



Town of Cochrane

Wildfire Mitigation Strategy



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1. INTRODUCTION/ BACKGROUND

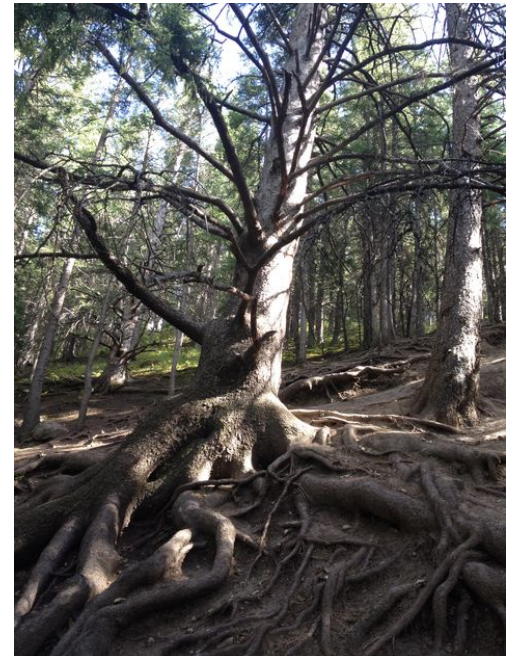
FireSmart, in the Town of Cochrane (Cochrane), is an initiative designed to help home and property owners reduce the threat of wildfire within the town's Wildland Urban Interface (WUI) areas. By implementing the FireSmart principles, all stakeholders become part of a commitment to help lessen the effects of wildfire in the community. The Town of Cochrane will demonstrate FireSmart principles on town municipal directed lands and lead the FireSmart principles for residents as a strong example of a "Safe and Viable Community".

Cochrane is located 30 kilometers directly west of the City of Calgary along Highway 1A. Within Cochrane there are 394.4 hectares (ha) of municipal lands. Within these municipal lands there are 79.3 ha of forest and 51.6 ha of native grasslands. There are also large and, in some cases, very steep areas of privately-owned grasslands and forest in and around the town that pose a moderate to high wildfire threat. The town lies wholly within the Foothills Parkland ecological sub-region.

The town is growing at a rapid pace and wildfire mitigation and management processes need to be appropriately established. Embedded in this document are strategies and discussions for the seven disciplines of FireSmart. All the recommendations will lower wildfire hazards making Cochrane a safer community and assist Fire Services to better respond with appropriate resources to wildfires in and around the town.

The forest areas consist of mature to over-mature white and Engelmann spruce, with components and stands of trembling aspen, balsam poplar and black spruce. Riparian areas along the Bow River and un-named creeks have dense components of willow that vary from moderately healthy to decadent. The coniferous stands tend to be in a declining mode with successional spruce understory in-filling growing space. Standing dead and down-and-dead components are common in the mature and overmatured spruce and aspen stands. Immature aspen and poplar stand tend to be naturally thinning with a component of dead material but are of a lower FireSmart vegetation management priority. Many of the immature aspen stands are beneficial as natural fire breaks.

Grasslands are frequent within and around the town and are comprised of fescue, muhly, hairy wild rye, reed grasses (sp.) and agricultural grasses. Although traditionally grazed, there are no longer cattle grazing on these areas. Grass matting is severe in some areas and combined with steep slopes generates a significant fire management risk.



The terrain varies considerably across the town with forested slopes from gentle up to 80% along the Bow River and in the Big Hill coulee on the north-east edge of town. Grassed coulees and hillsides are frequent within the town with slopes ranging from 20% to over 60% with extensive housing developments along the tops-of-slope.

Cochrane Fire Services initiated FireSmart community planning in 2017 through the assistance of FRIAA and the development of a wildfire threat assessment. (Montane Forest Management, Walkinshaw). One of Cochrane's mission statements is to provide a "Safe and Viable Community."

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2. PLANNING AREA

The planning area includes all lands within the Town of Cochrane that are under municipal authority. Fire prevention, fire planning and fire suppression are the responsibility of the Town of Cochrane. The town shall demonstrate sound FireSmart practices and lead community stakeholders and residents in creating a FireSmart community.

3. DEVELOPMENT

Cochrane is noted as one of the fastest growing communities in Alberta. Cochrane grew from 26,320 to 27,960 in 2017. It represents a 5.9% increase in one year. In the previous 10 years the population has grown from 14,653 in 2007 to 27,960 in 2017. The present development areas are located around coulee complexes with grasslands and mixed forest leading into larger forest stands. The coulees are not able to be approved for development; as such they become “Environmental Municipal Reserves”. The present development leads to pathway development and human use in the coulee bottom and residential development at the top of the slope as presently meeting approved setbacks. Cochrane Fire Services wishes to change local legislation (bylaws) and educate developers and residents through a FireSmart Wildland Fire Hazard Mitigation Plan.

4. WILDLIFE MITIGATION STRATEGIES

CCI completed an intensive field program along with a Fire Prevention Officer of the Cochrane Fire Services that consisted of multiple plots and site visits to assist in determining the most appropriate hazard reduction plans for the specific areas within the town.

4.1 Goals

The Town of Cochrane Wildfire Threat Assessment (2017, Montane Forest Management Ltd.) followed national and provincial FireSmart documents and were used as the primary guiding documents for this plan.

The guiding documents and recognized community priority areas of focus include the seven FireSmart disciplines:

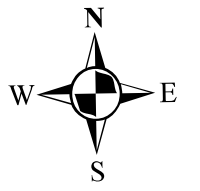
1. Vegetation Management
2. Development
3. Education
4. Legislation
5. Inter-Agency Cooperation
6. Cross Training
7. Emergency Planning

These disciplines are addressed within this document.

5. HAZARD AND RISK ASSESSMENT

The intent of FireSmart planning is to prescribe actions that will enhance the safety of the Community by reducing the threat of wildfire. The assessments completed during this project are the next phases as identified in the 2017 Town of Cochrane Wildfire Threat Assessment (Montane Forest Management). History has shown

Cochrane Prescription Polygons: Wildfire Hazard Reduction







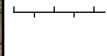




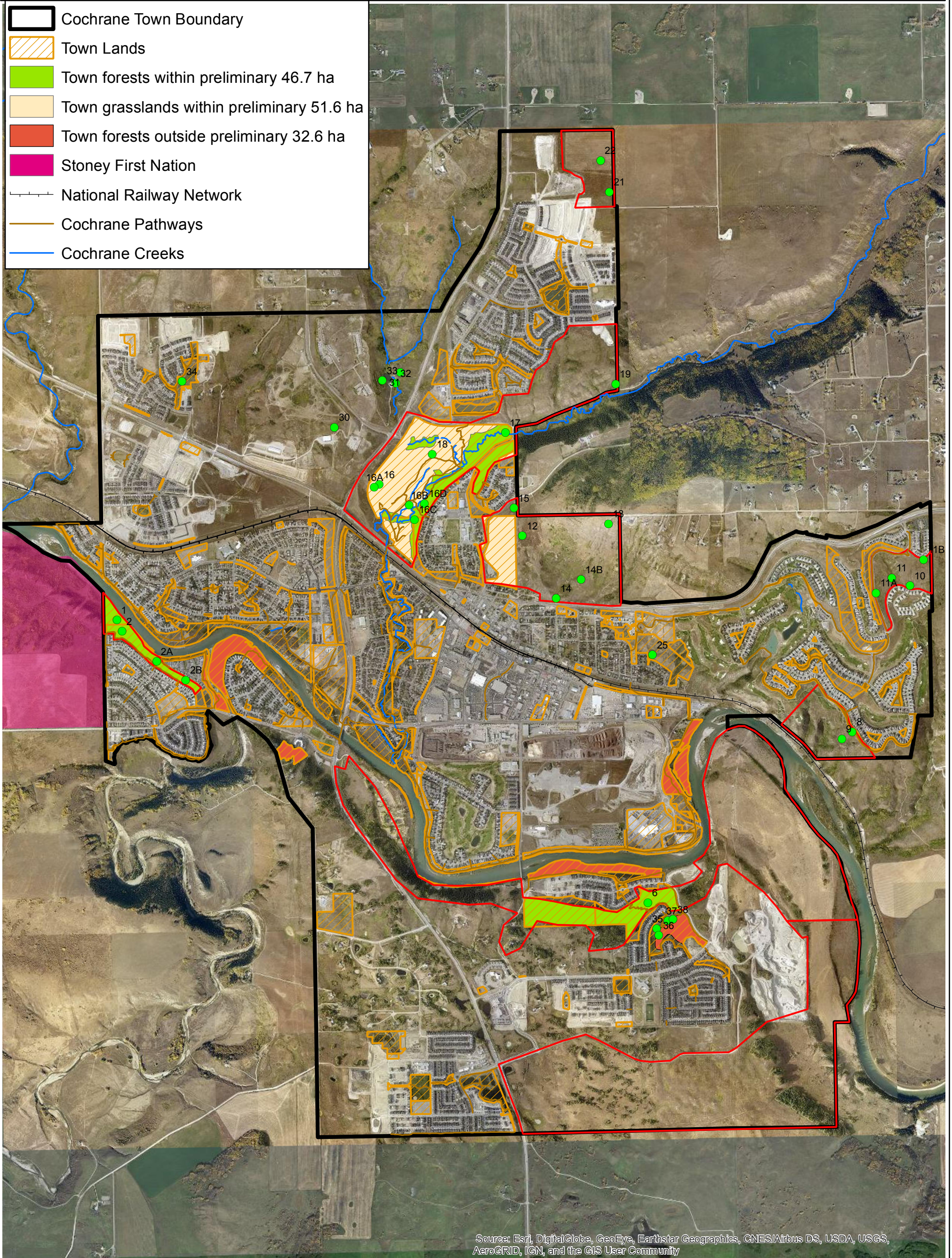
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November 16, 2018



-  Cochrane Town Boundary
-  Town Lands
-  Town forests within preliminary 46.7 ha
-  Town grasslands within preliminary 51.6 ha
-  Town forests outside preliminary 32.6 ha
-  Stoney First Nation
-  National Railway Network
-  Cochrane Pathways
-  Cochrane Creeks



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fires have return intervals over the same lands over time and it is with certainty that fires will continue to occur in this municipality. These fires may originate from the adjacent municipalities moving into town lands or fire may originate within Cochrane and spread into the neighboring communities. Fire prevention activities, public education, and legislative changes have reduced the number of human caused fires despite increased anthropogenic and industrial activity.

5.1 Hazards

Continued suppression of wildfires with no additional fuel management processes have increased forest and grassland fuel loading. This has created an un-natural buildup of burnable material, which may eventually lead to fires with greater intensity that are more problematic to control within municipal boundaries and neighbor communities.

Within the south-central portion of town, there is a fuel break due to the Bow River and from cropped agricultural land on the north side. However, the west side of town is of greater concern due to large areas of grassy undeveloped private land.

Another local hazard is the strong downslope winds that come off the mountains. Prevailing winds in this geography come from the southwest and northwest, which increase threats of wildfire to and from this area.

There is an ongoing concern with the CP Rail mainline running through Cochrane and the neighboring municipalities. The railway companies will continue to be contacted in the future to assist in rail-fire mitigation efforts. Human caused fires are most likely to come from recreational users along the Bow River, back-yard fire pits, random campfires, discarded smokers' materials, barbecues, or compromised powerlines. Traffic passing through on Highways 22 and 1A has the potential to increase fire risk. Education and focused prevention programs will assist in reducing these fire-starts; however, engineered solutions (fuel reduction) will significantly influence the reduction of severe fires.



5.2.1 Ecosite Classification and Site Evaluations

Ecosites are somewhat constant over this steeply rolling topography. Duff levels were generally low to moderate; soils were generally silty-loams to clay-loam to loamy-clay, some plots had cobble. Mottling was absent. Ecosites were generally LF-h, LF-a or LF-c. Sample plots of 3.99 m radius was established over the identified hazard matrix in Cochrane. FRIAA FireSmart protocols were followed and field templates were utilized from the FRIAA website.

5.2.2 Potential Watercourse/ Water Table Issues

There is a distinct advantage in this municipality with the Bow River running through town. Water access is good directly off Highway 22 where it crosses the Bow and several other areas in town. There is a history of springs (Big Hill Springs) and seepages in this geographic area. A couple of seepages were found during unit assessments however they neither assist nor hinder access or have impact on the FireSmart prescriptions. Big Hill Springs Creek runs through the north end FireSmart Units and will have a thirty metre (30 m) buffer established throughout. Town of Cochrane Fire Services and the Parks Department will ensure that FireSmart

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considerations and treatments are in harmony or support bank stabilizations or flood reduction strategies.

5.2.3 General Forest Health (Insects, Diseases and Weeds)

There were several areas of progressively dying or dead trees identified in the overmatured aspen and coniferous stands. Young white and Engelmann spruce were observed in many of these stands and are indicators of forest succession. Forest health was generally good in the immature aspen/ poplar stands and in the Engelmann spruce stands located in the Big Hill Coulee area.

Thistle (sp.) was observed in or around almost every plot and is a thorn in the side of municipal land management.



6. VEGETATION MANAGEMENT UNITS

In order to clearly reference and communicate FireSmart initiatives in areas affected, the Town of Cochrane Fire Services has assigned management units. Please refer to *Appendix A* for the Vegetation Management and Priorities Units details and vegetation management prescriptions.

6.1 Vegetation Management and Priorities by Units

Table 1. Unit Summary Sorted by Priority and Proposed Operating Year

Unit #	Priority	Operating Year	Area ha.	Prescription Summaries / Comments
1	1	2020	4.4	Hand prune and thin to FireSmart standards 30 metre fuel-break along the Stony Nakoda Reserve Boundary 30 metre fuel-break along the Townhouses to the river on the east
5	1	2020	10.3	Prescribed Fire Planning only in 2020, burn in 2021 due to public input sessions
7	1	2020	2.8	Hand prune and thin to FireSmart standards and mulch
10	1	2020	10.0	Prescribed Fire Planning only in 2020, and burn in 2021 as it is only Municipal land that borders this Unit
11	1	2020	2.5	Prescribed Fire Planning only in 2020, and burn in 2021 or 2022 as only Municipal land borders this Unit
2	2	2020 2022	0.5	Hand crew to prune the scattered spruce to 2 m Fall the standing dead Burn all in place or small chipper to the site Plant additional aspen or poplars on the Townhouse side of the unit
3	2	2020 2022	13.4	Hand crew to prune the scattered spruce to 2 m Fall the standing dead and burn all in place or bring a portable chipper to the site Plant rows aspen or poplars on the north side along housing
4	2	2021 2022	2.8	Hand crew to prune the scattered spruce to 2 m Fall the standing dead and burn in place Plant rows of poplars on the north side along housing
6	2	2021	2.0	30 m fuel-break on the east side along utility r.o.w. Hand prune to 2m and remove all small spruce Fall all standing dead and burn in place or chip
8	2	2021	2.4	Hand prune to 2m and remove all small spruce Fall all standing dead and burn in place or chip
9	2	2021	4.0	Hand prune to 2m and remove all small spruce Fall all standing dead and burn in place or chip

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7. EDUCATION AND PUBLIC ENGAGEMENT

The Town of Cochrane, through all departments will demonstrate the councils' strategic priorities throughout 2018-2021.

1. Community connectivity
2. Community development and planning
 - Focus on social policy and growth management strategy in order to promote a complete community.
3. Community engagement
 - Focus on improved community engagement opportunities.
4. Community facilities and services
 - Focus on services and spaces that achieve a safe and improved sense of community.
 - FireSmart course
 - Fire prevention and education information officer

7.1 Supporting Community Education and Involvement:

- Assign FireSmart public education to Cochrane Fire Services PIO.
- Having Fire Services and other town departments lead by example in applying FireSmart principles and mitigative activities.
- Making FireSmart brochures available with community, homeowner and industry information to assist the residents and business owners in understanding the need for, and the benefit of, FireSmart planning, actions and operations.
- Sharing notifications and timelines with supporting agencies for FireSmart activities with the residents.
- Ensuring safety awareness before and during FireSmart operations with written notifications and appropriate signage.
- Follow-up and communication of the planning activities and outcomes to municipal neighbors, residents, town departments and Council.

7.2 Seeking Financial Assistance:

- Assisting Cochrane to undertake the needed planning and operational execution of their well thought out FireSmart recommendations.

7.3 Stakeholders and Jurisdictional Authorities

7.3.1 Jurisdictional Authorities and Stakeholders

Consultations and/or awareness communications will be shared with the jurisdictions and stakeholders below:

Local Municipalities: The Protective Services and Councils of: Town of Cochrane
Municipal District of Rocky View No. 44

Agriculture and Forestry: Calgary Wildfire Management Area First Nations:
Stoney Nakoda First Nation

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Forest Management Area:	Spray Lake Sawmills
Provincial Park or Recreation Area:	Glenbow Ranch Provincial Park Nature Conservancy of Canada Girl Guides Canada

7.3.2 Enhancing Public Safety:

- Developing an operational framework for wildfire management.
- Aid ongoing planning and fire-mitigative activities through public engagement.
- Developing a clear, prioritized and prescriptive wildfire mitigation program for the municipality.
- Develop and implement prescriptions and identify actions that will reduce fire intensity from wildfires that originate within the town lands and spread to neighboring municipalities.
- Develop department wide prescription maintenance strategies.

8. LEGISLATION, DEVELOPMENT AND LAND USE BYLAW (LUB)

8.1 Land Use Bylaw (LUB) Considerations

This section will contain a series of general and specific information for possible inclusion with the Town Land Use Bylaw. Throughout the field assessment period there were consistent opportunities for common FireSmart applications. These will have pertinence to this document within the Land Use Bylaw Considerations. Opportunities for vegetation management outside of the FRIAA approved assessment polygons will be addressed within the Town Parks and trail maintenance program which is not part of this FireSmart submission.

8.1.2 Including FireSmart Principals for Land Use Development

- Include best practices and recommendations in the Land Use Bylaw for developers and private home builders.
- Recommend preferred FireSmart vegetation species for developers, home owners and town staff.
- Promote public and private xeric landscaping practices that align with Sustainable Community initiatives.
- The Town of Cochrane Planning and Engineering section has opened the Town of Cochrane Land Use Bylaw. The Bylaw review is during 2019 with the inclusion of public open houses and focus groups. They will prepare the proposed replacement land use bylaw for early 2020. The Fire Chief and Fire Prevention branch are compiling FireSmart best practices for the land use bylaw.

8.1.3 Adaptive Management and Prescriptive FireSmart Activities

Adaptive Management (def.): A learning approach that states intent, provides monitoring and verification of intent, and makes changes to planned activities as required.

There are options for FireSmart activities that may take place during operational phases. Public and/or municipal inputs may have an impact on the activities prescribed below. The FireSmart prescriptions and activities will therefore need an adaptive approach as the local stakeholders assess the outcomes of the various processes and prescriptions. These assessments need to be communicated by the municipalities in a

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timely and transparent manner. Operational activities can be altered over time to accommodate applicable input.

- Legislation and Planning (e.g. review provincial and municipal legislation, land- use bylaws and plans).
- Development (e.g. new subdivision development re: roadway access; water supply and utilities placement).

It is interesting to note here that the Towns of Canmore and Banff are also updating their LUBs. It is a consideration that the Town of Cochrane Protective Services and Administration align and join themselves to this joint review.

8.2 Considerations for Land Use Bylaw Inclusion

Development standards play a significant role in reducing the potential impact a wildfire will have on a community. A building is more likely to be destroyed in a wildfire when it is in a high-density area where fire can easily transfer from building to building. The potential for damage intensifies when flammable building materials are used.

Implement a “Wildfire Mitigation Plan”, prepared by a qualified professional, for all proposed developments adjacent to Moderate or High/ Extreme hazard areas as defined in the “Wildfire Threat Analysis, 2017, S. Walkinshaw”. The following considerations and recommendations are an excerpted summary of the information within the document: FireSmart Canada: “Home Development Guide”; a FireSmart Publication through the Institute for Business and Home Safety and sponsored by “the Co-operators” insurance company.

8.2.1 Roof Materials

The roof is the most vulnerable component of your home. Sparks and burning embers from a wildfire can travel long distances and quickly ignite roofing material. The fire rating of roof covering relies on the entire roof assembly (sheeting, drip edges, end caps) to offer the rated protection. Branches overhanging or close to your roof will result in more debris accumulating on your roof, in your gutters and near your home.

Roofing material tested for flammability is assigned a classification:

- Class A: high resistance to fire
- Class B: moderate resistance to fire
- Class C: low resistance to fire

A Class “A” fire-rated roof assembly offers the best protection. Examples of Class A roofing materials include clay tile, concrete tile, metal roofing and asphalt shingles. A Class “C” material would be untreated wood shingles which create a very dangerous combination of combustible material and crevices for embers or sparks to enter.

8.2.2 Siding, Vents and Openings

With the exception of the roof, siding material is the structural component most vulnerable to wildfire. Combustible debris can accumulate at the vents and openings on your home and be ignited by embers. Consider these guidelines when designing and maintaining your home:

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- Fibre cement siding
- Stucco siding
- Brick siding
- Multi-pane tempered glass windows with screening that can be closed tightly
- Garage doors that are properly clad, tightly fitted to the frame and well maintained

Note: Vinyl siding can melt allowing fire to enter in to the underlying wall and should be avoided on all new or refurbished homes.

8.2.3 Gutters and Eaves

The gutters on a home provide a place for combustible debris to accumulate and open eaves create an entry point for sparks and embers. Use the following considerations for safer eaves:

- Select soffit or boxed-in eaves for new or refitted eaves
- Install gutter guards on existing eaves
- Use non-combustible material such as galvanized steel, copper or aluminum
- Regularly clean and maintain your eaves

8.2.4 Decks and Porches

The materials used to build the deck, combustible materials stored under a deck, and the vegetation around it all contributes to how vulnerable a deck will be. Consider these guidelines when designing and maintaining your deck and porches:

- Use tempered glass railings
- Install metal railings
- Enclose the space under your deck with non-combustible materials
- Have a closed deck surface with no cracks or if openings or cracks exist
- Install an access door for under deck storage and cleaning
- Sheath the underside of your deck with fire resistant material
- Do not store combustible materials such as gas cans, lawn mowers etc. under the deck
- Create a one to two metre apron around and under your deck with non- flammable material such as paving stones, brick, gravel or concrete

8.2.5 Lawn and Deck Furniture and Decorative Items

- Move combustible patio furniture, cushions, decorative piece and brooms inside or onto the lawn.

8.2.6 Fencing

Wooden fences and boardwalks create a direct line to your home and can contribute to the spread of wildfire. Consider these guidelines when designing your home:

- Non-combustible metal, decorative block or stone fencing
- Do not attach your fence directly to your home or deck

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8.2.7 Landscaping

Selecting fire-resistant plants and materials can increase the likelihood of your home surviving a wildfire. An even better approach is to consider xeric (dry habitat) landscaping. This aligns with Sustainable Communities initiatives by using less or no water, reduces pollution by not using lawnmowers to cut grass and is virtually fire resistant. During our assessment, it was noted that many Cochrane residents are applying xeric landscaping around their homes. No local photos were used to protect privacy.



An example of a xeric landscape

8.2.8 Alternate Landscaping

- Plant a low density of fire-resistant plants and shrubs.
- Water your grass and cut it high to retain moisture (3”).
- If you presently use mulch, remove it and replace with a non-flammable material such as paving stones, brick, gravel or concrete
- Plants to avoid include: cedar, juniper, pine, tall grasses (reed grass) and spruce.

8.2.9 Combustible Materials and Fire Management

- Do not pile lumber or wood against a home or under a deck or between structures.
- Burn barrels used within town limits are inspected and under permit in specific sites.
- Every home should have readily accessible fire tools such as shovels, rakes, garden hoses (hooked up), sprinklers and ladders.

Note: Never use wood or wood product mulching around your home or outbuildings.

8.2.10 Power Lines

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- Power lines should always be clear of branches and other vegetation as inspected by the power authority.
- Contact your local utility company to discuss removing any branches or vegetation around overhead electrical installations.

8.2.11 Accessory Structures

Accessory structures (sheds and garages) must be FireSmarted to the same standard as your main dwelling and met Town of Cochrane building codes and land use standards.

9. INTER AGENCY COOPERATION / CROSS TRAINING

9.1 Interagency Cooperation and Cross-Training

The mutual support, interagency training and communications between municipal structural firefighters and provincial wildfire personnel are a key metric in Wildland Urban Interface situations. The Town of Cochrane has Mutual Aid Agreements in place with the M.D. of Rockyview No. 44, the M.D. of Bighorn No.8, the Stoney Nakoda First Nation and Agriculture and Forestry, Calgary Wildfire Management Area. Several of the municipal and many local First Nations fire fighters have had wildfire training, some extensively. They have also participated in wildfire suppression activities for the province. Many of these firefighters participated in the wildfire directly adjacent to the west boundary of Cochrane on the Stoney Nakoda Reserve in May 2018. Cochrane will review the Mutual Aid Agreements on a yearly basis to ensure that current and appropriate documents are in place to maximize training opportunities and smooth mutual aid missions.

Rockyview County and the RVC Fire Services have indicated a desire to participate in FireSmart initiatives in locations where hazard and risk assessments note a change in municipal boundaries. RVC Fire Services is an active partner under our coordinated Fire Suppression Assistance Agreement. Staff and stations operate as well, both operating on crown lands with A.A.F.

10. EMERGENCY PLANNING

10.1 Wildfire Mitigation Measures

A field assessment was completed in October and November 2018 to assess the project area for wildfire mitigation strategies and activities. The surveys were completed by Keith Ebbs, RFP, CCI Inc. and Jeff Avery, Fire Prevention Officer, Town of Cochrane. An overview of the entire area was assessed for status and opportunities for fuel reduction to lessen future fire impacts while maintaining the recreational values within and adjacent to the town. Containment line fuel breaks were identified to provide a foothold for firefighting efforts along the Cochrane / Stoney Nakoda Reserve interface on the west side of town and along the M.D. of Rocky View border in the Big Hill Coulee interface, on the east side.

Outcomes of FireSmart activities in Cochrane will benefit the community by:

- Increased protection of homes and infrastructure from the threat of wildfire.
- Limit the potential of large, uncontrollable wildfires by reducing fuel loading.

Recommended mitigation measures include the following:

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- Within the Units standing dead snags will be removed for fire and safety reasons however selected scattered snags should be left for bird nesting, perches and other wildlife habitat.
- Aspen and black poplar stems will be retained as much as possible.
- Noise generated by motorized equipment may be of concern to neighboring landowners. Noise will be mitigated through operational timing considerations (i.e. between 8 a.m. and 5 p.m. and/or no Sunday operations).
- Operations will be completed safely; for all personnel, public, and neighbors. A Site-Specific Safety Plan (SSSP) will be developed for all activity phases and inclusive of all types of equipment and workers.
- Maintaining water quantity and quality of watercourses is imperative.
- AbaData and One-Call will be used prior to any operational activity to ensure that underground / overhead lines are properly identified. Line locating will also be completed, if necessary.
- An ongoing public information process and dedicated fire prevention/ public education officer is recommended during any FireSmart operational activities. Cochrane Fire Services prevention branch will provide this service.
- Pre- and post-operation information meetings should be held for any interested area residents to attend.
- It is desirable to break this plan into several operational years so that FireSmart activities can be prioritized by need. This will also allow area residents to review ongoing activities and their impacts on the landscape and vegetation. It would also have granting implications with smaller dollar packages to be approved by FRIAA rather than one large sum.

10.2 Containment Lines

Containment lines are those which have all timber fuels removed to offer opportunity for a burn out or back fire. These are particularly effective anchor points or lines when crowning fires may be spreading into the area. Crews and aircraft use the anchor lines to prevent the fire from crossing over the containment line. Fires are lit on the wildfire side to “burn out” or remove unburned fuels, widening the secure perimeter.

A 30 to 50-metre-wide primary containment line is proposed along the east side of Town and the M.D. Rocky View in the Big Hill Coulee. This could be in conjunction with the power company that owns the right-of-way between the two municipalities. This could be a joint Rocky View – Cochrane / industry proposal in 2019.

A second 30 to 50 metre containment line is proposed along the west boundary of the Town interface with the Stoney Nakoda Reserve. This could be a partnership submission with the Stoney Nakoda in 2019. Additional containment lines could be added in the future as the Town expands as part of the Adaptive Management approach.

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APPENDIX A

Vegetation Management and Priorities by Units

Priority is ranked numerically with a value of 1 being High, 2 Moderate, and 3 Low. Fuel Type is classified using the Canadian Forest Fire Behavior Prediction System. A summary is presented in Table 1.

Unit 1:

Size: 5.4 hectares
Priority: 1
Plot(s): 2, 2A
FBP Fuel Type: C-1, C-2

Unit 1 is almost completely on a steep (30% to 80%) north aspect slope. It consists of over-mature spruce over-story with a light to moderate spruce understory. Scattered standing dead snags exist with varying amounts across the area. Down-and-dead coarse woody debris is scattered on the forest floor and heavily in certain areas heavy. Soil and moisture conditions would typically allow for year-round treatment. Frozen conditions may not be feasible due to safety constraints on this very steep terrain. The north side of the unit borders the Bow River and river flats. The north-east boundary borders a town-house row for approximately 100 m and the conifers are within 10 m of the development. The north side of the unit is the hill-top and borders dense housing. There is a recreation trail between the housing and the operating unit that will assist in establishing and maintaining a fire break.

Prescription:

- On the west boundary remove all fuel along the boundary with the Stoney Nakoda Reserve to create a 30 to 50-meter (m) fuel break from the top-of-slope to the Bow River proper.
- On the east boundary create a 30 to 50 (m) fuel break between the standing timber from the top-of-slope to the river proper.
- Prune all spruce limbs to 2 meters height.
- Thin out all the immature spruce.
- Deadfall and snags will be gathered.
- Larger standing dead snags will be felled and piled.
- These will be piled together and burned in place.
- Concerns with deeper pockets of duff in this unit require close monitoring and complete extinguishment prior to final clearance.
- Although a small component, some aspen and poplar will be retained.
- Maintenance Timing: Reassess in 3 to 5 years. Expect continued fall-down of the over- mature spruce.

Unit 2:

Size: 0.5 hectares
Priority: 2 Plot(s): 2B
FBP Fuel Type: D-1

Although small this unit has been separated from Unit 1 due to timber composition. This is an almost pure aspen stand with scattered spruce. It is parkland aspen with low overall height and diameter. Stand health is poor with black rot present on many of the tree bole (suspected *Ceratocystis fimbriata*). Light duff and litter

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layers of less than 10 cm and well drained soils would allow dry summer operations; however frozen conditions would create higher production and a burn-in-place opportunity.

Prescription:

- Hand crew to prune limbs off the scattered spruce to 2 m height.
- Fall the standing dead.
- Burn all piles in place.
- Plant additional aspen between this stand and the housing development.
- Option 2 would be to move a small chipper up the Town right-of-way behind the housing and hand carry to the chipper. This method would be more expensive, and the chipping dust may disperse the latent disease spores.

Maintenance Timing: Reassess in 10 years. Expect continued progression of the present bole disease in the aspen.

Unit 3:

Size: 13.7 hectares
Priority: 2
Plot(s): 40
FBP Fuel Type: C-2, M-1

This is a mixed-wood unit with pockets of pure spruce. General health of the spruce is good with most of the aspen in poor and dying condition. The timber comes within 30 m of the housing development on the north-east portion of the unit. There is a moderate to heavy amount of down and dead in pockets throughout the unit. Slopes are 15% to 30% with a north aspect. Light to moderate duff and litter layers and well drained soils would allow dry summer operations. Frozen conditions would create higher production and quality of treatments

Prescription:

- Clear all conifers for 50 m from within the unit to the housing development.
- Leave all green aspen and poplar.
- Prune spruce branches to a 2 m height.
- Thin out all the immature spruce.
- Fall standing dead aspen but leave firm standing dead aspen for wildlife trees.
- Burn all piles in place.
- Plant aspen or poplar in a 20 m wide strip along the north boundary between the housing development and the stand of timber.

Maintenance Timing: Reassess in 10 years. The spruce component is in good health and expected poor continued progression of the aspen.

Unit 4:

Size: 3.4 hectares
Priority: 2
Plot(s): 40

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FBP Fuel Type: C-2, M-1

This unit has a small spruce component but is primarily aspen. Health of the aspen is very poor and is likely exacerbated by the anthropogenic disturbance to build the walking trails and the housing development. There is a high percentage of standing dead. This unit is bounded on the east and north sides housing developments.

Prescription:

- Leave all green aspen and poplar.
- Fall standing dead aspen but leave firm standing dead aspen for wildlife trees.
- Thin out all the immature spruce.
- Mulch all debris generated and all down-and-dead
- Option 2: Burn all debris in place

Maintenance Timing: Reassess in 5 to 10 years. Expect continued progression of the present aspen condition.

Unit 5:

Size: 11.3 hectares
Priority: 1
Plot(s): 15
FBP Fuel Type: O-1a

This unit is a heavy, matted mix of fescue, wheat grass and reed grass. Standard fuel loading for this unit would be 0.35 kg/m² however this unit has been unmanaged for several years and present fuel loading was assessed to be very high. This west side of this unit is on a west aspect slope of 50% to the crest of the hill. The rest of the unit is on a gently rolling bench a third of the way up the Big Hill. It is bounded on the east and north sides by private land and continued grass cover. The west and south sides are established housing.

The cost calculation for this unit is for contracted Prescribed Fire Planning specialists only. The Town Fire Department and Agriculture and Forestry staff are presently proposed to carry out the burn itself.

Prescription:

- Prescribed Fire Planning by a contracted specialist.
- Plant aspen along the west aspect slope and along the crest of the hill to establish a long term, low maintenance and sustainable fire break.

Future State / Maintenance: Reassess annually. Burning will markedly assist in restoring the unit to its original ecology. Future prescriptions and activities are presently presumed to be in-house with no further FRIAA funding.

Unit 6:

Size: 1.6 hectares
Priority: 2
Plot(s): 41
FBP Fuel Type: C-2

This is a stand of almost pure spruce with a small component of aspen. General health of the spruce is good

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with most of the aspen in poor and dying condition. Slopes are 40% to 80% with a north aspect. Light to moderate duff and litter layers and well drained soils would allow summer operations. Frozen conditions may not be feasible due to safety constraints on this very steep terrain.

Prescription:

- Create a 30 m wide fuel break from the crest of the slope to the side road at the bottom of the hill.
- Plant aspen in the fuel break to establish a long term, low maintenance and sustainable fire break.

Maintenance: Reassess annually. Ensure the fuel break is maintained clear of regenerating conifer.

Unit 7:

Size: 1.0 hectares

Priority: 1

Plot(s): 17

FBP Fuel Type: D-1

This unit is a decadent stand of mixed Salix (willow) and poplar along the Bill Hill Springs Creek. The site has a heavy grass and down and dead litter layer. This site also has deeper organics and therefore a limiting operational factor for winter operations only. The north boundary is the buffer to the creek the south boundary is the side-road.

Note: This small stream runs year-round and is fish bearing. Prescription:

- Frozen conditions only.
- Maintain creek-side vegetation / shade for fish habitat. A buffer of 30 m, 100% retention, on the riparian vegetation for water quality maintenance and cooling.
- Hand thin all dead vegetation pile and burn in place.
- Maintain all healthy poplar and the small aspen component.
- Remove all regenerating conifers.
- Layout must be an obvious ribbon line and a GPS or Avenza program should be carried in the mulcher for constant geo-referencing to ascertain that there is no disturbance in the riparian buffer.

Maintenance: Reassess annually for regeneration. After the first-year assessment, and only if not rapidly regenerating, replant the unit with native poplar scions cut from healthy retained stems. Ensure the unit is maintained clear of regenerating conifer.

Unit 8:

Size: 1.5 hectares

Priority: 2

Plot(s): 41

FBP Fuel Type: C-2

This is primarily a stand of spruce with a small component of aspen. General health of the spruce is good, but the aspen tends to be over-matured and falling down. Slopes are 20% to 80% with a north-west aspect. Light duff and litter layers and well drained soils would allow summer operations. Frozen conditions may not be feasible due to slope safety constraints on this steep terrain.

Prescription:

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- Hand prune all conifer limbs to 2 m height.
- Remove all coniferous understory under 5" diameter breast height (dbh).
- Maintain all aspen and poplar.
- Fall all the standing dead conifer and the dead aspen if it is less than 5" dbh.
- Leave 4 to 6 stems of larger dead aspen per ha. as wildlife tree retention.
- Cut and pile the down-and-dead.
- Pile and burn in place.
- Plant aspen and poplar in all canopy openings.
- Ensure a 30 m riparian buffer is maintained as required along the stream on the west side of the unit.

Maintenance: Reassess every 5 years. Replant the unit with aspen or native poplar scions after every maintenance treatment to slowly convert this stand to a pure deciduous (FireSmart) stand. Ensure the unit is maintained clear of regenerating conifer.

Unit 9:

Size: 2.0 hectares
Priority: 2 Plot(s): 16C, 16D
FBP Fuel Type: M-2

This is a mixed-wood stand of spruce and aspen. General health of the spruce and aspen is good. Slopes are 20% to 80% with a west aspect. Light duff and litter layers and well drained soils would allow summer operations. Frozen conditions may not be feasible due to slope safety constraints on this steep terrain.

Prescription:

- Hand-prune all conifer limbs to 2 m height.
- Remove all coniferous understory under 5" diameter breast height (dbh).
- Maintain all aspen and poplar.
- Fall standing dead conifer and some of the dead aspen if it is less than 5" dbh.
- Leave 4 to 6 stems of larger dead aspen per ha. as wildlife tree retention.
- Cut and pile the down-and-dead.
- Pile and burn in place.
- Plant aspen and poplar in all canopy openings.
- Ensure a 30 m riparian buffer is maintained as required along the stream on the west side of the unit.

Maintenance: Reassess every 5 years. Replant the unit with aspen or native poplar scions after every maintenance treatment to slowly convert this stand to a pure deciduous (FireSmart) stand. Ensure the unit is maintained clear of regenerating conifer.

Unit 10:

Size: 4.5 hectares
Priority: 1 Plot(s): 16B
FBP Fuel Type: O-1a

This unit is a heavy, matted mix of fescue, wheat grass and reed grass. Standard fuel loading for this unit would normally be 0.35 kg/m² however this unit has been unmanaged for several years

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and present fuel loading was assessed to be very high. The unit is on the flat below the Ranche House Town Office. It is a long narrow unit running south-west from the Ranche House to the Historic Buildings and parking lot beside Highway 1A. The west boundary is the slope to Units 8 and 9. The east boundary is the bottom of the hill below the buffalo jump and the historic farm site.

Prescription:

- Prescribed Fire Planning by a contracted specialist.

Note: The cost calculation for this unit is for contracted Prescribed Fire Planning specialists only. The Town Fire Department and Agriculture and Forestry staff are presently proposed to carry out the burn itself.



Note: The staircase and the historic farm site must be protected with no FireSmart activity. The original farm site proper is presently managed with a selective mowing program and highlighted with a walking trail, information boards and a building outline.

Maintenance: Reassess annually. Burning will markedly assist in restoring the unit to its original ecology. Future prescriptions and activities are presently presumed to be in-house with no further FRIAA funding.

Unit 11:

Size: 2.1 hectares
Priority: 1 Plot(s): 16A
FBP Fuel Type: O-1a

This unit is heavy, matted mix of fescue, wheat grass and reed grass. Standard fuel loading for this unit would normally be 0.35 kg/m² however this unit has been unmanaged for several years and present fuel loading was assessed to be very high. The east side borders the creek. Ensure a riparian willow buffer remains here for creek and fish habitat shade. The north boundary runs along the Historical Cochrane Ranche site which must be protected. The south and west sides of the unit is adjacent to the highway 1A and highway 22 intersection.

This intersection is quite wide and is also heavily grassed. The town will be approaching Alberta Transportation to mow this large corner at least twice per year.

Prescription:

- Prescribed Fire Planning by a contracted specialist.

Note: The cost calculation for this unit is for contracted Prescribed Fire Planning specialists only. The Town Fire Department and Agriculture and Forestry staff are presently proposed to carry out the burn itself.

Note: The original farm site proper is presently managed with a selective mowing program and highlighted with a walking trail, information boards and a building outline.

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Maintenance: Reassess annually. Burning will markedly assist in restoring the unit to its original ecology. Future prescriptions and activities are presently presumed to be in-house with no further FRIAA funding.



An example of the extreme grass fuel loading and slopes
within the Town