

Community Wildfire Protection Plan

Behchokò
July | 2021

Edzo



Rae



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1 Introduction

In 2012, a Community Wildfire Protection Plan (CWPP) was developed for the Community Government of Behchokò 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 of wildfire to the community.

The original CWPP was developed by Montane Forest Management Ltd. in cooperation with the Government of the Northwest Territories (GNWT) and Behchokò.

In 2018 the GNWT, Department of Environment and Natural Resources (ENR) updated the Behchokò 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

Behchokò, in cooperation with ENR, has 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

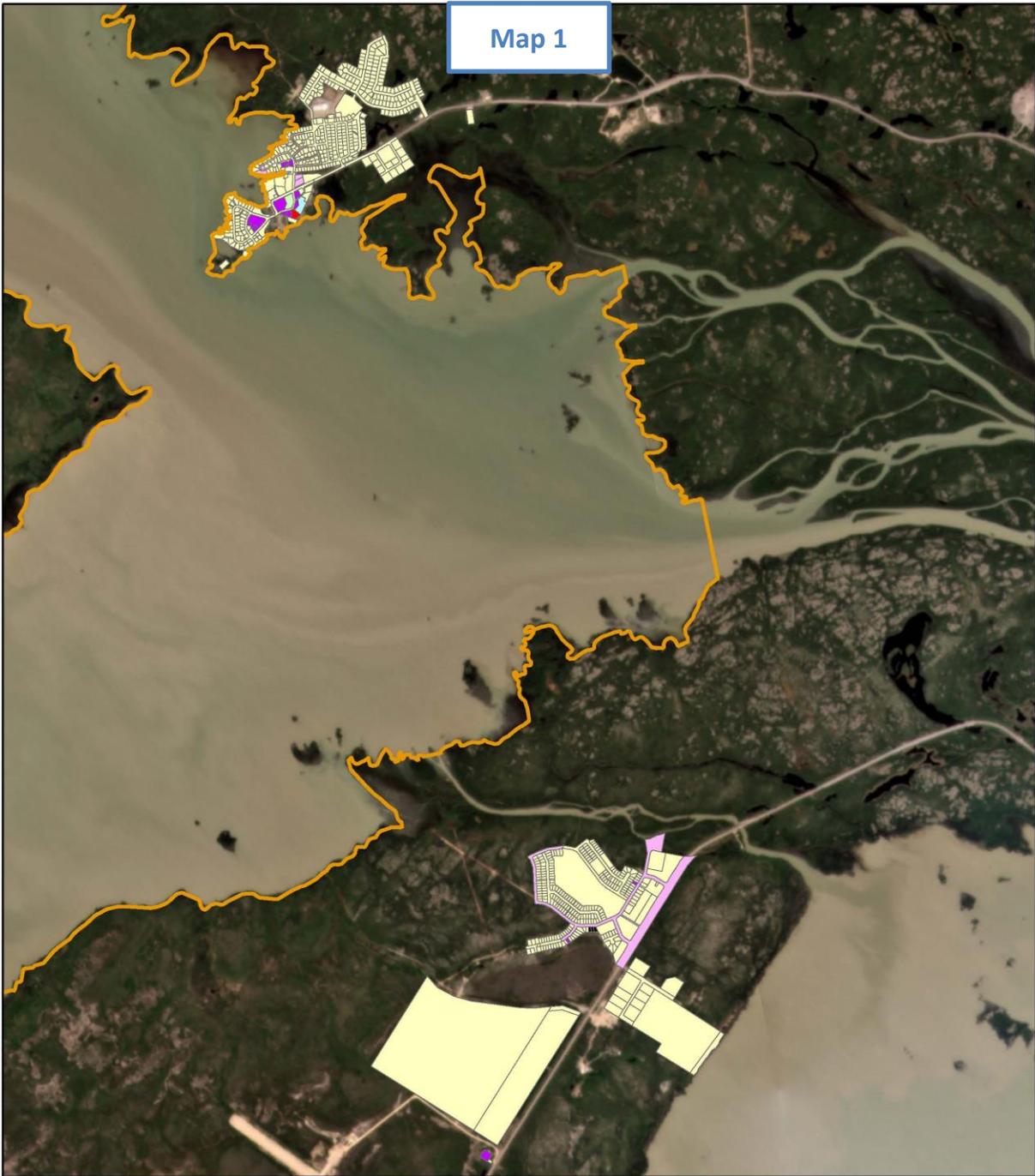
The planning area includes all lands within Behchokò and a ten-kilometre buffer surrounding the community (Map 1), including Rae, Edzo, and Frank Channel.

Stakeholders involved in the planning process included:

Government of the Northwest Territories, Environment and Natural Resources
Community Government of Behchokò

All lands are within the Tłıchò Land Claim Settlement. Land status authority is represented by the following (Map 1):

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



**Behchokò
Land Status Authority**

Land Ownership	Municipal	Planning Area
Commissioner	Private	
Federal	Territorial	
Indian Affairs Branch	Tłı̄chǫ́	
Mixed		



3 Hazard & Risk Assessment

In the original 2012 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

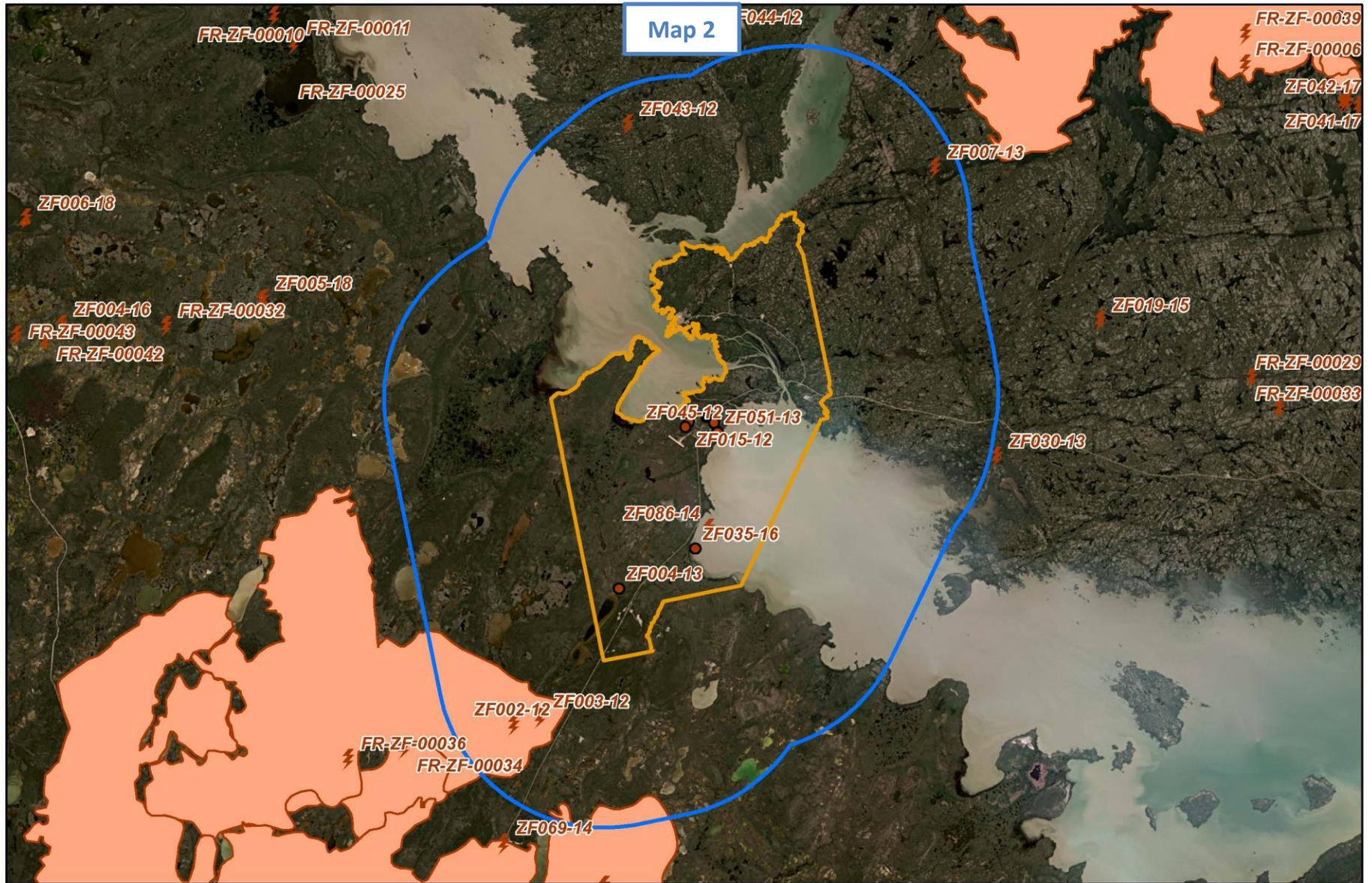
The assessment of recent fire incidence was completed using historical fire data from ENR for the ten-year period from 2009 to 2018.

Fire incidence data indicates that 10 wildfires were discovered within a 10 kilometre radius of the community, 50% were human-caused and 50% were lightning-caused (Table 1), (Map 2). Two wildfires, in 2008 and 2011 presented significant wildland/urban interface threat to development in Edzo (Map 2).

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

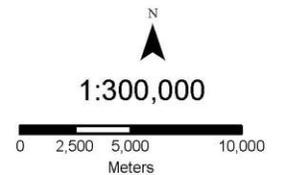
General Cause	Number of Fires	Percent of Total
Human-Caused	5	50%
Lightning-Caused	5	50%
Totals	10	100

The risk of wildfire in the planning area exists and most frequently occurs in areas accessible to residents and recreating public.



Behchokò Ten Year Fire History

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



3.2 FireSmart Hazard Assessments

FireSmart hazard assessments (P.I.P., 2003) were conducted on development areas 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. Perimeter developments in Rae and Edzo are at the highest threat to wildfire (Table 2 & Map 3 & 4).

Table 2: FireSmart Hazard Assessments

Development Area	Structure/Site Hazard (0 - 30m)
Rae	Low - Extreme
Edzo	Moderate - Extreme
Frank Channel	Low - High
Airport	Low
Sah Naji Kwe Lodge	High

Hazard factor's for each of the development areas are discussed below.

Rae

FireSmart hazard for Rae is rated as **LOW to MODERATE** in the western residential (older) portion and **HIGH to EXTREME** in the newer residential development on the eastern side. Fuels primarily consist of non-fuel and cured-grass in the eastern portion and flammable boreal spruce in the western residential portion. Exterior structure materials are primarily asphalt shingle/metal roofing and wood, vinyl, hardiplank or metal siding. Access roads are all-weather loop design.



Edzo

FireSmart hazard for Edzo is rated as **LOW to MODERATE** on the east-side, **HIGH to EXTREME** on the west-side, and **LOW to MODERATE** in the Industrial Area on the southeast-side of Hwy 3. Fuels primarily consist of non-fuel, cured grass, and spruce-lichen woodland (C-1) on the east-side, boreal spruce (C-2), mature pine (C-3), and non-fuel (NF) on the west-side, and non-fuel, cured

grass, and boreal spruce (C-2) surrounding the industrial area. Exterior structure materials are primarily asphalt shingle/metal roofing and wood/vinyl or hardiplank siding. Access roads are all-weather loop and dead-end design.

Frank Channel

FireSmart hazard for Frank Channel is rated as **LOW to MODERATE** for the majority of the development area, with the exception of two cabins rated as **HIGH**. Fuels primarily consist of mixedwood (M-1/M-2), deciduous (D-1), and scattered boreal spruce (C-2). Exterior structure materials are primarily asphalt/metal roofing and wood/vinyl or hardiplank siding. Access roads are all-weather dead-end design for the main community and dry-weather dead-end design for the cabin sites.



Airport

FireSmart hazard for the Airport is rated as **LOW**. Fuels primarily consist of non-fuel and cured grass with significant defensible space between the terminal and wildland fuels. Exterior structure materials are metal roofing and wood siding. The access road is all-weather dead-end design.



Sah Naji Kwe Lodge

FireSmart hazard for the Sah Naji Kwe Lodge is **HIGH**. The facility consists of the main lodge, a dwelling, and several tent frames and outbuildings. Surrounding fuels primarily consist of patchy boreal spruce (C-2). Exterior structure materials are asphalt-shingle and metal roofing and stucco, wood, or vinyl siding. The access road is dry-weather single-lane dead-end design.

The highest wildfire threat for Behchoko exists in the eastern residential area of Rae, the western residential area of Edzo, and the Sah Naji Kwe Lodge 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.

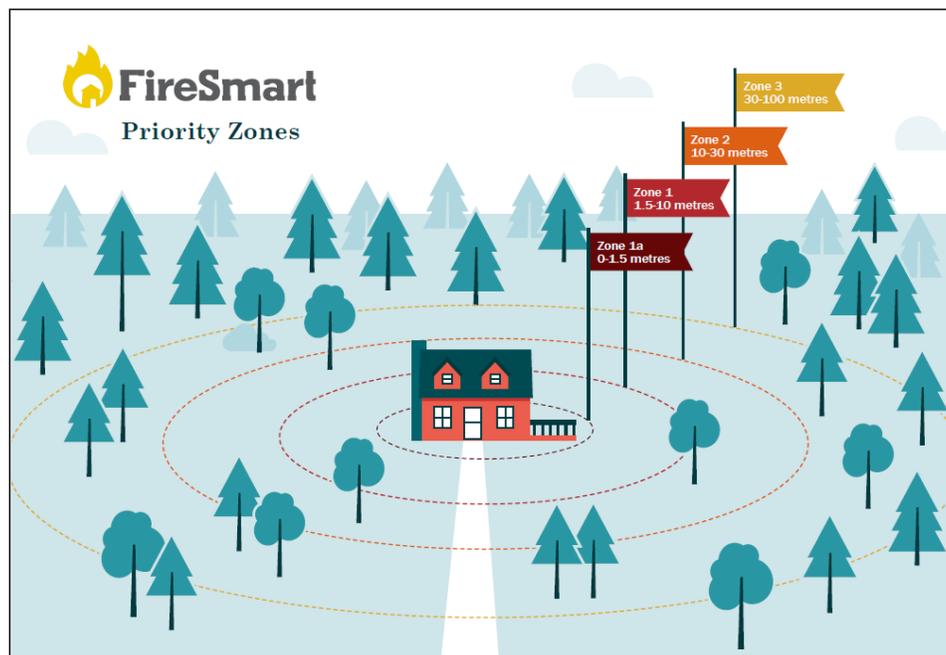


Figure 1– Interface Priority Zones (PIP, 2017)

4.1 Existing Vegetation Management

The fuelbreak constructed by ENR during the 1999 Edzo wildfire is no longer effective due to its location in relation to new development (Table 3 & Map 5). A new fuelbreak has been proposed.

Table 3: Existing Vegetation Management Areas

Name	Area (ha)	Year Established	Agency	Comments
Rae Residential	13.0	2012	Tẖcẖ Govt.	Maintenance required

4.2 Proposed Vegetation Management

4.2.1 Zone 1

Zone 1 and 1a vegetation management **inadequate** for many of the residential structures and seasonal cabins, with a lack of defensible space from native grass, spruce, and pine fuels.

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

FireSmart Zone vegetation management

inadequate for many of structures due to encroachment of native grass fuels.



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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 10 metres of structures.
- Removal of all coniferous ladder fuels (limbs) to a minimum height of 2 metres from ground level on residual overstory trees.
- Removal of all dead and down forest vegetation from the forest floor.

- Increased maintenance to ensure that all combustible needles, leaves, and native grass are removed from on and around structures.
- Establishment and maintenance of a non-combustible surface cover around the structure including the use of FireSmart landscaping species.
- Removal of all combustible material piles (firewood, lumber, etc) within 10 metres of the structure.

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

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

4.2.2 Zone 2-3

Priority areas are recommended for Zone 2-3 fuels management based on hazard and risk (Table 4 & Maps 3 and 4). 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: Priority Fuel Modification Areas

Priority	Area (Ha)	Proposed Fuel Modification Standards	Land Status Authority
Rae Residential	13.0	<ul style="list-style-type: none"> ▪ Continue to assess Fuels Reduction by spacing spruce to 2-3 m crown spacing for a minimum of 100m from structures ▪ Remove all dead standing and dead & down coniferous and deciduous ▪ Remove willow shrub cover ▪ Retain deciduous overstory stems ▪ Prune limbs to 2 metres ▪ Dispose of debris by piling and burning onsite or use as biomass or other product 	<ul style="list-style-type: none"> ▪ Tłıchǵ Govt.
Edzo Residential	4.4	<ul style="list-style-type: none"> ▪ Continue to assess and implement where needed, Fuels Reduction by spacing pine and spruce to 2-3 m crown spacing ▪ Remove all dead standing and dead & down coniferous and deciduous ▪ Retain deciduous overstory stems ▪ Prune limbs to 2 metres ▪ Dispose of debris by piling and burning onsite or use as biomass or other product 	<ul style="list-style-type: none"> ▪ Tłıchǵ Govt.
Edzo West Fuelbreak	4.8	<ul style="list-style-type: none"> ▪ Fuels Removal to construct a fuelbreak for a minimum width of 40 metres ▪ Dispose of debris by piling and burning onsite or use as biomass or other product 	<ul style="list-style-type: none"> ▪ Tłıchǵ Govt.
Rae Industrial	4.5	<ul style="list-style-type: none"> ▪ Fuels Reduction by spacing spruce to 2-3 m crown spacing ▪ Remove all dead standing and dead & down coniferous and deciduous 	<ul style="list-style-type: none"> ▪ Tłıchǵ Govt. ▪ Municipal

		<ul style="list-style-type: none"> ▪ Remove willow shrub cover ▪ Retain deciduous overstory stems ▪ Prune limbs to 2 metres ▪ Dispose of debris by piling and burning onsite or use as biomass or other product 	
Russel Lk Fuelbreak	15.7	<ul style="list-style-type: none"> ▪ Fuels Removal to construct a fuelbreak for a minimum width of 50 metres including existing road right-of-way ▪ Dispose of debris by piling and burning onsite or use as biomass or other product 	<ul style="list-style-type: none"> ▪ Tịchộ Govt.

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 fuel modification effectiveness. Maintenance should be the responsibility of the land manager or landowner.

Map 3

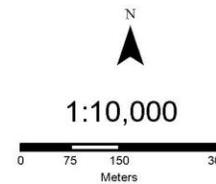


Behchokò (Rae) Fuel Modifications

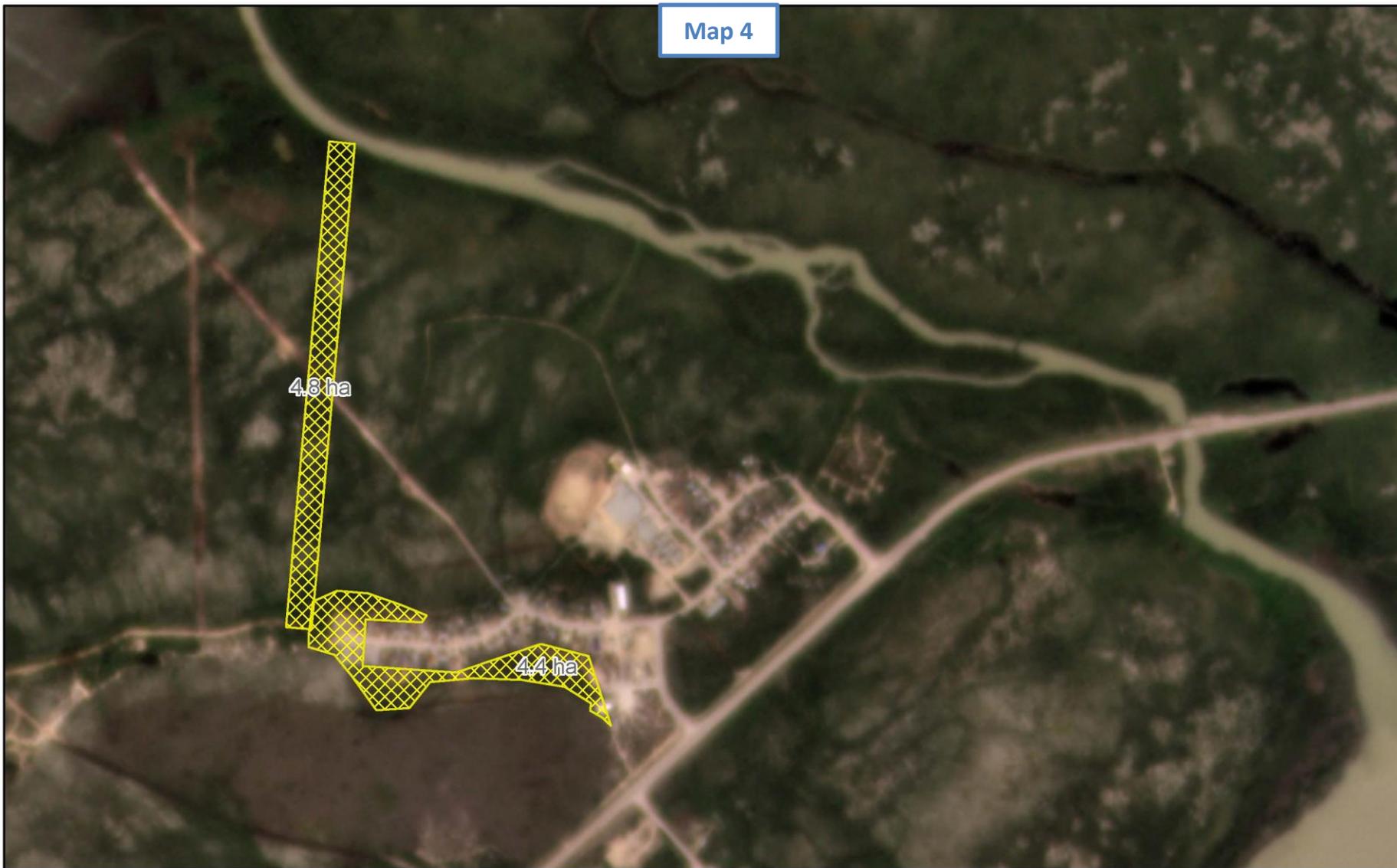
Completed and Proposed

Fuel Modifications

-  Completed
-  In Progress
-  Proposed



Map 4

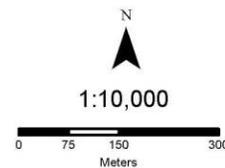


Behchokò (Edzo) Fuel Modifications

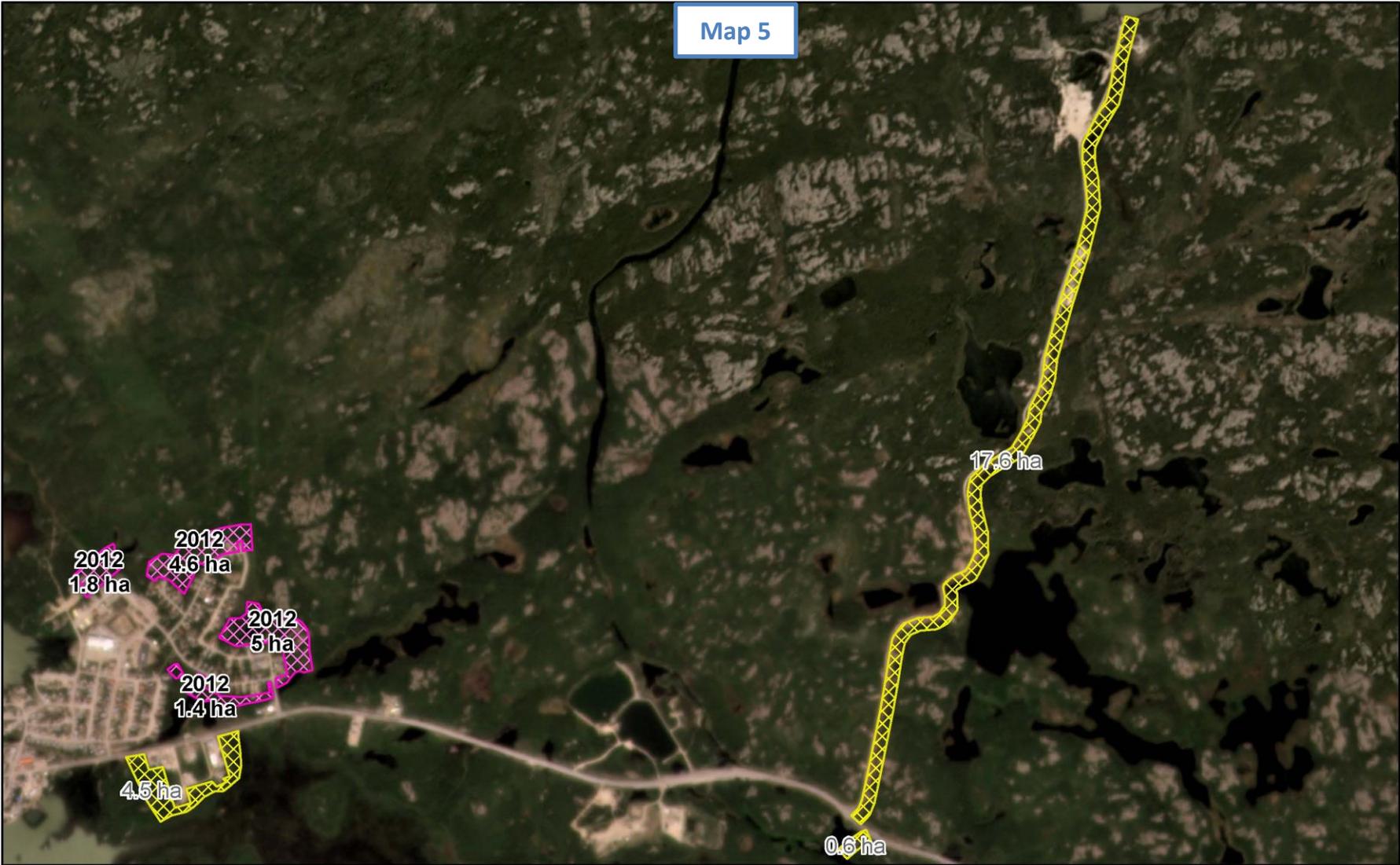
Completed and Proposed

Fuel Modifications

-  Completed
-  In Progress
-  Proposed



Map 5

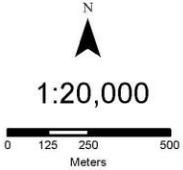


Behchokò (Rae) Fuel Modifications

Completed and Proposed

Fuel Modifications

-  Completed
-  In Progress
-  Proposed



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 fuel break 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, 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 and metal. Some of the older asphalt shingle roofs are curled and at risk to airborne firebrand ignition.

Siding materials vary between non-combustible hardi-plank on newer structures and combustible wood and vinyl on older structures.

Many structures have combustible debris piles (firewood, lumber, etc) immediately adjacent to the structure, increasing the threat of wildfire to the structure. Open decks and undersides are common.



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. Access roads are all-weather loop or dead-end design and cul-de-sacs have adequate turnaround dimensions for fire apparatus. Access roads to the seasonal cabins at Frank Channel and Mosquito Creek are narrow, dry-weather, dead-end roads with inadequate turnaround for fire apparatus.

5.2.2 Water Supply

Rae and Edzo have municipal hydrant water-supply for the majority of the developed areas and Frank Channel relies on water-tender supply for structure protection activities.

5.2.3 Franchised Utilities

Franchised utilities affected by an interface fire include electrical power and heating fuels. 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 powerlines from the NTPC generation plant.

Heating Fuel

Heating fuel is provided by diesel and propane tank supply.

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 Behchok̓ 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:

- Community Government of Behchoko
- GNWT

Recommendation 6: Coordinate with the established emergency management committee to determine what will be required during a wildfire emergency. All relevant stakeholders, should understand the FireSmart program and help to promote mitigation.

The Behchokò Fire Department has an active fire department with 12 firefighters and two engines. Cross-training for fire department members and ENR wildfire suppression personnel 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 7: The Behchokò Fire Department and the GNWT should partner on cross-training initiatives to ensure emergency responders are cross-trained in 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.

The Behchokò Emergency Measures Plan is used to provide authority and direction during an emergency.

At present the community 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 pre-plan 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 8: Develop a Community Wildfire Pre-Plan for the community to provide greater operational detail to emergency responders during a wildland/urban interface incident.

9 Recommendation Summary

Vegetation Management

Issue	Recommendation	Responsible Agency
Zone 1	Recommendation 1: Encourage residents to establish adequate Zone 1 defensible space around their structures.	Comm. Govt. of Behchokò
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.	Tłchò Govt. Comm. Govt. of Behchokò
Maintenance	Recommendation 3: Ensure that all existing fuel modification projects are inspected on a regular basis and maintained as necessary to ensure fuel modification effectiveness. Maintenance should be the responsibility of the land manager or landowner.	Tłchò Govt. Comm. Govt. of Behchokò

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.	GNWT Comm. Govt. of Behchokò

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 residents.	Comm. Govt. of Behchokò GNWT

Interagency Cooperation & Cross-Training

Issue	Recommendation	Responsible Agency
Interagency Cooperation	Recommendation 6: Coordinate with the established emergency management committee to determine what will be required during a wildfire emergency. All relevant stakeholders, should understand the FireSmart program and help to promote mitigation.	Comm. Govt. of Behchokò GNWT
Cross-Training	Recommendation 7: The Behchokò Fire Department and the GNWT should partner on cross-training initiatives to ensure emergency responders are cross-trained in the following: <ul style="list-style-type: none"> ▪ Wildland Firefighter ▪ Structure and Site Preparation Workshop (S-115) ▪ Incident Command System (I-100 to I-300) as applicable 	Comm. Govt. of Behchokò GNWT

Emergency Planning

Issue	Recommendation	Responsible Agency
Community Wildfire Pre- Planning	Recommendation 8: Develop a Community Wildfire Pre-Plan for the community to provide greater operational detail to emergency responders during a wildland/urban interface incident.	GNWT Comm. Govt. of Behchokò