



Community Wildfire Protection Plan

Kakisa



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1 Introduction

In 2009, a Community Wildfire Protection Plan (CWPP) was developed for the Ka'a'gee Tu First Nation community at Kakisa to address the hazard and the risk to the community from wildfire. That CWPP was developed to provide practical and operational wildland /urban interface (WUI) risk mitigation strategies to reduce the threat from wildfire to the community.

The original CWPP was developed by Arctic Response Ltd and Davis Wildfire Management Inc. in cooperation with the Government of the Northwest Territories (GNWT) and Kakisa.

In 2014, the community of Kakisa was evacuated due to a large wildfire, fortunately no structures were destroyed. This plan reflects the changes in the forest environment around Kakisa.

In 2018 the GNWT, Department of Environment and Natural Resources (ENR) updated the Kakisa CWPP by using the most recent information, science and expertise available. This included using standardized FireSmart assessment protocols and mitigative measures were developed based on the 7 disciplines of FireSmart.

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

The update included:

- The FireSmart mitigation efforts completed around the community
- The change in hazard around the community.
- New recommendations or modification to existing recommendations

Kakisa, in cooperation with ENR, implemented some of the original recommendations but there is still work to do.

The update includes recommendations to assist in setting priorities to reduce the threat from wildfire. It is important to note that while implementing these recommendations will reduce the threat from wildfire to structures, it will never completely remove the threat.

This plan should be reviewed regularly to ensure that it remains a priority to the community and its residents.

2 Planning Area and Stakeholders

The planning area includes all lands within two kilometres of the developed areas around Kakisa. (Map 1)

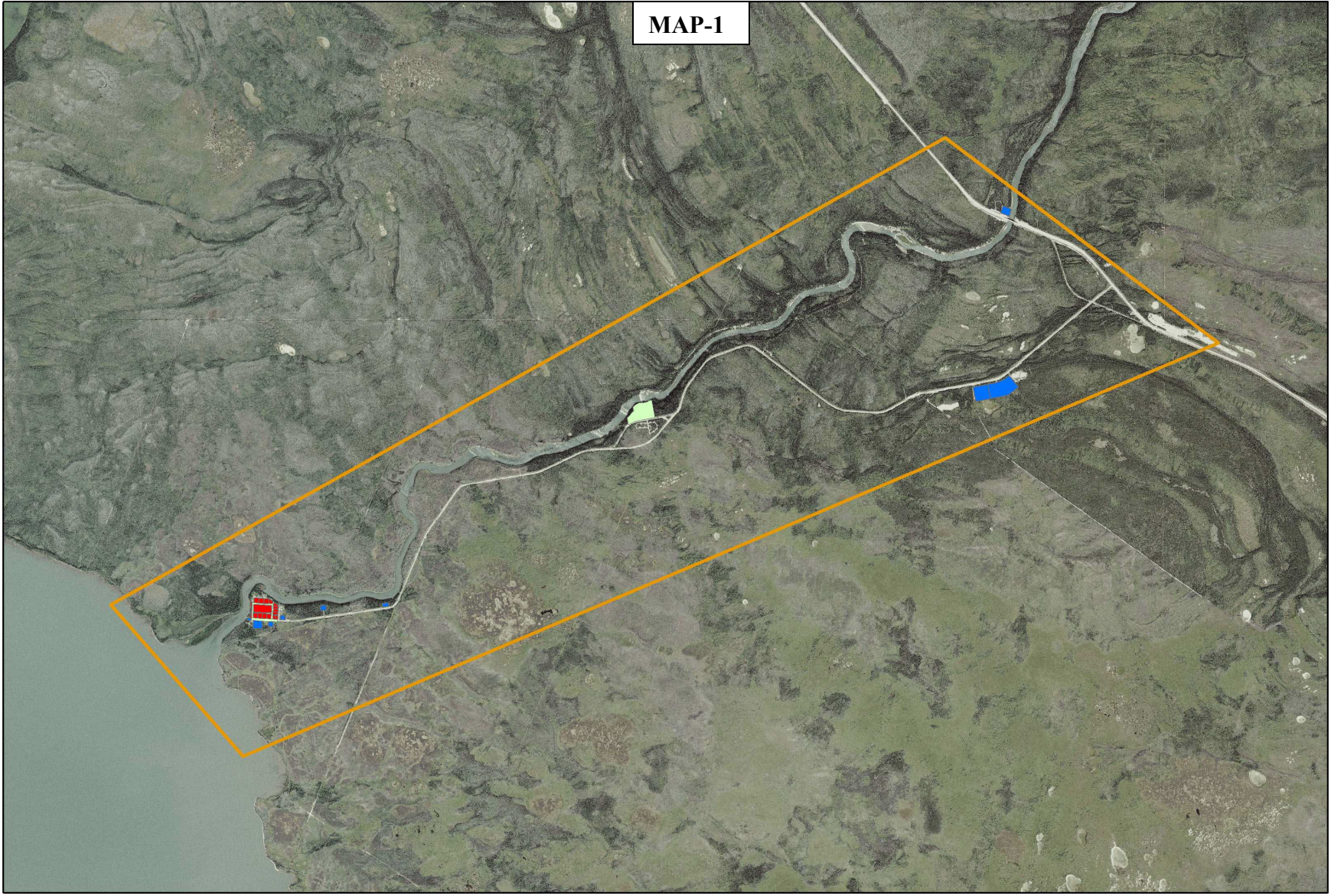
Stakeholders involved with the planning process included:

- Government of the Northwest Territories, Environment and Natural Resources
- Hamlet of Enterprise

Land status authority is varied and is represented by the following (Map 1)





- Commissioner
- Indian Affairs Branch
- Mixed
- Municipal
- Private
- Territorial

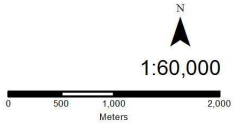
MAP-1



Kakisa Land Status Authority

Land Ownership

 Commissioner	 Municipal	 Planning Area
 Indian Affairs Branch	 Private	 Territorial
 Mixed		



3 Hazard & Risk Assessment

In the original 2009 CWPP a hazard and risk assessment was undertaken to determine the potential impact wildfire could have on the community. This was based on an analysis of the historical wildfire ignition sources, fire incidence and the wildland fire potential of the forest surrounding the community.

3.1 Wildfire Ignition Potential

The assessment of recent fire incidences was completed using historical fire data from ENR for the period from 2009 to 2018.

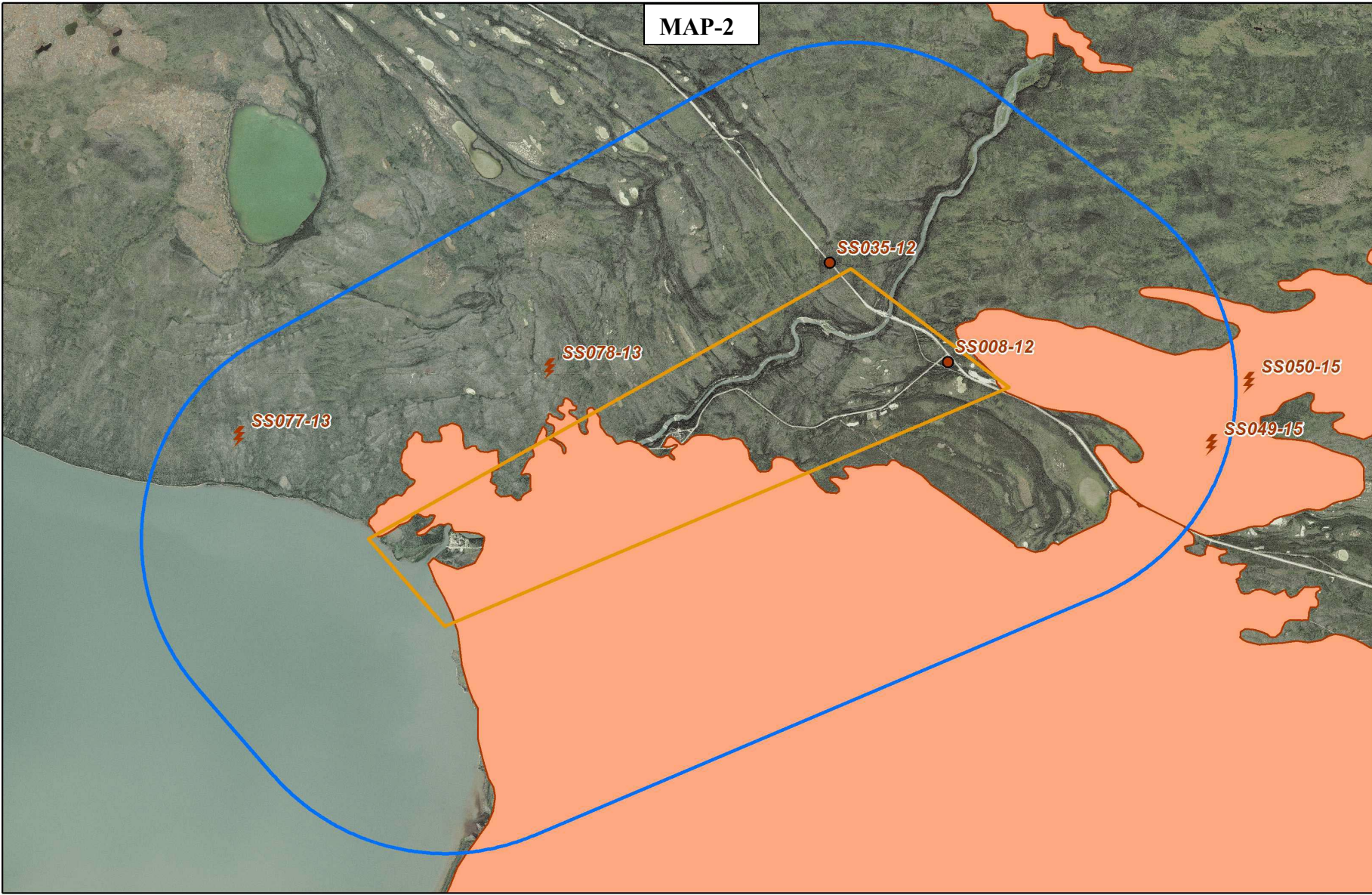
Data within a 10 kilometers radius of Kakisa indicates that wildfire incidence is moderate. Fire incidence data shows a total of 7 wildfires that started within the planning area (**Map 2**). Predominant fire causes are lightning outside the settled areas.

Table 1: Fire Incidence by Cause (2009 - 2018)







General Cause	Number of Fires	Percent of Total
Human-Caused	2	28%
Lightning-Caused	5	72%
Total	7	100%

Wildfire incidence in the planning area is low to moderate and is mostly due to the fire in 2014 that consumed most of the hazardous fuel near the community.

MAP-2

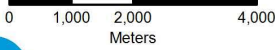


Kakisa Ten Year Fire History

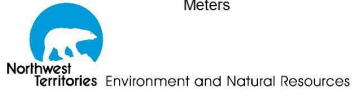
-  Planning Area 10km Buffer
-  Planning Area
-  Large Fire History
-  Human Caused
-  Lightning
-  Unknown

N

1:108,000



Meters



3.2 Wildfire Behavior Potential

3.2.1 Forest Fuel Types

Fire Behaviour Prediction (FBP) fuel types (Taylor, 1997) were used to analyze the fuel types and fire behaviour potential within and adjacent to Kakisa.

The overall area was dominated with black spruce (C-1), boreal spruce (C-2), mature jack pine (C-3) and deciduous fuel types while the Kakisa town-site area is mainly non-fuel (NF) and cured-grass (O1), and deciduous fuel types with boreal spruce (C-2) fuels along the south perimeter of town.

After the 2014 fire much of the fuel that was adjacent to the community was consumed. Over the past few years there have been some harvesting of the fire killed trees but much of this area has begun to fall over. This CWPP addresses those issues and should be updated on an ongoing basis.

Forest fuel types and data indicates a low potential for landscape-level wildfire exists in the areas surrounding Kakisa with the highest potential along the south perimeter of the town-site in down and dead C-2 fuel types.

3.3 FireSmart Hazard Assessments

FireSmart hazard assessments (P.I.P., 2003) 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 hazard for each of the development areas is discussed below.

Table 2: FireSmart Hazard Assessments

Developed Area	Structure/ Site Hazard
Kakisa	Low to Moderate

Kakisa Town site Area

FireSmart hazard for the Kakisa town site area is **Low to Moderate**. Many of the perimeter structures and homes are at **Moderate** hazard based on proximity to C-2 fuels. Some structures are FireSmart but the majorities require Zone 1a and Zone 1 improvements. Exterior structure materials are primarily asphalt shingle or metal roofing and wood or vinyl siding. Access roads are all-weather loop and dead-end. The highest wildfire threat is to structures backing onto C-2 fuels on the north and east perimeter of the townsite area and south of the town-site on the west-side of the community access road from Highway 3.

FireSmart hazard is Low to Moderate for most of the main town site and around rural structures south of the main town site.

4 Vegetation Management Options

The goal of vegetation management is to create a clear space between the community and the forest to reduce the intensity and rate of spread of wildfire approaching or leaving the community. 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 (remove trees)
- Fuel reduction (thin and prune trees)
- Species conversion (plant less flammable trees)

Complete descriptions of the methods included in each of the above options are included in the link:

<https://www.firesmartcanada.ca/mdocs-posts/firesmart-priority-zones-2017/>

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

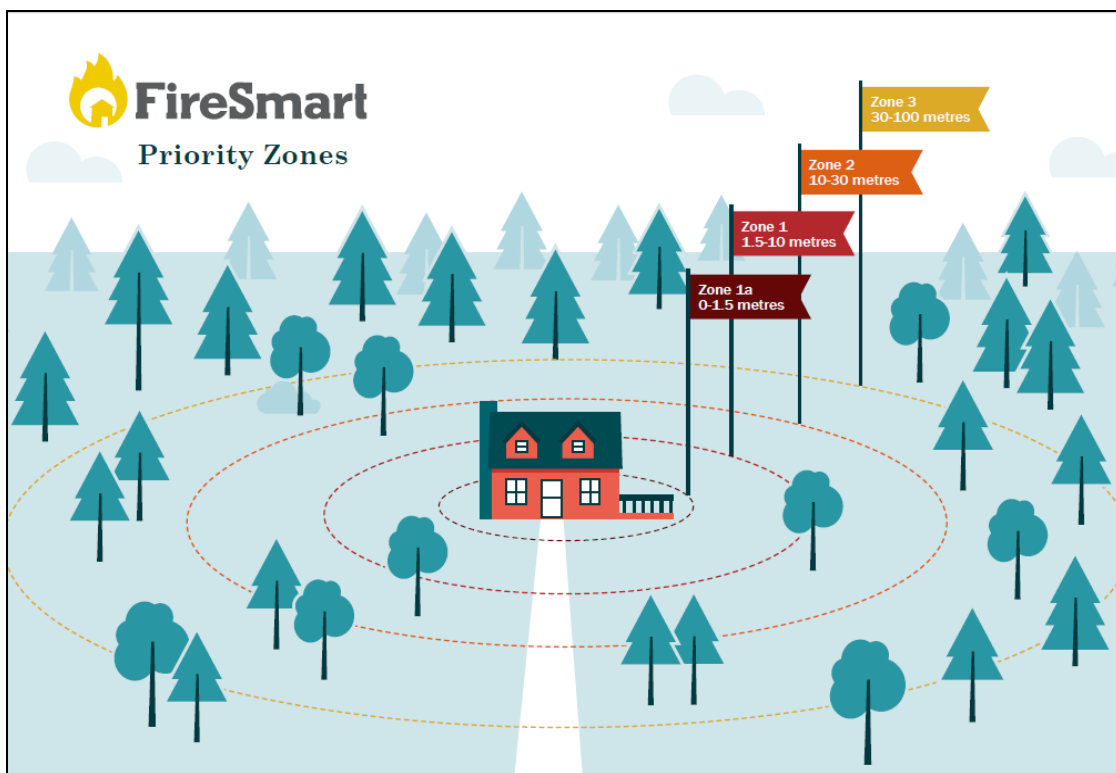


Figure 1– Interface Priority Zones (PIP, 2017)

4.1 Existing Vegetation Management

Kakisa has implemented some of the vegetation management recommendations as per the 2010 CWPP. Vegetation management has occurred in the form of fuels removal through fireguards and fuels reduction immediately adjacent to structures (**Map 3 & Table 3**).

Table 3: Existing Vegetation Management Areas

Name	Area	Year	Agency	Comments
2010	1.97	2010	GNWT	Will require Maintenance
North Cat Guard	10.23	2014	GNWT	Will require maintenance
Fuel treatments Area 1	5.76 ha	2010	Kakisa	Will require maintenance
Fuel treatment Area 2	0.08 ha	2014	Kakisa	Will require maintenance

Fireguards were completed along the south perimeter of the Village in 2014. They were cleaned up in 2015. These guards will require maintenance in the future.

In addition, Kakisa has been working with Wilfrid Laurier University and the GNWT Industry Tourism and Investment (ITI) on agriculture in the NWT. This project, with support of project partners builds on years of collaboration and supports the community's vision for developing capacity for growing food.

ENR is working with Kakisa to identify an area beside the community that will be acceptable. This area will be cleared for agriculture but will act as a fire break as well.

4.2 Proposed Vegetation Management

It is important to note that in 2014 the fire that reached Kakisa had a major impact on the fuels surrounding the area. Although much of the forest was impacted the use of proper FireSmart vegetation management principles should become a regular practice for anyone who is surrounded by wildland urban interface.

4.2.1 Zone 1a and Zone 1 (0-10 metres)

Zone 1a vegetation management is **inadequate** for many of structures due to encroachment of native grass fuels.

FireSmart Zone 1a vegetation management options include:

- Creating a noncombustible zone around structures by clearing vegetation and combustible material down to mineral soil within 1.5 meters of structures.
- Use noncombustible materials in this critical zone of 1.5 meters directly adjacent to your home such as gravel, bricks or concrete.
- Woody shrubs, trees or tree branches should be avoided in this zone and any that are present should be properly mitigated.

FireSmart Zone 1 vegetation management options include:

- Removal of flammable forest vegetation within 10 meters of structures.
- Removal of all coniferous ladder fuels (limbs) to a minimum height of 2 meters 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 meters of the structure.

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

Recommendation 1: Encourage residents to establish adequate Zone 1a and Zone 1 defensible space around their structures.

4.2.2 Zone 2-3

The Zone 2-3 fuels surrounding the community were to reduce the threat of wildfire in C-2 fuels to perimeter structures (**Map 3 & Table 4**). Proposed fuels management areas have been identified near the community to reduce the dead and down woody debris and to

ensure the events of 2014 never happen again. An area within these proposed treatment areas will be identified as an agricultural area.

Table 4: Priority Fuel Modification Areas

Priority	Area (Ha)	Proposed Fuel Modification Standards	Land Status Authority
Kakisa Village South	12.3	<ul style="list-style-type: none"> ▪ Fuels reduction to space Boreal spruce to 2-3 m crown spacing including ▪ Remove all dead standing and dead & down coniferous and willow ▪ Prune limbs to 2 meters ▪ Dispose of all debris from new and past fuels reduction 	<ul style="list-style-type: none"> ▪ Village of Kakisa
Kakisa Village East	3.08	<ul style="list-style-type: none"> ▪ Fuels reduction to space Boreal spruce to 2-3 m crown spacing for a minimum 75m wide behind homes ▪ Remove all dead standing and dead & down coniferous and willow ▪ Retain deciduous overstory stems ▪ Prune limbs to 2 meters ▪ Dispose of all debris from fuels reduction 	<ul style="list-style-type: none"> ▪ Village of Kakisa
Total	15.38		

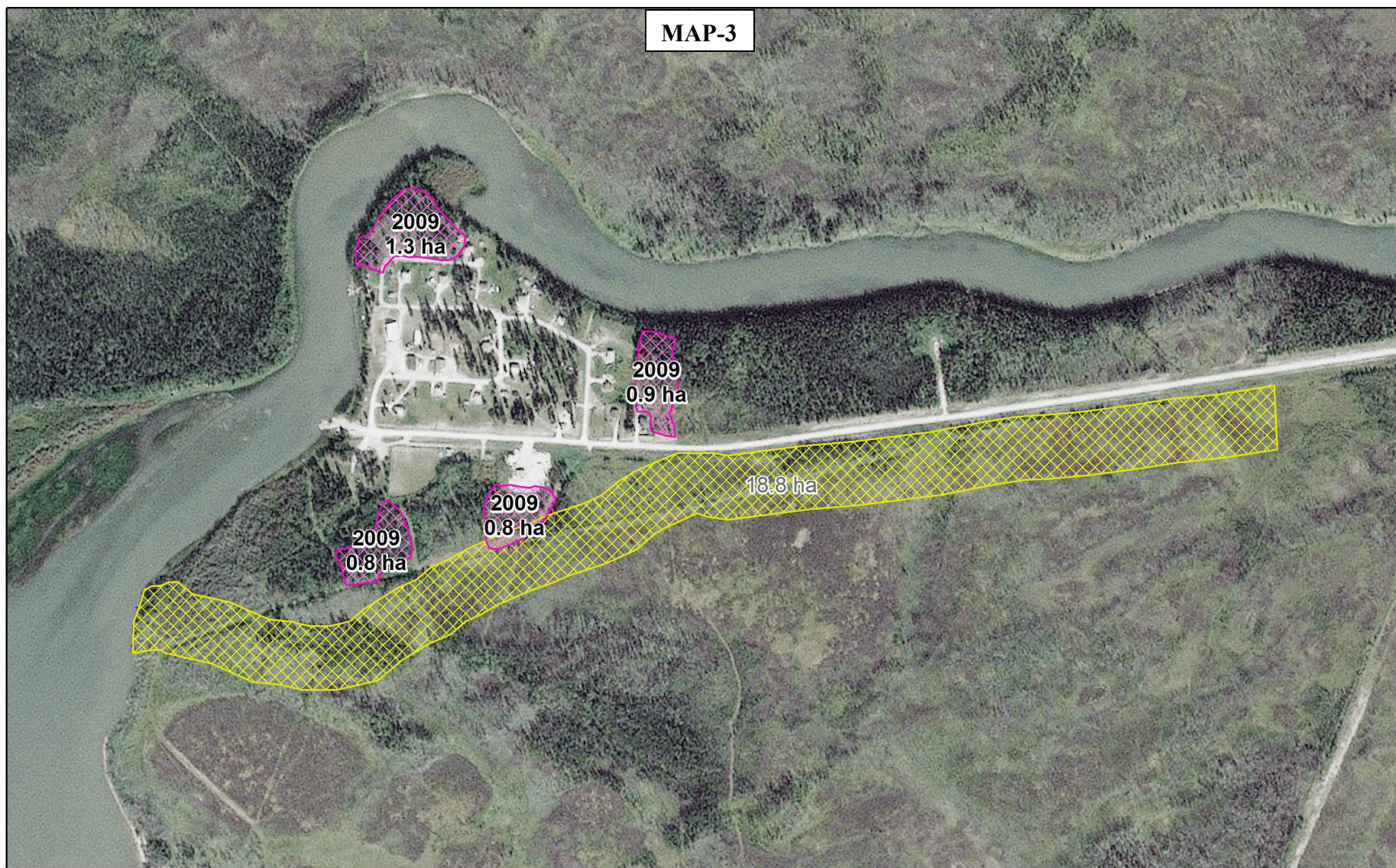
Recommendation 2: Zone 2-3 fuels reduction and maintenance is the responsibility of the Land Status Authority holder(s) and should be implemented based on the priorities identified in this plan.

4.3 Vegetation Management Maintenance

Fuel modification area maintenance schedules depend on many factors including fuel type, soil and moisture conditions, and specific weather events. It is suggested that land managers provide periodic inspections of their fuel modification project areas and complete maintenance as required. It is projected that fuel modification maintenance will be required at least each five-year period.

Recommendation 3: Ensure that all existing fuel modification projects are inspected on a regular basis and maintained as necessary to ensure effectiveness. Maintenance should be the responsibility of the land manager or landowner.




MAP-3



Kakisa Fuel Modifications

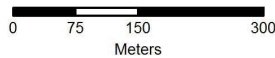
Completed and Proposed

Fuel Modifications


-  Completed
-  In Progress
-  Proposed

N

1:8,000



Meters



5 Development Options

Consideration of wildfire at the planning stage of new development is encouraged to ensure that wildfire hazard and appropriate mitigation measures are developed and implemented prior to development.

New developments may overlap or conflict with existing fuel modification resulting in a reduction in fuelbreak effectiveness and an increase in wildfire threat to the new or existing development in the area.

Recommendation 4: If a new development removes or reduces the effectiveness of any existing or proposed FireSmart mitigation measures or introduces new wildfire hazards, the area must be assessed and measures implemented to maintain the community protection standards.

5.1 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 steeper 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.



The most common roofing materials in the planning area are asphalt shingle, metal, and roll-roof asphalt. The most common siding materials are wood, log, hardy-plank and vinyl siding.

5.2 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, adequate and accessible water supply for structure protection and suppression, and utility installation standards that do not increase risk to emergency responders during a wildfire emergency.

5.2.1 Access

Access road standards throughout the planning area are mainly adequate for an interface community with primarily all-weather loop road and dead-end access.

5.2.2 Water Supply

Kakisa does not have municipal hydrant water-supply. All development areas rely on water-tender supply from the local fire department for structure protection activities.

5.2.3 Franchised Utilities

Franchised utilities affected by an interface fire include electrical power and gas. Proper installation and maintenance of these services can minimize the risk to residents and emergency services personnel.

Electrical Power

Power distribution and residential service is provided through above-ground lines.

Gas

Heating fuel is primarily provided by heating oil with scattered propane tanks.

6 Public Education Options

Public education plays a key role in promoting and implementing FireSmart principles and projects. Residents, landowners, municipal administration, and elected officials all need to be aware of the risk of wildfires and the solutions to minimizing the risk, and need to become a partner in implementation of the solutions in their communities. If stakeholders understand the issues relating to wildland/urban interface hazard they will be more likely to take action on their own property or to support actions taken by other authorities.

Residents and stakeholders can refer to the GNWT ENR, Forest Management Division website at: <https://www.enr.gov.nt.ca/en/services/be-firesmart> for further information on the GNWT FireSmart program, current wildfire updates, and other wildfire management related information.

Key Messages

FireSmart hazard assessments identified the need for the following key messages to target audiences in the planning area.

Homeowners

Homeowners can increase resiliency of homes and make them less vulnerable to wildfire by development and maintenance of the FireSmart Non-Combustible Zone 1a (0-1.5 metres) and Zone 1 (1.5-10 metres) defensible space surrounding the home, by:

- Clearing vegetation and combustible material down to mineral soil within 1.5 metres of structures.
- Using noncombustible materials in this critical zone of 1.5 metres directly adjacent to your home such as gravel, bricks or concrete.
- Woody shrubs, trees or tree branches should be avoided in this area and any that are present should be properly mitigated.
- Storing firewood and other combustible materials more than 10 metres away from the home.
- Keeping roof and eaves clear of leaves and other combustible debris.
- Creating propane and fuel-tank FireSmart defensible space.
- Creating a non-combustible zone for underneath and around any trailers/vehicles and mitigate sheds and other structures to the same standards as those of your home.
- If possible and/or applicable maintain Zone 2 (10-30 metres) and Zone 3 (30-100 metres) recommendations, and work with neighbors in any overlapping Priority Zones.

Communities

Communities can reduce wildfire risk and adopting FireSmart principles by:

- Holding a FireSmart Wildfire Community Preparedness Day or workshop.
- Using local government websites, social media and newsletters to promote FireSmart principles.
- Asking ENR staff what educational and/or promotional resources they have available, such as: wildfire information pamphlets, posters, educational resources, videos etc.
- Applying for the FireSmart Community Recognition Program. For more information visit: <http://www.firesmartcanada.ca/firesmart-communities/firesmart-canada-community-recognition-program>.

Recommendation 5: Public education on acceptable FireSmart Zone 1a and Zone 1 standards is recommended for all Kakisa residents.

7 Inter-Agency Cooperation and Cross-Training Options

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

Interagency stakeholders within the planning area include:

- Village of Kakisa
- GNWT

Member of the community that are involved with Emergency planning and response should be Cross-training with ENR and Municipal and Community Affairs (MACA) and should include basic wildfire, wildfire behavior, wildland/urban interface fire, and incident command system training courses.

The following cross-training courses are available.

Wildland Fire

- Wildland Firefighter (NFPA 1051 Level I, S-131, or equivalent)

Wildland/Urban Interface Fire

- Structure and Site Preparation Workshop (S-115)

Incident Command System

- ICS Orientation (I-100)
- Basic ICS (I-200)
- Intermediate ICS (I-300)

Recommendation 6: Members of the community that are involved with Emergency planning and response should partner on cross-training initiatives to ensure emergency responders are cross-trained to the following:

- Wildland Firefighter
- Structure and Site Preparation Workshop (S-115)
- Incident Command System (I-100 to I-300) as applicable

8 Emergency Planning Options

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

In 2016 Kakisa completed an Emergency planning workshop with MACA and completed the Village of Kakisa Emergency Plan.

Kakisa does not have a wildfire pre-plan to provide emergency responders with detailed tactical information with respect to values at risk and operational strategies and tactics to minimize losses during a wildland/urban interface fire. A suggested outline is as follows:

- Planning Area Jurisdictional Authority
- Values at risk (life, structures, infrastructure)
- Fire operations plan (strategies/tactics, water sources, equipment, communications plan)

Recommendation 7: Develop a Community Wildfire Pre-Plan for Kakisa to provide greater operational detail to emergency responders during a wildland/urban interface incident.

9 Recommendations Summary

Vegetation Management

Issue	Recommendation	Responsible Agency
Zone 1a and Zone 1	Recommendation 1: Encourage residents to establish adequate Zone 1a and Zone 1 defensible space around their structures.	Kakisa
Zone 2-3	Recommendation 2: Zone 2-3 fuels reduction and maintenance is the responsibility of the Land Status Authority holder(s) and should be implemented based on the priorities identified in this plan.	Kakisa
Maintenance	Recommendation 3: Ensure that all existing fuel modification projects are inspected on a regular basis and maintained as necessary to ensure effectiveness. Maintenance should be the responsibility of the land manager or landowner.	GNWT Kakisa

Development

Issue	Recommendation	Responsible Agency
FireSmart Development Planning	Recommendation 4: If a new development removes or reduces the effectiveness of any existing or proposed FireSmart mitigation measures or introduces new wildfire hazards, the area must be assessed and measures implemented to maintain the community protection standards.	Kakisa GNWT

Public Education

Issue	Recommendation	Responsible Agency
Public Education Priorities	Recommendation 5: Public education on acceptable FireSmart Zone 1a and Zone 1 standards is recommended for all Kakisa residents.	GNWT Kakisa

Interagency Cooperation & Cross-Training

Issue	Recommendation	Responsible Agency
Cross-Training	<p>Recommendation 6: Members of the community that are involved with Emergency planning and response should partner on cross-training initiatives to ensure emergency responders are cross-trained to the following:</p> <ul style="list-style-type: none"> ▪ Wildland Firefighter ▪ Structure and Site Preparation Workshop (S-115) ▪ Fire Operations in the Wildland/Urban Interface (S-215) ▪ Incident Command System (I-100 to I-300) as applicable 	GNWT Kakisa

Emergency Planning

Issue	Recommendation	Responsible Agency
Community Wildfire Pre- Planning	<p>Recommendation 7: Develop a Community Wildfire Pre-Plan for Kakisa to provide greater operational detail to emergency responders during a wildland/urban interface incident.</p>	GNWT Kakisa