



Community Wildfire Protection Plan

Fort Good
Hope



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1 Introduction

In 2010, a Community Wildfire Protection Plan (CWPP) was developed for the community of Fort Good Hope 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 Valhalla Consulting Inc., Diamond Head Consulting Ltd and Timberline Natural Resource Group Ltd in cooperation with the Government of the Northwest Territories (GNWT) and Fort Good Hope.

In 2018 the GNWT, Department of Environment and Natural Resources (ENR) updated the Fort Good Hope 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

Fort Good Hope, 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 Fort Good Hope and a two-kilometre buffer surrounding the community (**Map 1**).

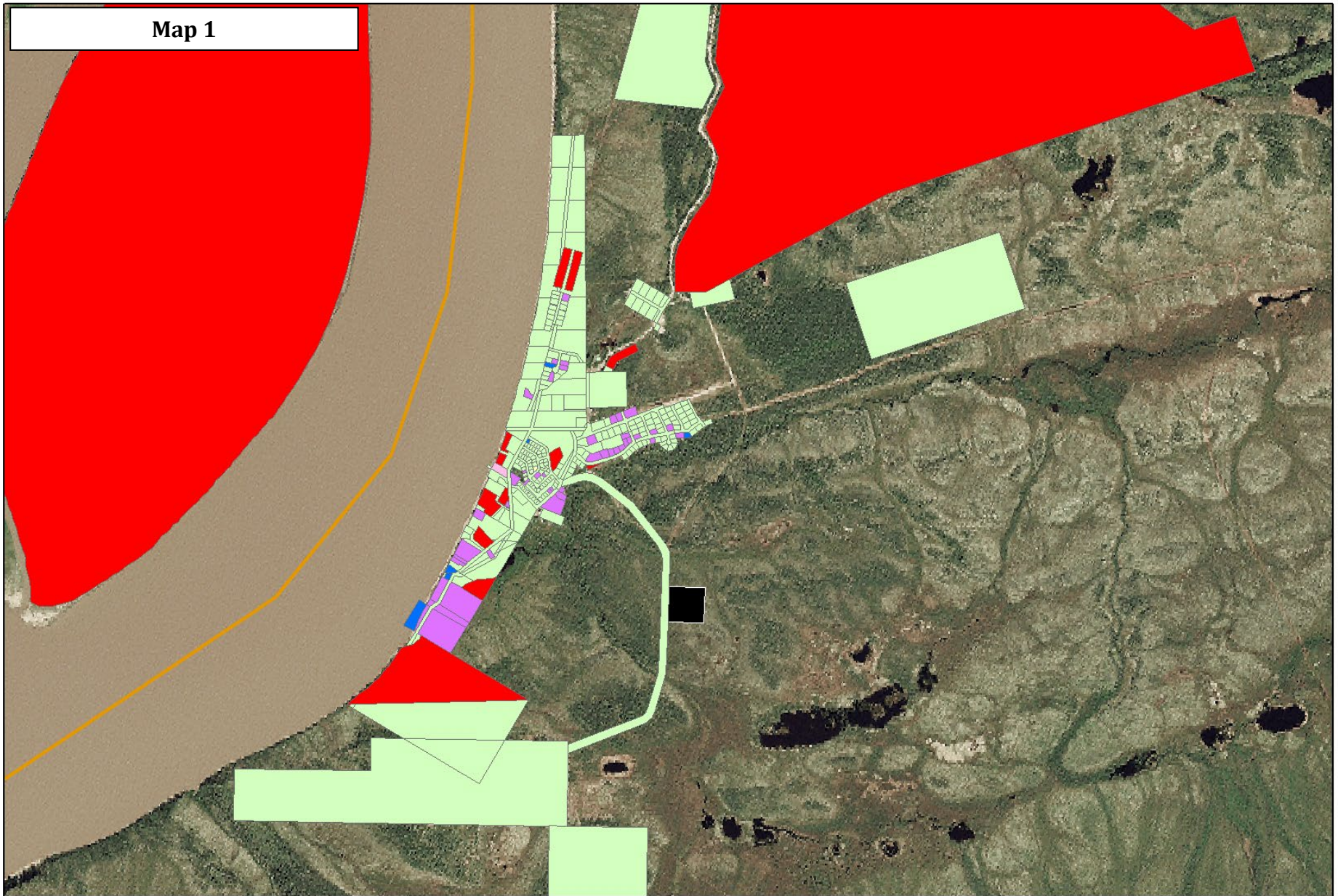
Stakeholders involved in the planning process included:

- Government of the Northwest Territories
- K'asho Got'ine Government

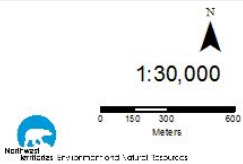
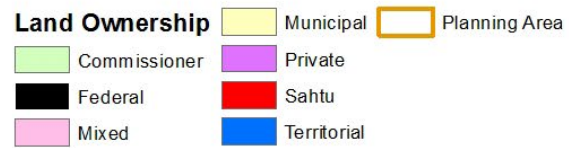
Land status authority is represented by the following (Map 1):

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

Map 1



Fort Good Hope Land Status Authority



3 Hazard & Risk Assessment

In the original 2010 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 ten year period from 2009 to 2018.

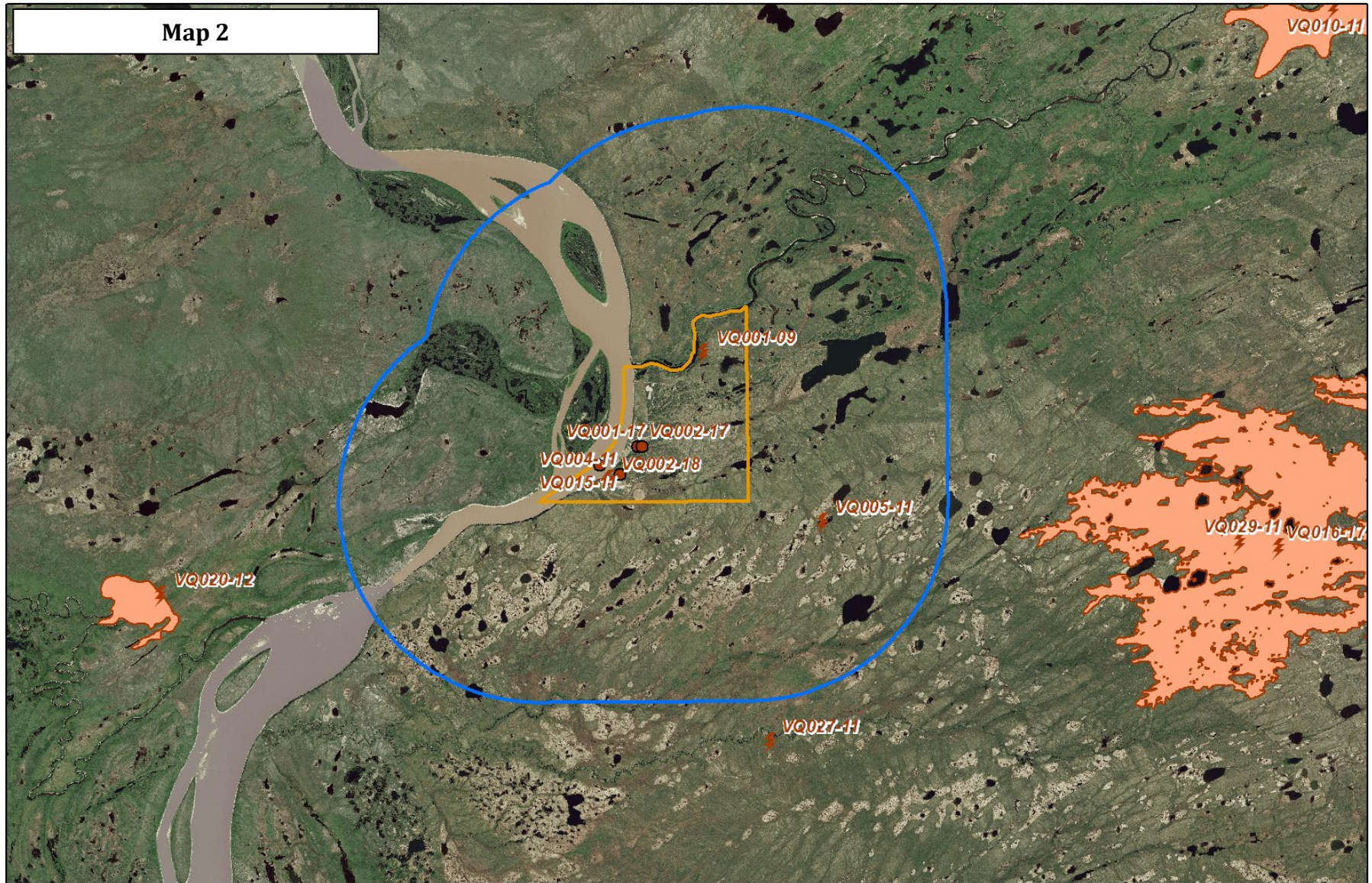
Fire incidence data indicates that 3 lightning-caused and 4 human caused wildfires were discovered within a 10 kilometre radius of the community (Table 1). All of these reported fires were small in size (<5 ha) and resulted in no impact to the community of Fort Good Hope (Map 2).

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







General Cause	Number of Fires	Percent of Total
Human-Caused	4	57
Lightning-Caused	3	43
Totals	7	100

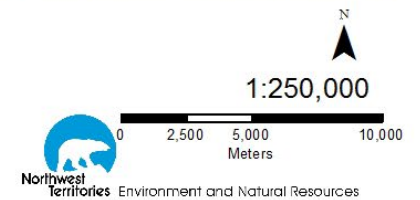
The risk of wildfire in the planning area is Low and is most frequently human-caused.

Map 2



Fort Good Hope Ten Year Fire History

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



3.2 Wildfire Behaviour Potential

3.2.1 Forest Fuel Types

Fire Behaviour Prediction (FBP) fuel types were used to analyze the fuel types and fire behaviour potential adjacent to Fort Good Hope.

The planning area is dominated with spruce-lichen woodland (C-1) fuels with patches of boreal spruce (C-2), cured-grass (O-1a), mixed wood (M-2), and deciduous (D-1). Existing fuel breaks are cured-grass (O1) and non-fuel (NF) fuel types.

Forest fuel types and fire weather data indicates that the threat of landscape-level wildfire towards Fort Good Hope is Low due to the predominance of C-1 fuel types.

3.3 FireSmart Hazard Assessments

FireSmart hazard assessments (P.I.P., 2017) were conducted on development areas and adjacent wildland fuel types within the planning area (Table 2). 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.

Table 2: FireSmart Hazard Assessments

Development Area	Structure/Site Hazard (0 - 30m)
Fort Good Hope	Moderate-High
Residential Area (North End)	High
Fuel Tank Site	Low
Airport	Low

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



Fort Good Hope

FireSmart hazard for Fort Good Hope is rated as **Moderate** in the southern end of the community where fuels primarily consist of non-fuel (NF) and cured-grass (O-1) with pockets of spruce (C-2). Structures in the central and northern end are rated at **High** hazard due to the proximity of spruce (C-2) fuels to many structures. Exterior structure materials are primarily asphalt shingle/metal roofing and wood, log, and hardiplank siding. Access roads are all-weather loop and dead-end design.

Residential Area (North End)

FireSmart hazard for the residential area along and North West of the old airstrip is **HIGH**. Fuels consist of moderate density spruce (C-2). This appears to be the direction in which residential and commercial growth is occurring. A FireSmart plan to account for future development is recommended for the community.



Fuel Tank Site

FireSmart hazard for the fuel tank site is rated as **LOW**. Fuels consist of moderate to high density spruce (C-2) with adequate mineral soil defensible space between the tanks and wildland fuels. Tanks are all new metal construction.

Airport

FireSmart hazard for the Airport is rated as **LOW**. Fuels primarily consist of non-fuel, cured grass and mixed wood 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.



The highest wildfire threat for Fort Good Hope development exists in the northern end of the existing community.

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:

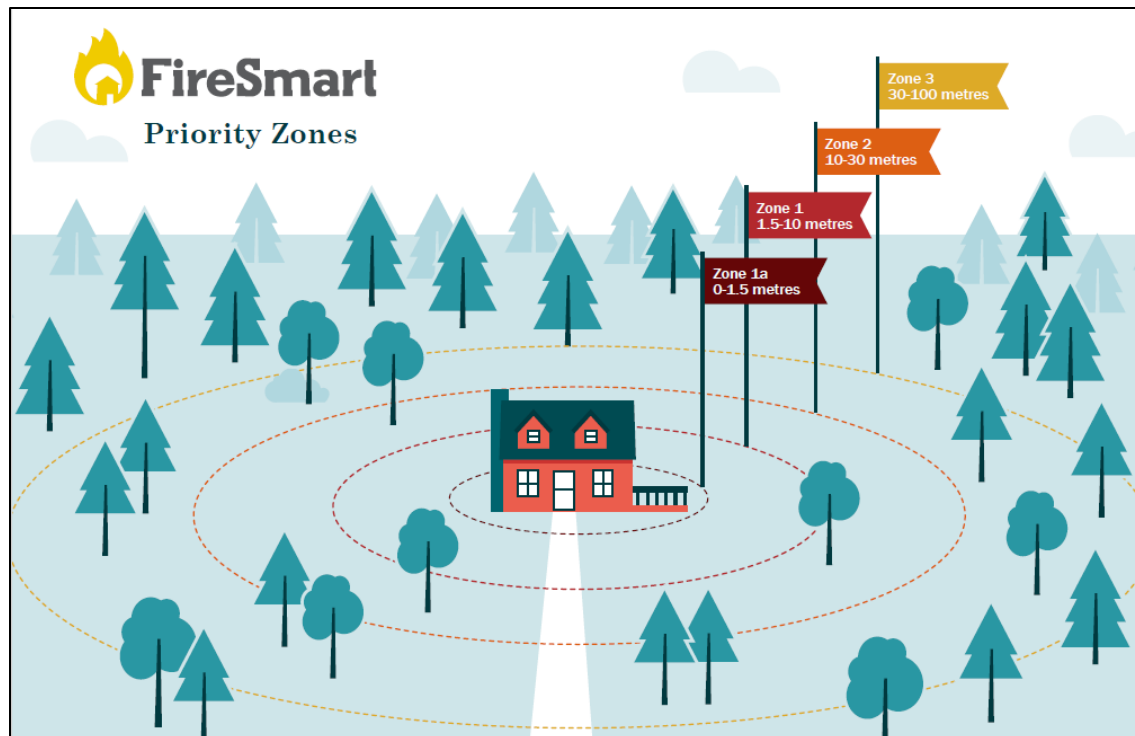
- Fuel removal (remove trees)
- Fuel reduction (thin and prune trees)
- Species conversion (plant less flammable trees)

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 3 – FireSmart Priority Zones, FireSmart Canada 2017



4.1 Existing Vegetation Management

Significant FireSmart work was initiated in and around Fort Good Hope in response to a 2017 wildland fire that ignited approximately 25 kilometers east of the community. The fire was deemed to pose a potential threat to the community based on forecasted weather conditions at the time. Four previously established fireguards that had become overgrown were fully refurbished and a location for a new fifth fire guard was identified. In addition, nine zones requiring thinning/pruning were established as well as one recommended for mulching. Two of the zones identified for thinning/pruning have been completed with a third still in progress as of the end of 2018. Work in these zones will continue through 2019. Work in additional zones will commence as current work is completed and will be started on a priority basis as determined at the time of development barring any future development that may alter the established priority ranking (Table 3).

Table 3: Existing Vegetation Management Areas

Name	Area (ha)	Year Started/Completed	Agency	Comments
Northwest Fireguard	1.3	2017	GNWT	Mulched and cleared of all vegetation
Northeast Fireguard	1.1	2017	GNWT	Mulched and cleared of all vegetation
East Fireguard	5.8	2017	GNWT	Cleared to mineral soil with heavy equipment
Airport Fireguard	1.8	2017	GNWT	Mulched and cleared of all vegetation
Zone 3 Thin/Prune	13.7	2017 (ongoing)	GNWT	Thinning/Pruning to FireSmart Standards
Zone 4 Thin/Prune	1.1	2017	GNWT	Thinned/Pruned to FireSmart Standards
Zone 5 Thin/Prune	2.9	2017	GNWT	Thinned/Pruned to FireSmart Standards



Before Brush-Mowing or Clearing (All Fireguards)



After Brush-Mowing (Northwest Fireguard)



After Mechanical-Clearing (East Fireguard)



After Mulching/Hand-Clearing (Northeast FireGuard)



Before Thin/Prune (Zone 4 and 5)



After Thin/Prune (Zone 4 and 5)



Before Thin/Prune (Zone 3)



After Thin/Prune (Zone 3)

4.2 Proposed Vegetation Management (Individual Structures)

4.2.1 Zone 1a (0-1.5 metres)

Zone 1a vegetation management is **inadequate** for many structures due to encroachment of native grass and other light 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 **inadequate** for the majority of structures in the north end of the community due to the proximity of spruce (C-2) fuels adjacent to structures and inadequate defensible space. Zone 1 vegetation management in the south end of the community is **adequate** with the exception of Our Lady of Good Hope church which has significant encroachment of mature spruce (C-2).

FireSmart Zone 1 vegetation management options include:

- Removal of flammable forest vegetation (shrubs) 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, jerry cans, propane tanks, etc.) within 10 metres of the structure.**

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

For more information on FireSmart Zones 1a and 1 standard refer to:

<https://www.firesmartcanada.ca/>

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

Priority areas are recommended for Zone 2-3 fuels management based on hazard and risk (Table 4 & Map 5). Proposed fuels management areas will require detailed fuels reduction planning to identify fuels management prescription, unit boundaries, and operational constraints as development continues.

Table 4: Priority Fuel Modification Areas

Priority	Area (Ha)	Proposed Fuel Modification Standards	Land Status Authority
New Northwest Fireguard	3.4	<ul style="list-style-type: none"> ▪ Mulched and cleared of all vegetation ▪ Dispose of debris by piling and burning onsite or use as biomass or other product 	<ul style="list-style-type: none"> ▪ K'asho Got'ine
Zones 1, 2 and 6-9 (Thin/Prune)	56.3	<ul style="list-style-type: none"> ▪ Fuels Reduction by spacing spruce to 3 metre crown spacing ▪ Remove all dead standing and dead & down coniferous and deciduous ▪ 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"> ▪ K'asho Got'ine
Zone 1 (Mulch)	1.3	<ul style="list-style-type: none"> ▪ Mulched and cleared of all vegetation ▪ Dispose of debris by piling and burning onsite or use as biomass or other product 	<ul style="list-style-type: none"> ▪ K'asho Got'ine
Total	61		

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.

4.3 Vegetation Management Maintenance

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

Map 3

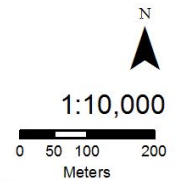


Fort Good Hope North Fuel Modifications

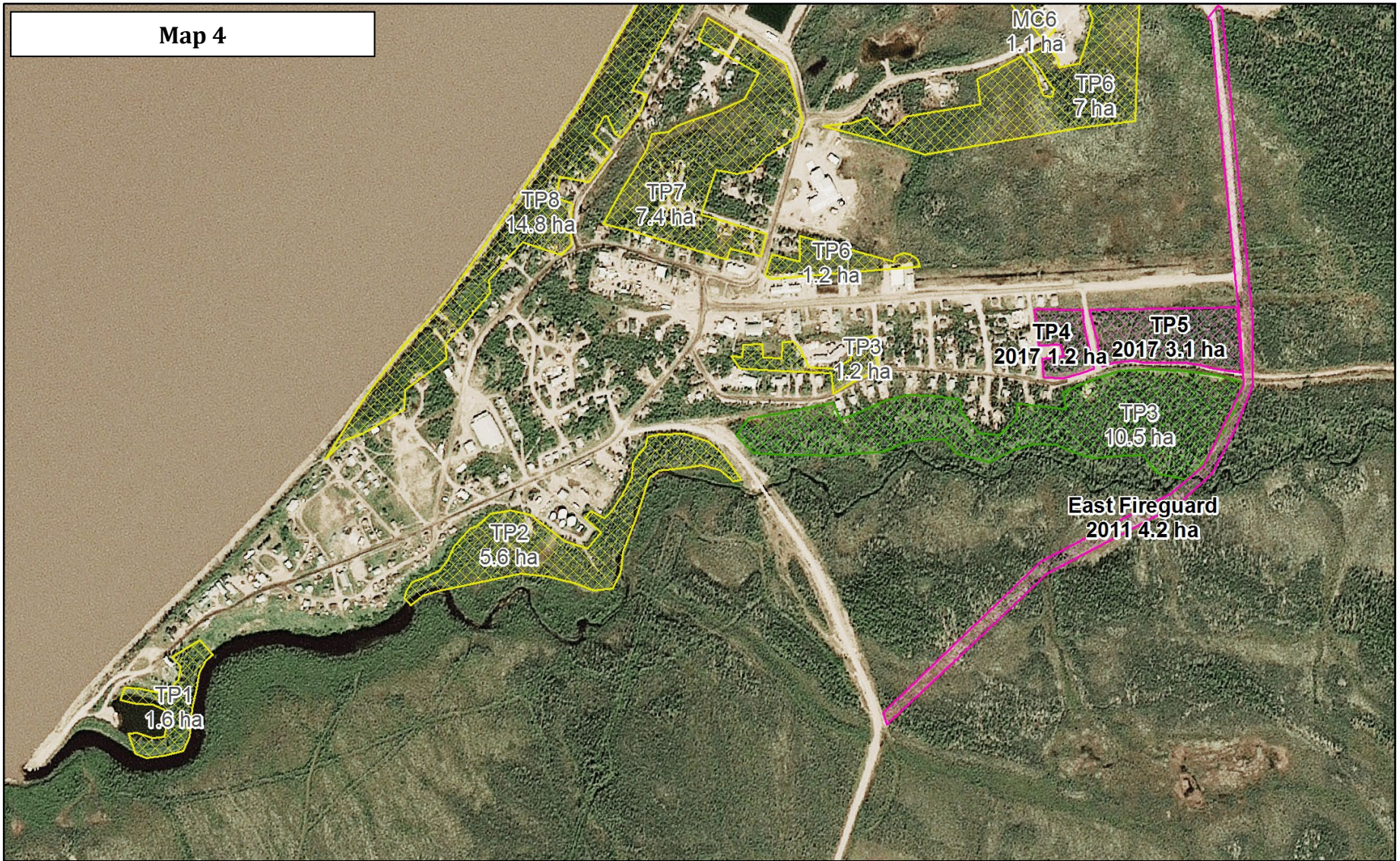
Completed and Proposed

Fuel Modifications

-  Completed
-  In Progress
-  Proposed



Map 4

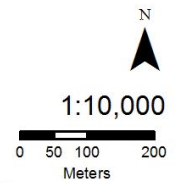


Fort Good Hope South Fuel Modifications

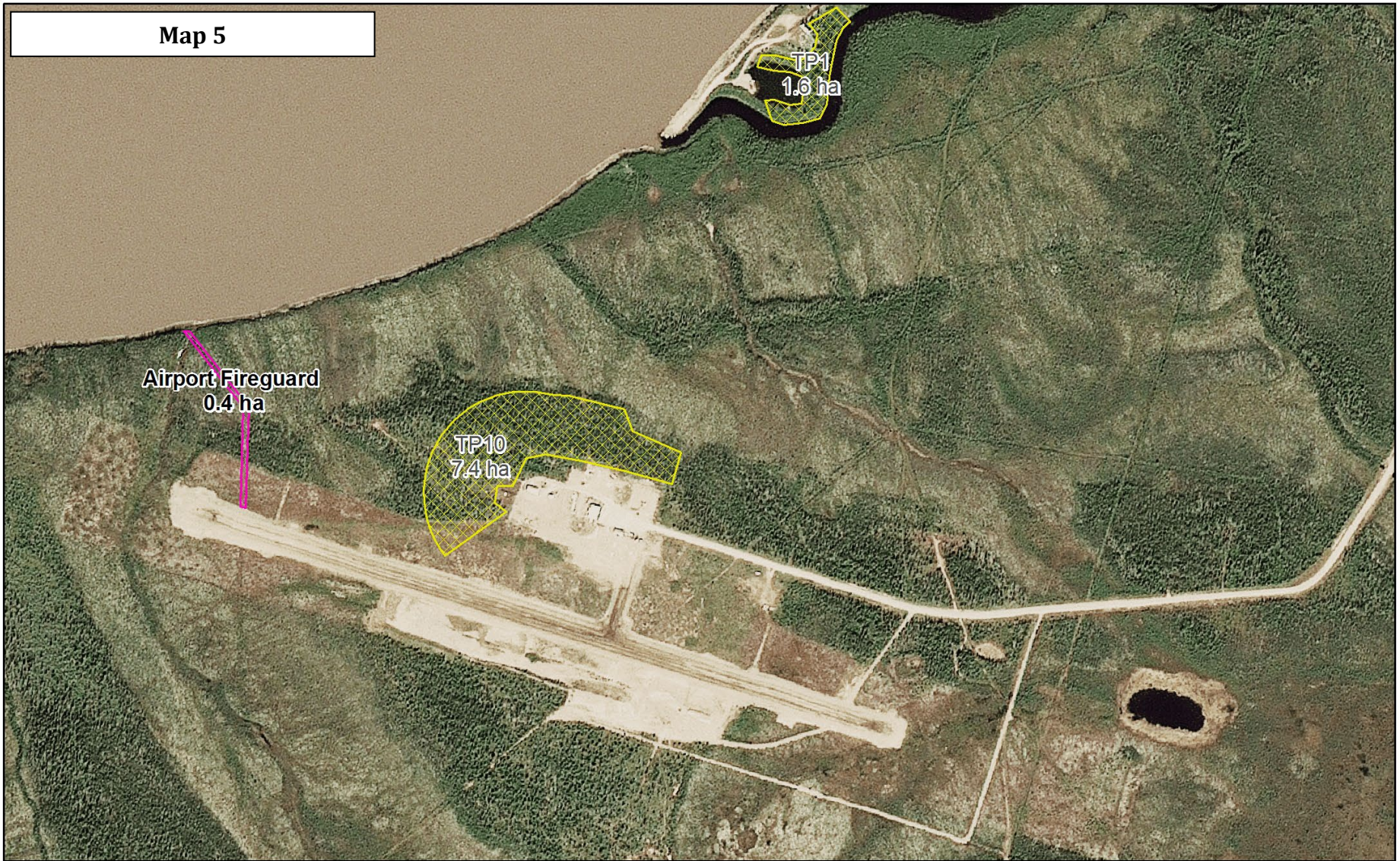
Completed and Proposed

Fuel Modifications

-  Completed
-  In Progress
-  Proposed



Map 5

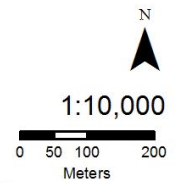


Fort Good Hope Airport Fuel Modifications

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.

Siding materials vary between hardiplank on newer structures and wood and log 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. In addition, most structures that 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 adequate for an interface community. Access roads are all-weather loop and dead-end design. There is no summer road access to the community.

5.2.2 Water Supply

Fort Good Hope does not have municipal hydrant water-supply. All development areas rely on water-tender supply for structure protection activities. Each home is equipped with an in-house water tank.

5.2.3 Franchised Utilities

Franchised utilities affected by an interface fire include electrical power and heating fuel. 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 diesel generator plant.

Heating Fuel

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. Applying for the FireSmart Community Recognition Program. For more information visit: 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:

- K'asho Got'ine
- 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.

Fort Good Hope has an active fire department, one Type I engine and access to multiple local water tenders. Some members have been trained in Basic Wildfire (S-131) and Incident Command System (I-100 and I-200). Recommended 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 Fort Good Hope Fire Department and Emergency Management Team and the GNWT should partner on cross-training initiatives to ensure emergency responders are cross-trained to the following minimum standards:

- 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 Fort Good Hope Emergency Measures Plan is used to provide authority and direction during an emergency.

The community is working with GNWT 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 EMP.

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 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.	<ul style="list-style-type: none"> ▪ K'asho Got'ine
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.	<ul style="list-style-type: none"> ▪ K'asho Got'ine
Maintenance	Recommendation 3: Residents should be educated and encouraged to maintain their properties regularly to reduce the threat of wildfire to their structures.	<ul style="list-style-type: none"> ▪ K'asho Got'ine

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.	<ul style="list-style-type: none"> ▪ GNWT ▪ K'asho Got'ine

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 Fort Good Hope residents.	<ul style="list-style-type: none"> ▪ GNWT ▪ K'asho Got'ine

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.	<ul style="list-style-type: none"> ▪ GNWT ▪ K’asho Got’ine
Cross-Training	<p>Recommendation 7: The Fort Good Hope Fire Department and Emergency Management Team and the GNWT should partner on cross-training initiatives to ensure emergency responders are cross-trained to include the following:</p> <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 	<ul style="list-style-type: none"> ▪ GNWT ▪ K’asho Got’ine

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.	<ul style="list-style-type: none"> ▪ GNWT ▪ K’asho Got’ine