

# **Town of Canmore Wildfire Mitigation Strategy Review**



**Prepared for:  
Town of Canmore**



**March 2018**

**Stew Walkinshaw, R.P.F.**



**Canmore, AB.**

**Phone: (403) 678-7054    Email: [montane@shaw.ca](mailto:montane@shaw.ca)**

# Table of Contents

	<b>Executive Summary</b> .....	iii
<b>1</b>	<b>Introduction</b> .....	1
<b>2</b>	<b>Planning Area</b> .....	1
<b>3</b>	<b>Hazard Assessment</b> .....	2
<b>4</b>	<b>Vegetation Management Options</b> .....	5
	4.1 Priority Zone 1	
	4.2 Priority Zones 2-3	
	4.2.1 Completed Vegetation Management	
	4.2.2 Proposed Vegetation Management	
	4.3 Vegetation Management Maintenance	
<b>5</b>	<b>Development &amp; Legislation Options</b> .....	12
	5.1 Exterior Structural Materials	
	5.2 Development Legislation & Policy	
<b>6</b>	<b>Public Education &amp; Engagement Options</b> .....	15
	6.1 FireSmart Education and Awareness	
	6.2 Key Messages	
	6.3 Communication Methods	
<b>7</b>	<b>Interagency Cooperation and Cross-Training Options</b> .....	17
	7.1 Inter-Agency Cooperation	
	7.2 Cross-Training	
<b>8</b>	<b>Emergency Planning Options</b> .....	18
	8.1 Municipal Emergency Management Plan	
	8.2 Wildfire Preparedness Guide	
	8.3 Structure Protection Equipment	
<b>9</b>	<b>Implementation Plan</b> .....	19
<b>10</b>	<b>References</b> .....	22

# Executive Summary

The Town of Canmore has been implementing FireSmart mitigation measures for over fifteen years and based on the accomplishment of many of the recommendations in the previous plans the Town has identified the need to review and update the Wildfire Mitigation Strategy. Twelve recommendations have been developed to assist the Town of Canmore with moving towards a FireSmart community over the next five years.

The Town of Canmore is a wildland/urban interface community. The term “wildland/urban interface” is used to define areas where combustible wildland fuels are found adjacent to human development and wildfires have the potential to interact with that development.

## Hazard Assessment

Wildfire behaviour potential analysis indicates:

- There are approximately 35 days per year with Very High or Extreme fire danger levels and winds on those days are predominantly from the southwest and west.
- Wildland fuels within and surrounding the Town of Canmore are primarily coniferous pine and spruce with the ability to produce extreme wildfire behaviour including long-range ember spotting under the right conditions.
- Down-valley spread from west to east is the most probable wildfire spread direction.
- The Carrot Creek and Canmore Nordic Centre West fuelbreaks along the east-boundary of Banff National Park provide an excellent containment line for wildfire operations.
- Perimeter developments and those at the crest of forested slopes are at the highest threat while those in the centre of Town are at lower threat.

## Vegetation Management

Priority Zone 1 (0-10 metres from structure) vegetation management conducted by residents on their private lots has been minimal and should be considered as an implementation priority for the next five-year term.

The Town of Canmore, Provincial government, developers, and private stakeholders have completed approximately 138 hectares of fuel reduction on municipal, provincial, and deeded lands within the Town of Canmore.

New proposed FireSmart Priority Zone 2-3 (10-100+ metres) vegetation management areas have been identified on Municipal, Provincial, and deeded lands and include areas:

- identified in the previous plan but not yet completed
- to close openings in landscape and community-level fuelbreaks
- adjacent to high-extreme hazard developments that were not identified in the previous plan
- adjacent to developments with limited numbers of structures
- previously completed blocks requiring “second-pass” thinning and/or maintenance

## **Development and Legislation**

The Town of Canmore Land Use Bylaw has required the use of fire-rated roofing materials since 1999 resulting in a significant reduction in the number of combustible roof structures since 2010. Several Town of Canmore critical infrastructure facilities have combustible wood-shake roofing materials putting them at increased threat to airborne firebrand ignition.

The Town of Canmore Municipal Development Plan and Land Use Bylaw both recognize wildfire as a hazard to life and property. The Land Use Bylaw is currently under revision and new FireSmart regulations are being considered.

## **Public Education and Engagement**

Residents, business owners, developers, and Town of Canmore administration and elected officials all need to be aware of the FireSmart hazard and the solutions to minimizing the risk and become a partner in implementation of FireSmart solutions in their own backyards and communities. FireSmart public education and awareness initiatives to create resident engagement in the FireSmart program at the grassroots level are a recommended priority action for the next 3-5 years.

## **Inter-Agency Cooperation & Cross-Training**

The Town of Canmore provides emergency management and fire operations training to Town administration and Fire/Rescue personnel. Cross-training should continue to ensure that staff are trained and competent in protecting the community from wildfire.

## **Emergency Planning**

The Town of Canmore Municipal Emergency Management Plan and Evacuation Plan both use the incident command system model and the Town emergency management team has performed a functional Emergency Coordination Centre exercise for a wildland/urban interface fire within the Town.

The Town of Canmore Wildfire Preparedness Guide has been updated in 2018 and a cross-training exercise is scheduled for fall/2018 to test the plan.

The Town currently does not have any structure protection equipment for quick deployment on a wildland/urban interface fire. A structure protection trailer with sprinklers, pumps, hose, and appliances would improve structure protection response effectiveness.

# 1 Introduction

The Town of Canmore has been implementing FireSmart mitigation measures for over fifteen years based on the findings and recommendations from FireSmart plans developed in 2000 and updated in 2010. Based on the accomplishment of many of the recommendations in the plans and new and proposed development, the Town has identified the need to review and update the plan.

The objectives of the Town of Canmore Wildfire Mitigation Strategy Review are to:

- Update the wildfire hazard assessment
- Review FireSmart mitigation accomplishments
- Set new FireSmart implementation priorities for the next five-year period

This review updates the wildfire hazard assessment and provides findings and accomplishments and updated recommendations for each of the seven-disciplines of wildland/urban interface.

1. Vegetation Management
2. Development
3. Legislation
4. Public Education and Engagement
5. Inter-Agency Cooperation
6. Cross-Training
7. Emergency Planning

Implementation of FireSmart mitigative options will **reduce** the threat of wildfire to structures however it will never **remove** the threat.

This plan should be reviewed and updated at approximately **five-year intervals** to ensure it is based on current conditions.

## 2 Planning Area

The Town of Canmore is a wildland/urban interface community. The term “wildland/urban interface” is used to define areas where combustible wildland fuels are found adjacent to human development and wildfires have the potential to interact with that development.

The planning area includes all lands within the Town of Canmore. Land ownership within the Town includes private, municipal, and provincial lands. Alberta Environment and Parks manages significant forested parcels of Provincial Park lands within the Town of Canmore.

The Town of Canmore has development authority and wildland and structural fire jurisdiction for all lands within the planning area, including Crown lands.

### 3 Hazard Assessment

Wildfire behaviour potential is used to quantify wildfire hazard within and surrounding the Town of Canmore and can be used to identify relative wildfire threat for existing and new development areas and to assist with prioritizing areas for FireSmart vegetation management and/or public education programs. Wildfire behaviour potential will require regular revision based on changes to wildland vegetation conditions in the Bow Valley.

Wildfire behaviour potential uses provincial weather data and wildland fuel types (Map 1) to analyze probable wildfire behavior potential and threat to development from direct flame impingement, radiant heat, and/or short and long-range ember transport (Beverly, 2010).

- Fire weather data for a twenty-year period from the Banff weather station is used to determine average number of “spread-event days” per year and the predominant wind direction and speed on those days. A “spread-event” day is defined as “a day when the fire actively spreads with high intensity” which corresponds to a Fire Weather Index value of 19 or higher (Very High or Extreme fire danger) (Podur & Wotton, 2011).
- Fuel types from the provincial Fire Behaviour Prediction (FBP) (Taylor et.al., 1997) fuel grid and Alberta Vegetation Inventory (AVI2FBP) were used. New fuel type changes not reflected on the existing fuel type layers, including new development areas and FireSmart fuel reduction areas, were added from satellite imagery analysis and field inspection.

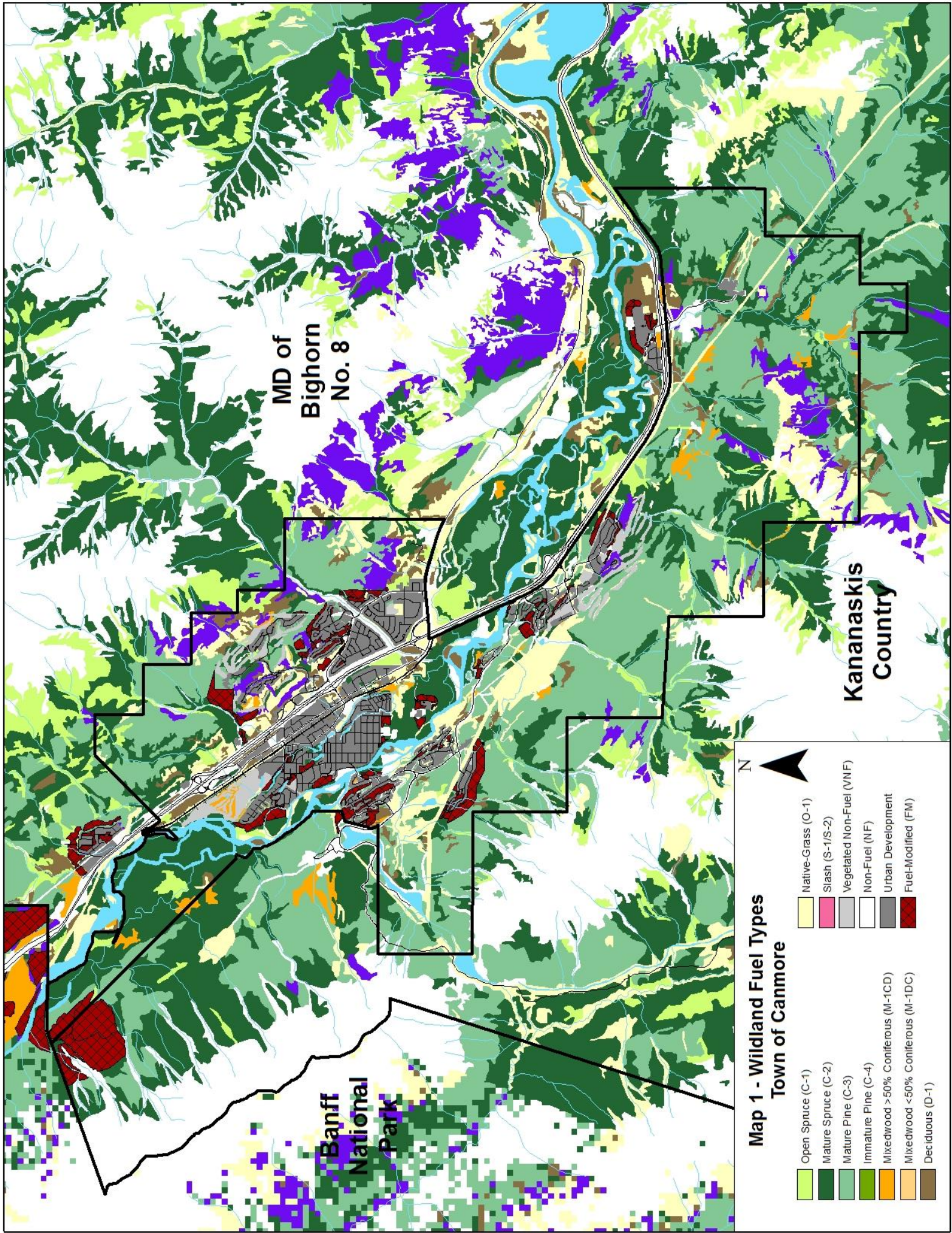
**Wildfire Behaviour Potential (Map 2) for Wildland Fuel Types**

Wildland Fuel Type	Wildfire Behaviour Potential
Mature Pine (C-3)	Extreme
Mature Spruce (C-2)	Extreme
Mature Pine/Douglas Fir (C-7)	High
Mixedwood (M-1)	Moderate
Open Coniferous (C-1)	Moderate
Cured-Grass (O1)	Moderate - Low
Deciduous (D-1)	Low
Vegetated Non-Fuel (VNF)	Low

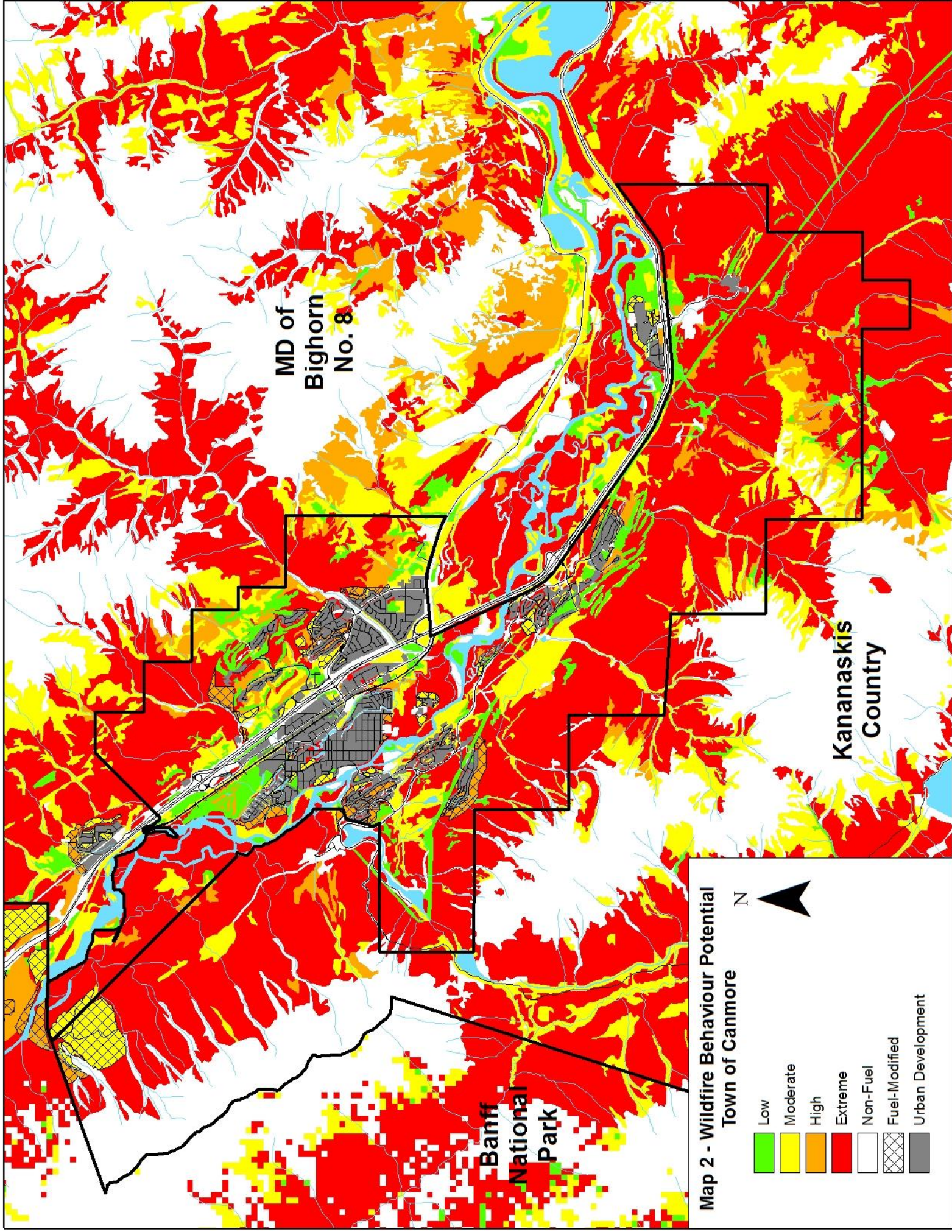
Wildfire behaviour potential analysis indicates:

- There are approximately 35 days per year with Very High or Extreme fire danger levels and winds on those days are predominantly from the southwest and west.
- Wildland fuels within and surrounding the Town of Canmore are primarily coniferous pine and spruce with the ability to produce extreme wildfire behaviour including long-range ember spotting under the right conditions.
- Down-valley spread from west to east is the most probable wildfire spread direction.
- The Carrot Creek and Canmore Nordic Centre West fuelbreaks along the east-boundary of Banff National Park provide an excellent containment line for wildfire operations.
- Perimeter developments and those at the crest of forested slopes are at the highest threat while those in the centre of Town are at lower threat.







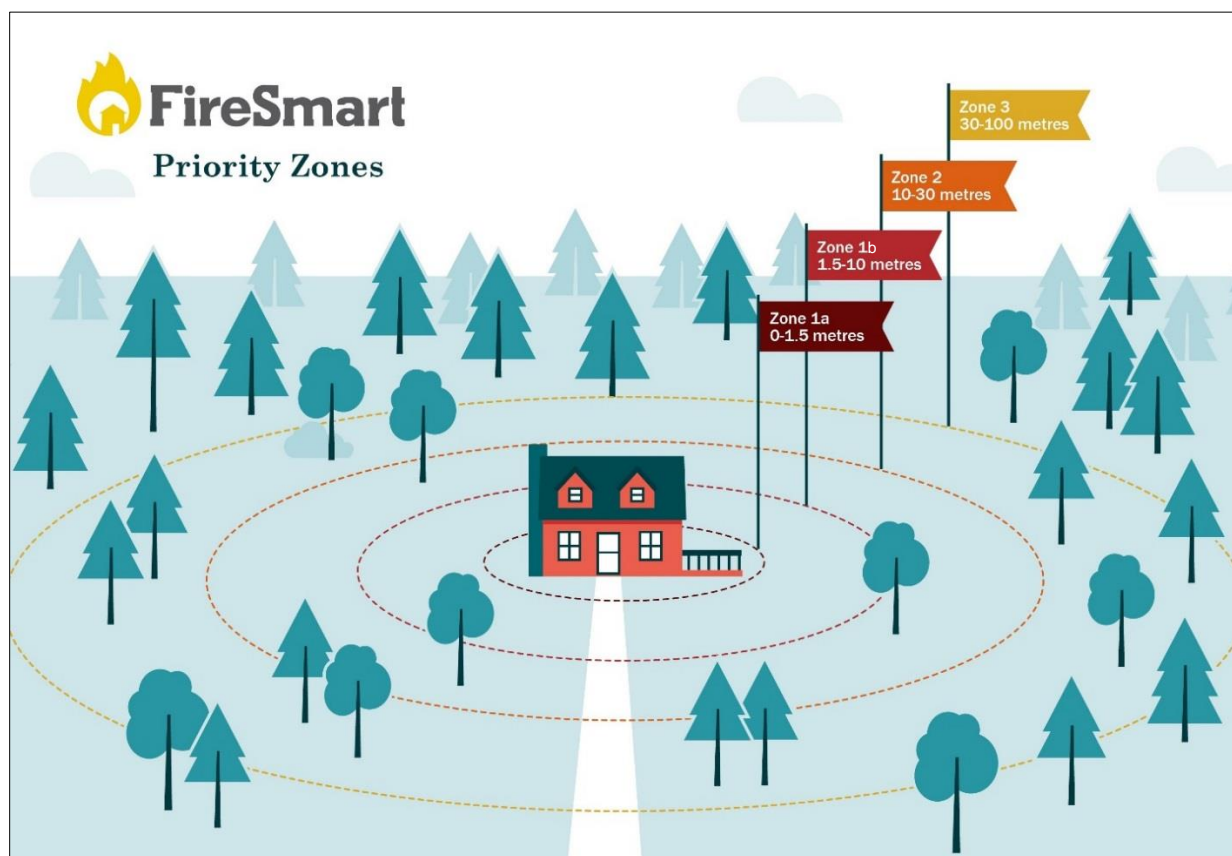




## 4 Vegetation Management Options

The goal of vegetation management is to create a fuel-reduced buffer between structures and flammable wildland vegetation to reduce the intensity and rate of spread of wildfire approaching or leaving the development. Vegetation management options are proposed to reduce the threat of wildfire to developed areas however **they do not ensure structure survival under all hazard conditions.**

FireSmart standards refer to three interface priority zones with vegetation management for interface structures recommended in Zones 1 and 2 at a minimum and in Zone 3 based on hazard and risk (PIP, 2003).



FireSmart Priority Zones

**Priority Zone 1** is the area extending from the structure a minimum of 10 metres in all directions and is separated into Priority Zone 1a and 1b. Priority Zone 1a is the non-combustible zone 1.5 metres out from the structure and any attachments such as decks or porches. Priority Zone 1b is the area from 1.5 metres out to 10 metres from the structure.

FireSmart recommended guidelines recommend **removal or conversion** of all combustible wildland fuels with the objective to **create an environment that will not support any wildfire.**

FireSmart **Priority Zone 1** vegetation management options to reduce the wildfire threat to structures may include:

- **Removal** of all flammable forest vegetation in the immediate area of the structure and **reduction** of flammable forest vegetation away from the immediate area of the structure
- **Pruning** of all limbs to a minimum height of 2 metres from ground level on residual evergreen trees
- **Establishment** of a non-combustible surface cover around the structure **including removal of flammable ornamental landscaping species (e.g. juniper, mugo pine) and bark mulch**
- **Removal** of all dead and down forest vegetation
- **Removal** of all combustible material piles (firewood, lumber, etc.) within 10 metres of the structure
- Regular **maintenance** to ensure that all combustible needles and leaves are removed and annual grasses are mowed to less than 10 centimetres

**Priority Zones 2 and 3** are the areas beginning 10 metres from the structure and extending to 30 metres (Zone 2) and 100 metres or farther (Zone 3). FireSmart guidelines recommend **reduction** of combustible wildland fuels in Zones 2 and 3, based on hazard and risk, with the objective to **create an environment that will only support fires of lower intensity and rate of spread.**

Structures in forested areas should treat Zone 2 (10-30m) at a minimum while those structures with High/Extreme hazard levels resulting from heavy continuous evergreen forest and/or steep topography should be treated in Zones 2 and 3 (10-100m).

FireSmart **Priority Zone 2-3** vegetation management options include:

- **Thinning and/or removal** of flammable forest vegetation
- **Pruning** of all limbs to a minimum height of 2 metres from ground level on residual evergreen trees
- **Removal** of all dead and down forest vegetation from the forest floor
- Regular **maintenance** to ensure that all flammable regrowth, dead and down and dead standing are removed



## 4.1 Priority Zone 1

Some residents and condominium associations have become engaged in reducing the wildfire threat on and adjacent to their properties due to recent wildland/urban interface events in western Canada however, Priority Zone 1 vegetation management conducted by residents on their private lots has been minimal and should be considered as an implementation priority for the next five-year term.



**Inadequate Priority Zone 1 on Private Lands**

**Recommendation 1:** Increase FireSmart public education and awareness to improve resident implementation of FireSmart Priority Zone 1 fuel reduction standards. Residents in Silvertip, Benchlands Terrace, Eagle Terrace, Canyon Ridge, Peaks of Grassi, Homesteads/Prospects, Cairns on the Bow, Three Sisters Creek, Rundlevue and Alpine Club of Canada are priority areas.

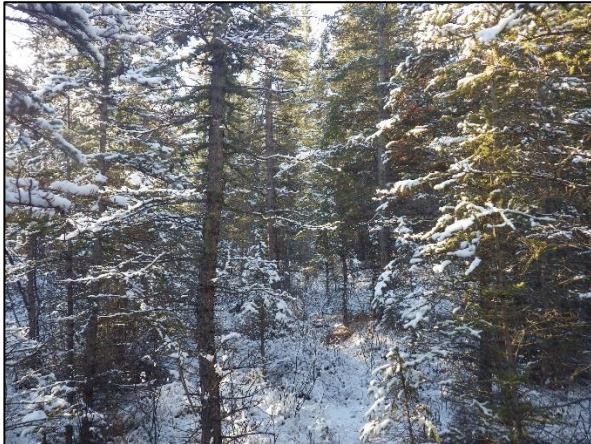
## 4.2 Priority Zones 2-3

### 4.2.1 Completed Vegetation Management

Since 2010, the Town of Canmore has completed several fuel reduction projects on Municipal and Provincial crown lands using grant and Town of Canmore funding, developers have completed fuel reduction within and adjacent to new and existing development areas, the Alberta Conservation Association has re-commenced fuel reduction on the Eagle Terrace wildlife corridor, and Kananaskis Improvement District has completed fuel reduction adjacent to the Town boundary in Canmore Nordic Centre Provincial Park (Map 3).

#### Completed Zone 2-3 Fuel Reduction – 2010-2017

Agency	Completed Area (Ha)			Totals
	Municipal Land	Provincial Land	Deeded Land	
Town of Canmore	50.5	72.1		122.6
Kananaskis Improvement District		2.4		2.4
Developers		2.7	6.3	9.0
Land Owners			3.8	3.8
<b>Totals</b>	<b>50.5</b>	<b>77.2</b>	<b>10.1</b>	<b>137.8</b>



2017 Waste Water Treatment Plant - Before



2017 Waste Water Treatment Plant - After



2016 Peaks of Grassi - Before



2016 Peaks of Grassi - After



## 4.2.2 Proposed Vegetation Management

Proposed vegetation management areas consist of new blocks and completed blocks that require second-pass thinning (Map 3).

New blocks have been identified on Municipal, Provincial, and deeded lands and include areas:

- identified in the previous plan but not yet completed
- to close openings in landscape and community-level fuelbreaks
- adjacent to high-extreme hazard developments that were not identified in the previous plan
- adjacent to developments with limited numbers of structures

Several of the completed fuel reduction projects were designed as a “two-pass removal” system to reduce blowdown potential with second-pass thinning proposed approximately 10 years after the first-pass to achieve the desired FireSmart objective.



“First-Pass” Thinning Completed – Peaks of Grassi 2015

**Proposed vegetation areas in this plan are conceptual at this time and require detailed field reconnaissance and prescription development prior to implementation.**

**Recommendation 2:** Complete proposed Zone 2-3 fuel reduction on Municipal and Provincial lands and begin second-pass thinning of the completed fuel reduction blocks.

**Recommendation 3:** Communicate and work cooperatively with private land-owners to have them complete Zone 2-3 vegetation management on deeded lands that present wildfire threat to developed areas.

### 4.3 Vegetation Management Maintenance

The Provincial government completed maintenance on the Canmore Nordic Centre West fuelbreak in 2014 and the Alberta Conservation Association completed maintenance on the Eagle Terrace wildlife corridor fuelbreak in 2015.



**2015 ACA Eagle Terrace Fuelbreak Maintenance In-Progress**

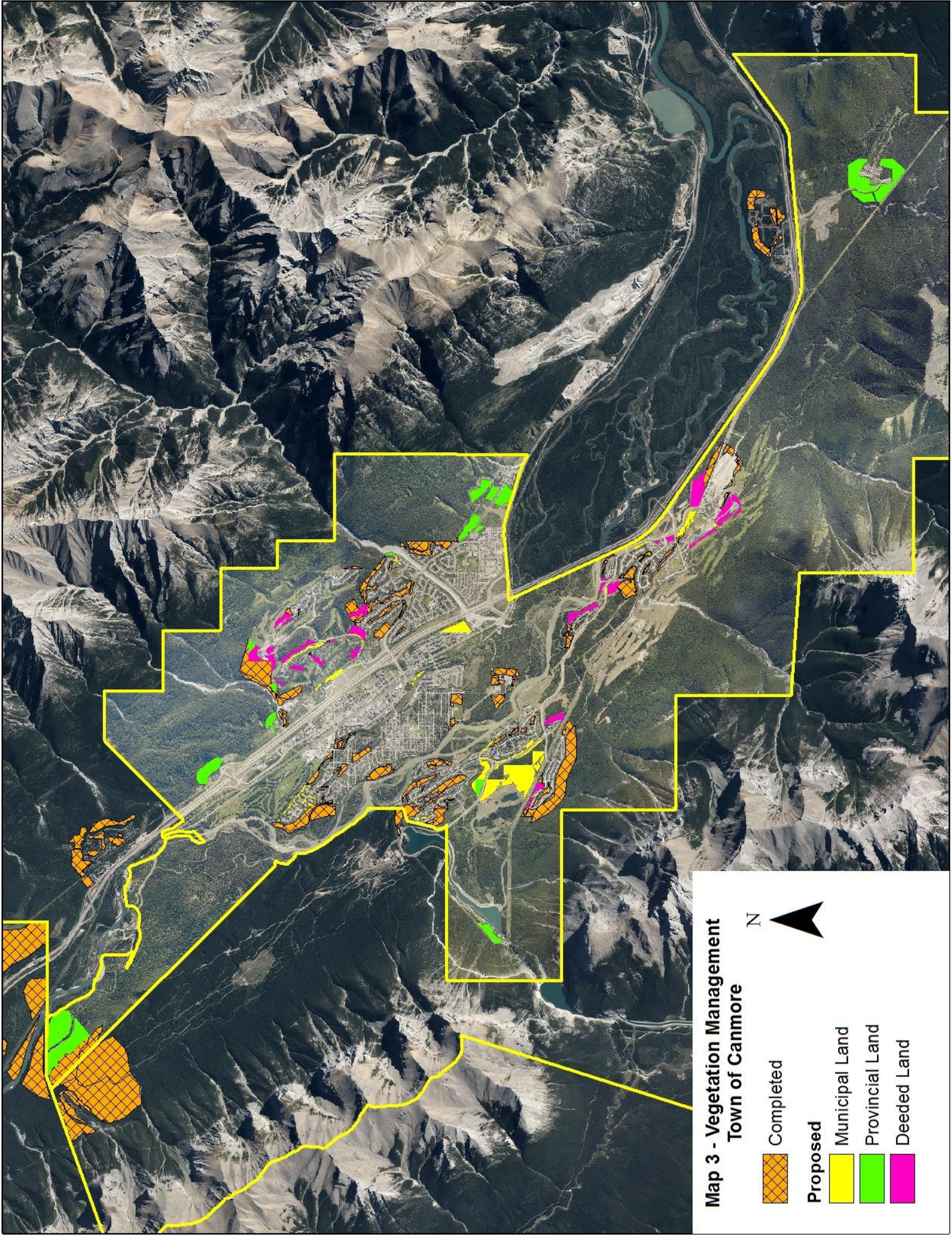
Many of the completed Town of Canmore fuel reduction blocks were completed between 10 and 15 years ago and require maintenance.



**2001 Fuelbreak Maintenance Needed**

**Recommendation 4:** Conduct inspections of all completed fuelbreaks and implement maintenance for those that require it.





**Map 3 - Vegetation Management  
Town of Canmore**



Completed

Proposed

Municipal Land

Provincial Land

Deeded Land



## 5. Development and Legislation Options

Consideration of wildfire at the development planning stage is encouraged to ensure that wildfire hazard is identified and the appropriate mitigation measures are implemented prior to and/or during development. FireSmart recommended guidelines for structural and infrastructure options may be implemented through developer and resident education and engagement and through adoption of development legislation and policy that recognizes FireSmart principles for new and existing developments.

Fire-resistant exterior structure products are becoming more common in interface community development and reduce the losses during interface wildfires (CAL-FIRE, 2011). The Fort McMurray (2016) wildfire provided excellent information on the need for fire-resistant exterior structure materials in interface communities to reduce the likelihood of structure ignition from airborne firebrands and/or radiant heat (Westhaver, 2017).

### 5.1 Exterior Structural Materials

The Town of Canmore Land Use Bylaw has required the use of fire-rated roofing materials since 1999. The impact of this on new development along with resident roof-replacements on existing structures has resulted in a significant reduction in the number of combustible roof structures since 2010.

The following Town of Canmore critical infrastructure facilities have combustible wood-shake roofing materials putting them at increased threat to airborne firebrand ignition.

- Benchlands Pumphouse 4
- Engine Bridge Pumphouse 3
- Canyon Ridge Pumphouse 5
- Elk Run Lift Station 6
- Palliser Trail Lift Station 7



**Town of Canmore Benchlands Pumphouse 4 with Combustible Wood-Shake Roof**

**Recommendation 5:** Replace combustible wood-shake roofing materials with ULC-rated roofing materials on all Town critical infrastructure facilities.



## 5.2 Development Legislation and Policy

The Town of Canmore Municipal Development Plan requires applicants for subdivision or development proposal to undertake and submit a Wildfire Risk Assessment with recommendations to reduce the wildfire hazard to the development. The MDP policy does not require applicants to implement the recommendations.

**Recommendation 6:** Revise the Municipal Development Plan and/or the Land Use Bylaw to require subdivision or development applicants to implement the recommendations in the Wildfire Risk Assessment.

Reduction of the ignition potential and combustibility of interface structures and immediately adjacent lands is critical to minimizing structure losses from interface wildfires. The Town of Canmore Land Use Bylaw is currently under revision and the Town is considering additional FireSmart development requirements.

**Recommendation 7:** Upgrade the FireSmart requirements in the revised Town of Canmore Land Use Bylaw to include fire-resistant siding and decking materials and Priority Zones 1-3 vegetation management for new development and consider regulation for retro-fits of existing structures in future Land Use Bylaw revisions.

The Town of Canmore Engineering Design and Construction Guidelines (2010) regulate infrastructure standards in future development areas. All standards within this document meet or exceed FireSmart recommended guidelines.

The Town of Canmore Construction and Landscaping Standards (2016) conflict with FireSmart recommended guidelines in the following locations:

- Section 6.9 provides several combustible non-FireSmart tree and shrub species as acceptable species for planting in the Town of Canmore
- Section 6.13 provides combustible bark and cedar chips as acceptable bed-cover materials

The Town, developers, and many residents and condominium associations are using bark mulch as bed-covers increasing the risk of ember ignition in close proximity to structures.



**Combustible Bark Mulch Landscaping**

**Recommendation 8:** Revise Section 6 of the Town of Canmore Construction & Landscaping Standards (2016) to meet FireSmart recommended guidelines related to acceptable plant species and the use of combustible bark mulch for landscaping.

## **6. Public Education & Engagement Options**

FireSmart public education and awareness are a key component to taking action. Residents, business owners, developers, and Town of Canmore administration and elected officials all need to be aware of the FireSmart hazard and the solutions to minimizing the risk and become a partner in implementation of FireSmart solutions in their own backyards and communities.

### **6.1 FireSmart Education and Awareness**

Recommendation 6 in the 2010 plan stated “The Town of Canmore should develop and implement a formal FireSmart communications strategy to identify key issues, target audiences, key messages, education methods and tools, timing, budget, and responsible agencies. One key component should focus on resident education regarding development and maintenance of FireSmart Priority Zone 1 standards immediately adjacent to homes.”

Since 2010, there has been minimal FireSmart public education and awareness initiatives to create resident engagement in the FireSmart program at the grassroots level.

### **6.2 Key Messages**

Key messages for residents may include:

- Use non-combustible roofing, siding, decking, and fencing materials for new structures or renovations of existing structures
- Skirt the undersides of your decks and porches to reduce the chances of fire getting underneath and ensure that decks greater than 2 metres from ground-level have a non-combustible surface cover underneath and surrounding for a minimum of 1.5 metres
- Priority Zones 1 and 2 are the most important areas for residents to conduct FireSmart vegetation management
  - Priority Zone 1 (0-10m from structure) should not support wildfire of any kind.
    - Use fire-resistant trees and shrubs and remove flammable species such as spruce, pine, juniper, and cedar
    - Have a non-combustible surface cover (irrigated/maintained lawn <10cm height, gravel, rock gardens)
    - Do not use bark mulch or wood chips for landscaping
    - Store all combustible firewood piles greater than 10m from the structure
    - Remove ground litter and dead/down and dead standing trees annually
  - Priority Zone 2 (10-30m from structure) should only support wildfires of lower intensity and rate of spread.
    - Thin or remove the spruce and pine trees
    - Prune limbs or residual spruce, pine, and fir trees up to 2m from ground-level
    - Provide annual maintenance of grass, ground litter, and dead/down and dead standing trees
- Call Town of Canmore Fire/Rescue to arrange for a FireSmart Hazard Assessment of your home and property



## 6.3 Communication Methods

The FireSmart public education program may be communicated in several ways including but not limited to:

- FireSmart home hazard assessments for residents
- Identify candidate neighborhoods for the FireSmart Canada Community Recognition Program and assist them through the process to become recognized
- Presentations to stakeholder groups (BOWDA, Condo Associations, Town staff)
- Newspaper articles
- FireSmart Canada public education materials displayed at the Town of Canmore Civic Centre front desk
- Development of a FireSmart tab on the Town of Canmore website

**Recommendation 9:** Professional development of a focused, repetitive, long-term FireSmart education and awareness program should be set as a high priority to ensure that residents are aware of options available to reduce the hazard and risk to their properties and are engaged and assisted to take action in their own backyards.

## 7. Inter-Agency Cooperation and Cross-Training Options

Interagency cooperation and cross-training between all stakeholders is necessary to ensure cooperative and effective implementation of FireSmart mitigation options and to coordinate an effective multi-agency response to a wildland/urban interface fire.

### 7.1 Interagency Cooperation

The Town of Canmore and Alberta Wildfire Management continue to hold a Mutual-aid Wildfire Agreement with each other to assist each other with wildfire response, prevention, and cross-training activities.

### 7.2 Cross-Training

Since 2010, the Town of Canmore has provided participants to the following cross-training opportunities:

- Wildland Fire Fighter (NFPA 1051)
- Fire Operations in the Wildland/Urban Interface (S-215)
- Sprinkler Workshop
- Incident Command System (ICS-100 to 400)
- Emergency Coordination Centre Workshops
- Emergency Management Exercises

The Office of the Fire Commissioner is currently developing a wildland/urban interface training curriculum for municipal fire services personnel responding to interface wildfires within their jurisdiction or providing mutual-aid assistance to others that would directly apply to Canmore Fire/Rescue.

**Recommendation 10:** Canmore Fire/Rescue should increase the wildland/urban interface cross-training based on the Extreme wildfire behaviour potential and high values at risk in the Town of Canmore and the future need for Provincial response assistance to other communities impacted by wildland/urban interface fires.

## 8. Emergency Planning Options

Emergency preparedness is an important part of any disaster planning. The need for organization, clear chain of command, and an understanding of job responsibilities during a wildland/urban interface fire are of paramount importance.

### 8.1 Municipal Emergency Management Plan

The Town of Canmore Municipal Emergency Management Plan was updated in 2016 using the incident command system model and includes wildfire in the hazard-specific action plan section. The Town emergency management team has performed a functional Emergency Coordination Centre exercise for a wildland/urban interface fire within the Town.

The Town of Canmore Evacuation Plan (2016) is designed to assist Town emergency management personnel implement an orderly evacuation of portions or all of the Town.

### 8.2 Wildfire Preparedness Guide

The Town of Canmore Wildfire Preparedness Guide was built in 2011 and has been updated in 2018.

**Recommendation 11:** Continue to conduct regular table-top, functional, and field exercises to test emergency management preparedness for a wildland/urban interface fire including the Site and ECC using the Wildfire Preparedness Guide, Municipal Emergency Management Plan, and Evacuation Plan.

### 8.3 Structure Protection Equipment

The Town currently does not have any structure protection equipment for quick deployment on a wildland/urban interface fire. A structure protection trailer with sprinklers, pumps, hose, and appliances would improve structure protection response effectiveness.

**Recommendation 12:** Design and build a Structure Protection trailer with sprinklers, pumps, hose, and appliances to improve response effectiveness to interface wildfires in Canmore.



## 9 Implementation Plan

### Vegetation Management

Item	Recommendation	Responsible Agency
<b>Priority Zone 1</b>	<b>Recommendation 1:</b> Increase FireSmart public education and awareness to improve resident implementation of FireSmart Priority Zone 1 fuel reduction standards. Residents in Silvertip, Benchlands Terrace, Eagle Terrace, Canyon Ridge, Peaks of Grassi, Homesteads/Prospects, Cairns on the Bow, Three Sisters Creek, and Rundlevue are priority areas.	Town of Canmore
<b>Priority Zone 2-3</b>	<b>Recommendation 2:</b> Complete proposed Zone 2-3 fuel reduction on Municipal and Provincial lands and begin second-pass thinning of the completed fuel reduction blocks.	Town of Canmore AB. Wildfire Mgt.
	<b>Recommendation 3:</b> Communicate and work cooperatively with private land-owners to have them complete Zone 2-3 vegetation management on deeded lands that present wildfire threat to developed areas.	Town of Canmore Developers/Land owners
<b>Vegetation Management Maintenance</b>	<b>Recommendation 4:</b> Conduct inspections of all completed fuelbreaks and implement maintenance for those that require it.	Town of Canmore AB. Wildfire Mgt.

## Development & Legislation

Item	Recommendation	Responsible Agency
<b>Structural Materials</b>	<b>Recommendation 5:</b> Replace combustible wood-shake roofing materials with ULC-rated roofing materials on all Town critical infrastructure facilities.	Town of Canmore
<b>Development Legislation &amp; Policy</b>	<b>Recommendation 6:</b> Revise the Municipal Development Plan and/or the Land Use Bylaw to require subdivision or development applicants to implement the recommendations in the Wildfire Risk Assessment.	Town of Canmore
	<b>Recommendation 7:</b> Upgrade the FireSmart requirements in the revised Town of Canmore Land Use Bylaw to include fire-resistant siding and decking materials and Priority Zones 1-3 vegetation management for new development and consider regulation for retro-fits of existing structures in future Land Use Bylaw revisions.	Town of Canmore
	<b>Recommendation 8:</b> Revise Section 6 of the Town of Canmore Construction & Landscaping Standards (2016) to meet FireSmart recommended guidelines related to acceptable plant species and the use of combustible bark mulch for landscaping.	Town of Canmore

## Public Education & Engagement

Item	Recommendation	Responsible Agency
<b>Public Education Program</b>	<b>Recommendation 9:</b> Professional development of a focused, repetitive, long-term FireSmart education and awareness program should be set as a high priority to ensure that residents are aware of options available to reduce the hazard and risk to their properties and are engaged and assisted to take action in their own backyards.	Town of Canmore

### Interagency Cooperation & Cross-Training

Item	Recommendation	Responsible Agency
<b>Cross-Training</b>	<b>Recommendation 10:</b> Canmore Fire/Rescue should increase the wildland/urban interface cross-training based on the Extreme wildfire behaviour potential and high values at risk in the Town of Canmore and the future need for Provincial response assistance to other communities impacted by wildland/urban interface fires.	Town of Canmore

### Emergency Planning

Item	Recommendation	Responsible Agency
<b>Emergency Exercises</b>	<b>Recommendation 11:</b> Continue to conduct regular table-top, functional, and field exercises to test emergency management preparedness for a wildland/urban interface fire including the Site and ECC using the Wildfire Preparedness Guide, Municipal Emergency Management Plan, and Evacuation Plan.	Town of Canmore
<b>Structure Protection Equipment</b>	<b>Recommendation 12:</b> Design and build a Structure Protection trailer with sprinklers, pumps, hose, and appliances to improve response effectiveness to interface wildfires in Canmore.	Town of Canmore



## 10 References

- Beverly, J.L. et.al., 2010. Assessing Exposure of the Built Environment to Potential Ignition Sources Generated from Vegetative Fuel. *International Journal of Wildland Fire*. Vol. 19, Issue 3, pp 299-313.
- CAL-FIRE, 2011. Wildland Urban Interface (WUI) Products. California Department of Forestry and Fire Protection, Office of the State Fire Marshal, Sacramento, CA.
- PIP. 2017. FireSmart Home Development Guide. Partners in Protection and the Cooperators, Edmonton, AB.
- PIP. 2003. FireSmart – Protecting Your Community from Wildfire. Partners in Protection, Edmonton, AB.
- Podur, J., Wotton, M. 2011. Defining Fire Spread Event Days for Fire-Growth Modelling. *International Journal of Wildland Fire* 2011, 20, Clayton, Australia.
- Taylor, S.W.; Pike, R.G.; Alexander, M.E. 1997. Field Guide to the Canadian Forest Fire Behaviour Prediction (FBP) System. Canadian Forest Service, Edmonton, AB.
- Westhaver, A. 2017. Why Some Homes Survived: Learning from the Fort McMurray Wildland/Urban Interface Fire Disaster, ICLR Research Paper Series Number 56. Institute for Catastrophic Loss Reduction, Toronto, ON.