Castle Mountain Resort

2024 Vegetation Management Update

Prepared For

PINCHER CREEK EMERGENCY SERVICES
FIRE EMS
HONOUR & TRADITION
SINCE 1906

Prepared By

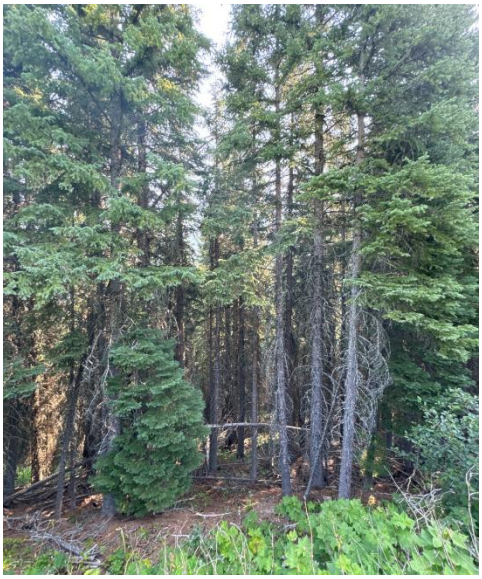
HFM CONSULTING

Josh Hoddinott RPFT, MBA
Phone: (587) 573-6353
Email: josh@forestmgmt.ca

Background

The MD of Pincher Creek completed the *Pincher Creek Wildfire Mitigation Strategy* in November 2016 to provide practical and operational recommendations to reduce the impacts of wildfire to communities and infrastructure within the MD of Pincher Creek. The plan included vegetation management recommendations for the Castle Mountain Resort (CMR) and surrounding area. The plan was updated again in 2021. Since the plan's development, the Municipality has identified a need to update the Vegetation Management Plan to capture work that has been completed and reassess the proposed vegetation management bocks. This update will provide

- Updates to FireSmart terminology and Wildfire Analysis of the planning area
- Capture Vegetation Management completed to date.
- Identify and Prioritize Blocks that require a first or second pass of vegetation management.
- Updates to recent vegetation management projects such as the West Castle Prescribed Fire Plan and Castle Fire Guard Plan.

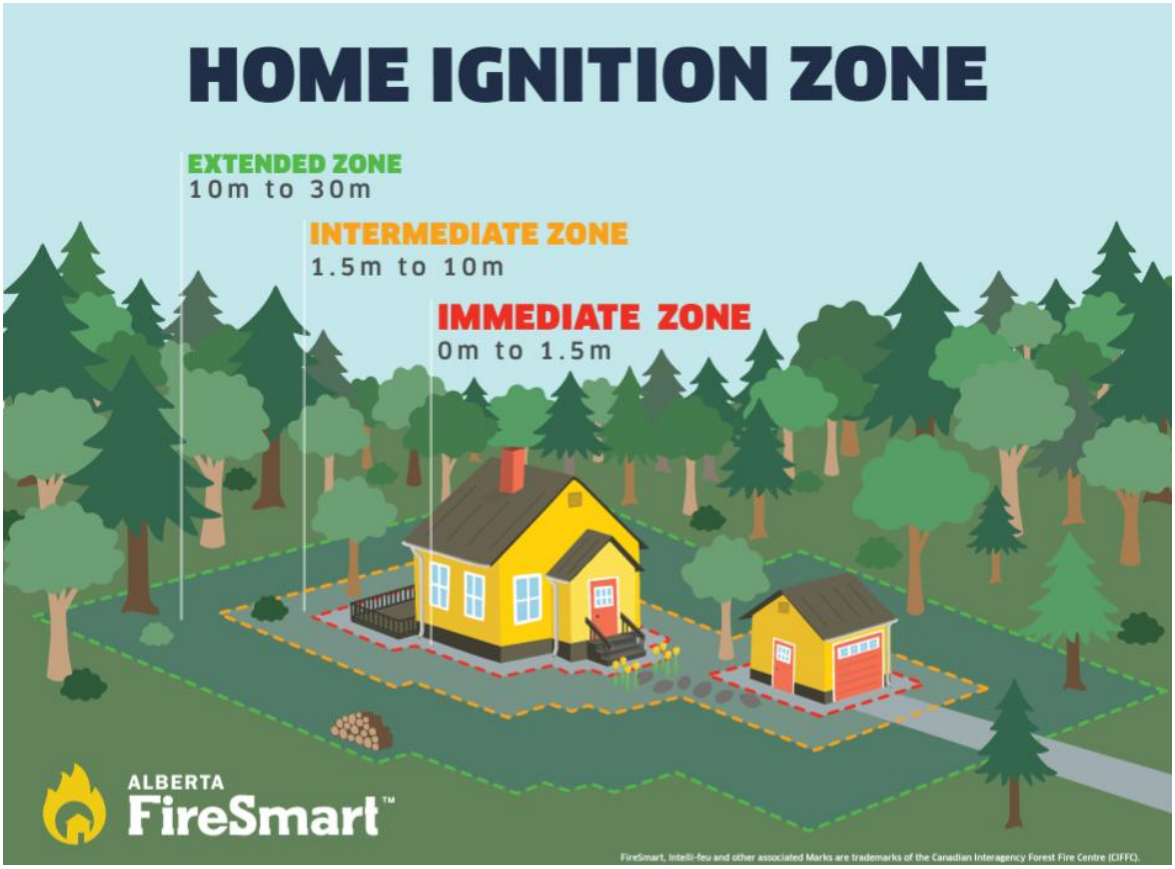


Block requires a first pass

Block requires a second pass

Home Ignition Zone

The 2016 *Pincher Creek Wildfire Mitigation Strategy* analysed the CMR using the FireSmart community Zones (Zone 1, Zone 2, and Zone 3). Since the development of the mitigation strategy in 2016, FireSmart Canada has updated its FireSmart Zones to the FireSmart Home Ignition Zone (HIZ). The update emphasises the importance of removing or reducing any potential ignition sources within 30 metres of the home. The HIZ also eliminates Zone 3, which extended from 30 to 100 metres in the previous version. While FireSmart activities are still important in this area, radiant heat is unlikely to ignite a structure at 30 metres and beyond. Instead, research has shown that the more likely source of ignition at these distances are embers. As much of the HIZ is located on homeowner's property, consider further developing educational outreach programs to encourage vegetation management at the homeowner level.



Wildfire Exposure Assessment

Image courtesy of FireSmart Canada

Exposure Assessments are a new wildfire analysis tool developed collaboratively between the University of Alberta, Alberta Forestry, and FireSmart Canada to help prioritize wildland fuel hazards by analyzing the type of vegetation surrounding homes. Exposure Assessments provide a hazard rating based on the percentage of hazardous wildland fuels around the home[1]. Homes with greater amounts of hazardous vegetation around them will show a higher hazard rating. The chart below provides guidance on how to prioritize mitigation activities.

Priorty 1 Radiant Heat

- High temperatures caused by wildfires have the potential to ignite nearby wildland fuels or built fuels through radiant heat. Factors such as the type of vegetation and it's proximity to buildings will influence the amount of heat a building is exposed to. High hazard wildland fuels that are within 30 metres of infrastructure should be prioritized to reduce exposure from radiant heat.

Priority 2 Short Range Ember Transport

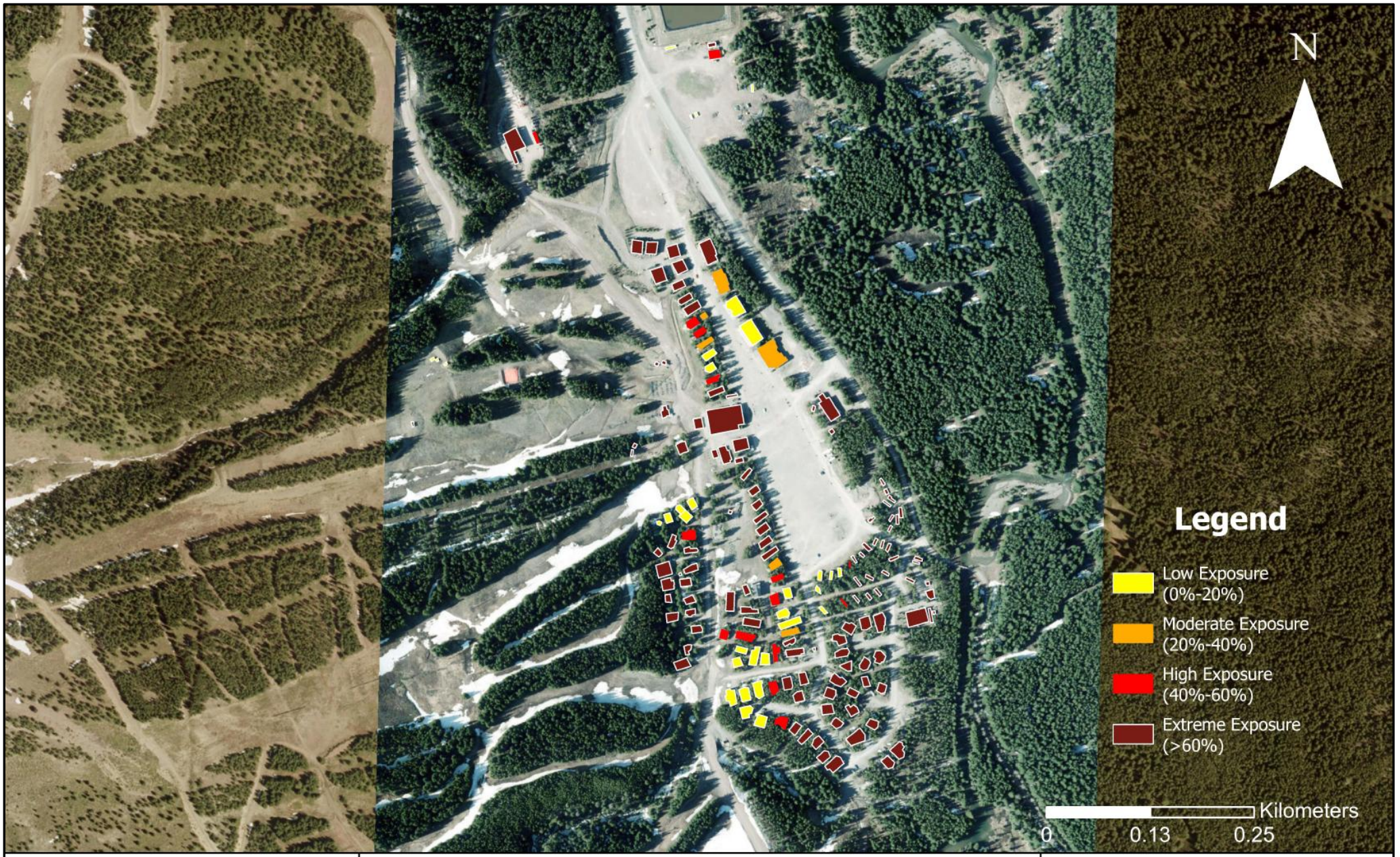
- Falling embers that are transported by wind or air have the potential to create entirely new fires beyond the fire perimeter called spot fires. These spot fires can ignite both wildland fuels and built fuels. Research has shown that over 70% of homes destroyed by wildfires were originally ignited by embers. Priority 2 mitigation strategies should seek to reduce short range ember transport and spot fires from wildland fuels within 0-100 metres of infrastructure.

Priorty 3 Long Range Ember Transport

- Some embers can travel much larger distances, exposing infrastructure to long range ember transport. The exposure assessment captures wildland fuels that have the potential to transport embers 100 - 500 metres away from their source. As vegetation management may not be vialbe in all of these areas, the primary strategy for long range ember transport is to reduce the probability of spot fires occurring from these embers arround the community.

---

[1] For more information on how Exposure Assessments are developed visit the FireSmart Canada Exposure Assessment Guidebook



HFM CONSULTING

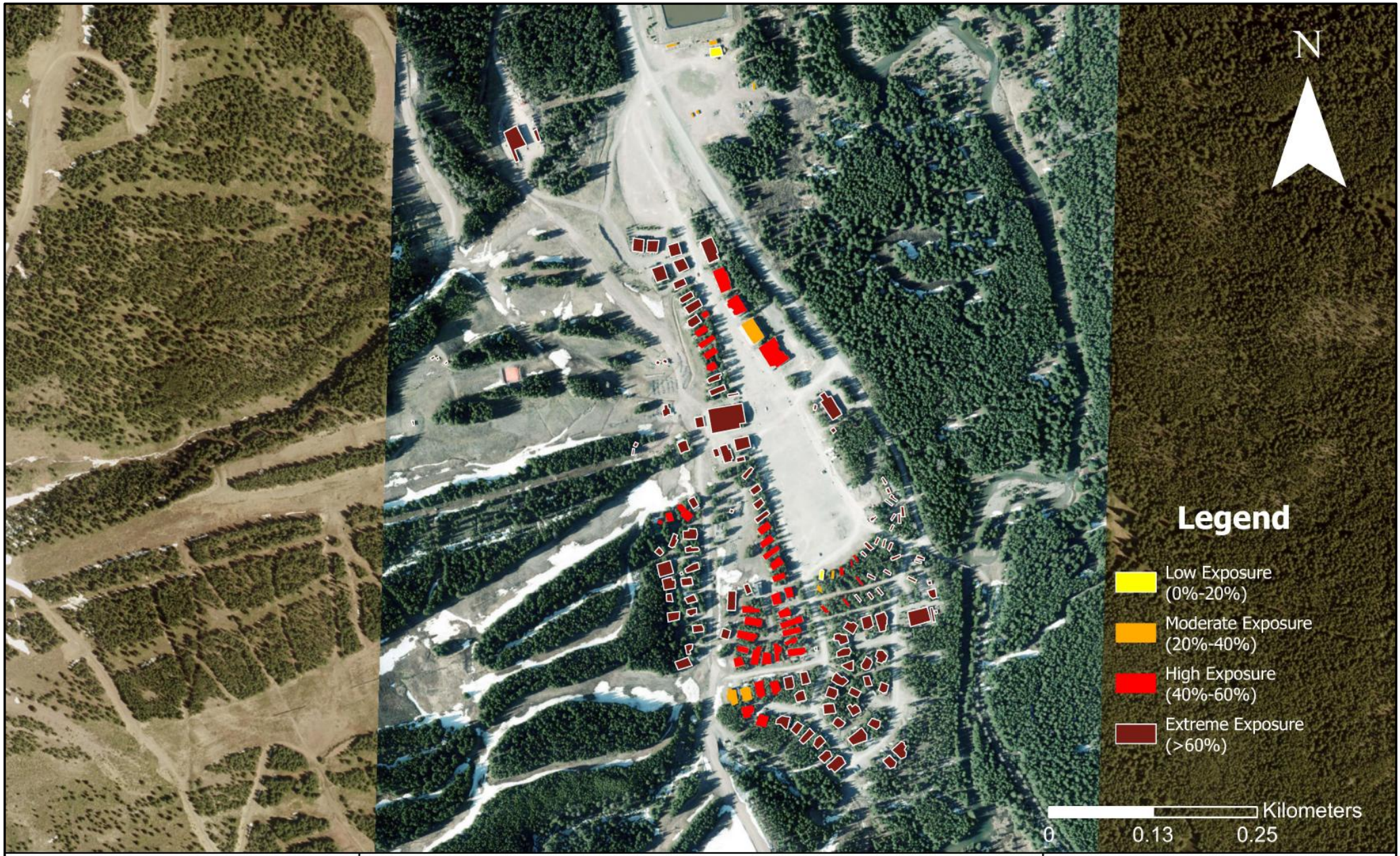
Castle Mountain Resort

Building Exposure to Ignition by Radiant Heat (0-30 Meters)

Maxar 0.25m Panchromatic Resolution

Date Produced: September 26th, 2024

Cartographer: HFH Consulting
Email: Josh@forestmgmt.ca



HFM CONSULTING

Castle Mountain Resort

Building Exposure to Ignition by Short Range Ember Transport
(0-100 Meters)

Maxar 0.25m Panchromatic Resolution

Date Produced: September 26th, 2024

Cartographer: HFH Consulting
Email: Josh@forestmgmt.ca

HFM CONSULTING

Castle Mountain Resort

Building Exposure to Ignition by Long Range Ember Transport
(100-500 Meters)

Maxar 0.25m Panchromatic Resolution

Date Produced: September 26th, 2024

Cartographer: HFH Consulting
Email: Josh@forestmgmt.ca

Interpretation of Wildfire Analysis

The wildfire analysis identified that over half of the homes within the Castle Mountain Resort Community have extreme exposure to radiant heat from nearby wildland fuels. The analysis of wildfire exposure through ember transport shows that the majority of homes have a high to extreme exposure to fire brands within 100 metres of homes and all of the homes have extreme exposure to long-range ember transport. This data illustrates the necessity for vegetation management at the municipal level as well as at the homeowner level. Vegetation Management at the municipal level can assist with factors such as reducing wildfire intensity and ember density, but engagement at the homeowner level is critical to reduce the probability of home ignition and damage from radiant heat.

Vegetation management blocks that have been identified as Priority A expose infrastructure to radiant heat or short-range ember transport. Priority B blocks seek to reduce the intensity of an incoming wildfire and reduce the density of embers traveling into the community. Portions of Block A and Block B have already been treated and will require a second pass. When evaluating blocks as part of a vegetation management project, consider prioritizing first pass blocks, and only treat second pass blocks once they have had time to allow for wind-firmness. Similar projects in Southern Alberta require a space of 5-10 years between the first and second pass for trees to windfirm. The table below provides a summary of the vegetation management blocks in hectares:

Block Name	Private Land	Provincial Land	Total Area
Priority A	**39.4**	**18.9**	**58.2**
A1	29.4	1.23	30.6
A2	10.0	17.6	27.6
Priority B	**13.4**	**49.0**	**62.4**
B1	13.4	32.1	45.5
B2	0	16.9	16.9
Grand Total	**52.8**	**67.9**	**120.6**

Treatment Recommendations

Immediate Zone (0-1.5)

- Choose non-combustible building materials when constructing or renovating your home.
- Clear vegetation and combustible material down to mineral soil and cover with non-combustible materials like gravel, brick, or concrete.
- Avoid planting woody shrubs or trees. If any are present, prune and maintain them regularly.

Intermediate Zone (1.5-10)

- Plant fire-resistant vegetation and select non-combustible landscaping materials.
- Avoid incorporating any woody debris, including mulch.
- Keep combustible items like firewood piles, construction materials, patio furniture, tools, and decorative pieces out of this zone.
- Move trailers, recreational vehicles, storage sheds, and other combustible structures into the Extended Zone. If that is not possible, store firewood inside your mitigated garage, shed, or other ember-resistant structures.
- Create a non-combustible ground cover, like a gravel pad, underneath and 1.5 metres around trailers, recreational vehicles, and sheds.

Extended Zone (10-30)

- Selectively remove evergreen trees to create at least 3 metres of horizontal space between the single or grouped tree crowns.
- Remove all branches to a height of 2 metres from the ground.
- Regularly clean up accumulations of fallen branches, dry grass, and needles to eliminate potential surface fuels.
- Continue to apply these principles if your property extends beyond 30m.

There are multiple jurisdictional boundaries in the treatment area. Ensure you contact the appropriate authority for approval before starting vegetation management projects

FireSmart Resources

Home Ignition Zone Self Assessment

https://firesmartalberta.ca/wp-content/uploads/2024/03/HIZ-Self-Assessment-8.5x11-WEB.pdf

FireSmart Begins at Home Guide

https://firesmartalberta.ca/wp-content/uploads/2023/09/FireSmart-Begins-at-Home-Guide_Alberta_WEB.pdf

FireSmart Guidebook for Community Protection

https://firesmartalberta.ca/wp-content/uploads/2023/09/FireSmart-GuideCommunityProtection-Nov2013.pdf

FireSmart Protecting Your Community from Wildfire

https://firesmartcanada.ca/wp-content/uploads/2022/01/FireSmart-Protecting-Your-Community.pdf

FireSmart Yard Fact Sheet

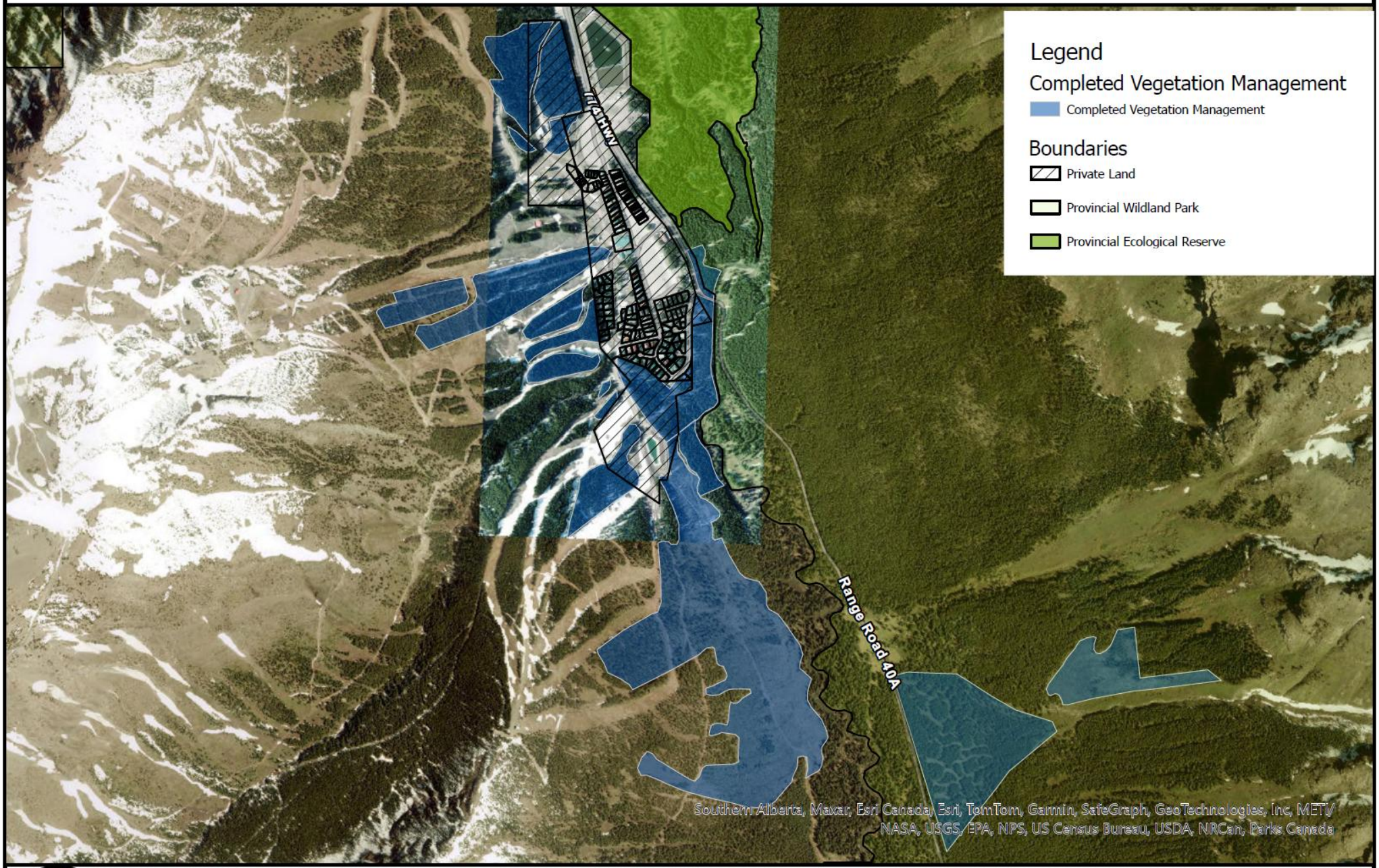
https://firesmartalberta.ca/wp-content/uploads/2023/09/FSA_FireSmart-Fact-Sheet-2024-Yard.pdf

FireSmart 101 Course

https://firesmartalberta.ca/training/

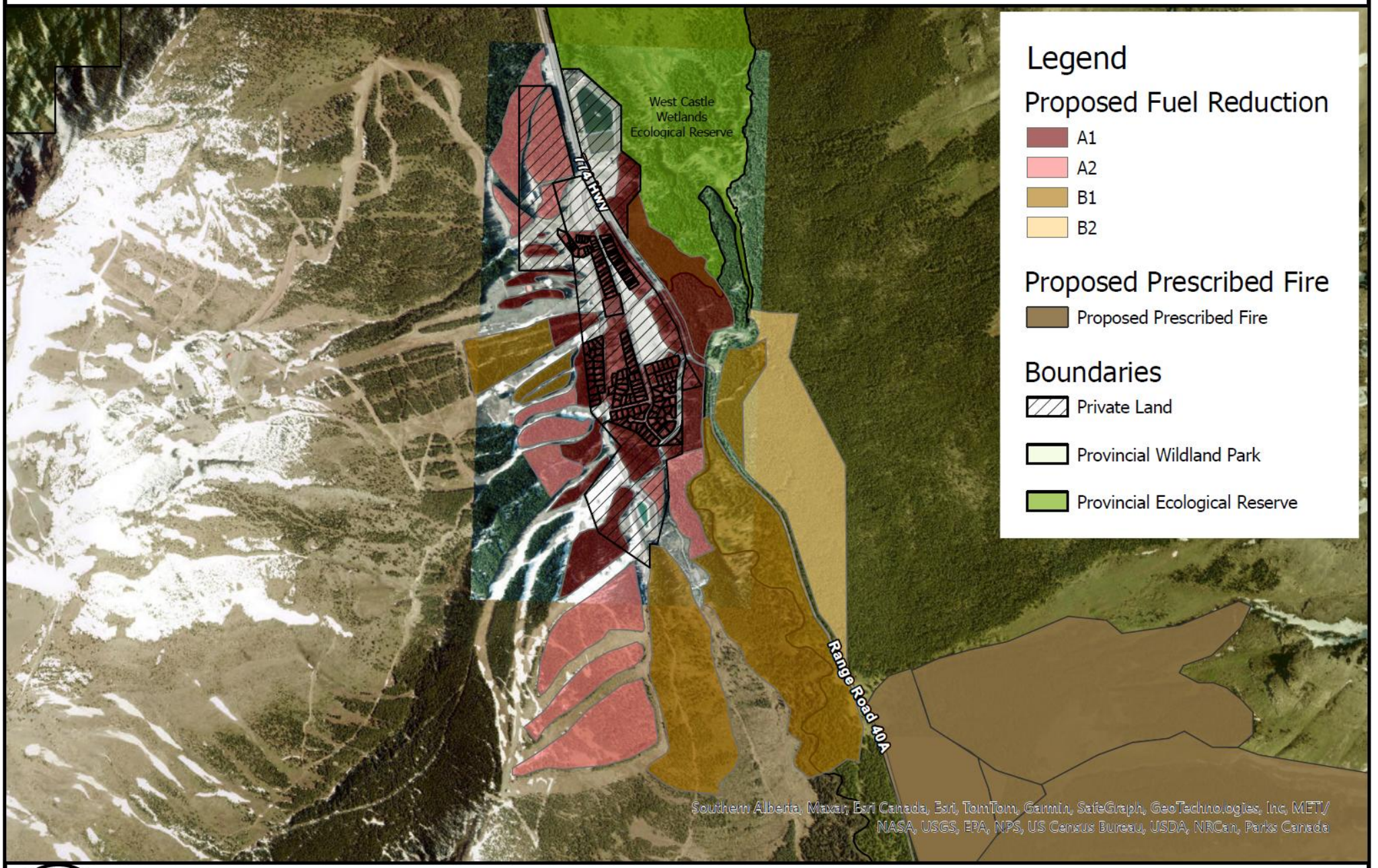
For a more detailed list of FireSmart resources, research, and publications visit https://firesmartalberta.ca/ or https://firesmartcanada.ca/

Castle Mountain Resort Vegetation Management Completed



Vegetation Management Completed:
79.5 Hectares

Castle Mountain Resort Proposed Vegetation Management



Castle Mountain Resort Vegetation Management Completed