fire Department
- Kelowna Fire Department
- Vernon Fire Department

Meetings are held quarterly.

8.5 Penticton Indian Band

The City of Penticton is located on the traditional, and unceded territory of the Sylix people within the Okanagan Nation. It also neighbours the Penticton Indian Band (PIB), and has a fire service agreement in which the City's fire department provides support for medical calls, fire suppression, and fire inspections.

After the 2017 flood and wildfire season, an independent review was conducted to evaluate a variety of emergency management criterion (Abbott & Chapman, 2018). Several recommendations were related to First Nations people, including:

- Establishing Indigenous Partners as true partners and leaders in emergency management by including First Nations from the beginning and at all levels of planning, decision making and implementation.
- Government recognition of First Nations jurisdiction in their traditional territories and support capacity development through training and accreditation
- BC increase use of traditional and prescribed burning as a tool to reduce the risk associated with landscape and local-level hazards, and to regenerate ecosystems

The PIB and Sylix Okanagan Nation have a core interest in the land and the water within their traditional territories. Wildfire management practices, including risk reduction and response, can have impacts on local cultural values. Therefore, the City of Penticton should be inclusive of PIB and the Okanagan Nation within their mitigation, planning, and response efforts and decision making.

9 Cross-Training

Wildland-Urban Interface resiliency planning and incident response draw on many different professions who do not typically work in wildfire environment. Cross-training of fire fighters, public works staff, utility workers, local government and First Nations administration, planning and logistics staff, and other key positions will help support the development of comprehensive and effective wildfire risk reduction planning and activities, as well as a safe and effective response.

Cross-training aims to bring emergency response organizations together for the purpose of identifying potential weaknesses and gaps in response efforts prior to an actual event. Training can also be completed to familiarize organizations with the equipment, procedures and strategies of other agencies. The overall goal is to reduce any required on-the-job learning that might occur during an emergency.

To aid in this venture, Chief Larry Watkinson developed the Wildland-Urban Interface Symposium as a means to bridge the gap between structure and wildland firefighting. Penticton hosted the first event in 2018, and another successful year in 2019. During the COVID-19 pandemic, the 2020 & 2021 symposium was delivered regionally due to public health restrictions. Its return in 2022 saw a strong comeback with a complete sellout of registrations, and adoption as a provincial standard by the BC Wildfire Service. The WUI Symposium will now be operated through BCWS, and combined with the FireSmart Conference.

Cross-training can also be applied to extending FireSmart training and certifications to community members and City staff. This can aid in community and departmental advocacy for wildfire preparedness.

9.1 Penticton Fire Department

The Penticton Fire Department is dedicated to providing a high standard of service to its residents as it pertains to fire and safety. This includes dedicated wildland fire training that is reviewed on an annual basis. Annual curriculum includes:

- ICS 100-400
- S-100 Basic Wildfire Suppression & Safety
- S-185 Fire Entrapment Avoidance
- Basic Chainsaw Operator

In addition department staff have undergone other wildland fire specific training, including accreditation as Structural Protection Specialists. Training has included:

- S-215 Fire Operations in the WUI
- S-231 Engine Boss
- WSPP-115 Structure
- Task Force & Group Supervisor

- Staging Manager
- Danger Tree Assessor (Wildfire Module)

There is continued cross-training opportunity in conducting joint tabletops or live exercises between PFD and the BCWS Penticton Zone. Cross-training would not only provide opportunity for knowledge of equipment and operations, but also, provide opportunity for relationship building between crew leaders and officers who may act in unified incident command. Inclusion of the Penticton EOC would also allow for crossing-training with the BCWS Zone Wildfire Coordination Officer (ZWCO).

9.2 Emergency Operations Center

The EOC is often staffed by non-emergency service personnel. Typically it is staff by other department employees including Public Works, Utilities, Planning and Development Services, Finance, etc. Providing opportunity for EOC staff to become more aware of the inner workings of wildfire response, and the multiple agencies involved can assist providing a better understanding if the City's role during a wildfire event.

Cultural humility and safety training for EOC staff is important step in reconciliation. The training will aid in building foundations in providing appropriate assistance to Indigenous residents and creating positive proactive relationships with representatives of First Nations communities. This training can also be extended to first responders and Emergency Support Services volunteers.

9.3 FireSmart Training

Currently the Penticton Fire Department has six (6) staff trained as LFRs and as Wildfire Mitigation Specialists. Several of these staff members are also recognized FireSmart instructors for the LFR and HPP courses.

As new staff are added to the department, it may be conducive to provide opportunity for certifications in either designation. Additionally, it may also be beneficial to train other City department staff that work in related fields, such as Parks, to provide an all-inclusive approach to FireSmart applications.

9.4 Neighbourhood Champions

FireSmart programming can hinge on the availability of Neighbourhood Champions. Neighbourhood champions are a locate resident that help rally their neighbours to participate in FireSmart activities. They also can act as a point of contact between a LFR or a FireSmart Coordinator. Provision of training gives potential Champions the knowledge on how to engage with their neighbors on preparedness, and potentially taking the lead in establishing a FireSmart committee and/or FireSmart plan.

10 Emergency Planning

Community preparations for a wildfire emergency requires a multi-pronged approach. Individuals and agencies need to be ready to react by developing plans, mutual-aid agreements, resource inventories, training and emergency communication systems. All of these make it possible for a community to respond effectively to the threat of wildfires as a whole.

The *Emergency Program Act* (EPA) forms the legislative framework for the management of disasters and emergencies in British Columbia. It outlines the responsibilities of local governments, in which it states, "…a local authority is at all times responsible for the direction and control of the local authority's emergency response." For the City of Penticton, the Penticton Fire Department is responsible for tactical wildfire response within the municipality's boundaries and maintains the facilitation and coordination of the City's Emergency Management Program.

10.1 Pre-Incident Planning

The City adopted a Wildland Urban Interface: Fire Response Action Plan in 2017, which is aimed at the protection of the community from wildfires through emergency response and recovery. As of 2023, it is under review and will be updated to reflect the City's Emergency Operations Center (EOC) roles and responsibilities – which previously was held by the Regional District of Okanagan Similkameen (RDOS).

10.1.1 Wildland Urban Interface Fire Flow Chart



ESTABLISH COMMAND & SIZE UP

UPDATE

DUTY CHIEF

NOTIFY

- Emergency Program Coordinator or EOC Director
- Penticton BCWS Zone
- RCMP
- RDOS and/or PIB

PFD RESOURCES ABLE TO CONTAIN & EXTINGUISH THE FIRE?

YES

NO

EXTERNAL RESOURCES AND SITE SUPPORT IS NOT REQUIRED

Resume Normal Operations

EXTERNAL RESOURCES AND SITE SUPPORT IS REQUIRED

ACTIVATE WUI RESONSE PLAN

CITY OF PENTICTON EOC ACTIVATION

Kelowna Fire Dispatch

[redacted]

Request for EOC Activation

Implement WUI Response Plan and Other Relevant Emergency Plans

DUTY CHIEF

- Request EOC Activation
- Determine Resources Needed
  - Utilize Mutual Aid Agreement and/or Interagency Agreement
- Provide updated to EOC/Fire Branch/Site Liaison
- Establish communications with BC Wildfire Service

(LOCATION DEPENDANT)

OTHER STAKEHOLDERS THAT MAY REQUIRE INFORMATION SHARING:

- CAO & MAYOR
- RCMP
- Ministry of Transport
- Ministry of Enviornment
- Utilities: Fortis, BC Hyrdo
- Media & other Public Notifications

IN JURISDICTION RESPONSE REQUIRES TASK NUMBER

EMCR

[redacted]

BC Wildfire Service

Kamloops Fire Center:

[redacted]

CELL *5555

Penticton Zone Wildfire Coordinating Officer Duty Line:

[redacted]

Penticton Indian Band

EOC

[redacted]

Regional District of Okanagan Similkameen

Mutual Aid Request via Fire Dispatch:

[redacted]

RDOS Duty Phone:

[redacted]

City of Penticton

EOC Phone*:

[redacted]

*Activation via Fire Dispatch:

[redacted]

10.1.2 Prep Levels

Probability of Daily Ignition (1=unlikely, 5 = very likely)						
	5	4	5	6	6	6
	4	3	4	5	6	6
	3	2	3	4	5	6
	2	1	2	3	4	5
	1	1	1	2	3	4
		1 (<10)	2 (10-500)	3 (500-2000)	4 (2000-4000)	5-6 (4000-10,000+)
		Head Fire Intensity Group (kW/m) in C7 Fuel Type				

Note: BCWS criteria for campfire bans = 50% of all weather stations at 140 or more BUI value

10.1.3 Pre-Incident Mapping

Pre-Incident Mapping has been established in the City of Penticton to aid jurisdictional and mutual aid response crews. These maps are geo-referenced and QR coded for ease of transferability. Information contained includes:

- Critical Infrastructure
- Wildfire Interface Zones
- Hydrants & possible water sources
- Safety Zones (potentials)
- Staging Areas (potentials)
- Access & Egress routes

These maps are also accessible by the EOC through the internal dashboard.

10.1.4 Penticton Fire Department Resources

The PFD has the following apparatuses and equipment at their disposal for wildfire response:

- 1 x Ladder
- 3 x Engines
- 1 x Water Tender (GAL??)
- 2 x Bush Trucks
- Utility Pickup
- UTV
- Type 3 Structure Protection Trailer

Engines and Additional resources can be requested through mutual aid or the EOC.

10.2 Recovery

Recovery operations can, and often should, begin to commence during response activities and may involve public and private sector coordination of recovery efforts. There are several stages to consider: short-term (i.e., days/weeks), medium-term (i.e., weeks/months), and/or long-term (i.e., months/years). Recovery efforts for the City from a wildfire will be dictated by the damage and/or losses as a result of the event. In general, efforts will require collaboration between City departments and consultation with subject matter experts.

Once the fire has been suppressed, the BC Wildfire Service or Fire Department will perform a fire watch for a period that is justified by the size of the event, or until the Fire Chief determines that a flare-up is unlikely. Once the Fire Chief declares the fire out, the PFD will return to their normal daily operations of monitoring the area.

Fire origin and cause investigation for wildfires starting within the service area boundary falls to the responsibility of the Fire Prevention Division, in cooperation with the Ministry of Forests.

10.2.1 Disaster Financial Assistance

Disaster Financial Assistance (DFA) exists to help communities recover from catastrophic emergencies. It is also available to private sector applicants (i.e., homeowners, residential tenants, business owners, farm owners, and charitable organization) that were unable to obtain insurance to cover disaster-related losses. It provides compensation for essential uninsurable losses for eligible disasters.

Where applicable, the City will act on behalf of its residents to seek out DFA support as part of the recovery process. Once an event has been deemed by the Province as “eligible” residents can submit claims to be reviewed under the DFA criteria.

11 Vegetation Management

The general goal of vegetation management is to reduce the potential wildfire intensity and ember exposure to people, infrastructure, structures and other values through manipulation of both the natural and cultivated vegetation that is within or adjacent to a community. A well-planned vegetation management strategy that is coordinated with development, planning, legislation and emergency response wildfire risk reduction objectives can greatly increase fire suppression effectiveness and reduce damage and losses to structure and infrastructure.

In the CWRP context, vegetation management may be achieved by carrying out two different types of wildfire risk mitigation activities, as outlined below:

1. Residential scale FireSmart landscaping (11.1)
    - ❖ takes place in the FireSmart Home Ignition Zone (HIZ)
        - Immediate Zone (0-1.5m): establishment of a non-combustible zone
        - Intermediate Zone (1.5-10m): establishment of environment with little to no fire activity potentials
        - Extended Zone (10-30m): reduction in fire behaviour potentials
    - ❖ focus is on removing, reducing, or converting flammable plants to fire-resistant plants
    - ❖ can be applied to residential properties, public property grounds, parks, open spaces, etc.
2. Fuel management treatments in the community and landscape zones (11.2)
    - ❖ usually takes place in the community zone from 30 m and beyond on municipal land
    - ❖ usually takes place in the landscape zone on Crown land outside of municipal land
    - ❖ goal is to reduce wildfire rate of spread and head fire intensity, while increasing the likelihood of successful suppression
    - ❖ focus is on manipulating and reducing living and/or dead forest and grassland fuels
    - ❖ generally applied to public land
    - ❖ UBCM CRI funding is available for municipal land
    - ❖ Crown Land Wildfire Risk Reduction (CLWRR) funding is available in partnership with the local Forest District for Crown land

Many of the FireSmart vegetation management activities recommended in this section are eligible for funding. Section 12 summarizes the action plan, including responsibilities, priorities, suggested timeframes, required resources, and metrics. Cross-reference the objectives and actions with the information and recommendations presented in this section to gain a full understanding of FireSmart vegetation management activities for the City.

11.1 Residential Scale FireSmart Landscaping

Residential scale FireSmart landscaping is generally completed in the Home Ignition Zone (HIZ) after a FireSmart HIZ Assessment has been completed (see Figure 14). Homeowners may complete HIZ assessments on their own or choose to have a Local FireSmart Representative

(LFR) complete one for them, such as one from the City. Section 5 provides information on available FireSmart education and assessment options. It is recommended that City apply for funding to provide residential assessments and rebates to homeowners, as per the summary in Section 12. In addition, it is recommended to provide vegetative debris disposal for residents who undertake their own vegetation management. The FCFS program does not provide funding for carrying out FireSmart landscaping on private property; however, rebate programs, and free disposal options provide incentives for private residents to do their own work. The City already has an active such program and should pursue funding for its continuance.



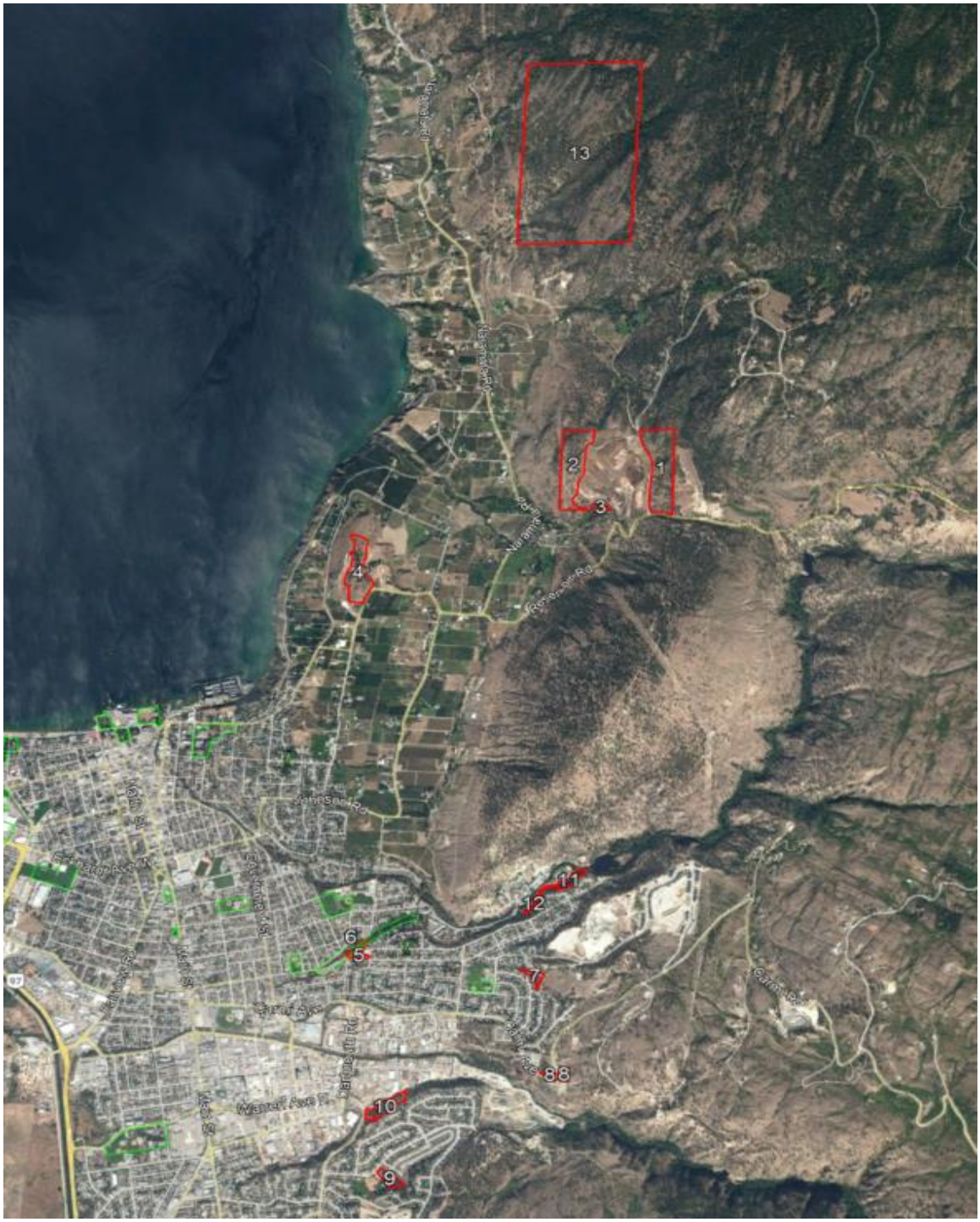
Figure 14 FireSmart Canada Home Ignition Zones

Through the City's province leading FireSmart program, many neighbourhoods throughout the City have already completed actions to address more FireSmart focused landscaping. The City should continue to educate residents to continue to promote community engagement in FireSmart.

Residential scale FireSmart landscaping may also be completed for publicly owned critical infrastructure where Critical Infrastructure Assessments have been completed. These assessments are essentially the same as the HIZ Assessments, where they include the structure, and the area around the structure extending 30 meters outwards. Refer to Figure 14 for a graphic depicting the FireSmart Critical Infrastructure Zone. The FCFS program does provide funding for carrying out FireSmart landscaping on critical infrastructure.

In this CWRP, only the landfill was identified as publicly owned critical infrastructure (other such infrastructure has had adjacent treatments). The City should apply for funding to carry out recommended mitigation activities for the grounds surrounding the landfill as it had the highest priority treatment areas (see figure 15 and 16). Upon completion, a post treatment assessment should be conducted again to ensure that hazard scores have been sufficiently reduced.

A wildfire threat assessment worksheet was completed for the landfill and would be a great public demonstration project area. Educational signs should be installed onsite to enhance the wildfire mitigation work, tying in with the education FireSmart discipline. The treatment area is in a location that is readily visible to community members.



Maps 8 Location of all priority treatment polygons within the City.



Maps 9 Aerial View of the Landfill (Priority Sequence Designated by Numbers)

11.1.1 FireSmart Rebates & Bins

After a completion of a FireSmart Home Assessment, residents may be eligible for financial compensation for completing FireSmart wildfire risk reduction work on their property. Rebates are managed through the City's FireSmart program and can be applied to a variety of FireSmart work including:

- Limbing and pruning of coniferous and non-FireSmart vegetation
- Plant and mulch conversion to fire resilient plants or materials
- Installation of FireSmart building materials
- General labour work to remove combustible debris and material from Zone 1

As of 2023, rebates can cover 50% of the cost up to a total of $1000. Personal work hours are also included and are calculated at a rate of $29/hr.

A pre- and post-assessment must be conducted by a Local FireSmart Representative or Wildfire Mitigation Specialist to identify eligible wildfire risk reduction activities, and ensure wildfire risk reduction has been achieved.

In additional to rebates, the City has the ability to apply for funding vegetation disposal. Historically this has been provided through supplying commercial sized bins, which are conveniently placed within a neighbourhood for residents to use for FireSmart events.

11.1.2 FireSmart Plants & BC Plant Tagging Program

By making strategic choices about plant species utilizing in residential landscaping, residents can balance reduced wildfire risk, reduced water consumption, and aesthetically pleasing yards. The BC FireSmart Landscaping Guide (see Appendix D Resources) provides a comprehensive list of trees, shrubs, grasses, perennials, etc. that are resiliency to wildfire. In addition, it also provides recommendation of plants based on their water consumption – which is an important factor to consider in an environment such as Penticton.



Figure 15 Penticton FireSmart Plant Tagging

The Penticton FireSmart Team has also worked with local nurseries and garden centers to implement the FireSmart BC Plant Tagging Program. The program aims to provide visual aid (i.e., Plant Tag) to residents to help identify fire-resilient plants available for purchase. As of 2023, the City of Penticton has the program offered through:

- Garden Works, 670 Duncan Ave W.
- Home Hardware Building Center, 150 Fairview Pl.
- Flowers of the Bench, 149 West Bench Dr.

11.2 Fuel Management Treatment in the Community and Landscape Zones

This subsection is continued from the local Wildfire Threat Assessment (section 4.4), where more detailed work was conducted in areas identified with the highest local wildfire risk classes in the WUI (see Table 19). Based on the assessment, logical treatment units were designed for future prescription development and fuel management treatments within the City boundaries. All fuel management prescriptions must be developed by a forest professional with wildfire vegetation management within their scope of practice.

Thirteen logical fuel treatment units (FTUs) have been designed for fuel management treatments within the AOI (see Table 19 for a summary). Proposed treatments have been organized in terms of priority, based on the local wildfire risk classes determined during the Wildfire Threat Assessment process. Overall, proposed treatment areas cover 175.3ha within the CWRP AOI. All treatments are proposed on City lands. It is important to note that many of the 13 treatment units proposed have already been treated and/or were assessed as moderate, the target for fuel management. However, the assessments and proposed treatments provide guidance for further treatments or maintenance of these units through time.

Table 19 Proposed fuel treatment unit (FTU) summary table

PROPOSED FUEL TREATMENT UNIT (FTU) SUMMARY TABLE							
FTU # / Priority Level	Total Area (ha)	Treatment Unit Fuel Break Type	Local Wildfire Threat			Overlapping Values / Treatment Constraints	Treatment Rationale & Location/Assessment Form Label
			Extreme / High	Mod	Low		
1	1.2	Interface		65		Proximal to Ellis Cr watershed. Close proximity to hydro substation. Adjacent to Carmi Avenue. Below homes.	One of the last untreated sites in the city limits. Directly adjacent to single access road and below homes. This site is small and isolated and could just be pruned to reduce hazard. Location: switchback on Carmi Ave just past hydro substation. Assessment Label: 8a
2	0.6	Interface		61		Immediately adjacent to Landfill. Poor access. South aspect and will dry out quickly in the spring.	One of the last untreated sites in the city limits. Adjacent to the dump and could contribute to spotting into the dump.

							Treating the site would provide some protection to the landfill. Location: immediately south of the landfill below the metal recycling pile. Assessment Label: 3a
3	6.7	Interface		58		Immediately adjacent to Munson Mtn recreation trails and BMX park.	One of the last untreated sites in the city limits. Isolated patch of conifers adjacent to grassland and heavy recreation area. Site could just be pruned as part of a FireSmart project. Location: east side of Munson Mtn Assessment Label: 4a
4	136	Landscape		56		Proximal to Penticton Creek Watershed. Adjacent to transmission line. Some invasive plants exist on site.	Much of this site was treated already. Existing fuel hazard is due to existing overstory (difficult to remove) and consistent grass and shrub fuels. Site should be considered for maintenance with prescribed burning. Location: Three Blind Mice recreation area Assessment Label: 13
5	0.8	Interface		55		Immediately adjacent to homes. Poor access.	One of the last untreated sites within the city. Potential to experience high fire behaviour associated with grassy fuels and yard waste being dumped by residents. Site could just be pruned as part of a FireSmart project. Location: small park off Dewdney Crescent at intersection with Cleland Road. Assessment Label: 7a

6	12.6	Landscape		51		Upslope of landfill, below homes and adjacent to only access to Spiller Dr neighbourhood. Penticton Creek watershed. Invasive plants on site and a riparian feature that will need to be removed from treatment. West aspect and will dry out quickly in the spring.	Site contains dense patches of conifers with crowns close to the ground. High fire behaviour, and rate of spread, could be realized due to consistent grassy fuels. Extensive pruning could remove ladder fuels. Goats, and eventually prescribed burning, could be used to modify grassy and shrub fuels. Location: opposite Spiller Rd from the landfill Assessment Label: 1c
7	1.3	Interface		51		Adjacent to school.	Site has been previously treated. Fuel hazard rating is entirely due to dense overstory. Monitor for shrub and grass growth and branch wood input. Remove by hand or chipping. Location: Whiltse avenue, park next to school. Assessment Label: 9
8	0.6	Interface		50		No site constraints or overlapping values.	Fuel hazard is due to grass and shrubs occupying site. Minor pruning could be undertaken. Monitor for shrub and grass growth and branch wood input. Location: stand south of reservoir on Ridgedale Ave Assessment Label: 6a
9	10.7	Landscape		49		Poor access to some parts of the unit. West aspect and will dry out quickly in the spring.	Unit is adjacent to the landfill and could spot into the chipping pile. Continuous grass and shrub fuels throughout

							Adjacent to large private land pieces. Treating the site would provide some protection to the landfill. Location: west of landfill. Assessment Label: 2a
10	1.4	Interface		47		Very steep slope. Poor access.	Previously treated unit. Fuel hazard is overstory density, which would be difficult to mitigate. Site has heavy, continuous grassy fuels that also contribute to fuel hazard. Only additional treatment to reduce or maintain fuel hazard is prescribed burning, which would be complicated. Site should be monitored for branch wood input and that addressed as necessary. Location: South and upslope of water treatment plant. Assessment Label: 11a
11	0.4	Interface		47		Very steep slope. Poor access.	Previously treated unit. Fuel hazard is overstory density, which would be difficult to mitigate. Site has heavy, continuous grassy fuels that also contribute to fuel hazard. Only additional treatment to reduce or maintain fuel hazard is prescribed burning, which would be complicated. Site should be monitored for branch wood input and that addressed as necessary. Location: Southwest of water treatment plant. Assessment Label: 12

12	2.4			46		Very steep slope. Poor access.	Previously treated area. Fuel hazard is overstory density, which would be difficult to mitigate. Site should be monitored for branch wood input and that addressed as necessary. Location: above SPCA/animal pound Assessment Label: 10a
13	0.6		22			Very steep slope. Poor access.	Monitor for infill. No crown fire risk. Could mow grass to lower fuel hazard. Monitor for branch wood accumulations. Location: slope north of Duncan Ave reservoir. Assessment Label: 5a
Notes: Private property locations need confirmation; all sites are eligible for CRI funding.							

Refer to Map 4 & 5 to see the locations of each proposed FTU.

Fuel management planning on provincial Crown land is administered through the Ministry of Forests (MoF) through the CLWRR program. The City should collaborate with BCWS and the Okanagan Shuswap Forest District to facilitate fuel management prescription development and subsequent fuel management treatments on non-municipal lands adjacent to the municipal boundary. This is particularly true for the Naramata Bench and Penticton and Ellis Creek drainages. These geographic areas heavily forested and wildfires in these locations can either spread towards, and into the City, or spot into the City.

The FTUs propose to modify fire behaviour and create better options for fire suppression or for anchoring suppression tactics. Several key principles were considered during FTU development, including unit continuity (where land ownership allows), relatively linear shapes, anchoring to non-fuel areas where possible, accessibility, defensibility, and a design to effectively change fire behaviour from a crown fire to a surface fire during 90th percentile fire weather conditions for the local area. Additional criteria aimed to ensure proposed treatments are sufficient in size (where land ownership allows), and strategically located with boundaries that can be effectively utilized for wildfire response. While boundaries were often driven by land ownership, they are also consistent with logical burn unit planning principles of utilizing topographical breaks, and man-made / natural features of roads, hydro transmission lines, wetlands, lakes, irrigated fields, non-fuel areas, etc.. Fuel treatment design also considered constrained areas (i.e., private land,

constraints that preclude treatment), and treatment method (commercial timber harvest, mechanical, prescribed fire, etc.).

All FTUs are tied to the same fire management objective: to conduct fuel treatments to create residual stand characteristics that do not support an active crown fire. Various treatment methods may be utilized to meet the objective, in conjunction with treatment intensity and timing, site sensitivity, public support, and any unique site-specific requirements.

Hand crews are commonly utilized to thin and prune forested FTUs with tools such as power saws, brush saws, pole pruners, etc. Debris may be piled and burned, chipped and scattered or hauled away. Due to the proximity to private property, and lack of community support for ground-based mechanized equipment use, all treatments have been recommended for hand crew utilization, with the exception of the units around the landfill and the Three Blind Mice recreation area.

Intense physical labour is required for hand treatments, so prior to finalizing fuel management prescriptions, it is recommended to consult with neighbours to gain support for alternative treatment options with ground-based mechanized equipment. This would increase fuel treatment efficiency of larger proposed FTUs. However, soil disturbance is much higher with mechanized equipment (unless completed on snow pack or frozen soils), meaning that highly sensitive sites would still be limited to hand crew treatment methods.

Mechanical fuel treatment may result in higher levels of surface fuels in the unit, especially fine fuels. If fine fuels are exacerbated by treatment, they should be managed by a feasible method such as low-intensity prescribed fire. Ecological effects from prescribed fire tend to be beneficial on sites selected for treatment. Prescribed burns must be planned, carried out, and supervised by a qualified professional.
To meet the fire management objective and ensure effectiveness, proposed treatment areas should be treated, and then maintained. It is recommended to schedule periodic site checks for determining when to schedule maintenance treatments. This is especially important for all NDT4 sites, which will eventually return to pre-treatment structure if not maintained.

Each FTU has been categorized into interface fuel breaks, and landscape fuel breaks (see Table 19). Interface fuel breaks in the WUI are located adjacent to important values requiring protection, such as the hydro substation, water treatment plant and private property. They tend to be smaller, and have been designed to incorporate natural features that will help to modify potential fire behaviour. To realize the full potential of interface fuel breaks, adjacent buildings should adhere to FireSmart principles. Landscape level fuel breaks tend to be larger, and extend further beyond the 30-100 m Home Ignition Zone, creating larger-scale breaks that reduce the likelihood of a crown fire adjacent to community structures and access / escape routes.

12 Action Plan & Implementation

This section takes discussion from the preceding sections on FireSmart Disciplines and summarizes recommendations for the City of Penticton to consider pursuing. Successful implementation of the Community Wildfire Resiliency Plan requires a strategy for implementation, tracking mechanisms for success, and a schedule for revisiting issues left unresolved.

The Action Plan follows the SMART criteria for outlining potential initiatives:

- **S**pecific
  - What needs to be accomplished?
  - Who's responsible for it?
  - What steps need to be taken to achieve it?
- **M**easureable
  - How is progressed tracked?
  - How is success defined?
- **A**chievable
  - Is the goal reasonable?
- **R**elevant
  - Does this goal contribute to the "big picture"?
- **T**ime
  - When will this be implemented?
  - How long will it take?

Risk management is a dynamic process that requires on-going assessment and flexibility to adapt to changing priorities. Initiatives will have different priorities depending on time-sensitivity, impact on community, and requirement for future initiative success. Where and when possible, funding can be sought through UBCM under the Community Resiliency Investment (CRI) program.

Table 20 CWRP Recommendations and Action Table

COMMUNITY WILDFIRE RESILIENCE PLAN ACTION TABLE						
Action	**Lead(s)**	**Priority**	**Timeframe**	**Resources Required**	**Metric for Success**	**Notes**
Risk Assessment						
Objective: Community Wildfire Resiliency Plan as a living						
1. Conduct a formal review of the CWRP every five (5) years.	City of Penticton, FireSmart Coordinator, Emergency Program Coordinator	**Medium**	Every five (5) years; Next review 2028	Continued program capacity for wildfire preparedness within the Fire/Emergency Services department	Maintain annual tracking and monitoring on initiatives in Action Plan	CRI funding eligible for updates
Education						
Objective: Conduct an annual FireSmart education campaign to educate the public on wildfire risk and support local resident actions.						
2. Participate in FireSmart Community Preparedness Day	Penticton FireSmart	**Medium**	Annually (May)	Social Media, City of Penticton communications and event support	Participation by minimum of 50 residents	N/A
3. Conduct FireSmart educational programming for School District 67	Penticton FireSmart	**High**	Annually (Sept-June)	Established relationships with SD67	Participation of 65% of schools each year	Collaboration with the BCWS Penticton Zone
4. Establish FireSmart BC Library Program for City of Penticton	Penticton FireSmart / FireSmart BC Education Officer	**Medium**	Implement by 2023-2024	Library Program Materials grant funding allocation	Participation from Penticton Library	N/A
5. Continued promotion and engagement in FCNRP and HPP	Penticton FireSmart	**High**	Ongoing	Coordination with Neighbourhood Champions	Continued retention of current recognized neighbourhoods; 1 new recognized neighbourhood per year	

COMMUNITY WILDFIRE RESILIENCE PLAN ACTION TABLE						
Action	**Lead(s)**	**Priority**	**Timeframe**	**Resources Required**	**Metric for Success**	**Notes**
Legislation and Planning						
Objective: Integrate FireSmart principles and wildfire risk reduction into bylaws to promote resiliency						
6. Familiarization with policies and guidance of the overarching legislation applicable to FireSmart activities.	Residents and City employees engaged in FireSmart initiatives	**Medium**	Ongoing	Continued education on legislation modernization; education through related wildfire risk reduction conferences	Increased knowledge in legislation pertaining to wildfire resiliency	CRI funding eligible
7. Conduct FireSmart Critical Infrastructure Assessments for all city-owned infrastructure needed in the event of an emergency.	Penticton FireSmart	**High**	Complete by 2024-2025	Coordination between Emergency Services, City departments, and FireSmart to identify Critical Infrastructure	Completed assessments of identified CI	CRI funding eligible
8. Explore options for programming to support fuel reduction and elimination of tipping fees for green waste	Penticton FireSmart, CoP, RDOS	**Medium**		Coordination between the City and RDOS; green waste bins for neighborhoods	Green waste by weight associated with a completed FireSmart assessment; fees deferred	CRI funding available for bins
9. Make provisions for FireSmart open burning permits to allow for fuel reduction on private property	Fire Department, FireSmart Penticton	**Low**	Annual (Oct 15th-April 15th)	Education on safe burning practices, Venting Index	Reduction of hazardous fuel on private property; record of FireSmart applications	Refer to OBSCR
Development Considerations						
Objective: Utilize FireSmart design principles in planning and development bylaws						

COMMUNITY WILDFIRE RESILIENCE PLAN ACTION TABLE						
Action	**Lead(s)**	**Priority**	**Timeframe**	**Resources Required**	**Metric for Success**	**Notes**
10. Using FireSmart guidelines, amend Penticton Official Community Plan and/or bylaws to landscaping and construction requirements to reduce wildfire risks.	CoP Planning & Development Services	**High**	2024	Coordination between Fire/Emergency Services and Planning & Development departments	Implementation of a WDPA	
11. Include wildfire suppression, access/egress considerations and prevention planning in the development of subdivisions.	CoP Planning & Development Services	**High**		Coordination between Fire/Emergency Services and Planning & Development departments	Development of roadways allowing for multiple access/egress	
12. Monitor implementation and amend guidelines for the Development Permit Area for Wildfire Hazard as needed.	CoP Planning & Development Services, FireSmart Penticton	**High**	Annual	Coordination between Fire/Emergency Services and Planning & Development departments	Applications and approvals for buildings in the WUI	
Interagency Cooperation						
Objective: Working collaboratively with partnered agencies towards wildfire resiliency and response						
13. Engagement with South Okanagan Wildfire Committee	RDOS	**Medium**	1-4x Annually	Participation of local FDs, First Nations BCWS, FireSmart Programs, and emergency programs	Annual meeting	
14. Engagement with Regional FireSmart Committee	Penticton FireSmart	**Medium**	Quarterly	Participation of regional FDs	Quarterly meetings	

COMMUNITY WILDFIRE RESILIENCE PLAN ACTION TABLE						
Action	**Lead(s)**	**Priority**	**Timeframe**	**Resources Required**	**Metric for Success**	**Notes**
Cross-Training						
Objective: Ensuring all involved in emergency response have training and experience						
15. PFD Staff trained in Basic Wildland Suppression and Structural Protection	PFD Training Officer	**High**	Annual Recurrency Training (April)	Identify training needs, training grounds and equipment needed	Completion of required training prior to wildfire season	
16. Conduct Multi-Jurisdiction Exercises	RDOS, City of Penticton	**High**	Every 2-5 years	Coordination between agencies to determine time, location, etc.	Completion of live exercises	Funding through UBCM CEPF EOC Grant
17. Conduct wildfire exercise between CoP EOC, PFD, and BCWS	Emergency Program Coordinator, PFD T.O, BCWS FPO	**Medium**	Every 2-5 years	Coordination between agencies to determine time, location, etc.	Completion of live exercises	
18. Complete Cultural Humility & Safety training	Emergency Program Coordinator	**High**	Annual	Local and traditional indigenous knowledge keepers to provide education	Completion of annual training	Funding through UBCM CEPF
19. Provide FS LFR & WMS training; Neighbourhood Champion training	FireSmart Penticton	**Medium**	Annual		At least 1 Neighbourhood Champion workshop annually	CRI eligible
Emergency Planning						
Objective: Enhance emergency response capacity						
20. Update & Review Wildfire ERP	Emergency Program Coordinator, Fire Chief	**High**	Review every 3-5 years or after major event	Administrative capacity from Fire and Emergency Services	Regular reviews and updates to Wildfire ERP	
21. Personal wildfire preparedness public education campaigns	CoP Communications, & EPC	**High**	April-August	Social Media and Public Engagement		

COMMUNITY WILDFIRE RESILIENCE PLAN ACTION TABLE						
Action	**Lead(s)**	**Priority**	**Timeframe**	**Resources Required**	**Metric for Success**	**Notes**
22. Emergency Notification	CoP Communications, Emergency Program	**High**	Ongoing	IT and Social Media Support	50% of City of Penticton residents signed up for Emergency Notification Alerts	
Vegetation Management						
Objective						
23. Complete fuel treatment prescription on all untreated priority polygons	FireSmart Penticton	**High**	Immediately to 2 years	RPF wildfire consultant	Completion of prescriptions for all untreated sites within the City as per the priority map.	Funding through UBCM
24. Complete fuel treatment operations on all untreated priority polygons	FireSmart Penticton	**High**	Immediately to 3 years	Implementation contractors	Completion of treatment on all untreated sites within 2 years asper the priority map.	Funding through UBCM
25. Create burn plans for treatment polygons where maintenance burning is recommended	Penticton FireSmart	**Medium**	Within 2 years	RPF wildfire consultant; BCWS may be able to help with burn plans	Existing burn plans for all appropriate sites within 3 years to allow ongoing maintenance burns.	Funding through UBCM. However, the section for which you would require a consultant would not be expensive to pay for internally. Through collaboration, BCWS could develop the rest of the burn plan.
26. Provide FireSmart Rebates for local residents	Penticton FireSmart	**Medium**	Within 2 years			Funding through UBCM CRI FireSmart Grants

Appendices

Appendix A Glossary of Terms

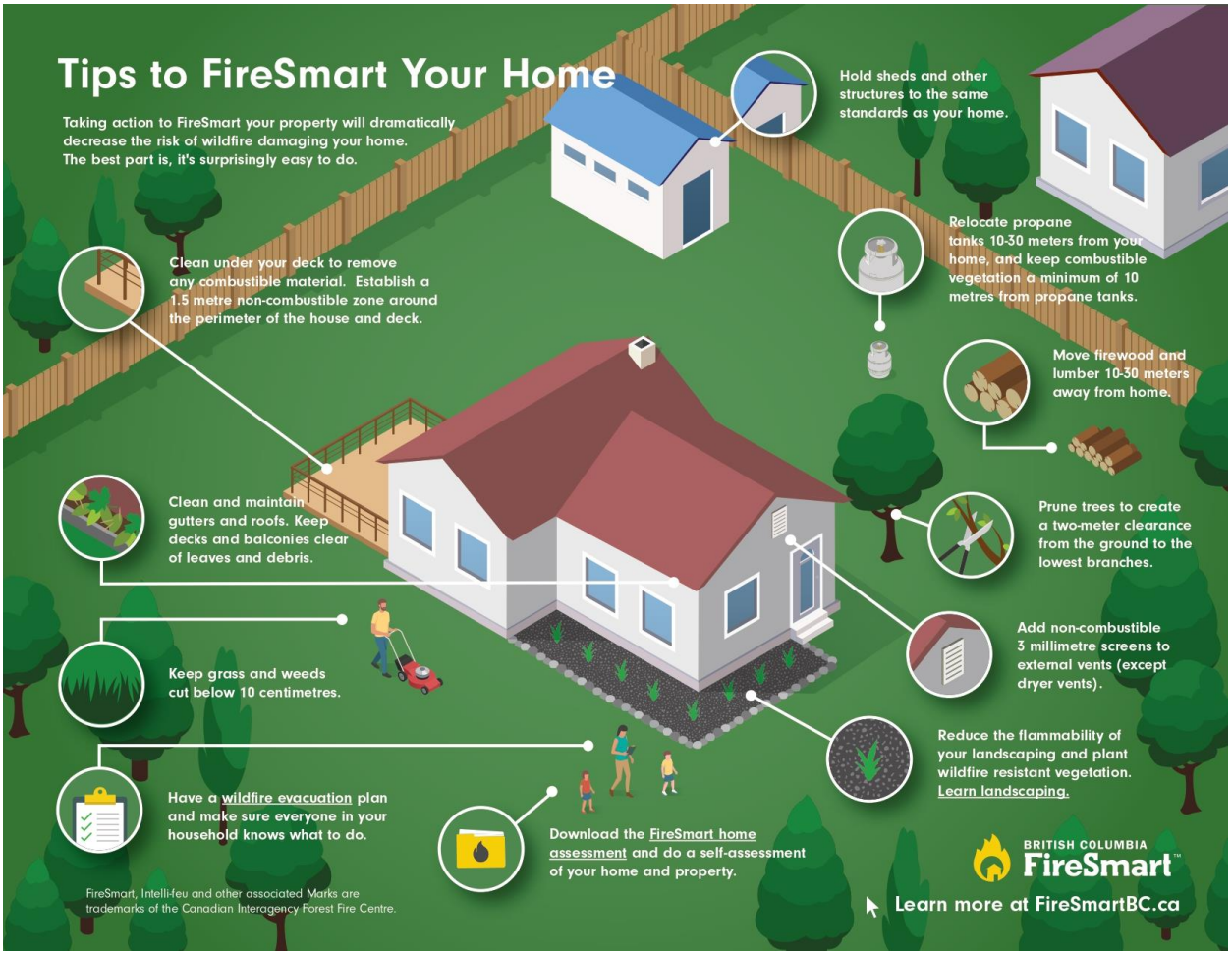
GLOSSARY	
Term	**Definition**
Area of Interest	An area of focus with predetermined boundaries
BC Wildfire Service	Part of the Government of British Columbia to deliver effective wildfire management and emergency response support
Biogeoclimatic Zone	A geographical area with relatively uniform macroclimate
Community Resiliency Investment	A provincial program intended to reduce the risk and impact of wildfire to communities in BC
Crown fire	A wildfire that advance by spreading from treetop to treetop
Emergency Program Act	A legislative framework for the management of disasters and emergencies in British Columbia
Emergency Response Plan	A plan that specifies procedures for handling sudden or unexpected situations
Fire Behaviour	The way a wildfire burns, spreads, and changes over time
Fire intensity	The amount of energy or heat given off by a forest fire at a point in time
Fire type	
FireSmart	Living with and managing for wildfire on and around your property
FireSmart Coordinator	Supports wildfire preparedness, preventions, and mitigation through public education, and assessments
FireSmart Neighbourhood Recognition Program	Recognition of neighbourhoods taking action to FireSmart
Ground fire	A wildfire that consumes the organic material beneath surface fuels
Home Partners Program	A program to engage homeowners in voluntary wildfire mitigation activities by offering a professional home assessment with property-specific recommendations
Interface	Where wildland fuels meet human development
Intermix	Where human development intermingles with wildland fuels
Ladder fuel	Live or dead vegetation that allows fire to climb into trees
Local FireSmart Representative	A knowledgeable FireSmart person that has completed the LFR workshop training
Natural Disturbance Types	Categorize the Province of British Columbia into zones based on the frequency and severity of pre-European disturbance events
Neighbourhood Champion	Acts as a point of communication with the LFR during the FireSmart Neighbourhood Recognition process

Official Community Plan	As outlined in the Local Government Act section 875, describes the long-term vision of communities
Provincial Strategic Threat Assessment	An assessment that provides a relative wildfire threat rating at a provincial level
Rights Holder	Indigenous Peoples; recognition of Indigenous people as having constitutional rights, including the ability to halt projects in legal process under constitutionally protected rights
Risk	A situation involving exposure to danger
Stakeholder	A person or group impacted by a project, initiative, policy or organization
Surface fire	A wildfire consuming vegetation lying above the duff layer and below ladder fuels
Topography	The forms and features of land surfaces
Union of BC Municipalities	A common voice for local government
Wildfire Development Permit Area	A set of policies to support the development of building resilient to wildfire
Wildfire Mitigation Specialist	A knowledgeable FireSmart person that has completed the WMS workshop training
Wildland fuels	Any organic matter, living or dead, in the group, on the ground, or in the air that can ignite and burn
Wildland Urban Interface	The area where combustible forest fuel is found adjacent to homes, farm structures, or other outbuildings

Appendix B FireSmart Education



Appendix C FireSmart Tips



Appendix D Resources

Additional information on improving FireSmart readiness and implementing wildfire-related bylaws are listed below:

1. FireSmart Canada Home Development Guide (2021)
2. National Guide for Wildland Urban Interface Fires: Guidance on Hazard
3. FireSmart BC Landscaping Guide
4. Headwater Economics- Building a Wildfire-Resistant Home
5. Planning in the Wildland-Urban Interface

BRITISH COLUMBIA
FireSmart™

Check Out These Great FireSmart™ Resources



Who is FireSmart BC
https://firesmartbc.ca/who-we-are/



Home Partners Program
https://firesmartbc.ca/homepartners/



Top Tips
https://firesmartbc.ca/resource/tips-to-firesmart-your-home/



Find Your Local FireSmart Representative
https://firesmartbc.ca/local-firesmart-representatives/



Landscaping Hub
https://firesmartbc.ca/landscaping-hub/



Home Ignition Zone Resources
https://firesmartbc.ca/resource/firesmart-home-ignition-zone/



PreparedBC: Get prepared for a wildfire
http://preparedbc.ca/wildfires



Embers Den
https://firesmartbc.ca/ember/

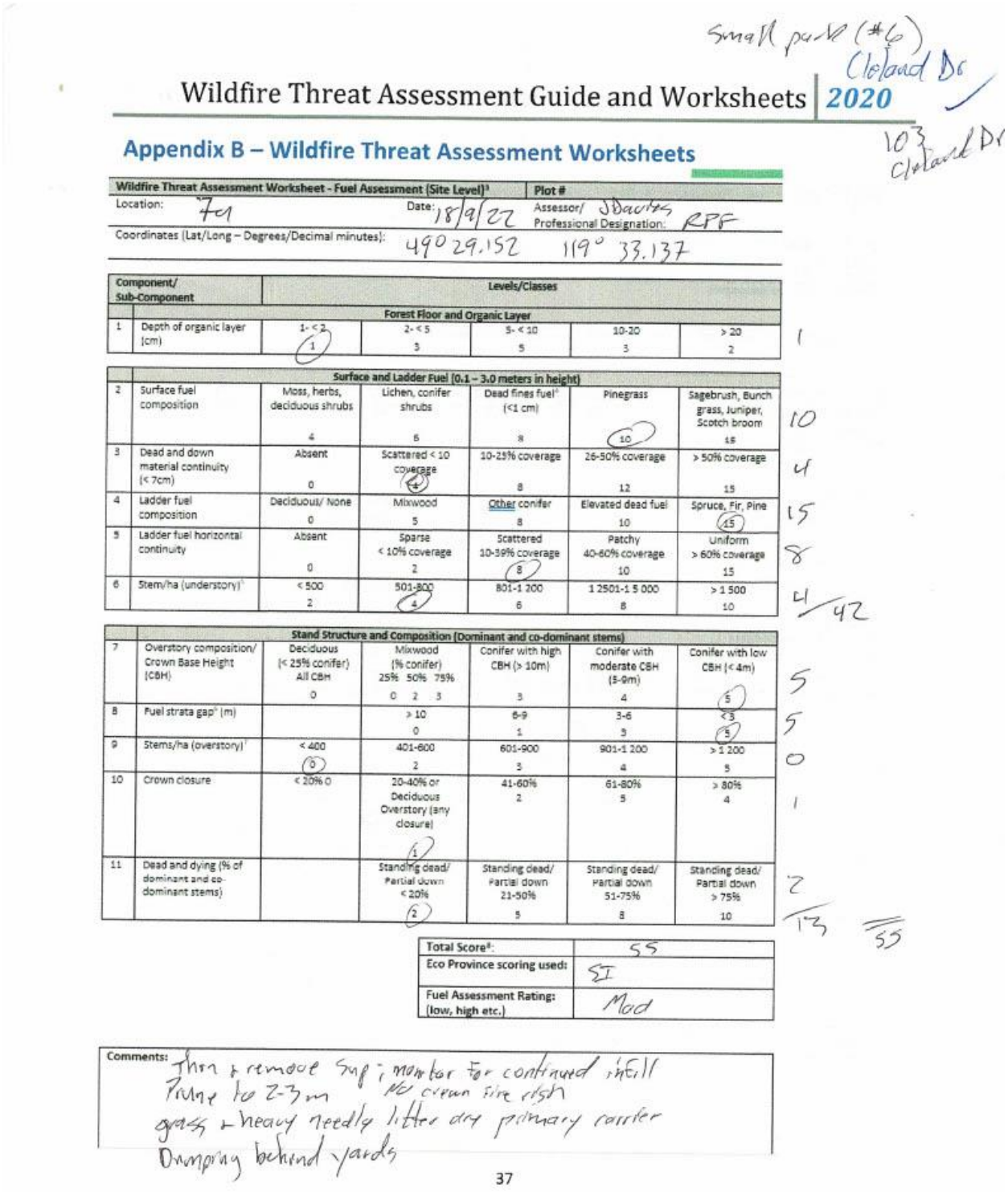


Video Resources
https://vimeo.com/firesmartbc

For even more great resources visit **www.firesmartbc.ca**

FireSmart, Intelli-feu and other associated Marks are trademarks of the Canadian Interagency Forest Fire Centre.

Appendix E Threat Assessments



Small park (#6)
Cleland Dr

Wildfire Threat Assessment Guide and Worksheets | 2020

103 Cleland Dr

Appendix B – Wildfire Threat Assessment Worksheets

Wildfire Threat Assessment Worksheet - Fuel Assessment (Site Level)[3]		Plot #	
Location: 7c1	Date: 18/9/22	Assessor/ Professional Designation:	JDavies RPF
Coordinates (Lat/Long – Degrees/Decimal minutes):	49° 29.152	119° 33.137	

	Component/ Sub-Component	Levels/Classes					
		Forest Floor and Organic Layer					
1	Depth of organic layer (cm)	1- < 2 1	2- < 5 3	5- < 10 5	10-20 3	> 20 2	1
		Surface and Ladder Fuel (0.1 – 3.0 meters in height)					
2	Surface fuel composition	Moss, herbs, deciduous shrubs 4	Lichen, conifer shrubs 6	Dead fines fuel[4] (<1 cm) 8	Pinegrass 10	Sagebrush, Bunch grass, Juniper, Scotch broom 15	10
3	Dead and down material continuity (< 7cm)	Absent 0	Scattered < 10 coverage 4	10-25% coverage 8	26-50% coverage 12	> 50% coverage 15	4
4	Ladder fuel composition	Deciduous/ None 0	Mixwood 5	Other conifer 8	Elevated dead fuel 10	Spruce, Fir, Pine 15	15
5	Ladder fuel horizontal continuity	Absent 0	Sparse < 10% coverage 2	Scattered 10-39% coverage 8	Patchy 40-60% coverage 10	Uniform > 60% coverage 15	8
6	Stem/ha (understory)[5]	< 500 2	501-800 4	801-1 200 6	1 2501-1 5 000 8	> 1 500 10	4/42
		Stand Structure and Composition (Dominant and co-dominant stems)					
7	Overstory composition/ Crown Base Height (CBH)	Deciduous (< 25% conifer) All CBH 0	Mixwood (% conifer) 25% 50% 75% 0 2 3	Conifer with high CBH (> 10m) 3	Conifer with moderate CBH (3-9m) 4	Conifer with low CBH (< 4m) 5	5
8	Fuel strata gap[6] (m)		> 10 0	6-9 1	3-6 3	< 3 5	5
9	Stems/ha (overstory)[7]	< 400 0	401-600 2	601-900 3	901-1 200 4	> 1 200 5	0
10	Crown closure	< 20% 0	20-40% or Deciduous Overstory (any closure) 1	41-60% 2	61-80% 5	> 80% 4	1
11	Dead and dying (% of dominant and co-dominant stems)		Standing dead/ Partial down < 20% 2	Standing dead/ Partial down 21-50% 5	Standing dead/ Partial down 51-75% 8	Standing dead/ Partial down > 75% 10	2
							13 55

Total Score[8]:	55
Eco Province scoring used:	SI
Fuel Assessment Rating: (low, high etc.)	Mod

Comments: Thin + remove Sup; monitor for continued infill
Prune to 2-3m NC crown fire risk
grass + heavy needly litter dry primary carrier
Dumping behind yards

37

Updated March 2017

Wildfire Threat Assessment Worksheet – Priority Setting Scoring (complete one for entire proposed treatment area)		
Location:	Date:	Assessor/ Professional Designation:
Coordinates (Lat/Long – Degrees/Decimal Minutes):		
PSTA Threat:		FBP Fuel Type:
Assessor's FBP Fuel Type:		Ownership:
Assessor's Fuel Type Rationale[1]:		
Value Description (include type of value and distance to the value from the proposed treatment area):		

Landscape Assessment						
Proximity of fuel treatment area to value (m)	0-100 25	101-500 20	501- 1,000 15	1 000- 2,000 5	> 2,000 0	25
Existing Fuel Mgmt. treatment area in place between the proposed treatment area and the value(s)	Yes 5	No 0				0
Treatment Placement: using the predominant wind direction/ fire spread pattern, what is the treatment location in relationship to the value(s) location?		Downwind 0	270° offset to prevailing wind/ highest ISI values 7	90° offset to prevailing wind/ highest ISI values 10	Upwind/ highest ISI values 15	15
Distance to nearest vehicle access (m)		0-200 5	201-400 3	401- 1,000 1	> 1,000 0	5
Distance to non-fuel / treated[2] area near the assessment area (m)		0-200 5	201-400 3	401- 1,000 1	> 1,000 0	5/50

Topographical Factors						
Topography: Slope	< 20% 0	21-30% 1	31-45% 3	46-60% 4	> 60% 5	1
Topography: Aspect (> 20% slope)		North 0	East/Flat 3	West 4	South 5	3 4
Slope position of value (only applies if slope is > 20%)		Bottom of slope/ valley bottom 0	Mid slope - bench 1	Mid slope - continuous 3	Upper 1/3 of slope 5	0/5
				Total Score:		55

55

Comments:

[1] Must include three photos for each plot (one of forest floor, one of surface and ladder fuel, one of overstory)
[2] Fuel management type treatment where wildfire threat has been mitigated

Substation
Carmi Ave

Appendix B – Wildfire Threat Assessment Worksheets

Wildfire Threat Assessment Worksheet - Fuel Assessment (Site Level)[3]		Plot #
Location: 8a	Date: 18/9/22	Assessor/ Professional Designation: Davies RPF
Coordinates (Lat/Long – Degrees/Decimal minutes): 49° 28.738		119° 37.992

Component/ Sub-Component		Levels/Classes					
	Forest Floor and Organic Layer						
1	Depth of organic layer (cm)	1- < 2 1	2- < 5 3	5- < 10 5	10-20 3	> 20 2	1
	Surface and Ladder Fuel (0.1 – 3.0 meters in height)						
2	Surface fuel composition	Moss, herbs, deciduous shrubs 4	Lichen, conifer shrubs 6	Dead fines fuel[1] (<1 cm) 8	Pinegrass ~~12~~	Sagebrush, Bunch grass, Juniper, Scotch broom 15	~~15~~ 15
3	Dead and down material continuity (< 7cm)	Absent 0	Scattered < 10 coverage 4	10-25% coverage 8	26-50% coverage 12	> 50% coverage 15	4
4	Ladder fuel composition	Deciduous/ None 0	Mixwood 5	Other conifer 8	Elevated dead fuel 10	Spruce, Fir, Pine 15	15
5	Ladder fuel horizontal continuity	Absent 0	Sparse < 10% coverage 2	Scattered 10-39% coverage 8	Patchy 40-60% coverage 10	Uniform > 60% coverage 15	10
6	Stem/ha (understory)[1]	< 500 2	501-800 4	801-1 200 6	1 2501-1 5 000 8	> 1 500 10	4 / 49
	Stand Structure and Composition (Dominant and co-dominant stems)						
7	Overstory composition/ Crown Base Height (CBH)	Deciduous (< 25% conifer) All CBH 0	Mixwood (% conifer) 25% 50% 75% 0 2 3	Conifer with high CBH (> 10m) 3	Conifer with moderate CBH (5-9m) 4	Conifer with low CBH (< 4m) 5	5
8	Fuel strata gap[2] (m)		> 10 0	6-9 1	3-6 3	< 3 5	5
9	Stems/ha (overstory)[1]	< 400 0	401-600 2	601-900 3	901-1 200 4	> 1 200 5	4
10	Crown closure	< 20% 0	20-40% or Deciduous Overstory (any closure) 1	41-60% 2	61-80% 5	> 80% 4	0
11	Dead and dying (% of dominant and co-dominant stems)		Standing dead/ Partial down < 20% 2	Standing dead/ Partial down 21-50% 5	Standing dead/ Partial down 51-75% 8	Standing dead/ Partial down > 75% 10	2 / 16

65

Total Score[6]:	65
Eco Province scoring used:	SI
Fuel Assessment Rating: (low, high etc.)	Mod

Comments: thin infill, chip or remove

37

Updated March 2017

Wildfire Threat Assessment Worksheet – Priority Setting Scoring (complete one for entire proposed treatment area)

Location: Date: Assessor/ Professional Designation:

Coordinates (Lat/Long – Degrees/Decimal Minutes):

PSTA Threat: FBP Fuel Type: C7

Assessor's FBP Fuel Type: C7/O1 Ownership:

Assessor's Fuel Type Rationale[1]:

Value Description (include type of value and distance to the value from the proposed treatment area):

Landscape Assessment						
Proximity of fuel treatment area to value (m)	0-100 25	101-500 (20)	501-1,000 15	1 000-2,000 5	>2,000 0	20
Existing Fuel Mgmt. treatment area in place between the proposed treatment area and the value(s)	Yes 5	No (0)				0
Treatment Placement: using the predominant wind direction/ fire spread pattern, what is the treatment location in relationship to the value(s) location?		Downwind 0	270° offset to prevailing wind/ highest ISI values 7	90° offset to prevailing wind/ highest ISI values 10	Upwind/ highest ISI values (15)	15
Distance to nearest vehicle access (m)		0-200 (5)	201-400 3	401-1,000 1	>1,000 0	5
Distance to non-fuel / 'treated' area near the assessment area (m)		0-200 (5)	201-400 3	401-1,000 1	>1,000 0	5 / 45

Topographical Factors						
Topography: Slope	<20% (0)	21-30% 1	31-45% 3	46-60% 4	>60% 5	0
Topography: Aspect (>20% slope)		North 0	East/Flat 3	West 4	South (5)	5
Slope position of value (only applies if slope is >20%)		Bottom of slope/ valley bottom (0)	Mid slope - bench 1	Mid slope - continuous 3	Upper 1/3 of slope 5	0/5
				Total Score:		50

Comments:
Isolated patch, No adjacent homes
Powerline & road, substation

[1] Must include three photos for each plot (one of forest floor, one of surface and ladder fuel, one of overstory)
[2] Fuel management type treatment where wildfire threat has been mitigated

White Birch Park

Appendix B – Wildfire Threat Assessment Worksheets

Wildfire Threat Assessment Worksheet - Fuel Assessment (Site Level)[3]		Plot #
Location: 9	Date:	Assessor/ Professional Designation:
Coordinates (Lat/Long – Degrees/Decimal minutes):	49° 28.285	119° 33.897

	Component/ Sub-Component	Levels/Classes					
		Forest Floor and Organic Layer					
1	Depth of organic layer (cm)	1- < 2 (1)	2- < 5 3	5- < 10 5	10-20 3	> 20 2	1
		Surface and Ladder Fuel (0.1 – 3.0 meters in height)					
2	Surface fuel composition	Moss, herbs, deciduous shrubs 4	Lichen, conifer shrubs 6	Dead fines fuel[4] (<1 cm) 8	Pinegrass 10	Sagebrush, Bunch grass, Juniper, Scotch broom (15)	15
3	Dead and down material continuity (< 7cm)	Absent (0)	Scattered < 10 coverage (4)	10-25% coverage 8	26-50% coverage 12	> 50% coverage 15	4
4	Ladder fuel composition	Deciduous/ None 0	Mixwood 5	Other conifer 8	Elevated dead fuel 10	Spruce, Fir, Pine (15)	15
5	Ladder fuel horizontal continuity	Absent 0	Sparse < 10% coverage (2)	Scattered 10-39% coverage 8	Patchy 40-60% coverage 10	Uniform > 60% coverage 15	2
6	Stem/ha (understory)[5]	< 500 (2)	501-800 4	801-1 200 6	1 2501-1 5 000 8	> 1 500 10	2/39
		Stand Structure and Composition (Dominant and co-dominant stems)					
7	Overstory composition/ Crown Base Height (CBH)	Deciduous (< 25% conifer) All CBH 0	Mixwood (% conifer) 25% 50% 75% 0 2 3	Conifer with high CBH (> 10m) 3	Conifer with moderate CBH (3-9m) (4)	Conifer with low CBH (< 4m) 5	4
8	Fuel strata gap[6] (m)		> 10 0	6-9 1	3-6 3	< 3 (5)	5
9	Stems/ha (overstory)[7]	< 400 (0)	401-600 2	601-900 3	901-1 200 4	> 1 200 5	0
10	Crown closure	< 20% 0	20-40% or Deciduous Overstory (any closure) (1)	41-60% 2	61-80% 5	> 80% 4	1
11	Dead and dying (% of dominant and co-dominant stems)		Standing dead/ Partial down < 20% (2)	Standing dead/ Partial down 21-50% 5	Standing dead/ Partial down 51-75% 8	Standing dead/ Partial down > 75% 10	2

12 = 51

Total Score[8]:	51
Eco Province scoring used:	51
Fuel Assessment Rating: (low, high etc.)	Mod

Comments:
Open forest w/ minor infill; adj to school & homes
Bunchgrass & needle primary carrier
Monitor for infill
could rake & mow

Updated March 2017

Wildfire Threat Assessment Worksheet – Priority Setting Scoring (complete one for entire proposed treatment area)

Location:	Date:	Assessor/ Professional Designation:
Coordinates (Lat/Long – Degrees/Decimal Minutes):		
PSTA Threat:		FBP Fuel Type: C7
Assessor's FBP Fuel Type: C7		Ownership:
Assessor's Fuel Type Rationale[1]:		

Value Description (include type of value and distance to the value from the proposed treatment area):

Landscape Assessment						
Proximity of fuel treatment area to value (m)	0-100 25	101-500 20	501- 1,000 15	1 000- 2,000 5	> 2,000 0	25
Existing Fuel Mgmt. treatment area in place between the proposed treatment area and the value(s)	Yes 5	No 0				0
Treatment Placement: using the predominant wind direction/ fire spread pattern, what is the treatment location in relationship to the value(s) location?		Downwind 0	270° offset to prevailing wind/ highest ISI values 7	90° offset to prevailing wind/ highest ISI values 10	Upwind/ highest ISI values 15	15
Distance to nearest vehicle access (m)		0-200 5	201-400 3	401- 1,000 1	> 1,000 0	5
Distance to non-fuel / 'treated' area near the assessment area (m)		0-200 5	201-400 3	401- 1,000 1	> 1,000 0	5 /50

Topographical Factors						
Topography: Slope	< 20% 0	21-30% 1	31-45% 3	46-60% 4	> 60% 5	0
Topography: Aspect (> 20% slope)		North 0	East/Flat 3	West 4	South 5	3
Slope position of value (only applies if slope is > 20%)		Bottom of slope/ valley bottom 0	Mid slope - bench 1	Mid slope - continuous 3	Upper 1/3 of slope 5	0/3
				Total Score:		55

Comments:

[1] Must include three photos for each plot (one of forest floor, one of surface and ladder fuel, one of overstory)
[2] Fuel management type treatment where wildfire threat has been mitigated

SPCA ✓

Appendix B – Wildfire Threat Assessment Worksheets

Wildfire Threat Assessment Worksheet - Fuel Assessment (Site Level)[3] | **Plot #**

Location: 10a | Date: 18/9/22 | Assessor/ Professional Designation: David RPF

Coordinates (Lat/Long – Degrees/Decimal minutes): 49° 28.563 119° 33.998

	Component/ Sub-Component	Levels/Classes					
		Forest Floor and Organic Layer					
1	Depth of organic layer (cm)	1- < 2 (1)	2- < 5 3	5- < 10 5	10-20 3	> 20 2	1
		Surface and Ladder Fuel (0.1 – 3.0 meters in height)					
2	Surface fuel composition	Moss, herbs, deciduous shrubs 4	Lichen, conifer shrubs 6	Dead fines fuel[4] (<1 cm) 8	Pinegrass (10)	Sagebrush, Bunch grass, Juniper, Scotch broom 18	10
3	Dead and down material continuity (< 7cm)	Absent 0	Scattered < 10 coverage (4)	10-25% coverage 8	26-50% coverage 12	> 50% coverage 15	4
4	Ladder fuel composition	Deciduous/ None 0	Mixwood 5	Other conifer 8	Elevated dead fuel 10	Spruce, Fir, Pine (15)	15
5	Ladder fuel horizontal continuity	Absent 0	Sparse < 10% coverage (2)	Scattered 10-39% coverage 8	Patchy 40-60% coverage 10	Uniform > 60% coverage 15	2
6	Stem/ha (understory)[5]	< 500 (2)	501-800 4	801-1 200 6	1 2501-1 5 000 8	> 1 500 10	2/3
		Stand Structure and Composition (Dominant and co-dominant stems)					
7	Overstory composition/ Crown Base Height (CBH)	Deciduous (< 25% conifer) All CBH 0	Mixwood (% conifer) 25% 50% 75% 0 2 3	Conifer with high CBH (> 10m) 3	Conifer with moderate CBH (3-9m) (4)	Conifer with low CBH (< 4m) 5	4
8	Fuel strata gap[6] (m)		> 10 0	6-9 1	3-6 (3)	< 3 5	3
9	Stems/ha (overstory)[7]	< 400 0	401-600 (2)	601-900 3	901-1 200 4	> 1 200 5	2
10	Crown closure	< 20% 0	20-40% or Deciduous Overstory (any closure) (1)	41-60% 2	61-80% 5	> 80% 4	1
11	Dead and dying (% of dominant and co-dominant stems)		Standing dead/ Partial down < 20% (2)	Standing dead/ Partial down 21-50% 5	Standing dead/ Partial down 51-75% 8	Standing dead/ Partial down > 75% 10	2/12

Total Score[8]:	~~54~~ 46
Eco Province scoring used:	CI
Fuel Assessment Rating: (low, high etc.)	Mod

Comments: Previously treated patchy needle litter as primary carrier, rockdirt-slop Monitor for infill + surface fuel loading

37

Updated March 2017

Wildfire Threat Assessment Worksheet – Priority Setting Scoring (complete one for entire proposed treatment area)

Location:	Date:	Assessor/ Professional Designation:
Coordinates (Lat/Long – Degrees/Decimal Minutes):		
PSTA Threat:		FBP Fuel Type:
Assessor's FBP Fuel Type: C7		Ownership:
Assessor's Fuel Type Rationale[1]:		

Value Description (include type of value and distance to the value from the proposed treatment area):

Landscape Assessment						
Proximity of fuel treatment area to value (m)	0-100 (25)	101-500 20	501-1,000 15	1 000-2,000 5	>2,000 0	25
Existing Fuel Mgmt. treatment area in place between the proposed treatment area and the value(s)	Yes (0)	No 0				0
Treatment Placement: using the predominant wind direction/ fire spread pattern, what is the treatment location in relationship to the value(s) location?		Downwind 0	270° offset to prevailing wind/ highest ISI values 7	90° offset to prevailing wind/ highest ISI values 10	Upwind/ highest ISI values (15)	15
Distance to nearest vehicle access (m)		0-200 (5)	201-400 3	401-1,000 1	>1,000 0	5
Distance to non-fuel / treated[2] area near the assessment area (m)		0-200 (5)	201-400 3	401-1,000 1	>1,000 0	5/50

Topographical Factors						
Topography: Slope	<20% 0	21-30% 1	31-45% 3	46-60% (4)	>60% 5	4
Topography: Aspect (>20% slope)		North 0	East/Flat 3	West (4)	South 5	4
Slope position of value (only applies if slope is >20%)		Bottom of slope/ valley bottom (0)	Mid slope - bench 1	Mid slope - continuous 3	Upper 1/3 of slope 5	0/8
				Total Score:	58	58

Comments:

[1] Must include three photos for each plot (one of forest floor, one of surface and ladder fuel, one of overstory)
[2] Fuel management type treatment where wildfire threat has been mitigated

Treatment Plant (obt#8)

Appendix B – Wildfire Threat Assessment Worksheets

Wildfire Threat Assessment Worksheet - Fuel Assessment (Site Level)[3]		Plot #
Location: 11a	Date:	Assessor/ Professional Designation:
Coordinates (Lat/Long – Degrees/Decimal minutes): 49° 29.553 119° 33.028		

Component/ Sub-Component		Levels/Classes					
	Forest Floor and Organic Layer						
1	Depth of organic layer (cm)	1- < 2 1	2- < 5 3	5- < 10 5	10-20 3	> 20 2	1
	Surface and Ladder Fuel (0.1 – 3.0 meters in height)						
2	Surface fuel composition	Moss, herbs, deciduous shrubs 4	Lichen, conifer shrubs 6	Dead fines fuel[4] (<1 cm) 8	Pinegrass 10	Sagebrush, Bunch grass, Juniper, Scotch broom 15	10
3	Dead and down material continuity (< 7cm)	Absent 0	Scattered < 10 coverage 4	10-25% coverage 8	26-50% coverage 12	> 50% coverage 15	4
4	Ladder fuel composition	Deciduous/ None 0	Mixwood 5	Other conifer 8	Elevated dead fuel 10	Spruce, Fir, Pine 15	15
5	Ladder fuel horizontal continuity	Absent 0	Sparse < 10% coverage 2	Scattered 10-39% coverage 8	Patchy 40-60% coverage 10	Uniform > 60% coverage 15	2
6	Stem/ha (understory)[5]	< 500 2	501-800 4	801-1 200 6	1 2501-1 5 000 8	> 1 500 10	2 / 34
	Stand Structure and Composition (Dominant and co-dominant stems)						
7	Overstory composition/ Crown Base Height (CBH)	Deciduous (< 25% conifer) All CBH 0	Mixwood (% conifer) 25% 50% 75% 0 2 3	Conifer with high CBH (> 10m) 3	Conifer with moderate CBH (5-9m) 4	Conifer with low CBH (< 4m) 5	4
8	Fuel strata gap[6] (m)		> 10 0	6-9 1	3-6 3	< 3 5	3
9	Stems/ha (overstory)[7]	< 400 0	401-600 2	601-900 3	901-1 200 4	> 1 200 5	2
10	Crown closure	< 20% 0	20-40% or Deciduous Overstory (any closure) 1	41-60% 2	61-80% 5	> 80% 4	2
11	Dead and dying (% of dominant and co-dominant stems)		Standing dead/ Partial down < 20% 2	Standing dead/ Partial down 21-50% 5	Standing dead/ Partial down 51-75% 8	Standing dead/ Partial down > 75% 10	2 / 13

Total Score[8]:	47
Eco Province scoring used:	SI
Fuel Assessment Rating: (low, high etc.)	Mod

Comments: Previously treated
steep grassy slope, homes above
Monitor for infill & surface fuel accumulation

37

Updated March 2017

Wildfire Threat Assessment Worksheet – Priority Setting Scoring (complete one for entire proposed treatment area)

Location: Date: Assessor/ Professional Designation:

Coordinates (Lat/Long – Degrees/Decimal Minutes):

PSTA Threat: FBP Fuel Type:

Assessor's FBP Fuel Type: C7 Ownership:

Assessor's Fuel Type Rationale[1]:

Value Description (include type of value and distance to the value from the proposed treatment area):

Landscape Assessment						
Proximity of fuel treatment area to value (m)	0-100 15	101-500 20	501- 1,000 15	1 000- 2,000 5	> 2,000 0	25
Existing Fuel Mgmt. treatment area in place between the proposed treatment area and the value(s)	Yes 5	No 0				0
Treatment Placement: using the predominant wind direction/ fire spread pattern, what is the treatment location in relationship to the value(s) location?		Downwind 0	270° offset to prevailing wind/ highest ISI values 7	90° offset to prevailing wind/ highest ISI values 10	Upwind/ highest ISI values 15	15
Distance to nearest vehicle access (m)		0-200 5	201-400 3	401- 1,000 1	> 1,000 0	5
Distance to non-fuel / treated[2] area near the assessment area (m)		0-200 5	201-400 3	401- 1,000 1	> 1,000 0	5/50

Topographical Factors						
Topography: Slope	< 20% 0	21-30% 1	31-45% 3	46-60% 4	> 60% 5	4
Topography: Aspect (> 20% slope)		North 0	East/Flat 3	West 4	South 5	0
Slope position of value (only applies if slope is > 20%)		Bottom of slope/ valley bottom 0	Mid slope - bench 3	Mid slope - continuous 3	Upper 1/3 of slope 5	1/3
				Total Score:	55	55

Comments:

[1] Must include three photos for each plot (one of forest floor, one of surface and ladder fuel, one of overstory)
[2] Fuel management type treatment where wildfire threat has been mitigated

Diary From Treatment Plant (old #61)

Appendix B – Wildfire Threat Assessment Worksheets

Wildfire Threat Assessment Worksheet - Fuel Assessment (Site Level)[3] | **Plot #**

Location: 12 | Date: 18/11/22 | Assessor/ Professional Designation: Dados RPF

Coordinates (Lat/Long – Degrees/Decimal minutes): 49 29.467 119° 33.175

	Component/ Sub-Component	Levels/Classes				
		Forest Floor and Organic Layer				
1	Depth of organic layer (cm)	1- < 2 (1)	2- < 5 3	5- < 10 5	10-20 3	> 20 2
		Surface and Ladder Fuel (0.1 – 3.0 meters in height)				
2	Surface fuel composition	Moss, herbs, deciduous shrubs 4	Lichen, conifer shrubs 6	Dead fines fuel[4] (<1 cm) 0	Pinegrass (10)	Segebrush, Bunch grass, Juniper, Scotch broom 15
3	Dead and down material continuity (< 7cm)	Absent 0	Scattered < 10 coverage (4)	10-25% coverage 8	26-50% coverage 12	> 50% coverage 15
4	Ladder fuel composition	Deciduous/ None 0	Mixwood 5	Other conifer 8	Elevated dead fuel 10	Spruce, Fir, Pine (15)
5	Ladder fuel horizontal continuity	Absent 0	Sparse < 10% coverage (2)	Scattered 10-39% coverage 8	Patchy 40-60% coverage 10	Uniform > 60% coverage 15
6	Stem/ha (understory)[5]	< 500 (2)	501-800 4	801-1 200 6	1 2501-1 5 000 8	> 1 500 10
		Stand Structure and Composition (Dominant and co-dominant stems)				
7	Overstory composition/ Crown Base Height (CBH)	Deciduous (< 25% conifer) All CBH 0	Mixwood (% conifer) 25% 50% 75% 0 2 3	Conifer with high CBH (> 10m) 3	Conifer with moderate CBH (3-9m) (4)	Conifer with low CBH (< 4m) 5
8	Fuel strata gap[6] (m)		> 10 0	6-9 1	3-6 (3)	< 3 5
9	Stems/ha (overstory)[7]	< 400 (0)	401-600 (3)	601-900 3	901-1 200 4	> 1 200 5
10	Crown closure	< 20% 0	20-40% or Deciduous Overstory (any closure) 1	41-60% (2)	61-80% 5	> 80% 4
11	Dead and dying (% of dominant and co-dominant stems)		Standing dead/ Partial down < 20% (2)	Standing dead/ Partial down 21-50% 5	Standing dead/ Partial down 51-75% 8	Standing dead/ Partial down > 75% 10

Total Score[8]:	47
Eco Province scoring used:	ST
Fuel Assessment Rating: (low, high etc.)	Mod

Comments: Same comments as 11
Monitor

Updated March 2017

Wildfire Threat Assessment Worksheet – Priority Setting Scoring (complete one for entire proposed treatment area)

Location:	Date:	Assessor/ Professional Designation:
Coordinates (Lat/Long – Degrees/Decimal Minutes):		
PSTA Threat:		FBP Fuel Type:
Assessor's FBP Fuel Type:		Ownership:
Assessor's Fuel Type Rationale[2]:		

Value Description (include type of value and distance to the value from the proposed treatment area):

Landscape Assessment						
Proximity of fuel treatment area to value (m)	0-100 25	101-500 20	501- 1,000 15	1 000- 2,000 5	> 2,000 0	25
Existing Fuel Mgmt. treatment area in place between the proposed treatment area and the value(s)	Yes 5	No 0				0
Treatment Placement: using the predominant wind direction/ fire spread pattern, what is the treatment location in relationship to the value(s) location?		Downwind 0	270° offset to prevailing wind/ highest ISI values 7	90° offset to prevailing wind/ highest ISI values 10	Upwind/ highest ISI values 15	15
Distance to nearest vehicle access (m)		0-200 5	201-400 3	401- 1,000 1	> 1,000 0	5
Distance to non-fuel / treated[1] area near the assessment area (m)		0-200 5	201-400 3	401- 1,000 1	> 1,000 0	5/50

Topographical Factors						
Topography: Slope	< 20% 0	21-30% 1	31-45% 3	46-60% 4	> 60% 5	4
Topography: Aspect (> 20% slope)		North 0	East/Flat 3	West 4	South 5	0
Slope position of value (only applies if slope is > 20%)		Bottom of slope/ valley bottom 0	Mid slope - bench 1	Mid slope - continuous 3	Upper 1/3 of slope 5	1/5
				Total Score:	55	55

Comments:

[1] Must include three photos for each plot (one of forest floor, one of surface and ladder fuel, one of overstory)
[2] Fuel management type treatment where wildfire threat has been mitigated

3 Blind Mtn

Appendix B – Wildfire Threat Assessment Worksheets

Wildfire Threat Assessment Worksheet - Fuel Assessment (Site Level)[3]		Plot #
Location: 13	Date: 18/9/22	Assessor/ Professional Designation: Davies RPF
Coordinates (Lat/Long – Degrees/Decimal minutes): 49° 32.530 119° 33.423		

Component/ Sub-Component		Levels/Classes					
	Forest Floor and Organic Layer						
1	Depth of organic layer (cm)	1- < 2 1	2- < 5 3	5- < 10 5	10-20 3	> 20 2	1
	Surface and Ladder Fuel (0.1 – 3.0 meters in height)						
2	Surface fuel composition	Moss, herbs, deciduous shrubs 4	Lichen, conifer shrubs 6	Dead fines fuel[4] (<1 cm) 8	Pinegrass 10	Sagebrush, Bunch grass, Juniper, Scotch broom 15	15
3	Dead and down material continuity (< 7cm)	Absent 0	Scattered < 10 coverage 4	10-25% coverage 8	26-50% coverage 12	> 50% coverage 15	4
4	Ladder fuel composition	Deciduous/ None 0	Mixwood 5	Other conifer 8	Elevated dead fuel 10	Spruce, Fir, Pine 15	15
5	Ladder fuel horizontal continuity	Absent 0	Sparse < 10% coverage 2	Scattered 10-39% coverage 8	Patchy 40-60% coverage 10	Uniform > 60% coverage 15	2
6	Stem/ha (understory)[5]	< 500 2	501-800 4	801-1 200 6	1 2501-1 5 000 8	> 1 500 10	2 / 39
	Stand Structure and Composition (Dominant and co-dominant stems)						
7	Overstory composition/ Crown Base Height (CBH)	Deciduous (< 25% conifer) All CBH 0	Mixwood (% conifer) 25% 50% 75% 0 2 3	Conifer with high CBH (> 10m) 3	Conifer with moderate CBH (5-9m) 4	Conifer with low CBH (< 4m) 5	4
8	Fuel strata gap[6] (m)		> 10 0	6-9 1	3-6 3	< 3 5	3
9	Stems/ha (overstory)[7]	< 400 0	401-600 2	601-900 3	901-1 200 4	> 1 200 5	3
10	Crown closure	< 20% 0	20-40% or Deciduous Overstory (any closure) 1	41-60% 2	61-80% 5	> 80% 4	5
11	Dead and dying (% of dominant and co-dominant stems)		Standing dead/ Partial down < 20% 2	Standing dead/ Partial down 21-50% 5	Standing dead/ Partial down 51-75% 8	Standing dead/ Partial down > 75% 10	2 / 17

Total Score[8]:	56
Eco Province scoring used:	SF
Fuel Assessment Rating: (low, high etc.)	Mod

Comments: Previously treated; grass & needle primary conifer
High crowns, could Py B to maintain grass
Low Crown Fire risk

37

Updated March 2017

Wildfire Threat Assessment Worksheet – Priority Setting Scoring (complete one for entire proposed treatment area)		
Location:	Date:	Assessor/ Professional Designation:
Coordinates (Lat/Long – Degrees/Decimal Minutes):		
PSTA Threat:		FBP Fuel Type:
Assessor's FBP Fuel Type:		Ownership:
Assessor's Fuel Type Rationale[2]:		
Value Description (include type of value and distance to the value from the proposed treatment area):		

Landscape Assessment						
Proximity of fuel treatment area to value (m)	0-100 25	101-500 20	501- 1,000 15	1 000- 2,000 5	> 2,000 0	25
Existing Fuel Mgmt. treatment area in place between the proposed treatment area and the value(s)	Yes 5	No 0				5
Treatment Placement: using the predominant wind direction/ fire spread pattern, what is the treatment location in relationship to the value(s) location?		Downwind 0	270° offset to prevailing wind/ highest ISI values 7	90° offset to prevailing wind/ highest ISI values 10	Upwind/ highest ISI values 15	15
Distance to nearest vehicle access (m)		0-200 5	201-400 3	401- 1,000 1	> 1,000 0	5
Distance to non-fuel / treated[2] area near the assessment area (m)		0-200 5	201-400 3	401- 1,000 1	> 1,000 0	5 / 55

Topographical Factors						
Topography: Slope	< 20% 0	21-30% 1	31-45% 3	46-60% 4	> 60% 5	4
Topography: Aspect (> 20% slope)		North 0	East/Flat 3	West 4	South 5	4
Slope position of value (only applies if slope is > 20%)		Bottom of slope/ valley bottom 0	Mid slope - bench 1	Mid slope - continuous 3	Upper 1/3 of slope 5	1 / 9 = 64
				Total Score:		64

Comments: Powerline line through area

[1] Must include three photos for each plot (one of forest floor, one of surface and ladder fuel, one of overstory)
[2] Fuel management type treatment where wildfire threat has been mitigated

Large fenced field above dump ✓

Appendix B – Wildfire Threat Assessment Worksheets

Wildfire Threat Assessment Worksheet - Fuel Assessment (Site Level)[3] | **Plot #**

Location: lc | Date: 17/09/22 | Assessor/ Professional Designation: Davies RPF

Coordinates (Lat/Long – Degrees/Decimal minutes): 49°31.552 119° 32.660

	Component/ Sub-Component	Levels/Classes				
		Forest Floor and Organic Layer				
1	Depth of organic layer (cm)	1- < 2 (1)	2- < 5 3	5- < 10 5	10-20 3	> 20 2
		Surface and Ladder Fuel (0.1 – 3.0 meters in height)				
2	Surface fuel composition	Moss, herbs, deciduous shrubs 4	Lichen, conifer shrubs 6	Dead fines fuel[4] (<1 cm) 8	Pinegrass (10)	Sagebrush, Bunch grass, Juniper, Scotch broom 15
3	Dead and down material continuity (< 7cm)	Absent 0	Scattered < 10 coverage (4)	10-25% coverage 8	26-50% coverage 12	> 50% coverage 15
4	Ladder fuel composition	Deciduous/ None 0	Mixwood 5	Other conifer 8	Elevated dead fuel 10	Spruce, Fir, Pine (15)
5	Ladder fuel horizontal continuity	Absent 0	Sparse < 10% coverage (2)	Scattered 10-39% coverage 8	Patchy 40-60% coverage 10	Uniform > 60% coverage 15
6	Stem/ha (understory)[5]	< 500 2	501-800 (4)	801-1 200 6	1 2501-1 5 000 8	> 1 500 10
		Stand Structure and Composition (Dominant and co-dominant stems)				
7	Overstory composition/ Crown Base Height (CBH)	Deciduous (< 25% conifer) All CBH 0	Mixwood (% conifer) 25% 50% 75% 0 2 3	Conifer with high CBH (> 10m) (3)	Conifer with moderate CBH (5-9m) 4	Conifer with low CBH (< 4m) 5
8	Fuel strata gap[6] (m)		> 10 0	5-9 1	3-6 (3)	< 3 5
9	Stems/ha (overstory)[7]	< 400 0	401-600 (2)	601-900 3	901-1 200 4	> 1 200 5
10	Crown closure	< 20% 0	20-40% or Deciduous Overstory (any closure) 1	41-60% (4)	61-80% (5)	> 80% 4
11	Dead and dying (% of dominant and co-dominant stems)		Standing dead/ Partial down < 20% (2)	Standing dead/ Partial down 21-50% 5	Standing dead/ Partial down 51-75% 8	Standing dead/ Partial down > 75% 10

1 10 4 15 2 4/36 3 3 2 5 2/15 ~~51~~ 51

Total Score[8]:	51
Eco Province scoring used:	ST
Fuel Assessment Rating: (low, high etc.)	Mod

Comments:

Updated March 2017

Wildfire Threat Assessment Worksheet – Priority Setting Scoring (complete one for entire proposed treatment area)

Location: Date: Assessor/ Professional Designation:

Coordinates (Lat/Long – Degrees/Decimal Minutes):

PSTA Threat: ~~H~~ High FBP Fuel Type: C7

Assessor's FBP Fuel Type: C7 (01) Ownership:

Assessor's Fuel Type Rationale[2]:

Value Description (include type of value and distance to the value from the proposed treatment area):
Dump 1100m; Homes 200m North

Landscape Assessment						
Proximity of fuel treatment area to value (m)	0-100 25	101-500 20	501-1,000 15	1 000-2,000 5	>2,000 0	20
Existing Fuel Mgmt. treatment area in place between the proposed treatment area and the value(s)	Yes 5	No 0				0
Treatment Placement: using the predominant wind direction/ fire spread pattern, what is the treatment location in relationship to the value(s) location?		Downwind 0	270° offset to prevailing wind/ highest ISI values 7	90° offset to prevailing wind/ highest ISI values 10	Upwind/ highest ISI values 15	~~0~~ 15
Distance to nearest vehicle access (m)		0-200 5	201-400 3	401-1,000 1	>1,000 0	5
Distance to non-fuel / treated[1] area near the assessment area (m)		0-200 5	201-400 3	401-1,000 1	>1,000 0	0 /~~20~~ 35

Topographical Factors						
Topography: Slope	<20% 0	21-30% 1	31-45% 3	46-60% 4	>60% 5	3
Topography: Aspect (>20% slope)		North 0	East/Flat 3	West 4	South 5	4
Slope position of value (only applies if slope is >20%)		Bottom of slope/ valley bottom 0	Mid slope - bench 1	Mid slope - continuous 3	Upper 1/3 of slope 5	01/~~0~~
				Total Score:		~~29~~ 43

Comments: Variable unit C7 w/ O1 inclusions grading to O1 @ South
Low FWD: needle n grass primary carrier
Low opportunity for crown fire: ladder fuels low
Rx burn, protect ponderosa & scattered Junipers
Consider IPs in burn plan w/ post treatment monitoring - mastered conifer
Alternative: targetted grazing

[1] Must include three photos for each plot (one of forest floor, one of surface and ladder fuel, one of overstory)
[2] Fuel management type treatment where wildfire threat has been mitigated

Larger stems @ S end w/ ingrowth - would have to recreate gaps

Appendix B – Wildfire Threat Assessment Worksheets

Wildfire Threat Assessment Worksheet - Fuel Assessment (Site Level)[3] | **Plot #**

Location: 2a | Date: 17/9/22 | Assessor/ Professional Designation: Davies RPF

Coordinates (Lat/Long – Degrees/Decimal minutes): 49° 31.482 119° 33.103

	Component/ Sub-Component	Levels/Classes					
		Forest Floor and Organic Layer					
1	Depth of organic layer (cm)	1- < 2 (1)	2- < 5 3	5- < 10 5	10-20 3	> 20 2	1
		Surface and Ladder Fuel (0.1 – 3.0 meters in height)					
2	Surface fuel composition	Moss, herbs, deciduous shrubs 4	Lichen, conifer shrubs 6	Dead fines fuel[4] (<1 cm) 8	Pinegrass (10)	Sagebrush, Bunch grass, Juniper, Scotch broom 15	10
3	Dead and down material continuity (< 7cm)	Absent 0	Scattered < 10 coverage (4)	10-25% coverage 8	26-50% coverage 12	> 50% coverage 15	4
4	Ladder fuel composition	Deciduous/ None 0	Mixwood 5	Other conifer 8	Elevated dead fuel 10	Spruce, Fir, Pine (15)	15
5	Ladder fuel horizontal continuity	Absent 0	Sparse < 10% coverage (2)	Scattered 10-39% coverage 8	Patchy 40-60% coverage 10	Uniform > 60% coverage 15	2
6	Stem/ha (understory)[5]	< 500 2	501-800 (4)	801-1 200 6	1 2501-1 5 000 8	> 1 500 10	4/36
		Stand Structure and Composition (Dominant and co-dominant stems)					
7	Overstory composition/ Crown Base Height (CBH)	Deciduous (< 25% conifer) All CBH 0	Mixwood (% conifer) 25% 50% 75% 0 2 3	Conifer with high CBH (> 10m) 3	Conifer with moderate CBH (5-9m) (4)	Conifer with low CBH (< 4m) 5	4
8	Fuel strata gap[6] (m)		> 10 0	6-9 1	3-6 (3)	< 3 5	3
9	Stems/ha (overstory)[7]	< 400 0	401-600 (2)	601-900 3	901-1 200 4	> 1 200 5	2
10	Crown closure	< 20% 0	20-40% or Deciduous Overstory (any closure) 1	41-60% (2)	61-80% 5	> 80% 4	2
11	Dead and dying (% of dominant and co-dominant stems)		Standing dead/ Partial down < 20% (2)	Standing dead/ Partial down 21-50% 5	Standing dead/ Partial down 51-75% 8	Standing dead/ Partial down > 75% 10	2/13

49

Total Score[8]:	49
Eco Province scoring used:	~~Mod~~ SI
Fuel Assessment Rating: (low, high etc.)	Mod

Comments:

37

Below dump

Wildfire Threat Assessment Guide and Worksheets | 2020

Updated March 2017

Wildfire Threat Assessment Worksheet – Priority Setting Scoring (complete one for entire proposed treatment area)

Location: 2a	Date:	Assessor/ Professional Designation:
Coordinates (Lat/Long – Degrees/Decimal Minutes):		
PSTA Threat:		FBP Fuel Type: C7
Assessor's FBP Fuel Type: C7 Ø minor Ø1		Ownership:
Assessor's Fuel Type Rationale[2]:		

Value Description (include type of value and distance to the value from the proposed treatment area):
Dump adj. <400m; homes 200-400mt; transmission line <100m (wooden poles)

Landscape Assessment						
Proximity of fuel treatment area to value (m)	0-100 25	101-500 20	501-1,000 15	1,000-2,000 5	> 2,000 0	15
Existing Fuel Mgmt. treatment area in place between the proposed treatment area and the value(s)	Yes 5	No 0				0
Treatment Placement: using the predominant wind direction/ fire spread pattern, what is the treatment location in relationship to the value(s) location?		Downwind [illegible]	270° offset to prevailing wind/ highest ISI values 7	90° offset to prevailing wind/ highest ISI values 10	Upwind/ highest ISI values 15	15
Distance to nearest vehicle access (m)		0-200 5	201-400 3	401-1,000 1	> 1,000 0	3
Distance to non-fuel / treated[1] area near the assessment area (m)		0-200 5	201-400 3	401-1,000 1	> 1,000 0	5 / 38

Topographical Factors						
Topography: Slope	< 20% 0	21-30% 1	31-45% 3	46-60% 4	> 60% 5	3
Topography: Aspect (> 20% slope)		North 0	East/Flat 3	West 4	South 5	4
Slope position of value (only applies if slope is > 20%)		Bottom of slope/ valley bottom 0	Mid slope - bench 1	Mid slope - continuous 3	Upper 1/3 of slope 5	1/8

Total Score:	~~[illegible]~~ 16

Comments: Dense, consistent int. layer below scattered CDs
Low FWD - grass + needles, primary carrier
Ladder fuel consistent vert + horiz.
Extensive IP issue
Thin ints: Pb, Chlr, No PxB
Low crown fire potential
Restore to open forest

[1] Must include three photos for each plot (one of forest floor, one of surface and ladder fuel, one of overstory)
[2] Fuel management type treatment where wildfire threat has been mitigated

38

South of dump

Appendix B – Wildfire Threat Assessment Worksheets

Wildfire Threat Assessment Worksheet - Fuel Assessment (Site Level)[3] | **Plot #**

Location: 3m | Date: 7/9/22 | Assessor/ Professional Designation: Davies RPF

Coordinates (Lat/Long – Degrees/Decimal minutes): 49° 31.237 119° 32.952

	Component/ Sub-Component	Levels/Classes					
		Forest Floor and Organic Layer					
1	Depth of organic layer (cm)	1- < 2 1	2- < 5 3	5- < 10 5	10-20 3	> 20 2	1
		Surface and Ladder Fuel (0.1 – 3.0 meters in height)					
2	Surface fuel composition	Moss, herbs, deciduous shrubs 4	Lichen, conifer shrubs 6	Dead fines fuel[4] (<1 cm) 8	Pinegrass 10	Sagebrush, Bunch grass, Juniper, Scotch broom 15	10
3	Dead and down material continuity (< 7cm)	Absent 0	Scattered < 10 coverage 4	10-25% coverage 8	26-50% coverage 12	> 50% coverage 15	4
4	Ladder fuel composition	Deciduous/ None 0	Mixwood 5	Other conifer 8	Elevated dead fuel 10	Spruce, Fir, Pine 15	15
5	Ladder fuel horizontal continuity	Absent 0	Sparse < 10% coverage 2	Scattered 10-39% coverage 8	Patchy 40-60% coverage 10	Uniform > 60% coverage 15	10
6	Stem/ha (understory)[5]	< 500 2	501-800 4	801-1 200 6	1 2501-1 5 000 8	> 1 500 10	4/44
		Stand Structure and Composition (Dominant and co-dominant stems)					
7	Overstory composition/ Crown Base Height (CBH)	Deciduous (< 25% conifer) All CBH 0	Mixwood (% conifer) 25% 50% 75% 0 2 3	Conifer with high CBH (> 10m) 3	Conifer with moderate CBH (3-9m) 4	Conifer with low CBH (< 4m) 5	4
8	Fuel strata gap[5] (m)		> 10 0	6-9 1	3-6 3	< 3 5	3
9	Stems/ha (overstory)[5]	< 400 0	401-600 2	601-900 3	901-1 200 4	> 1 200 5	3
10	Crown closure	< 20% 0	20-40% or Deciduous Overstory (any closure) 1	41-60% 2	61-80% 5	> 80% 4	5
11	Dead and dying (% of dominant and co-dominant stems)		Standing dead/ Partial down < 20% 2	Standing dead/ Partial down 21-50% 5	Standing dead/ Partial down 51-75% 8	Standing dead/ Partial down > 75% 10	2/17 = 61

Total Score[6]:	61
Eco Province scoring used:	SI
Fuel Assessment Rating: (low, high etc.)	High

Comments:

Updated March 2017

Wildfire Threat Assessment Worksheet – Priority Setting Scoring (complete one for entire proposed treatment area)

Location: Date: Assessor/ Professional Designation:

Coordinates (Lat/Long – Degrees/Decimal Minutes):

PSTA Threat: FBP Fuel Type: C7

Assessor's FBP Fuel Type: C7 Ownership:

Assessor's Fuel Type Rationale[1]:

Value Description (include type of value and distance to the value from the proposed treatment area):
Dump, homes 200m+ powerline 150, Rd 200m

Landscape Assessment						
Proximity of fuel treatment area to value (m)	0-100 25	101-500 20	501-1,000 15	1 000-2,000 5	>2,000 0	20
Existing Fuel Mgmt. treatment area in place between the proposed treatment area and the value(s)	Yes 5	No 0				0
Treatment Placement: using the predominant wind direction/ fire spread pattern, what is the treatment location in relationship to the value(s) location?		Downwind 0	270° offset to prevailing wind/ highest ISI values 7	90° offset to prevailing wind/ highest ISI values 10	Upwind/ highest ISI values 15	0
Distance to nearest vehicle access (m)		0-200 5	201-400 3	401-1,000 1	>1,000 0	5
Distance to non-fuel / treated[2] area near the assessment area (m)		0-200 5	201-400 3	401-1,000 1	>1,000 0	5/30

Topographical Factors						
Topography: Slope	<20% 0	21-30% 1	31-45% 3	46-60% 4	>60% 5	3
Topography: Aspect (>20% slope)		North 0	East/Flat 3	West 4	South 5	5
Slope position of value (only applies if slope is >20%)		Bottom of slope/ valley bottom 0	Mid slope - bench 1	Mid slope - continuous 3	Upper 1/3 of slope 5	1/9
				Total Score:		37

Comments: Dense understory w/ scattered CDs
Pine + litter predom. surface fuel; ladder fuels = supp. layer
Low crown fire pot.
JH, PB

[1] Must include three photos for each plot (one of forest floor, one of surface and ladder fuel, one of overstory)
[2] Fuel management type treatment where wildfire threat has been mitigated

~~Dump - below (west) & South~~
Muns Mtn

Appendix B – Wildfire Threat Assessment Worksheets

Wildfire Threat Assessment Worksheet - Fuel Assessment (Site Level)[1]		Plot #	
Location: 49	Date: 17/9/22	Assessor/ Professional Designation: Davis RPF	
Coordinates (Lat/Long – Degrees/Decimal minutes): 49°30.972 119° 34.375			

Component/ Sub-Component		Levels/Classes					
	Forest Floor and Organic Layer						
1	Depth of organic layer (cm)	1- < 2 1	2- < 5 3	5- < 10 5	10-20 3	> 20 2	1
	Surface and Ladder Fuel (0.1 – 3.0 meters in height)						
2	Surface fuel composition	Moss, herbs, deciduous shrubs 4	Lichen, conifer shrubs 6	Dead fines fuel[4] (<1 cm) 8	Pinegrass 10	Sagebrush, Bunch grass, Juniper, Scotch broom 15	10
3	Dead and down material continuity (< 7cm)	Absent 0	Scattered < 10 coverage 4	10-25% coverage 8	26-50% coverage 12	> 50% coverage 15	4
4	Ladder fuel composition	Deciduous/ None 0	Mixwood 5	Other conifer 8	Elevated dead fuel 10	Spruce, Fir, Pine 15	15
5	Ladder fuel horizontal continuity	Absent 0	Sparse < 10% coverage 2	Scattered 10-39% coverage 8	Patchy 40-60% coverage 10	Uniform > 60% coverage 15	8
6	Stem/ha (understory)[5]	< 500 2	501-800 4	801-1 200 6	1 2501-1 5 000 8	> 1 500 10	4 / 42
	Stand Structure and Composition (Dominant and co-dominant stems)						
7	Overstory composition/ Crown Base Height (CBH)	Deciduous (< 25% conifer) All CBH 0	Mixwood (% conifer) 25% 50% 75% 0 2 3	Conifer with high CBH (> 10m) 3	Conifer with moderate CBH (5-9m) 4	Conifer with low CBH (< 4m) 5	4
8	Fuel strata gap[6] (m)		> 10 0	6-9 1	3-6 3	< 3 5	5
9	Stems/ha (overstory)[7]	< 400 0	401-600 2	601-900 3	901-1 200 4	> 1 200 5	3
10	Crown closure	< 20% 0	20-40% or Deciduous Overstory (any closure) 1	41-60% 2	61-80% 5	> 80% 4	2
11	Dead and dying (% of dominant and co-dominant stems)		Standing dead/ Partial down < 20% 2	Standing dead/ Partial down 21-50% 5	Standing dead/ Partial down 51-75% 8	Standing dead/ Partial down > 75% 10	2 / 16

58

Total Score[8]:	58
Eco Province scoring used:	SI
Fuel Assessment Rating: (low, high etc.)	Mod

Comments: Rd access off powerline

37

Updated March 2017

Wildfire Threat Assessment Worksheet – Priority Setting Scoring (complete one for entire proposed treatment area)

Location:	Date:	Assessor/ Professional Designation:
Coordinates (Lat/Long – Degrees/Decimal Minutes):		
PSTA Threat:		FBP Fuel Type:
Assessor's FBP Fuel Type:		Ownership:
Assessor's Fuel Type Rationale[1]:		

Value Description (include type of value and distance to the value from the proposed treatment area):

Landscape Assessment						
Proximity of fuel treatment area to value (m)	0-100 25	101-500 ~~25~~	501- 1,000 15	1 000- 2,000 5	> 2,000 0	25
Existing Fuel Mgmt. treatment area in place between the proposed treatment area and the value(s)	Yes 5	No 0				0
Treatment Placement: using the predominant wind direction/ fire spread pattern, what is the treatment location in relationship to the value(s) location?		Downwind 0	270° offset to prevailing wind/ highest ISI values 7	90° offset to prevailing wind/ highest ISI values 10	Upwind/ highest ISI values 15	15
Distance to nearest vehicle access (m)		0-200 5	201-400 3	401- 1,000 1	> 1,000 0	5
Distance to non-fuel / treated[2] area near the assessment area (m)		0-200 5	201-400 3	401- 1,000 1	> 1,000 0	5 /50

Topographical Factors						
Topography: Slope	< 20% 0	21-30% 1	31-45% 3	46-60% 4	> 60% 5	3
Topography: Aspect (> 20% slope)		North 0	East/Flat 3	West 4	South 5	3
Slope position of value (only applies if slope is > 20%)		Bottom of slope/ valley bottom 0	Mid slope - bench 1	Mid slope - continuous 3	Upper 1/3 of slope 5	1 /7
				Total Score:	57	57

Comments: Dpose Fel bonedly scattered CBJ
Ladder Fuels consistent on Sup Fel
Pine grass & needles primary surface Fuel
Prune & scatter/remove. RB: loaded thin but good refuge site
No Rx B: hazard is isolated

[1] Must include three photos for each plot (one of forest floor, one of surface and ladder fuel, one of overstory)
[2] Fuel management type treatment where wildfire threat has been mitigated

Resident Duncan Ave ✓

Appendix B – Wildfire Threat Assessment Worksheets

Wildfire Threat Assessment Worksheet - Fuel Assessment (Site Level)[3]		Plot #
Location: 5a	Date: 18/9/27	Assessor/ Professional Designation: J Davidson RPF
Coordinates (Lat/Long – Degrees/Decimal minutes): 49° 29.207 119° 34.178		

	Component/ Sub-Component	Levels/Classes					
	Forest Floor and Organic Layer						
1	Depth of organic layer (cm)	1- < 2 1	2- < 5 3	5- < 10 5	10-20 3	> 20 2	1
	Surface and Ladder Fuel (0.1 – 3.0 meters in height)						
2	Surface fuel composition	Moss, herbs, deciduous shrubs 4	Lichen, conifer shrubs 6	Dead fines fuel[4] (<1 cm) 0	Pinegrass 10	Sagebrush, Bunch grass, Juniper, Scotch broom 15	10
3	Dead and down material continuity (< 7cm)	Absent 0	Scattered < 10 coverage 4	10-25% coverage 8	26-50% coverage 12	> 50% coverage 15	0
4	Ladder fuel composition	Deciduous/ None 0	Mixwood 5	Other conifer 8	Elevated dead fuel 10	Spruce, Fir, Pine 15	0
5	Ladder fuel horizontal continuity	Absent 0	Sparse < 10% coverage 2	Scattered 10-39% coverage 8	Patchy 40-60% coverage 10	Uniform > 60% coverage 15	0
6	Stem/ha (understory)[5]	< 500 2	501-800 4	801-1 200 6	1 2501-1 5 000 8	> 1 500 10	2 / 13
	Stand Structure and Composition (Dominant and co-dominant stems)						
7	Overstory composition/ Crown Base Height (CBH)	Deciduous (< 25% conifer) All CBH 0	Mixwood (% conifer) 25% 50% 75% 0 2 3	Conifer with high CBH (> 10m) 3	Conifer with moderate CBH (5-9m) 4	Conifer with low CBH (< 4m) 5	4
8	Fuel strata gap[6] (m)		> 10 0	6-9 1	3-6 3	< 3 5	3
9	Stems/ha (overstory)[7]	< 400 0	401-600 2	601-900 3	901-1 200 4	> 1 200 5	0
10	Crown closure	< 20% 0	20-40% or Deciduous Overstory (any closure) 1	41-60% 2	61-80% 5	> 80% 4	0
11	Dead and dying (% of dominant and co-dominant stems)		Standing dead/ Partial down < 20% 2	Standing dead/ Partial down 21-50% 5	Standing dead/ Partial down 51-75% 8	Standing dead/ Partial down > 75% 10	2 / 9 22

Total Score[8]:	22
Eco Province scoring used:	SI
Fuel Assessment Rating: (low, high etc.)	Low

Comments: Monitor for infill (5+ yrs)
could Py burn grass or mow
No Crown Fire risk; minimal spread risk

37

Updated March 2017

Wildfire Threat Assessment Worksheet – Priority Setting Scoring (complete one for entire proposed treatment area)

Location:	Date:	Assessor/ Professional Designation:
Coordinates (Lat/Long – Degrees/Decimal Minutes):		
PSTA Threat:		FBP Fuel Type: C1
Assessor's FBP Fuel Type: C1		Ownership:
Assessor's Fuel Type Rationale[1]:		

Value Description (include type of value and distance to the value from the proposed treatment area):
Adj homes

Landscape Assessment						
Proximity of fuel treatment area to value (m)	0-100 25	101-500 20	501- 1,000 15	1 000- 2,000 5	>2,000 0	25
Existing Fuel Mgmt. treatment area in place between the proposed treatment area and the value(s)	Yes 5	No 0				5
Treatment Placement: using the predominant wind direction/ fire spread pattern, what is the treatment location in relationship to the value(s) location?		Downwind 0	270° offset to prevailing wind/ highest ISI values 7	90° offset to prevailing wind/ highest ISI values 10	Upwind/ highest ISI values 15	15
Distance to nearest vehicle access (m)		0-200 5	201-400 3	401- 1,000 1	>1,000 0	5
Distance to non-fuel / treated' area near the assessment area (m)		0-200 5	201-400 3	401- 1,000 1	>1,000 0	5 / 55

Topographical Factors						
Topography: Slope	<20% 0	21-30% 1	31-45% 3	46-60% 4	>60% 5	0
Topography: Aspect (> 20% slope)		North 0	East/Flat 3	West 4	South 5	3
Slope position of value (only applies if slope is > 20%)		Bottom of slope/ valley bottom 0	Mid slope - bench 1	Mid slope - continuous 3	Upper 1/3 of slope 5	0 / 3
				Total Score:		58

Comments: Flat open forest w/ trails
good grass complex - consistent
Roads adjacent (+ unit 12)

[1] Must include three photos for each plot (one of forest floor, one of surface and ladder fuel, one of overstory)
[2] Fuel management type treatment where wildfire threat has been mitigated

Sleepy Butler reservoir

Appendix B – Wildfire Threat Assessment Worksheets

Wildfire Threat Assessment Worksheet - Fuel Assessment (Site Level)[1] | **Plot #**

Location: Gm | Date: 18/9/22 | Assessor/ Professional Designation: Davies RPF

Coordinates (Lat/Long – Degrees/Decimal minutes): 49° 29.222 119° 34.195

	Component/ Sub-Component	Levels/Classes					
		Forest Floor and Organic Layer					
1	Depth of organic layer (cm)	1- < 2 (1)	2- < 5 3	5- < 10 5	10-20 3	> 20 2	1
		Surface and Ladder Fuel (0.1 – 3.0 meters in height)					
2	Surface fuel composition	Moss, herbs, deciduous shrubs 4	Lichen, conifer shrubs 6	Dead fines fuel[4] (<1 cm) 8	Pinegrass (10)	Sagebrush, Bunch grass, Juniper, Scotch broom 15	10
3	Dead and down material continuity (< 7cm)	Absent 0	Scattered < 10 coverage (4)	10-25% coverage 8	26-50% coverage 12	> 50% coverage 15	4
4	Ladder fuel composition	Deciduous/ None 0	Mixwood 5	Other conifer 8	Elevated dead fuel 10	Spruce, Fir, Pine (15)	15
5	Ladder fuel horizontal continuity	Absent 0	Sparse < 10% coverage 2	Scattered 10-39% coverage (8)	Patchy 40-60% coverage 10	Uniform > 60% coverage 15	8
6	Stem/ha (understory)[5]	< 500 (2)	501-800 4	801-1 200 6	1 2501-1 5 000 8	> 1 500 10	2/40
		Stand Structure and Composition (Dominant and co-dominant stems)					
7	Overstory composition/ Crown Base Height (CBH)	Deciduous (< 25% conifer) All CBH 0	Mixwood (% conifer) 25% 50% 75% 0 2 3	Conifer with high CBH (> 10m) 3	Conifer with moderate CBH (5-9m) 4	Conifer with low CBH (< 4m) (5)	5
8	Fuel strata gap[6] (m)		> 10 0	6-9 1	3-6 (3)	< 3 5	3
9	Stems/ha (overstory)[7]	< 400 (0)	401-600 2	601-900 3	901-1 200 4	> 1 200 5	0
10	Crown closure	< 20% (0)	20-40% or Deciduous Overstory (any closure) 1	41-60% 2	61-80% 5	> 80% 4	0
11	Dead and dying (% of dominant and co-dominant stems)		Standing dead/ Partial down < 20% (2)	Standing dead/ Partial down 21-50% 5	Standing dead/ Partial down 51-75% 8	Standing dead/ Partial down > 75% 10	2/10 = 50

Total Score[8]:	50
Eco Province scoring used:	S1
Fuel Assessment Rating: (low, high etc.)	M

Comments: Steep slope, minor surf
Low crown risk ; grass & shrub complex
Adjacent homes, torching potential
Could prune & remove
Monitor Fir infill = crown closure (5+ yrs)

Updated March 2017

Wildfire Threat Assessment Worksheet – Priority Setting Scoring (complete one for entire proposed treatment area)

Location:	Date:	Assessor/ Professional Designation:
Coordinates (Lat/Long – Degrees/Decimal Minutes):		
PSTA Threat:		FBP Fuel Type:
Assessor's FBP Fuel Type:		Ownership:
Assessor's Fuel Type Rationale[1]:		

Value Description (include type of value and distance to the value from the proposed treatment area):

Landscape Assessment						
Proximity of fuel treatment area to value (m)	0-100 25	101-500 20	501- 1,000 15	1 000- 2,000 5	> 2,000 0	25
Existing Fuel Mgmt. treatment area in place between the proposed treatment area and the value(s)	Yes 5	No 0				0
Treatment Placement: using the predominant wind direction/ fire spread pattern, what is the treatment location in relationship to the value(s) location?		Downwind 0	270° offset to prevailing wind/ highest ISI values 7	90° offset to prevailing wind/ highest ISI values 10	Upwind/ highest ISI values 15	15
Distance to nearest vehicle access (m)		0-200 5	201-400 3	401- 1,000 1	> 1,000 0	5
Distance to non-fuel / treated[2] area near the assessment area (m)		0-200 5	201-400 3	401- 1,000 1	> 1,000 0	5 / 50

Topographical Factors						
Topography: Slope	< 20% 0	21-30% 1	31-45% 3	46-60% 4	> 60% 5	4
Topography: Aspect (> 20% slope)		North 0	East/Flat 3	West 4	South 5	4
Slope position of value (only applies if slope is > 20%)		Bottom of slope/ valley bottom 0	Mid slope - bench 1	Mid slope - continuous 3	Upper 1/3 of slope 5	0 / 58
				Total Score:		58

Comments:

[1] *Must include three photos for each plot (one of forest floor, one of surface and ladder fuel, one of overstory)*
[2] *Fuel management type treatment where wildfire threat has been mitigated*

References

Abbott, G. & Chapman, M. (2018). *Addressing the new normal: 21st century disaster management in British Columbia.* Province of British Columbia. 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

BC Wildfire Service. (n.d.). *Wildfire season summary.* Province of British Columbia. www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-history/wildfire-season-summary

Census Canada. (2021). *Census profile, 2021 census of population profile table. City of Penticton.* Statistics Canada. https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?Lang=E&SearchText=Penticton&DGUIDlist=2021A00055907041&GENDERlist=1,2,3&STATISTIClist=1&HEADERlist=0

City of Penticton. (2019). *Official community plan bylaw no. 2019-08.* https://www.penticton.ca/sites/default/files/uploads/bylaws/Consolidated%20Official%20Community%20Plan%20Bylaw%20No.%202019-08%20-%20February%2013%2C%202023.pdf

City of Penticton. (2023). 2023-2027 *draft financial & corporate business plan*. www.penticton.ca/2023-budget

Cohen, J.D., & Westhaver, A. (2022). *An examination of the Lytton, British Columbia wildland-urban interface fire destruction*. Institute for Catastrophic Loss Reduction. An-examination-of-the-Lytton-BC-wildland-urban-fire-destruction.pdf (firesmartbc.ca)

Davies, J. (2016) City of *Penticton: Community wildfire protection plan.* Valhalla Consulting Ltd. https://www.penticton.ca/sites/default/files/docs/city-services/fire%20services/2021-08-12-PDF-Penticton%20Community%20Wildfire%20Protection%20Plan.pdf

Harvey, D.A., Alexander, M.E., & Janz, B. (1986). A comparison of fire-weather severity in northern Alberta during the 1980 and 1981 fire season. *Forestry Chronicle, 62*, 507-513. Northern Forestry Centre.

Pacific Climate Impacts Consortium. (n.d.-a). *About PCIC.* www.pacificclimate.org/analysis-tools/plan2adapt

Pacific Climate Impacts Consortium. (n.d.-b). *Plan2Adapt.* www.pacificclimate.org/analysis-tools/plan2adapt

Province of British Columbia. (1995). *Biodiversity guidebook. Forest practices code of British Columbia.* BC Environment.

Quarles, S.L., & Phol, K. (2018). *Building a wildfire-resistant home: Codes and costs.* Headwaters Economics. https://headwaterseconomics.org/wp-content/uploads/building-costs-codes-report.pdf

Stocks, B.J., Lawson, B.D., Alexander, M.E., Van Wagner, C.E., McApline, R.S., Lynham, T.J., & Dube, D.E. (1989). The Canadian forest fire danger rating system: An overview. *Forestry Chronicle, 65*(6), 450-457. Northern Forestry Centre. https://cfs.nrcan.gc.ca/publications?id=11347

Van Wagner, C.E. (1987). Development and structure of the Canadian forest fire weather index system. *Forestry Technical Report, 35*. Northern Forestry Centre. https://d1ied5g1xfgpx8.cloudfront.net/pdfs/19927.pdf

Vicars, M., Vicars., M & Associates (Eds.). (2003). *FireSmart: Protecting your community from wildfire* (2nd ed.). Partners in Protection.

Westhaver, A. (2017). *Why some homes survived: Larning from the Fort McMurray Wildland/urban interface fire disaster.* Institute for Catastrophic Loss Reduction. https://www.iclr.org/wp-content/uploads/PDFS/Westhaver_Fort_McMurray_Preliminary_Aug_2016.pdf

Wildfire Regulation, B.C. Reg. 38/2005. (2005). https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/11_38_2005