Community Wildfire Protection Plan

K’átł’odeeche First Nation

Government of
Northwest Territories

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1 Introduction

In 2011, a Community Wildfire Protection Plan (CWPP) was developed for the K'atl'odeeche First Nation in conjunction with the Town of Hay River to address the hazard and the risk to these communities 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 communities.

The original CWPP was developed by Montane Forest Management Ltd. in cooperation with the Government of the Northwest Territories (GNWT), Hay River and K'atl'odeeche.

In 2018 the GNWT, Depertment of Environment and Natural Resources (ENR) developed the K'atl'odeeche Community Wildfire Protection 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

K'atl'odeeche, 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

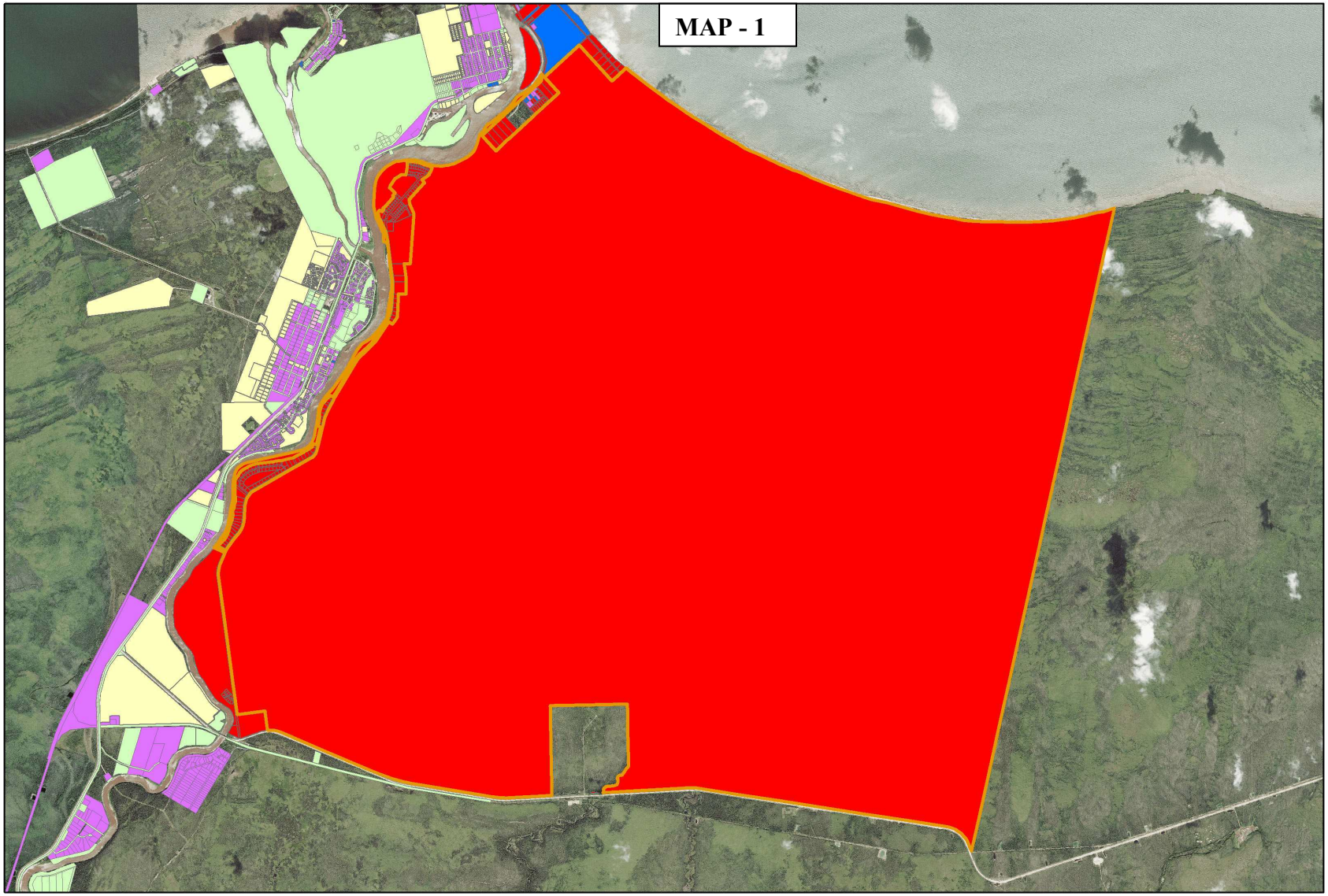
The planning area includes all lands within the developed areas within K'atl'odeeche Reserve (Map 1).

Stakeholders involved in the planning process included:

- Government of the Northwest Territories, Environment and Natural Resources
- K'atl'odeeche First Nation
- Town of Hay River

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

- Commissioner
- Hay River Indian Reserve
- Mixed
- Municipal
- Private
- Territorial



Katlodeeche
Land Status Authority

3 Hazard & Risk Assessment

In the original 2011 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

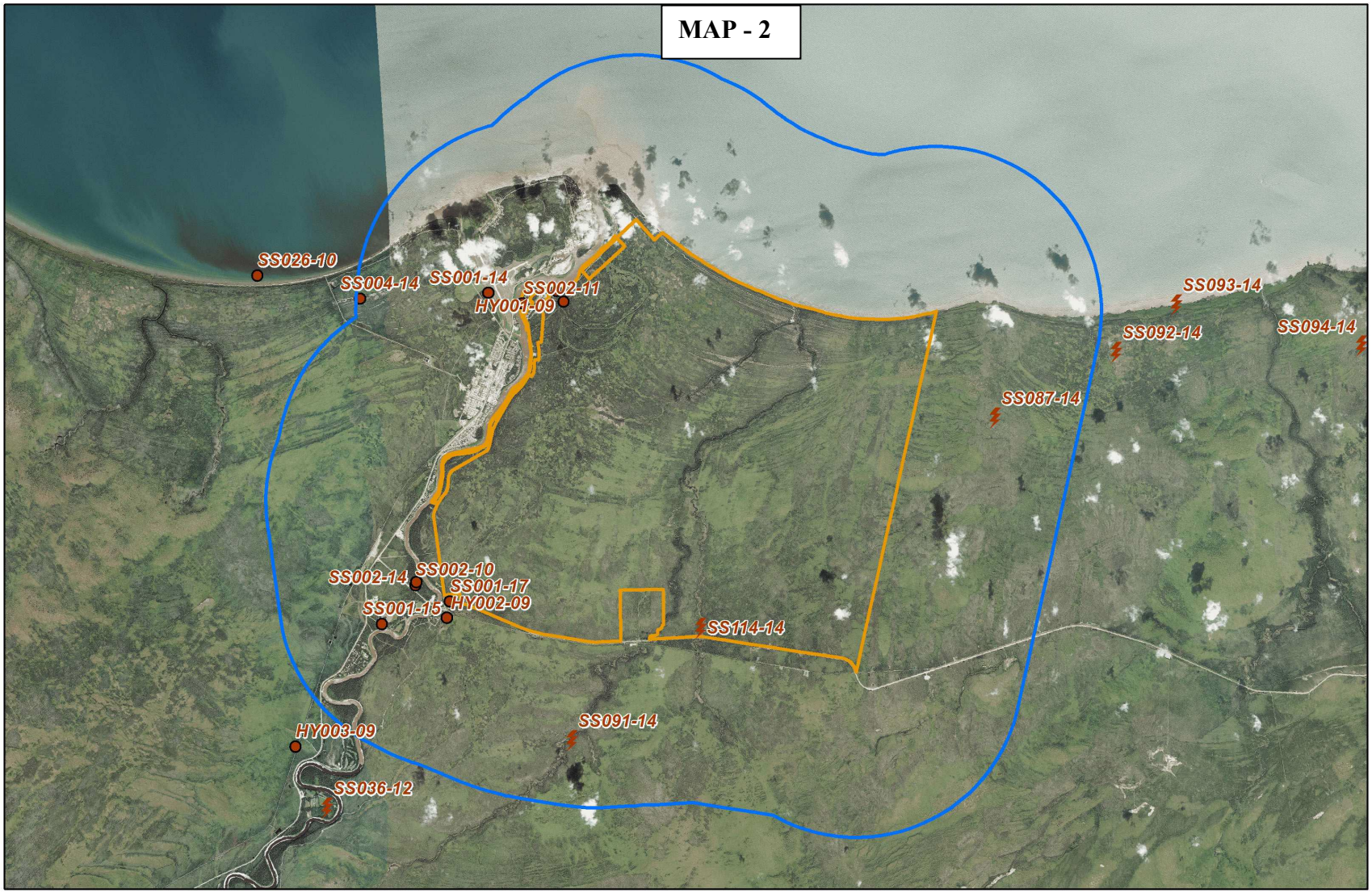
The assessment of recent fire incidence was completed using historical fire data from ENR for the period from 2009 to 2018.

Data within a 10-kilometer radius of K'atl'odeeche Reserve indicates that wildfire incidence is high. Fire incidence data shows a total of 12 wildfires in the planning area **(Map 2).** Predominant fire causes are lightning-caused outside the settled areas and human-caused within settled areas. Several large wildfires greater than 10,000 ha have occurred over the past few years **outside** the 10 kilometers buffer zone indicating the potential for landscape-level wildfire exists.

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

General Cause	Number of Fires	Percent of Total
Human-Caused	9	75%
Lightning-Caused	3	25%
Totals	**12**	**100%**

Wildfire incidence in the planning area is high and is naturally caused by lighting.



Katlodeeche
Ten Year Fire History

Planning Area 10km Buffer
Planning Area
Large Fire History

Human Caused
Lightning
Unknown

N

1:148,000

0 1,500 3,000 6,000
Meters

Northwest Territories Environment and Natural Resources

3.2 Wildfire Behaviour Potential

3.2.1 Forest Fuel Types

Analysis of the forest fuels surrounding K'atl'odeeche Reserve were completed in 2011. Fuel types within and adjacent to the developed areas on the K'atl'odeeche Reserve are predominantly boreal spruce (C-2), deciduous (D-1 & D-2), and cured-grass (O1). Each of these fuel types can present hazard to interface structures based on fuel moisture conditions and time of year.

Forest fuels data indicates that the potential for high to extreme wildfire behavior exists in the K'atl'odeeche Reserve area.

3.3 FireSmart Hazard Assessments

FireSmart hazard assessments (P.I.P., 2003) of developed areas and adjacent fuels were completed in 2011 and indicated that many developments within K'atl'odeeche Reserve are still at threat from wildfire. 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 (WUI) 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
Rural Developments	High-Extreme
Main Town Site	Moderate - High
Old North Settlement	Moderate

Development on the K'atl'odeeche Reserve consists of several rural development sites scattered along Reserve Highway, the main town site area, and the old north settlement area.

FireSmart hazard for the rural developments are generally **High to Extreme** due to proximity to C-2 fuel types and lack of adequate Zone 1-2 defensible space, **Moderate** to **High** for the main town site area, and **Moderate** for the old north settlement area due lack of adequate Zone 1-2 defensible space from cured-grass fuels. Exterior structure materials are primarily asphalt shingle roofing and wood siding. The main access is the all-weather dead-end Reserve Highway with structure access consisting of all-weather loop and dead-end design.

ENR and Reserve Hwy South Rural

K'atl'odeeche Town Site

Treatment Centre and Cultural Institute

Old North Settlement

FireSmart hazard is High/Extreme for several development areas within the planning area. The threat of structure loss to wildfire is significant particularly in the rural areas.

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.

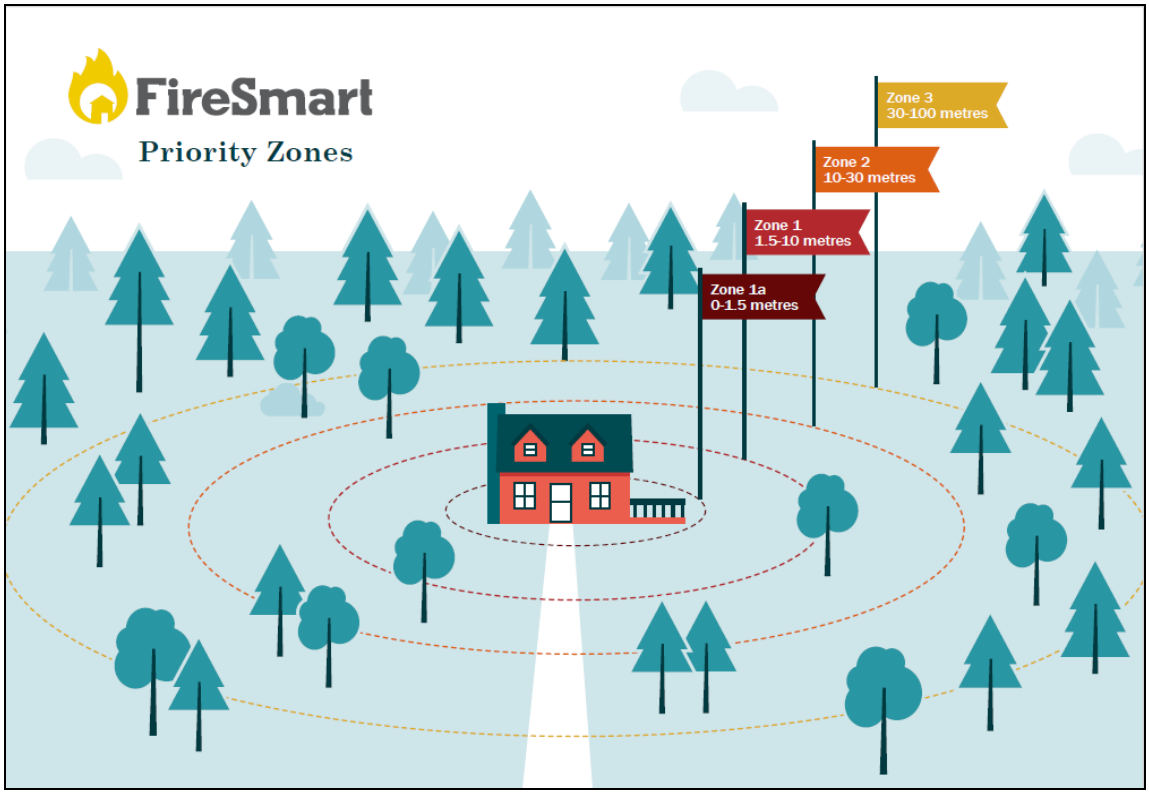


Figure 1– Interface Priority Zones (PIP, 2017)

4.1 Existing Vegetation Management

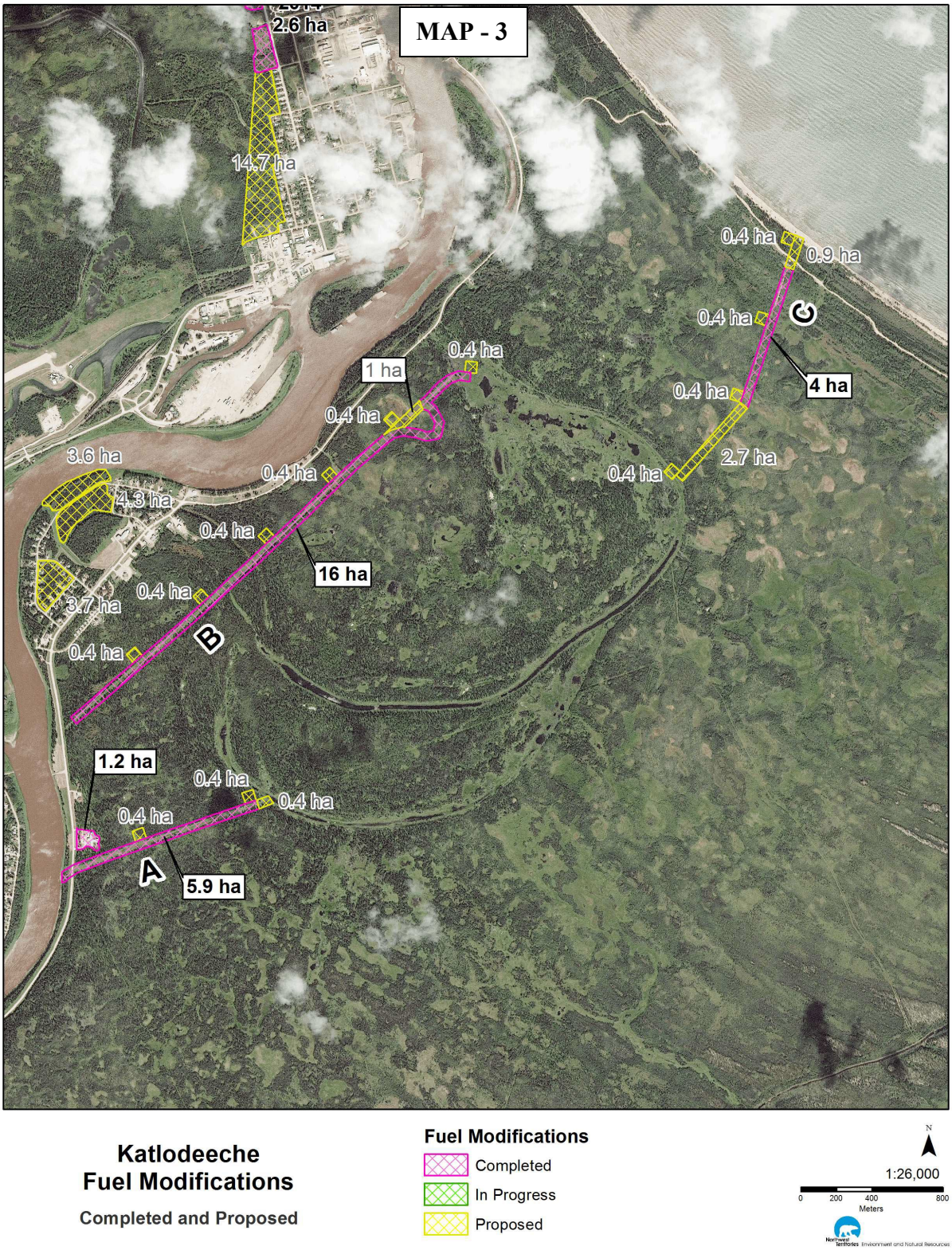
Fuels removal and reduction projects have been completed within the planning area by the GNWT ENR Department **(Map 3 & Table 3)** and by the K'atl'odeeche First Nation.

Table 3: Existing Vegetation Management Areas

Name	Area (ha)	Year	Agency	Comments
K'atl'odeeche Reserve Fuel Break	3.0	2010	K'atl'odeeche First Nation	Will require maintenance
K'atl'odeeche Reserve Treatment Center	1.2	2010	K'atl'odeeche First Nation	Will require maintenance
K'atl'odeeche Reserve Fuel Break A, B & C	25.9	2015	GNWT K'atl'odeeche First Nation	Widen and extended to North
Main Town Site	3.7	2018	K'atl'odeeche First Nation	Thinning & Pruning nearby residences
Main Town Site	0.4	2019	GNWT K'atl'odeeche First Nation	Completion of 2018 Main Town Project. Burning of residual brush piles
New Sub-Division	4.3	2019	GNWT K'atl'odeeche First nation	Thinning & Pruning New Sub-Division
New Sub-Division	3.6	2019	GNWT K'atl'odeeche First Nation	Removal of fuels along Hay River shorelines

Fuels reduction was completed around the K'atl'odeeche Treatment Centre and Cultural Institute in 2009/10. The fuel reduction area will require maintenance at least every five-year period.

The Initial Katlodeeche fireguard was hand-cleared to approximately 25 metres in width during the winter of 2009/10 around the southeast perimeter of the main townsite. The guard needs to be extended and widened to ensure effectiveness in extreme fire behavior conditions.



Note: Depicted 0.4 ha proposed areas along fuel breaks listed as helipads.

4.2 Proposed Vegetation Management

4.2.1 Zone 1a (0-1.5m) and Zone 1 (1.5m – 10m)

FireSmart 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 1.5m of structures.
- Use noncombustible materials in this critical zone of 1.5m 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 10m of structures.
- Removal of all coniferous ladder fuels (limbs) to a minimum height of 2m 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 10m 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 (10m-30m) - Zone 3 (30m- 100m)

Zone 2-3 fuels management is recommended for areas surrounding rural developments, main town site and Old North Settlement to reduce the threat of wildfire in C-2 fuels to perimeter structures **(Table 4 and Map 3).** Proposed fuels management areas are conceptual at this time and will require detailed fuels reduction planning to identify fuels management prescription, unit boundaries, and operational constraints.

Table 4: Proposed Fuel Modification Areas

Treatment Area	Area (Ha)	Proposed Fuel Modification Standards	Land Status Authority
Completion & Extension of Fuel Break A	0.8	Dozer Guards to tie-in with wetlands	K'atl'odeeche First Nation
Completion & Extension of Fuel Break B	1.0	Dozer Guards to tie-in with wetlands	K'atl'odeeche First Nation
Completion & Extension of Fuel Break C	3.6	Dozer Guards to tie-in with wetlands and Great Slave Lake	K'atl'odeeche First Nation
Completion of Fuel Reductions in Rural Developments, Main Town Site & Old North Settlement	8.0	Thinning & Pruning nearby structures to create defensible space zone 1a, 1, 2 & 3.	K'atl'odeeche First Nation
Total			

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.

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/vinyl with scattered log and hardi-plank.

Structures are typically elevated above-ground on pilings and many are not skirted allowing wildfire access to the underside of structures.

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

K'atlo'deeche Reserve 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: 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 K'atl'odeeche Reserve 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:

- K'atl'odeeche First Nation
- K'atl'odeeche Volunteer Fire Department
- GNWT

Cross-training for K'atl'odeeche Volunteer Fire Department members should include basic wildfire, 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: K'atl'odeeche Volunteer Fire Department and the GNWT 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.

K'atl'odeeche Reserve 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 K'atl'odeeche Reserve 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.	K'atl'odeeche First Nation
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.	K'atl'odeeche First Nation
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 K'atl'odeeche First Nation

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.	K'atl'odeeche First Nation 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 K'atl'odeeche Reserve residents.	K'atl'odeeche First Nation GNWT

Interagency Cooperation & Cross-Training

Issue	Recommendation	Responsible Agency
Cross-Training	**Recommendation 6:** K'atl'odeeche Reserve Volunteer Fire Department members and GNWT 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	K'atl'odeeche First Nation GNWT

Emergency Planning

Issue	Recommendation	Responsible Agency
Community Wildfire Pre- Planning	**Recommendation 7:** Develop a Community Wildfire Pre-Plan for K'atl'odeeche Reserve to provide greater operational detail to emergency responders during a wildland/urban interface incident.	GNWT K'atl'odeeche First Nation