Town of Canmore

FireSmart Mitigation Strategy

Prepared for:

CANMORE™

December 2010

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1 Introduction

The Town of Canmore, in cooperation with Alberta Sustainable Resource Development (SRD), the MD of Bighorn, and Parks Canada recognized the threat of wildfire to development in the Bow Valley and developed the Bow Valley Wildland/Urban Interface Plan (Walkinshaw, 2000). The plan identified interface hazard and risk and recommended mitigative options based on the seven disciplines of wildland/urban interface. The plan has guided the FireSmart program in the Bow Valley over the past decade however due to high growth rates and increased development and progress in FireSmart initiatives, the Town of Canmore has identified the need to revise the plan based on current interface hazard and risk.

The intent of the Town of Canmore FireSmart Mitigation Strategy is to:

- Update the FireSmart hazard and risk assessment.
- Review FireSmart mitigation progress over the past ten years.
- Develop priority FireSmart mitigation options based on the updated FireSmart hazard and risk assessment, existing FireSmart program progress, and future development plans.

2 Planning Area and Stakeholders

The planning area includes all lands within the Town of Canmore boundary (Map 1). Land ownership within the Town includes private deeded, crown, and municipal lands. Alberta Tourism, Parks & Recreation manages significant forested parcels of land as Bow Valley Wildland Provincial Park within the Town of Canmore.

The Town has been divided into the following development areas, based on the Canmore Community Preparedness Planning Zones boundaries.

- Palliser
- Silvertip Stone Creek
- Silvertip Little Ravine
- Benchlands Terrace
- Eagle Terrace
- Cougar Point
- Cougar Creek
- Canyon Ridge
- Avens
- Grotto Mountain Village
- Elk Run Industrial Park
- Bow Meadows Industrial Park
- Larch
- Lion's Park
- Fairholm
- Spring Creek
- Industrial Place
- Aspen
- Gateway
- Town Centre
- South Canmore
- Riverside
- Spring Creek Mountain Village
- North Bow Valley Trail
- Central Bow Valley Trail
- South Bow Valley Trail
- Teepee Town
- Rundle
- Mineside
- Rundleview
- Prospects
- Homesteads
- Peaks of Grassi
- Cairns
- Three Sisters Creek
- Three Sisters Ridge
- East
    - Harvie Heights Rgr Stn
    - Cross-Zee Ranch
    - Silvertip Golf Course
    - Alpine Club
- Central
    - Canmore Golf Course, Recreation Centre, & High School
    - WW Treatment Plant
    - Canmore Ranch
    - Rural dwelling
- West
    - Rundle Forebay Housing
    - Spray Hydro Plant
    - Rundle Hydro Plant
- South
    - TS Water Reservoir
    - Stewart Cr. Golf Course
    - Banff Mtn Gate Lodge
    - Thunderstone Quarry

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

Banff National Park

West

East

Central

East

MD Bighorn No. 8

West

Central

South

Kananaskis
Improvement District

South

Map 1 - Planning Area
Town of Canmore
FireSmart Mitigation Strategy

- Town of Canmore Boundary
- Development Area Boundary
- MD8/KID/BNP Boundary
- Parks & Protected Areas

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3 Hazard & Risk Assessment

The hazard and risk assessment process analyses the risk of wildfire ignition through analysis of fire incidence, the wildfire behavior potential through analysis of fuels and weather data, and the values at risk to wildfire through FireSmart hazard assessments.

3.1 Wildfire Ignition Potential

The assessment of recent fire history was completed using the Sustainable Resource Development (SRD) provincial wildfire database for the twenty-year period from 1990 to 2009 and a review of the Town of Canmore Fire & EMS response reports for an eight year period from 2002 to 2009 within the Bow Valley from the Banff National Park boundary to Lac Des Arcs.

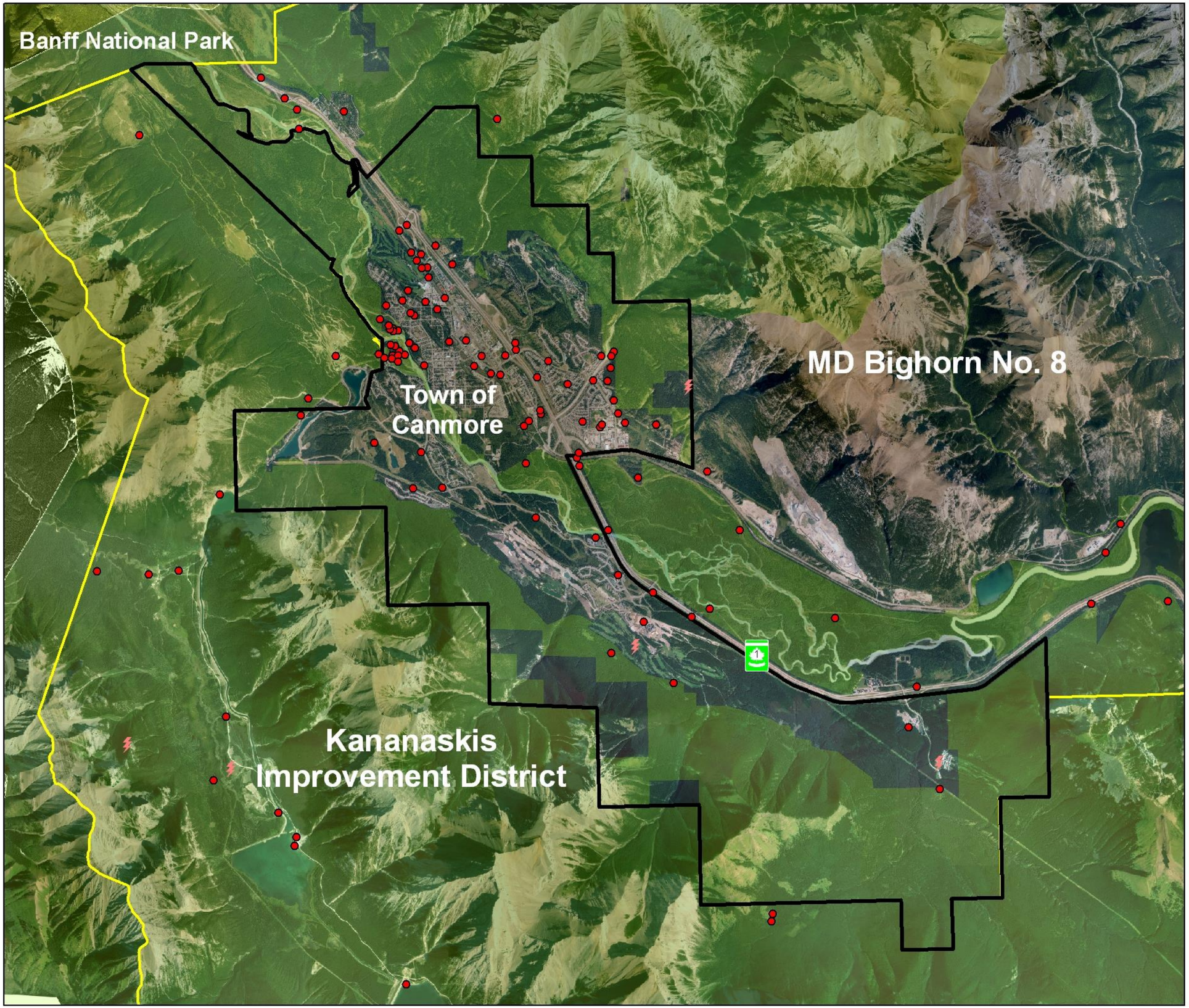
The wildfire incidence analysis (Table 1) indicates that fire agencies responded to 119 wildfires (Map 2) and 97.5% are human-caused and less than 0.1 hectares in size. Common fire causes include abandoned campfires, railroad, and discarded burning materials along roadways.

Table 1: 20-Year Fire Incidence by Cause

General Cause	Number of Fires	Percent of Total
Human-Caused	116	97.5
Lightning-Caused	3	2.5
Totals	**119**	**100.0**

Areas of high wildfire incidence include Larch and Engine Bridge Islands, the TransCanada and 1A highway corridors, the Canadian Pacific Railroad right-of-way, and the Cougar Creek area. Small wildfires have been found in many of the forested municipal and environmental reserve areas within the Town. There have also been two significant structure fires in condominiums under construction that have spread to the surrounding wildland fuels. Both were during periods of low hazard thus spread was not significant however could have resulted in significant spread under higher hazard conditions.

The risk of wildfire in the planning area is High and most frequently occurs on the Larch and Engine Bridge Islands, highway and railroad corridors, and MR/ER areas within the Town.



Map 2 - Wildfire Incidence 1990 - 2009 Town of Canmore FireSmart Mitigation Strategy

Wildfire General Cause

- Human-Caused
- Lightning-Caused

- Town of Canmore Boundary
- MD8/KID/BNP Boundary
- Parks & Protected Areas

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3.2 Wildfire Behavior Potential

3.2.1 Wildland Fuel Types

Wildland fuel types were determined using Alberta Vegetation Inventory (AVI) data processed into Fire Behavior Prediction (FBP) fuel types using AVI2FBP software (Figure 1). Revisions to the fuel types were made based on ground-truthing and ortho-image analysis to account for clearings and fuel reductions since the AVI layer was developed.

The planning area is dominated with mature fire-origin coniferous fuel types resulting in significant High/Extreme hazard level areas. The valley bottom is dominated with mature spruce, mid-slope with mature pine and Douglas fir, and upper slopes with open coniferous fuel types.

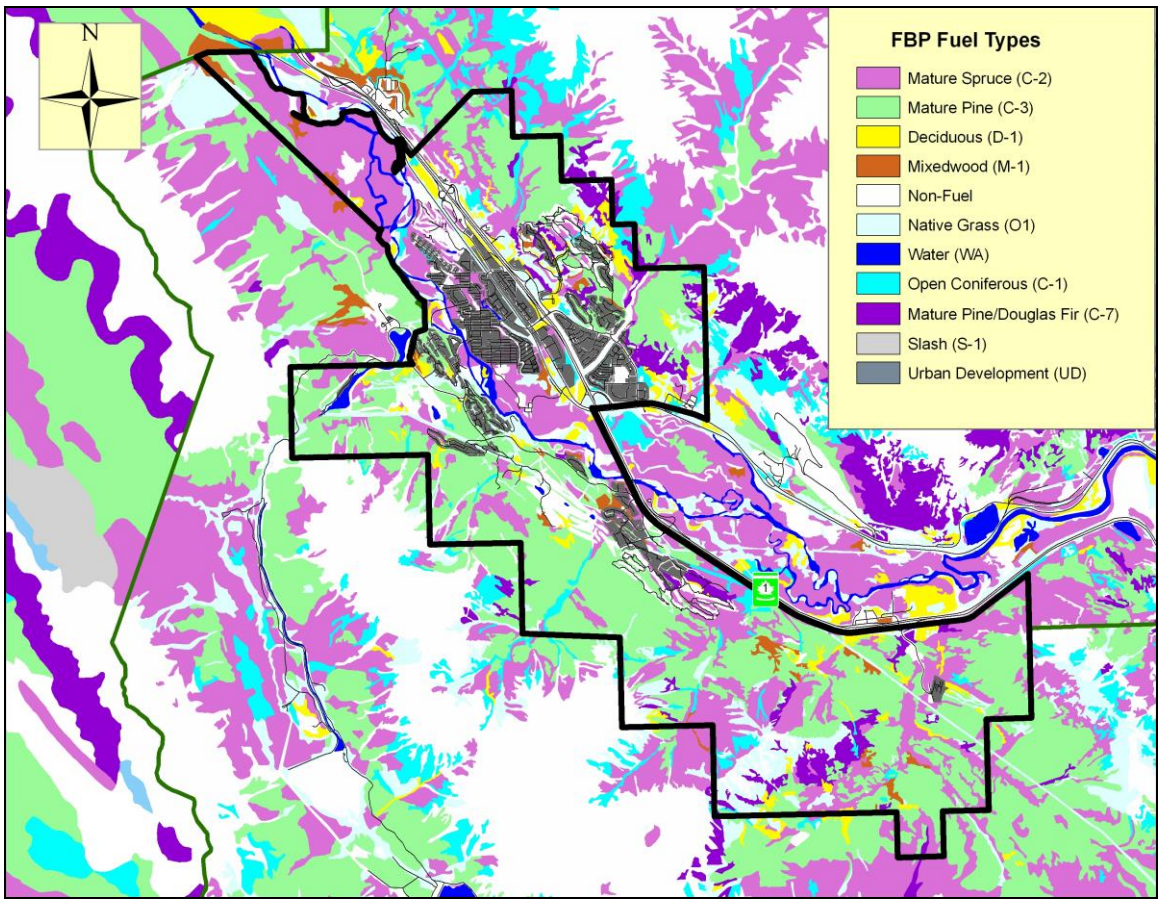


Figure 1 – FBP Fuel Types

3.2.2 Fire Weather Analysis

Ten years of historical fire weather (2000 - 2009) from the Bow Valley weather station and three years of wind data from the Deadman's Flats weather station were used to determine critical burning days and predominant wind speeds and directions.

Critical burning days are defined as those with a Fire Weather Index (FWI) greater than 14 and/or an Initial Spread Index (ISI) greater than 11. Data indicates that from a total of 2010 total days of fire weather calculations, 32.5% (654 days) had an FWI value equal to or greater than 14 and 11.7% (235 days) had an FWI greater than or equal to 14 and an ISI greater than or equal to 11.

Analysis of wind direction from the Deadman's Flats weather station (2007 – 2009) indicates that the predominant wind directions and strongest winds are from the S and SW. Predominant wind direction at Bow Valley (2000 – 2009) on critical burning days is S and SW and wind speeds are much higher than at Deadman's Flats (Figure 2).

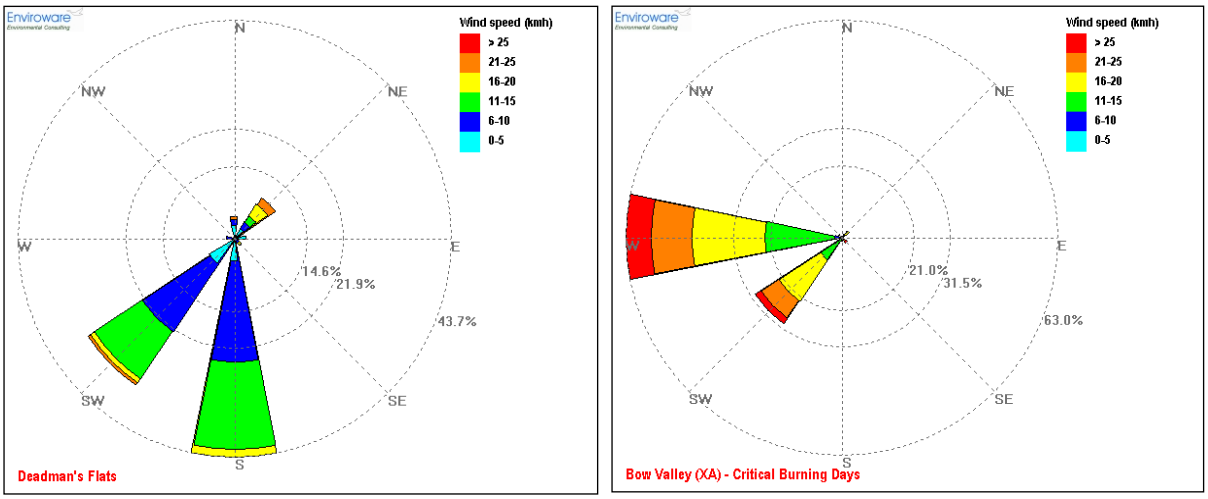


Figure 2 – Deadman's Flats and Bow Valley Windroses

Fire weather data indicates that the potential for extreme wildfire behavior exists in the Bow Valley.

3.3 FireSmart Hazard Assessment

FireSmart hazard assessments were conducted on developments and adjacent wildland fuel types within the planning area. The FireSmart hazard assessment process evaluates wildland and structural fuel types, structural features, and topography within and adjacent to the development area to consistently quantify the wildland/urban interface hazards within the planning area and to help set priorities for mitigative options.

FireSmart Structure/Site hazard assessments were applied to each of the development areas. A range of hazard levels are present in each area based on structural and wildland fuel types, structural features, and topography therefore average hazard level and the ranges are presented for each development area. Development areas with the highest overall wildland/urban interface hazard levels include (Table 3 and Map 3):

- Silvertip Little Ravine
- Benchlands Terrace
- Canyon Ridge
- Rundleview
- Mineside
- Peaks of Grassi
- Larch
- Cairns
- Wind Valley
- Spring Creek
- Larch
- Lion's Park
- Homesteads
- Cougar Point

Corresponding FireSmart Area hazard levels are applied to each of the adjacent fuel types (Table 2 and Map 3) to quantify hazard adjacent to existing development or to evaluate potential hazard for new developments.

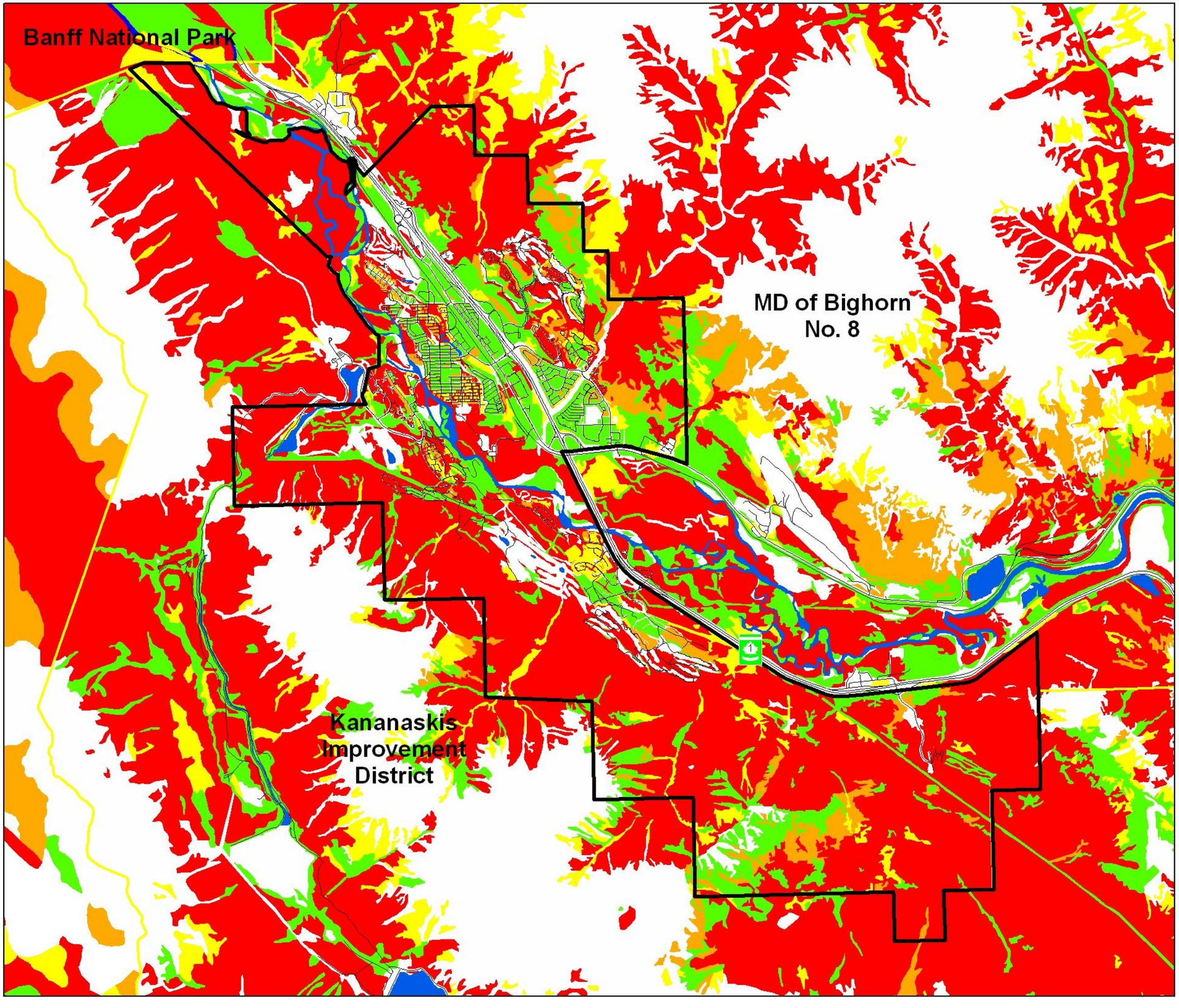
Table 2: FBP Fuel Type and FireSmart Area Hazard Levels

FBP Fuel Type	**FireSmart Area Hazard Level**
Mature Pine (C-3)	Extreme
Mature Spruce (C-2)	Extreme
Mature Pine/Douglas Fir (C-7)	High
Open Coniferous (C-1)	Moderate
Mixedwood (M-1)	Moderate
Deciduous (D-1)	Low
Cured Grass (O1)	Low

Table 3: Average FireSmart Structure/Site Hazard Levels by Development Area

Development Area	FireSmart Hazard Level	
	Average	Range
Silvertip Little Ravine	Extreme	Extreme
Benchlands Terrace	Extreme	High - Extreme
Canyon Ridge	Extreme	Low - Extreme
Rundleview	Extreme	Moderate - Extreme
Mineside	Extreme	Low - Extreme
Peaks of Grassi	Extreme	Low - Extreme
Cairns	Extreme	Extreme
Wind Valley	Extreme	Extreme
Spring Creek	Extreme	Moderate - Extreme
Larch	High	Low - Extreme
Lion's Park	High	Low - Extreme
Cougar Point	High	Low - High
Homesteads	High	Low - Extreme
Palliser	Moderate	Low - High
Silvertip Stone Creek	Moderate	Low - Extreme
Eagle Terrace	Moderate	Low - Extreme
Aspen	Moderate	Low - Extreme
South Canmore	Moderate	Low - Extreme
Riverside	Moderate	Low - Extreme
Rundle	Moderate	Low - Extreme
Prospects	Moderate	Low - Extreme
Three Sisters Creek	Moderate	Low - High
Cougar Creek	Low	Low - High
Avens	Low	Low - High
Grotto Mountain Village	Low	Low
Elk Run Industrial Park	Low	Low - High
Bow Meadows Industrial Park	Low	Low - Moderate
Fairholm	Low	Low - Extreme
Industrial Place	Low	Low
Gateway	Low	Low - Extreme
Town Centre	Low	Low - High
Spring Creek Mtn. Village	Low	Low - Extreme
North Bow Valley Trail	Low	Low - Extreme
Central Bow Valley Trail	Low	Low - High
South Bow Valley Trail	Low	Low - Extreme
Teepee Town	Low	Low - High
Three Sisters Ridge	Low	Low - Moderate

FireSmart hazard is High/Extreme in many development areas, both at the interface with the forested areas and in the intermix. The threat of structure loss to wildland/urban interface fire within the Town of Canmore is significant.



Map 3 - FireSmart Hazard
Town of Canmore
FireSmart Mitigation Strategy

FireSmart Hazard Level

- Low
- Moderate
- High
- Extreme
- Non-Fuel

- Town of Canmore Boundary
- MD8/KID/BNP Boundary

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4 FireSmart Mitigation Options

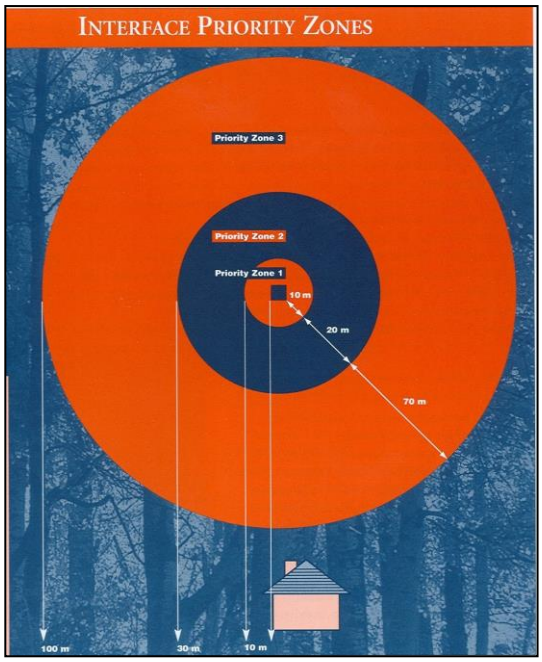
Development of a FireSmart community is achieved through implementation of a **combination** of mitigation options using the seven-disciplines of wildland/urban interface:

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

Options and recommendations are offered for each of the seven disciplines to reduce the threat of wildfire to development within the planning area.

4.1 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 at the appropriate scale, based on hazard and risk, to reduce the threat of wildfire to developed areas. While fuel modification projects reduce the threat of wildfire to developments, they do not ensure structure survival under all hazard conditions.



Vegetation management consists of one or any combination of the following options:

- Fuel removal
- Fuel reduction
- Species conversion

Complete descriptions of the methods included in each of the above options are included in *"Fire-Smart Protecting Your Community from Wildfire"* (PIP 2003).

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.

4.1.1 Existing Vegetation Management

Fuels reduction projects have been completed by the Town of Canmore, developers/landowners, and Sustainable Resource Development in several locations (Table 4 and Map 4) within the planning area based on recommendations made in the Bow Corridor Wildland/Urban Interface Plan (Walkinshaw, 2000) and in Wildfire Risk Assessments prepared by developers for subdivision approval.

Table 4: Existing Fuels Management Areas

Name	Agency	Comments
Canmore Nordic Centre West	SRD	Inspection & maintenance required
Eagle Terrace MR/ER's	Developer	Inspection & maintenance required
Eagle Terrace Wildlife Corridor	Landowner	Maintenance required
Canyon Ridge	Town of Canmore	
Three Sisters Creek	Developer	Maintenance required
Cairns	Developer	

The Canmore Nordic Centre West and Carrot Creek fuelbreaks have been completed by SRD/TPR and Parks Canada to provide a valley-wide fuelbreak at the East Park boundary. Maintenance of the CNC West fuelbreak is required to reduce the dead and down woody material.

CNC West and Carrot Creek Fuelbreaks (May/2010)

Eagle Terrace, Stone Creek Properties, and Three Sisters Mountain Village have completed fuels reduction in areas immediately adjacent to developments. Many of these areas have become Municipal or Environmental reserves and are now the responsibility of the Town of Canmore for inspection and maintenance.

The Rocky Mountain Elk Foundation completed fuels reduction in 2002 in the Conservation Easement behind Eagle Terrace Phases 4 and 5. Wind events over the past several years have resulted in heavy blowdown in fuel modified and other areas of the

easement that are creating significant wildfire hazard to structures in Eagle Terrace and Silvertip Stone Creek development areas. Priority maintenance is required by the new landowner, the Alberta Conservation Association.

Eagle Terrace Wildlife Corridor Fuels Reduction Area (July/2010)

The Town of Canmore completed fuels reduction in 2008 in the MR/ER and Provincial Park lands adjacent to Canyon Ridge development area. Removal of juniper shrubs is still required to complete this prescription. Ongoing monitoring and maintenance will be required.

Canyon Ridge Fuels Reduction Area (August/2010)

Recommendation 1: Ensure that all fuel modification projects are completed, inspected on a regular basis, and maintained as necessary.

The CNC West and Eagle Terrace Wildlife Corridor fuelbreaks require immediate maintenance.

The Canyon Ridge fuelbreak requires removal of juniper shrubs to complete the project.

4.1.2 Proposed Vegetation Management

4.1.2.1 Zone 1

Zone 1 vegetation management is lacking in many areas due to the desire to have native vegetation and landscaping on residential lots. Homes in Silvertip, Benchlands Terrace, Canyon Ridge, Peaks of Grassi, Cairns, and Rundleview commonly have inadequate Zone 1 defensible space, increasing the threat of wildfire to those areas.

FireSmart Zone 1 vegetation management options include:

- Removal of flammable forest vegetation within 10 metres of structures.
- Removal of all coniferous ladder fuels (limbs) to a minimum height of 2 metres from ground level on residual overstory trees.
- Removal of all dead and down forest vegetation from the forest floor.
- Increased maintenance to ensure that all combustible needles, leaves, and native grass are removed from on and around structures.
- Establishment and maintenance of a non-combustible surface cover around the structure including the use of FireSmart landscaping species.
- Removal of all combustible material piles (firewood, lumber, etc) within 10 metres of the structure.

For more information on FireSmart Zone 1 standards refer to *FireSmart – Protecting Your Community from Wildfire* (PIP 2003).

Recommendation 2: Public education on acceptable FireSmart Zone 1 standards are recommended for all residents and in particular for residents located in the following development areas:

- Silvertip
- Benchlands Terrace
- Canyon Ridge
- Peaks of Grassi
- Cairns
- Rundleview

4.1.2.2 Zone 2-3

Zone 2-3 vegetation management is the responsibility of the Town of Canmore on MR and ER lands, the Provincial Government (TPR and SRD) on crown lands, and landowners and developers on deeded lands.

Zone 2-3 vegetation management is proposed in several areas surrounding development areas (Table 5 and Map 4). Fuels reduction projects have been prioritized into Priority A or B, based on FireSmart hazard and risk and the following criteria:

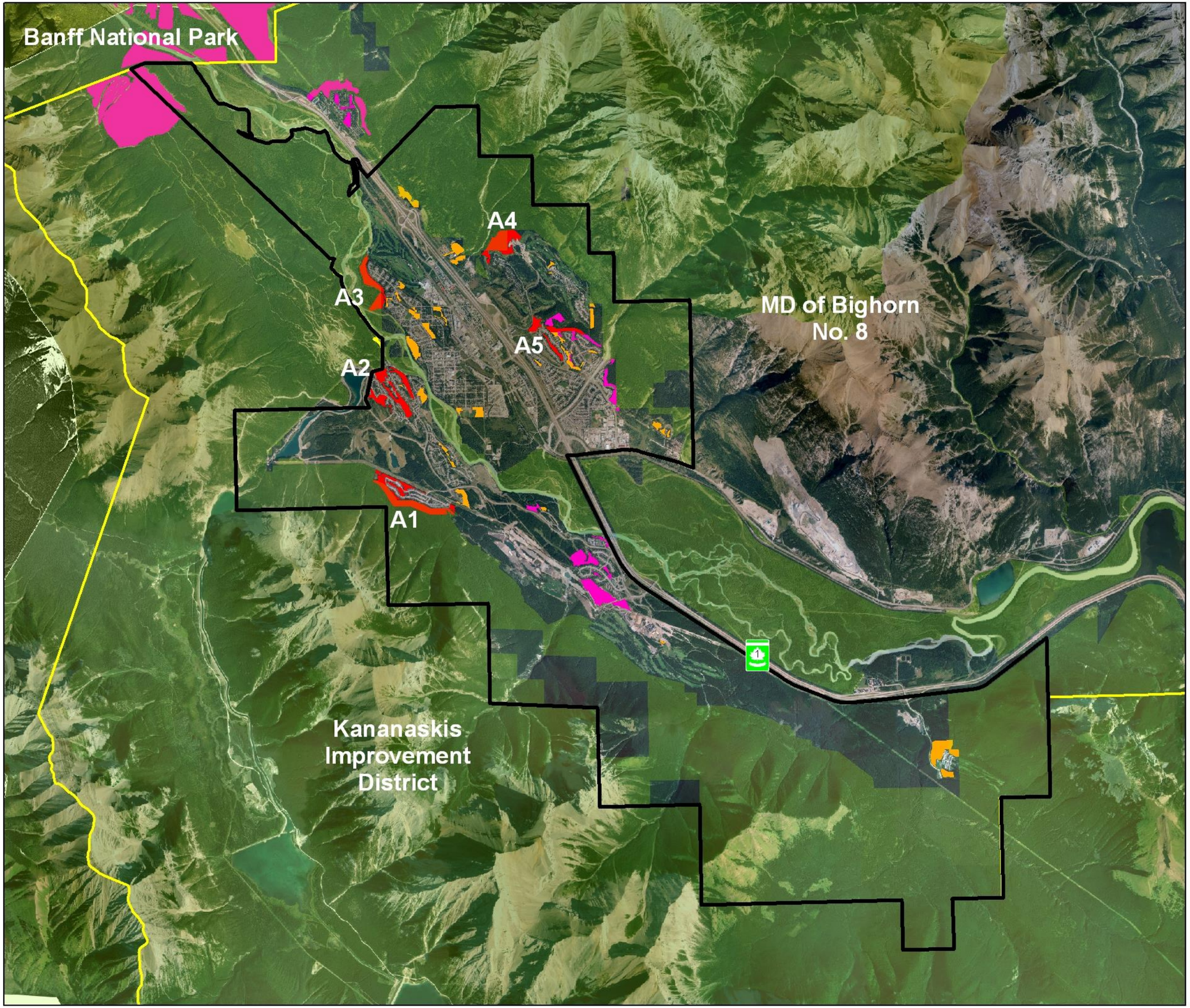
Priority A	Units on the perimeter of or within developed areas with the potential for landscape-level wildfire impingement and significant structure loss
Priority B	Units within developed areas with the potential to support localized wildfire and structure loss

Fuels reduction polygons identified in this plan are conceptual at this time. ***Detailed fuel modification planning is required prior to implementation to identify land management authority and responsibility, fuels management prescription, unit boundaries, and ensure that all stakeholder needs are considered in the project.***

Table 5: Proposed Priority A Vegetation Management Areas

Priority	Name	Area (ha)	Responsibility
A1	Peaks of Grassi	21.5	AB. Tourism, Parks & Recreation Developer Town of Canmore
A2	Rundleview/Mineside	16.0	Town of Canmore AB. Sustainable Resource Development
A3	Larch Islands	11.5	AB. Tourism, Parks & Recreation AB. Sustainable Resource Development Town of Canmore
A4	Silvertip	14.7	AB. Tourism, Parks & Recreation Developer
A5	Benchlands/Eagle Terrace	8.7	Town of Canmore Developer Alberta Conservation Association

Recommendation 3: Zone 2-3 fuels reduction is the responsibility of the Town of Canmore, developers/landowners, and the Provincial Government (SRD/TPR). All stakeholders should implement fuels reduction based on the priorities identified in this plan.



Map 4 - Fuel Modification Priorities
Town of Canmore
FireSmart Mitigation Strategy

Fuel Modification

- Existing
- Proposed - Priority A
- Proposed - Priority B

- Town of Canmore Boundary
- MD8/KID/BNP Boundary
- Parks & Protected Areas

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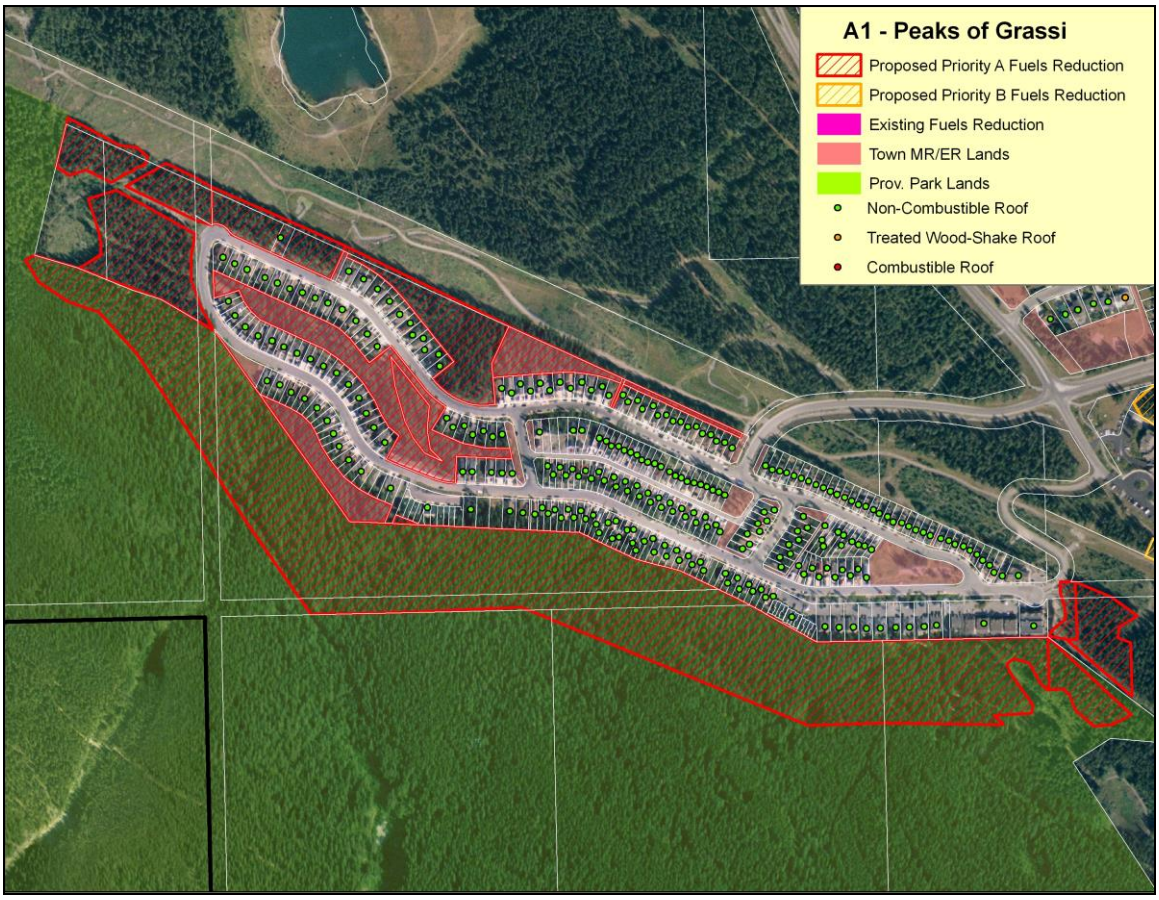
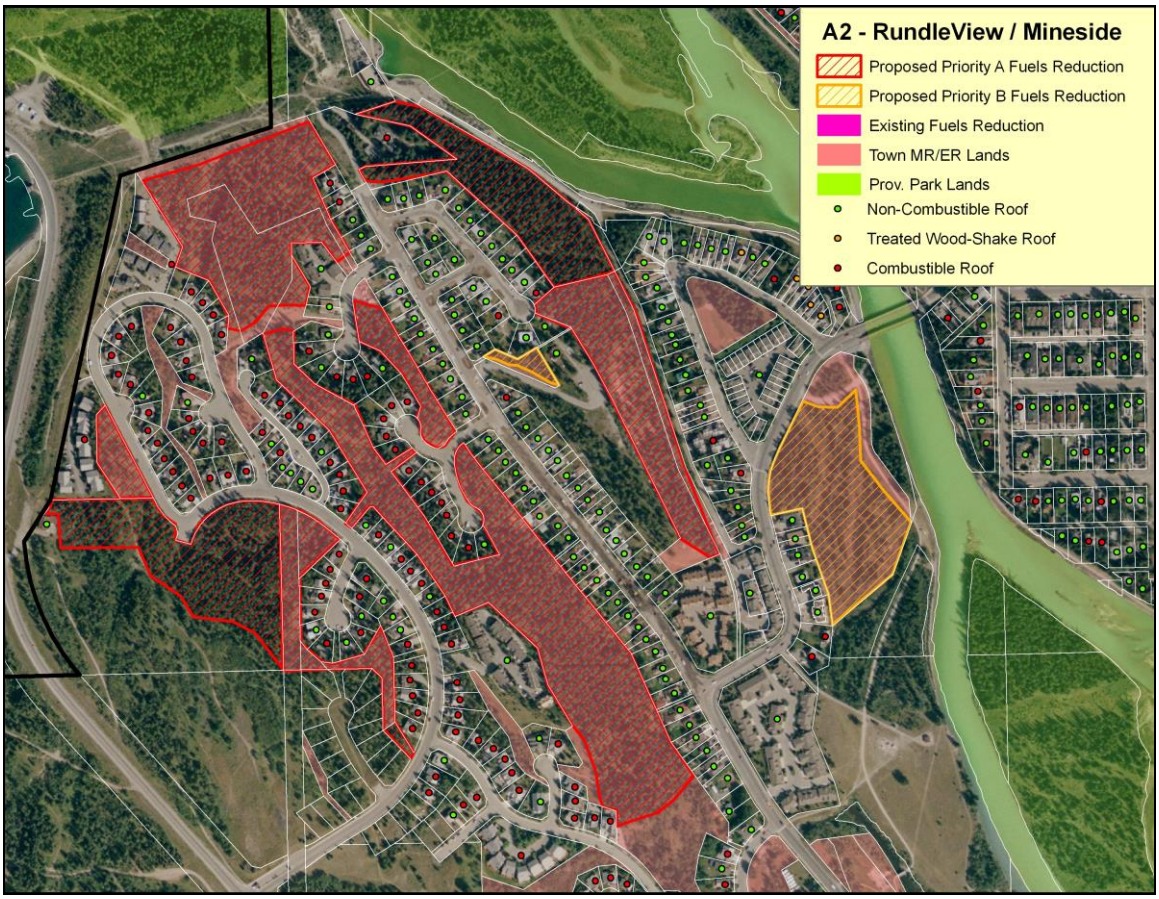
A1 – Peaks of Grassi

This 21.5 hectare unit is primarily on lands administered by AB. Tourism, Parks & Recreation with lesser amounts in deeded developer and Town of Canmore MR/ER lands. Detailed fuels reduction planning has been completed for this unit proposing hand-removal of advanced growth understory and dead and down material. The risk of wildfire under northwest or southeast winds in the spruce/pine fuels surrounding the community and the density of development make this a high priority unit.



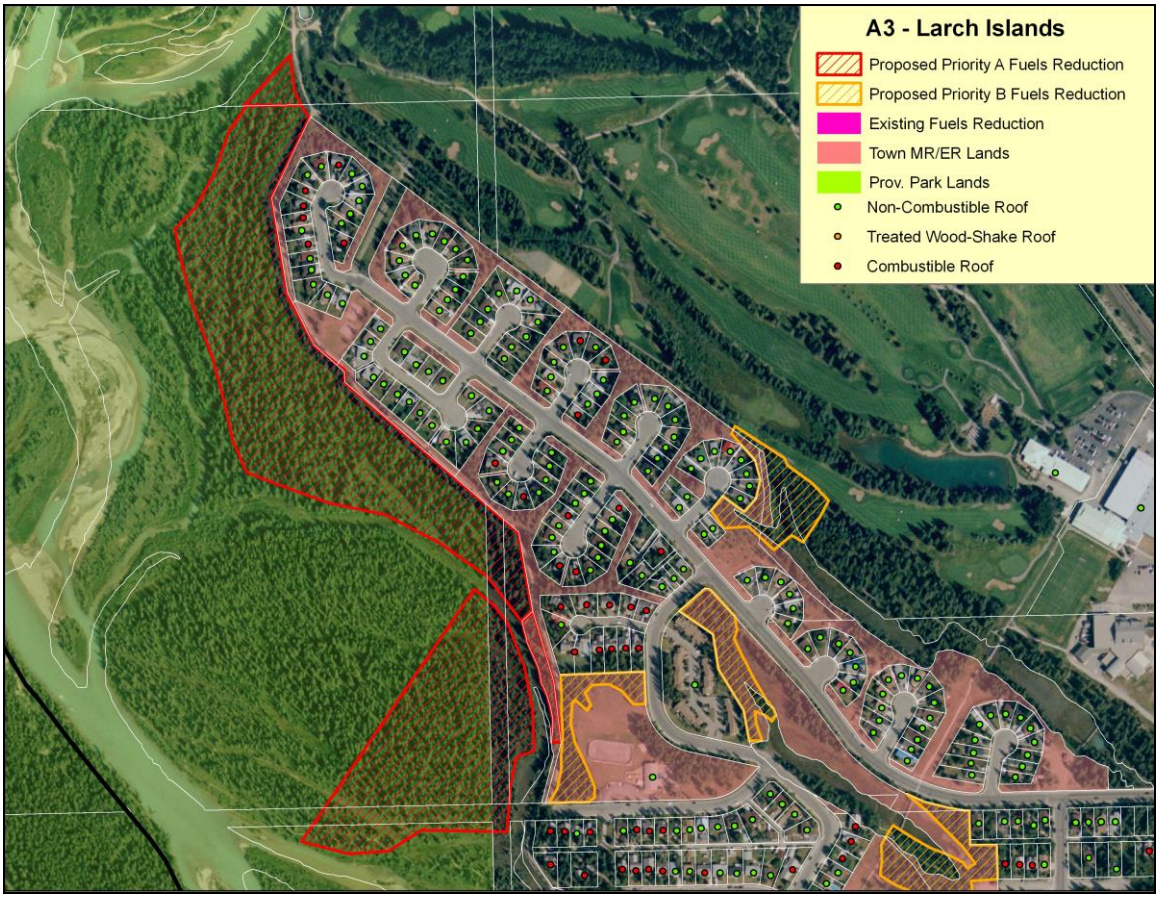
A2 – Rundleview/Mineside

This 16.0 hectare unit is on Town of Canmore MR/ER lands and lands administered by AB. Sustainable Resource Development. The high number of combustible roofs, mid-slope location of the development, and intermix of structures with mature pine fuels make this a high priority unit.



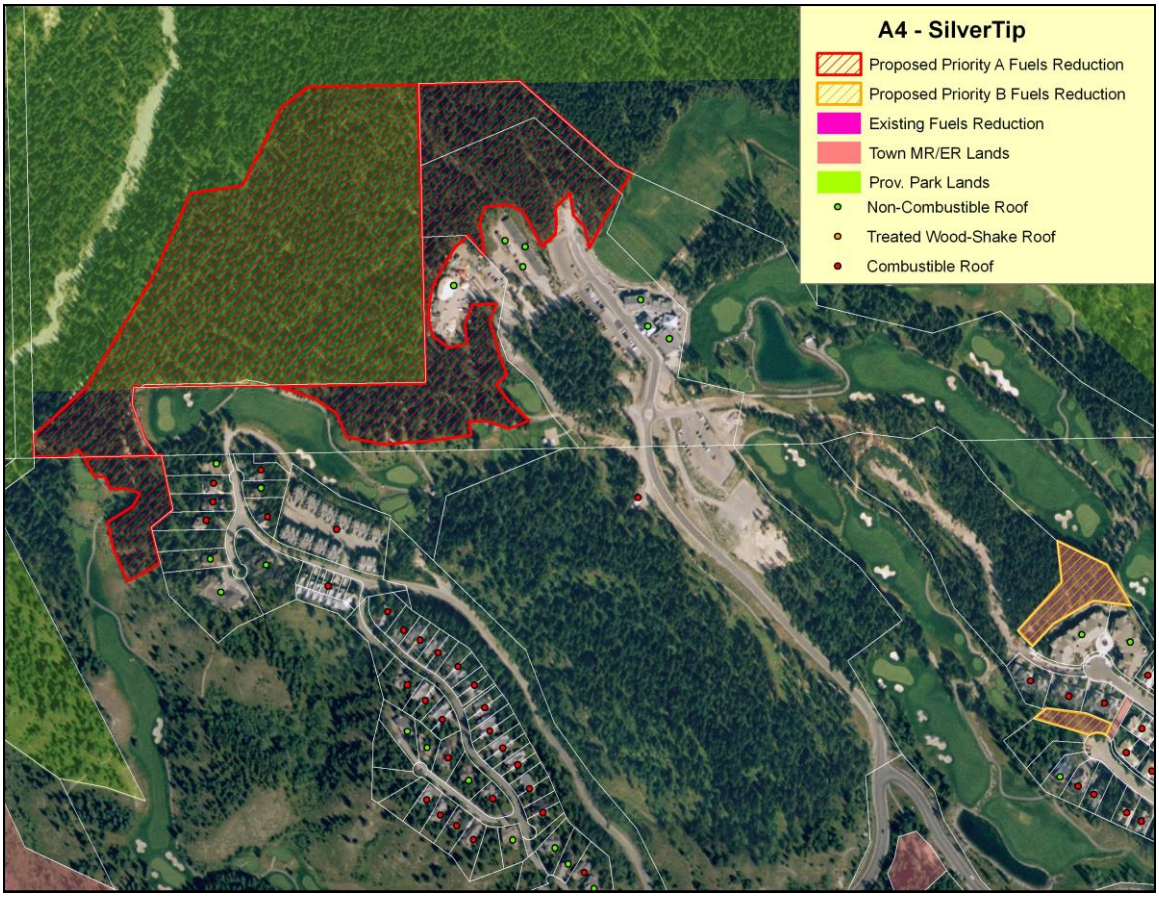
A3 – Larch Islands

This 11.5 hectare unit is primarily on Bow Valley Provincial Park lands administered by AB. Tourism, Parks & Recreation and on Crown lands administered by AB. Sustainable Resource Development, with a small portion on Town of Canmore MR/ER lands. The proximity of the mature spruce fuels structures in Larch and Woodside Lane and the high incidence of wildfire on Larch Islands make this a high priority unit.

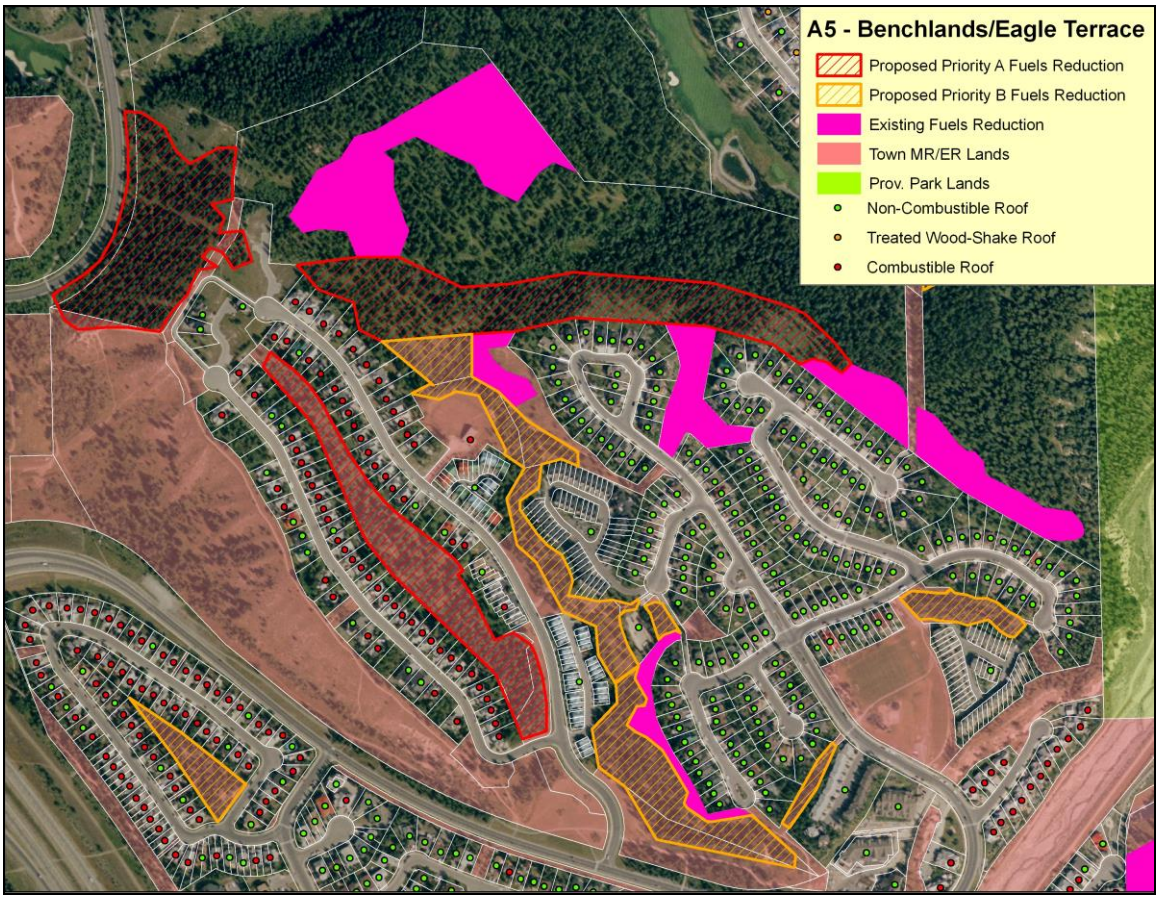


A4 - Silvertip

This 15 hectare unit is on Bow Valley Provincial Park lands administered by AB. Tourism, Parks & Recreation and on deeded developer lands administered by Stone Creek Properties. The conceptual unit is designed in coordination with golf course fairways to provide a fuelbreak for the Silvertip Little Ravine, Stone Creek, and Golf Course development areas. The proximity of mature pine/spruce fuels, lack of Zone 1 defensible space, limited access for fire apparatus during a wildfire, and high number of combustible roofs make this a high priority unit.



A5 – Benchlands Terrace/Eagle Terrace
This 9.0 hectare unit is on a mixture of Town of Canmore MR/ER lands, deeded developer lands administered by Stone Creek Properties, and deeded Conservation Easement lands owned by the Alberta Conservation Association. The high number of combustible roofs in Benchlands Terrace development area, mid-slope location of Benchlands and Eagle Terrace, and the proximity of mature pine/spruce fuels to homes backing on to the proposed areas make this a high priority unit.



4.1.2.3 Zone 3
While it is not the intent of this Plan to identify landscape-level containment line strategies, several of the units recommended in the Bow Corridor Wildland/Urban Interface Plan (Walkinshaw, 2000) are still applicable and should be considered for implementation to provide fire managers with containment options prior to wildfire reaching the developed areas.

Recommendation 4: Landscape-level wildfire containment lines are the cooperative responsibility of SRD, TPR, and Parks Canada and should be planned, implemented, and maintained based on present and future development in the Town of Canmore and surrounding area.

4.2 Development Options

As the wildland/urban interface issue becomes more widely recognized as a safety issue in Alberta, the design and construction of structures, subdivisions, access systems, water supply, and utilities within new subdivisions will reflect these concerns. Municipalities must incorporate wildfire at the planning stage of the development and ensure that adequate structural and infrastructure options are implemented to minimize the interface hazard. Wildfire must be identified as a risk and incorporated into land use and development planning at the initial stages of any development that is located in the wildland/urban interface.

Development options include structural considerations such as location on site, exterior construction materials, and additions such as balconies, porches and decks. Infrastructure options include access road design, water supply, and utility installation.

4.2.1 Structural Options

Structural characteristics that contribute to a structure's ability to withstand wildfire ignition include type of roofing and siding material, structure siting with respect to steep forested slopes, and proper construction and maintenance of eaves, vents, and openings that can accumulate flammable debris and allow wildfire to gain entry to the structure. Structure design and exterior structural materials may be controlled through municipal land use bylaws and development regulation while others such as combustible woodpiles locations are best dealt with through public education and awareness.

Combustible wood-shake roofing materials are common in most development areas that were approved prior to revision of the Land Use Bylaw requiring a minimum Class C ULC rated roofing materials. Silvertip Little Ravine and Stone Creek, Eagle Terrace Phase I, Benchlands Terrace, Canyon Ridge, Rundleview, Canyon Close, and Cougar Point development areas are predominantly combustible roofing materials exposing them to increased threat of airborne firebrand ignition. Other common roofing materials include fire-rated asphalt shingle, metal, ceramic tile, fiberglass-composite shingle, rubber, and factory-treated wood shake.

4.2.2 Infrastructure Options

Infrastructure options include provision of adequate access standards to ensure quick and safe ingress and egress for residents and emergency responders during a wildfire and adequate and accessible water supply for structure protection and suppression.

4.2.2.1 Access

Access road standards throughout the Town primarily meet FireSmart community standards except for access roads into Silvertip Little Ravine (Blue Grouse Ridge, Juniper Ridge, Aspen Glen) which have inadequate width and turnaround capacity for fire apparatus during a wildfire incident.

Recommendation 5: Ensure that all access in future development areas meets FireSmart standards (PIP, 2003).

4.2.2.2 Water Supply

The Town of Canmore core area is provided with municipal hydrant supply with adequate volume and pressure for interface fire incidents.

Rural properties including the Alpine Club, Harvie Heights Road, and Cross-Zee Ranch areas have no hydrant system and tender-shuttle fire suppression water supply would be necessary. The Banff Mountain Gate Lodge facility relies on gravity-fed hydrant-supply from an underground tank located above the development.

4.3 Education and Communication Options

FireSmart education and awareness are a key component to taking action. If stakeholders understand the issues relating to wildland/urban interface hazard they will be more likely to take action on their own property and/or to support FireSmart actions taken by the Town of Canmore or others.

Several public education initiatives have been held over the past ten years including FireSmart open houses, vegetation management information sessions, newspaper articles, presentations to stakeholder groups, and the 2004 Westwind Mock-Wildfire Exercise.

FireSmart education and awareness should be re-prioritized and focused to ensure that the public are aware of options available to reduce the hazard and risk to their properties.

Recommendation 6: 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 Zone 1 standards immediately adjacent to homes.

4.4 Legislation Options

Legislating *FireSmart* requirements for structural materials, infrastructure, and vegetation management is an important step to *FireSmart* development in a municipality. The Town of Canmore utilizes the Municipal Development Plan (MDP, 2008) and Land Use Bylaw (LUB, 1999) and developers are using Architectural Design Guidelines to implement FireSmart development standards.

The Town of Canmore MDP requires developers, where appropriate, to prepare a Wildfire Risk Assessment for new subdivisions and developments, identifying present hazard and risk, proposed development standards, and making recommendations to reduce the hazard and risk to the development.

The Town of Canmore LUB (1999) is currently under revision. Canmore Development and Planning and Fire & EMS have met to discuss the current FireSmart requirements and any required additions to the revised LUB. Those recommended FireSmart revisions are being considered by Town of Canmore Development and Planning for inclusion into the revised LUB at this time.

Recommendation 7: The Town of Canmore should adopt and include the FireSmart bylaw revisions provided for inclusion in the updated Land Use Bylaw (2010).

Architectural design guidelines are provided by developers to regulate development standards within a subdivision. Most refer to FireSmart standards with respect to roofing and siding materials however sometimes other guidelines within the document contradict FireSmart development. In particular, guidelines regarding minimal tree clearing outside of the building envelope and residential lot landscaping standards and species often contradict with the intent of building FireSmart communities.

Recommendation 8: The Town of Canmore should complete a review of all Architectural Design Guidelines submitted for approval to reduce the potential for conflict with FireSmart development principles.

4.5 Inter-Agency Cooperation and Cross-Training Options

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

The Town of Canmore Fire & EMS, Alberta Sustainable Resource Development, and Banff National Park have cooperated together for many years on FireSmart issues in the Bow Valley including provision of grant funds for FireSmart projects, coordination and planning of the Westwind exercise with Town of Canmore, and provision of Canmore Fire & EMS firefighters to assist on the Mt. Nestor and Carrot Creek prescribed burns.

Canmore Fire & EMS has cross-trained many of their firefighters to the following levels:

- Wildland Firefighter Level 1 (NFPA 1051)
- Fire Operations in the Wildland/Urban Interface (S-215)
- Incident Command System (I-100 to I-400)
- Sprinkler Workshop

Recommendation 9: Town of Canmore Fire & EMS should continue to strive to cross-train as many of their firefighters as possible to the following levels:

- Wildland Firefighter (NFPA 1051 Level I)
- Structure Protection Workshop (S-115)
- Fire Operations in the Wildland/Urban Interface (S-215)
- Incident Command System (I-100 to I-400) as applicable

4.6 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 an interface fire are of paramount importance.

The Town of Canmore Municipal Emergency Plan has been designed on the Incident Command System model, making it very easy for responders from different jurisdictions or agencies to quickly and easily become a part of the emergency organization during a wildfire incident. The Town of Canmore also has a Wildfire Mutual-Aid Agreement with AB. Sustainable Resource Development.

The 2004 Westwind Mock-Wildfire Exercise was used to test mutual-aid response to an interface fire incident between emergency responders from Town of Canmore, MD of Bighorn, Kananaskis Improvement District, AB. Sustainable Resource Development and Tourism, Parks & Recreation, and Parks Canada. One of the exercise findings was the need for a wildfire pre-plan to assist responders with identification of values at risk and determination of strategies and tactics to protect those values. The recommended pre-plan is currently being developed and will be ready for the 2011 fire season. A further exercise would assist responders to use the plan to its fullest potential to identify any weaknesses.

Recommendation 10: Conduct a wildland/urban interface emergency exercise to train local emergency responders, test the pre-plan for operational effectiveness, and educate residents of the issues and impacts related to interface fire incidents.

5 Implementation Plan

The goal of the implementation plan is to identify the responsible stakeholders for each of the recommendations and set timelines for completion based on priorities and funding availability.

The implementation plan should be used by the Town of Canmore to annually identify priorities for available funding and to assist with annual review to determine success of implementation of the recommendations.

5.1 Vegetation Management

Issue	Recommendation	Responsible Agency
Existing Fuel Modification Maintenance	1. Ensure that all fuel modification projects are inspected on a regular basis and maintained as necessary. ▪ The CNC West and Eagle Terrace Wildlife Corridor fuelbreaks require immediate maintenance. ▪ The Canyon Ridge fuelbreak requires removal of juniper shrubs to complete the project.	Town of Canmore AB. SRD/TPR
Zone 1 Defensible Space Standards	2. Public education on acceptable FireSmart Zone 1 standards are recommended for all residents and in particular for residents located in the following development areas: ▪ Silvertip ▪ Benchlands Terrace ▪ Canyon Ridge ▪ Peaks of Grassi ▪ Cairns ▪ Rundleview	Town of Canmore – Fire & EMS
Zone 2-3 Fuels Reduction	3. Zone 2-3 fuels reduction is the responsibility of the Town of Canmore, developers/landowners, and the Provincial Government (SRD/TPR). All stakeholders should implement fuels reduction based on the priorities identified in this plan.	Town of Canmore Developers/Landowners AB. SRD/TPR
Zone 3 Containment Lines	4. Landscape-level wildfire containment lines are the cooperative responsibility of SRD, TPR, and Parks Canada and should be planned, implemented, and maintained based on present and future development in the Town of Canmore and surrounding area.	AB. SRD/TPR Parks Canada

5.2 Development

Issue	Recommendation	Responsible Agency
Access Standards	5. Ensure that all access in future development areas meets FireSmart standards (PIP, 2003).	

5.3 Public Education

Issue	Recommendation	Responsible Agency
FireSmart Communications Plan	6. 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 Zone 1 standards immediately adjacent to homes.	Town of Canmore

5.4 Legislation

Issue	Recommendation	Responsible Agency
TOC Land Use Bylaw Revision	7. The Town of Canmore should adopt and include the FireSmart bylaw revisions provided for inclusion in the updated Land Use Bylaw (2010).	Town of Canmore – P&D
Architectural Design Guidelines	8. The Town of Canmore should complete a review of all Architectural Design Guidelines submitted for approval to reduce the potential for conflict with FireSmart development principles.	Town of Canmore – P&D

5.5 Implementation Plan – Interagency Cooperation & Cross-Training

Issue	Recommendation	Responsible Agency
Cross-Training	9. Town of Canmore Fire & EMS should continue to strive to cross-train as many of their firefighters as possible to the following levels: ▪ Wildland Firefighter (NFPA 1051 Level I) ▪ Structure Protection Workshop (S-115) ▪ Fire Operations in the Wildland/Urban Interface (S-215) ▪ Incident Command System (I-100 to I-400) as applicable	Town of Canmore – Fire & EMS

5.6 Implementation Plan – Emergency Planning

Issue	Recommendation	Responsible Agency
Emergency Exercise	10. Conduct a wildland/urban interface emergency exercise to train local emergency responders, test the pre-plan for operational effectiveness, and educate residents of the issues and impacts related to interface fire incidents.	Town of Canmore – Fire & EMS

6 References

Partners in Protection 2003. *FireSmart – Protecting Your Community from Wildfire Second Edition.* Partners in Protection. Edmonton, Alberta. ISBN 0-662-34064-7.

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