Community Wildfire Protection Plan

Tulita

Government of
Northwest Territories

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1. Introduction

In 2011, a Community Wildfire Protection Plan (CWPP) was developed for the Hamlet of Tulita 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 Montane Forest Management Ltd. in cooperation with the Government of the Northwest Territories (GNWT) and Tulita.

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

Tulita, 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 in Tulita (Map 1).

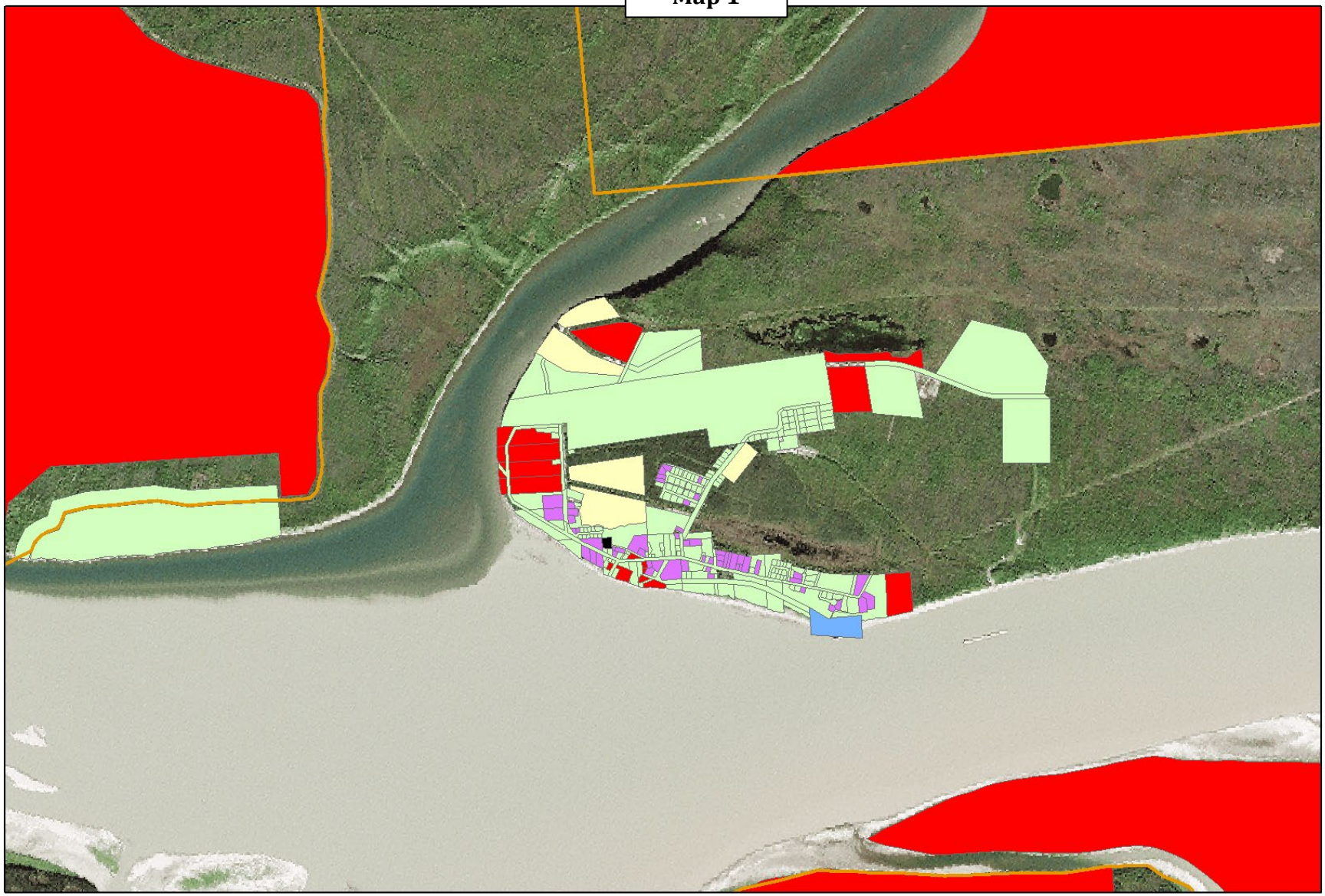
Stakeholders involved in the planning process included:

- Government of the Northwest Territories, Environment and Natural Resources
- Hamlet of Tulita
- Tulita Dene Band

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

- Commissioner
- Federal
- Municipal
- Private
- Sahtu
- Territorial

Map 1



Tulita
Land Status Authority

3. Hazard & Risk Assessment

In the original 2011 CWPP 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.

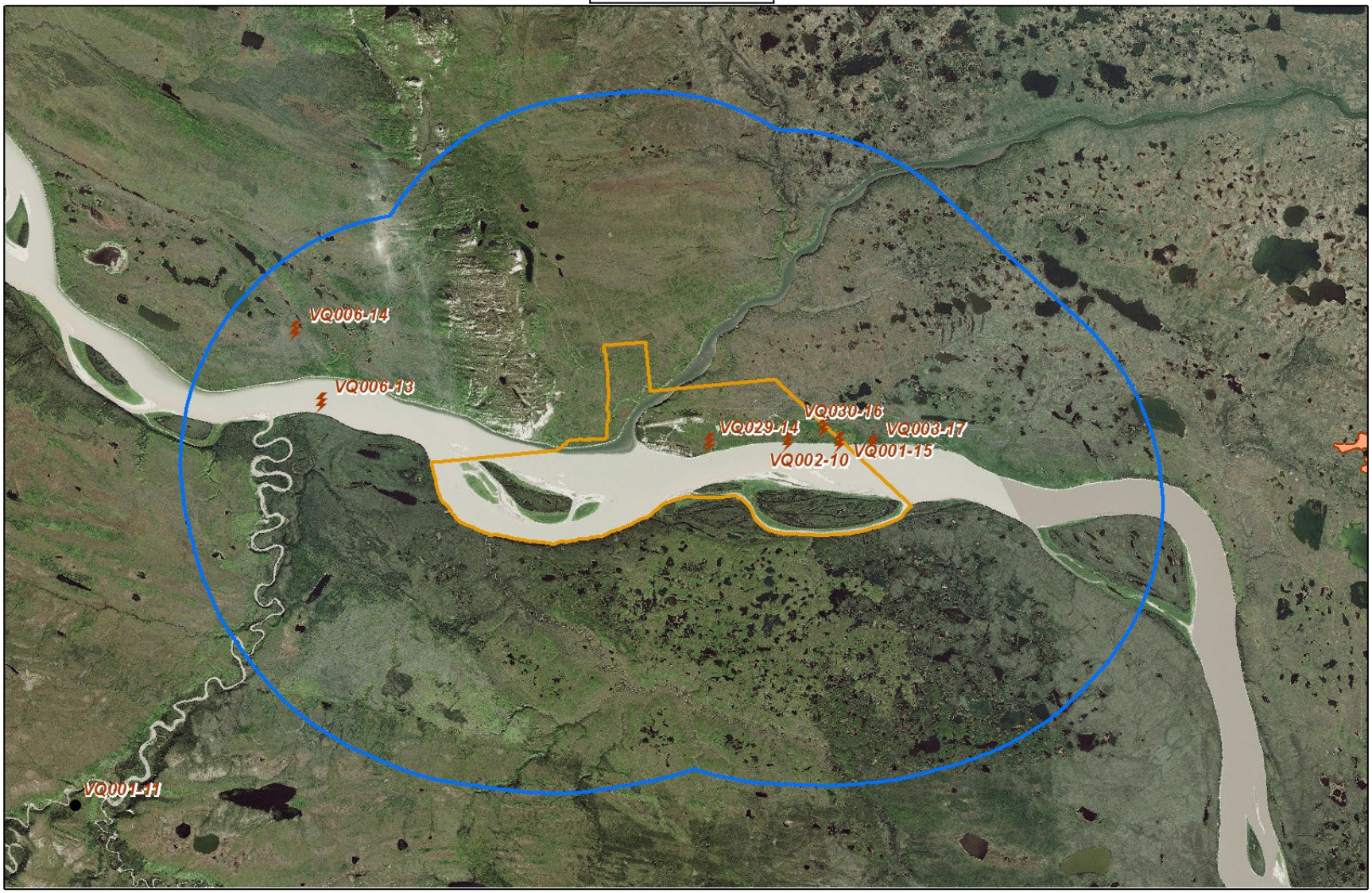
Data within a 10 kilometer radius of Tulita indicates that wildfire incidence is high. Fire incidence data shows a total of 7 wildfires in the planning area (Map 2). Predominant causes include fires ignited by lightning. Several large wildfires greater than 10,000 ha have occurred over the past twenty years including the 1995 coal seam fire which burned up to and around the Hamlet of Tulita.

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

General Cause	Number of Fires	Percent of Total
Human-Caused	0	0
Other-Caused	0	0
Lightning-Caused	7	100
Totals	**7**	**100**

Wildfire incidence in the planning area is high and is predominantly lightning.

Map 2



Tulita
Ten Year Fire History

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

N
1:200,000
0 1,250 2,500 5,000
Meters

Northwest Territories Environment and Natural Resources

3.2 Wildfire Behaviour Potential

3.2.1 Forest Fuel Types

Analysis of the forest fuels surrounding Tulita were completed in 2011. Fire Behaviour Prediction (FBP) fuel types (Taylor, 1997) were used to analyze the fuel types and fire behaviour potential within and adjacent to Tulita.

The planning area is dominated with cured–grass fuels in the 1995 fire area and boreal spruce (C-2), mixed wood (M-1) non-fuel (NF), and deciduous (D-1) fuel types in the developed Hamlet area. The forest fuels have not changed significantly since that time. Each of these fuel types can present hazard to interface structures based on fuel moisture conditions and time of year. The Mackenzie River provides a fuel break to wildfires on the south-side of the river.

Forest fuel types and fire weather data indicates a Low potential for intense landscape-level wildfire exists in the areas surrounding Tulita. The potential for smaller-scale wildfire within the Hamlet area exists due to the C-2 and M-1 fuel types.

3.3 FireSmart Hazard Assessments

FireSmart hazard assessments (P.I.P., 2017) were conducted on developments and adjacent wildland fuel types within the planning area in 2011. 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. Since these assessments were completed the risk to the community has not changed.

Section 3.2 identified a Low potential for intense landscape-level wildfire on the lands surrounding Tulita. FireSmart hazard is rated as High to Extreme based on the proximity of C-2 fuel types to newer development areas within the Hamlet. FireSmart hazard for each of the development areas is discussed below.

Table 2: FireSmart Hazard Assessments

Development Area	Structure/Site Hazard (0 – 30m)
Main Town site	Low - Extreme
New Residential Subdivision	Extreme
Industrial Area/Airport	Low
NTPC Power Generation Station	Moderate

Main Town site

FireSmart hazard for the Tulita main town site is primarily **Low** with some perimeter areas at **High to Extreme** hazard based on proximity to C-2 and M-1 fuels. Exterior structure materials are primarily non-combustible asphalt shingle or metal roofing and wood or metal 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 perimeters of the town site area.

New Residential Subdivision
FireSmart hazard for the new residential subdivision is **Extreme** due to C-2 fuels immediately surrounding the structures, with inadequate Zone 1 defensible space. Exterior structure materials are primarily asphalt shingle roofing and hardiplank or vinyl siding.

Industrial Area/Airport
FireSmart hazard for the Industrial Area/Airport is **Low**. Fuel types surrounding the structures are primarily non-fuel and cured-grass with significant Zone 1-2 defensible space established between fuels and structures. Exterior structure materials are primarily metal roofing and metal siding.

NTPC Power Station and Bulk Fuel
FireSmart hazard for the NTPC Power Generation Station is **Moderate**. The site consists of a large non-fuel clearing surrounded by boreal spruce (C-2) fuel types. Exterior structure of NTPC building is metal roofing and siding. Bulk fuel tanks are all metal construction.

The FireSmart hazard is High to Extreme in the new residential subdivision and on the north and east perimeter developments in the main town site area.

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 – FireSmart Priority Zones, FireSmart Canada 2017

4.1 Existing Vegetation Management

Fireguards were completed to the east of the Hamlet in the 1990's by the GNWT ENR Department (Map 3 & Table 3). This fireguard was challenged and over-run by wildfire in 1995 but managed to slow the intensity and rate of spread enough to allow ENR to control the spread across the guard the following day.

Table 3: Existing Vegetation Management Areas

Name	Area (ha)	Year	Agency	Comments
Fireguards	4.2	1990's	GNWT	Currently used as an access road, minimizing vegetation regrowth. Additional widening would enhance its effectiveness.

1995 Fuel Break

4.2 Proposed Vegetation Management

4.2.1 Zone 1a (0-1.5 metres)

Zone 1a vegetation management is **inadequate** for many 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 metres of structures.
- Use 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.

4.2.2 Zone 1 (1.5-10 metres)

Zone 1 vegetation management is predominantly **adequate** throughout the area except for scattered structures with lack of adequate Zone 1 defensible space from native grass fuels.

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.

Recommendation 1: Encourage residents to establish adequate Zone 1a and Zone1 defensible space around their structures.

For more information on FireSmart Zone 1a and 1 standards refer to: FireSmart Canada website at this link: https://www.firesmartcanada.ca/ .

4.2.3 Zone 2-3 (10-30 metres and 30-100 metres)

Zone 2-3 fuels management is recommended for areas surrounding the new residential subdivision and on the east and west perimeters of the main town site to reduce the threat of wildfire in C-2 and M-1 fuels to perimeter structures (Table 4 & 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: Priority Fuel Modification Areas

Priority	Area (Ha)	Proposed Fuel Modification Standards	Land Status Authority
Housing development south of airport	84.56	▪ Fuels reduction by spacing Spruce to 2-3 m crown spacing for a minimum 100m wide behind homes (approx. 14.7 ha) ▪ Remainder of zone should also be treated ▪ Remove all dead standing and dead & down coniferous and deciduous ▪ Retain deciduous overstory stems ▪ Prune limbs to 2 metres ▪ Dispose of debris by burning onsite/removal	▪ Hamlet of Tulita ▪ Tulita Dene Band
North and East of fuel station/NTPC power generator	4.1	▪ Fuels reduction by spacing Spruce to 2-3 m crown spacing for a minimum 100m wide behind homes ▪ Remove all dead standing and dead & down coniferous and deciduous ▪ Retain deciduous overstory stems ▪ Prune limbs to 2 metres ▪ Dispose of debris by burning onsite/removal	▪ Hamlet of Tulita ▪ Tulita Dene Band
Northwest of community along Bear River	16.9	▪ Fuels reduction by spacing 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 burning onsite/removal	▪ Hamlet of Tulita ▪ Tulita Dene Band
Access road from MYB to winter road	5	▪ Fuels removal to maintain and widen existing fireguard to minimum 40m width ▪ Dispose of debris by burning onsite/removal	▪ Hamlet of Tulita ▪ Tulita Dene Band
Proposed fuel break along dump access road	4.6	▪ Mulch along entire length to widen as fuel break	▪ Hamlet of Tulita ▪ Tulita Dene Band
Proposed Cat guard around dump	1.9	▪ Cleared to mineral soil to a distance of 25m around municipal dump site	▪ Hamlet of Tulita ▪ Tulita Dene Band
Total	**117.06**		

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 areas identified in this plan.

4.2.4 Fire Breaks

Additional areas around the perimeter of the community have been identified for possible fuel modification to effectively create a protective fire break. Total area requiring modification for this portion of work is 4.72 hectares.

Recommendation 3: ENR will work with the community in planning for the fuel modification required. Method of modification would be fuel reduction or stand/species conversion.

Fuel modification area maintenance schedules depend on many factors including fuel type, soil and moisture conditions, and specific weather events. FireSmart Zone 1a and Zone 1 fuel modification maintenance is a process requiring continued maintenance. Residents should be educated and encouraged to maintain their properties regularly to reduce the threat of wildfire to their structures.

Recommendation 4: Residents should be educated and encouraged to maintain their properties regularly to reduce the threat of wildfire to their structures.

Map 3

Tulita
Fuel Modifications

Completed and Proposed

Fuel Modifications

- Completed
- In Progress
- Proposed

N

1:15,000

0 75 150 300

Meters

Northwest Territories Environment and Natural Resources

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 5: 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 and metal and the most common siding materials are wood, metal, or hardiplank.

Structures are typically elevated above-ground on pilings and many are not skirted, allowing wildfire access to the underside of structures with cured grass or combustible materials underneath the structure. Those structures that do use skirting employ a mesh that is too open spaced in design to block embers. It is applied primarily as a wildlife deterrent.

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. There is no summer access road to Tulita.

5.2.2 Water Supply

Tulita 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 a NTPC diesel-powered generator station with above-ground distribution lines.

Gas

Heating fuel is provided by truck delivery and stored in bulk at a tank farm.

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 6: Public education on acceptable FireSmart Zone 1a and Zone 1 standards is recommended for all 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:

- Sahtu Dene and Metis
- GNWT

Recommendation 7: 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.

Tulita has an active fire department. Cross-training for Tulita 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 8: The Tulita 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.

The community is working with GNWT Municipal and Community Affairs (MACA) to develop 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. GNWT MACA has developed a template for community use in creating an Emergency Measures Plan.

Recommendation 9: Develop a Community Wildfire Pre-Plan for Tulita 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 1 defensible space around their structures.	Hamlet of Tulita
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.	Sahtu Dene Indian Affairs
Fire Breaks	**Recommendation 3:** ENR will work with the community in planning for the fuel modification required. Method of modification would be fuel reduction or stand/species conversion.	Hamlet of Tulita
Maintenance	**Recommendation 4:** Residents should be educated and encouraged to maintain their properties regularly to reduce the threat of wildfire to their structures.	Sahtu Dene Indian Affairs

Development

Issue	Recommendation	Responsible Agency
FireSmart Development Planning	**Recommendation 5:** 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.	Hamlet of Tulita GNWT

Public Education

Issue	Recommendation	Responsible Agency
Public Education Priorities	**Recommendation 6:** Public education on acceptable FireSmart Zone 1a and Zone 1 standards is recommended for all Tulita residents.	GNWT Hamlet of Tulita

Interagency Cooperation & Cross-Training

Issue	Recommendation	Responsible Agency
Interagency Cooperation	**Recommendation 7:** 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.	GNWT Hamlet of Tulita Sahtu Dene and Metis Metis Association Sahtu Renewable Resource Board
Cross-Training	**Recommendation 8:** Tulita Fire Department members 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	GNWT Hamlet of Tulita

Emergency Planning

Issue	Recommendation	Responsible Agency
Community Wildfire Pre- Planning	**Recommendation 9:** Develop a Community Wildfire Pre-Plan for Tulita to provide greater operational detail to emergency responders during a wildland/urban interface incident.	GNWT Hamlet of Tulita