Dettah

Community Wildfire Protection Plan

Prepared for:
Government of the Northwest Territories
Environment and Natural Resources - Forest Management Division

Northwest Territories Environment and Natural Resources

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1 Introduction

The Dettah Community Wildfire Protection Plan was developed to provide practical and operational wildland/urban interface risk mitigation strategies to reduce the threat of wildfire to developments within the community.

The project objectives include:

- Assess and quantify community wildland/urban interface hazard and risk
- Based on interface hazard and risk:
    - Develop and prioritize fuel management and maintenance recommendations and prescriptions
    - Develop a summary of significant factors within the community that would enhance its exposure to wildfire and offer recommendations to reduce that threat.

This Community Wildfire Protection Plan was developed using standardized FireSmart hazard assessment protocols and mitigative measures were developed based on the seven disciplines of wildland/urban interface approach and current research and knowledge in interface community protection.

An implementation plan is included in this Plan to assist stakeholders to budget and complete projects based on the priorities identified.

This plan should be reviewed and updated at **five year intervals** to ensure it is based on current conditions.

2 Planning Area and Stakeholders

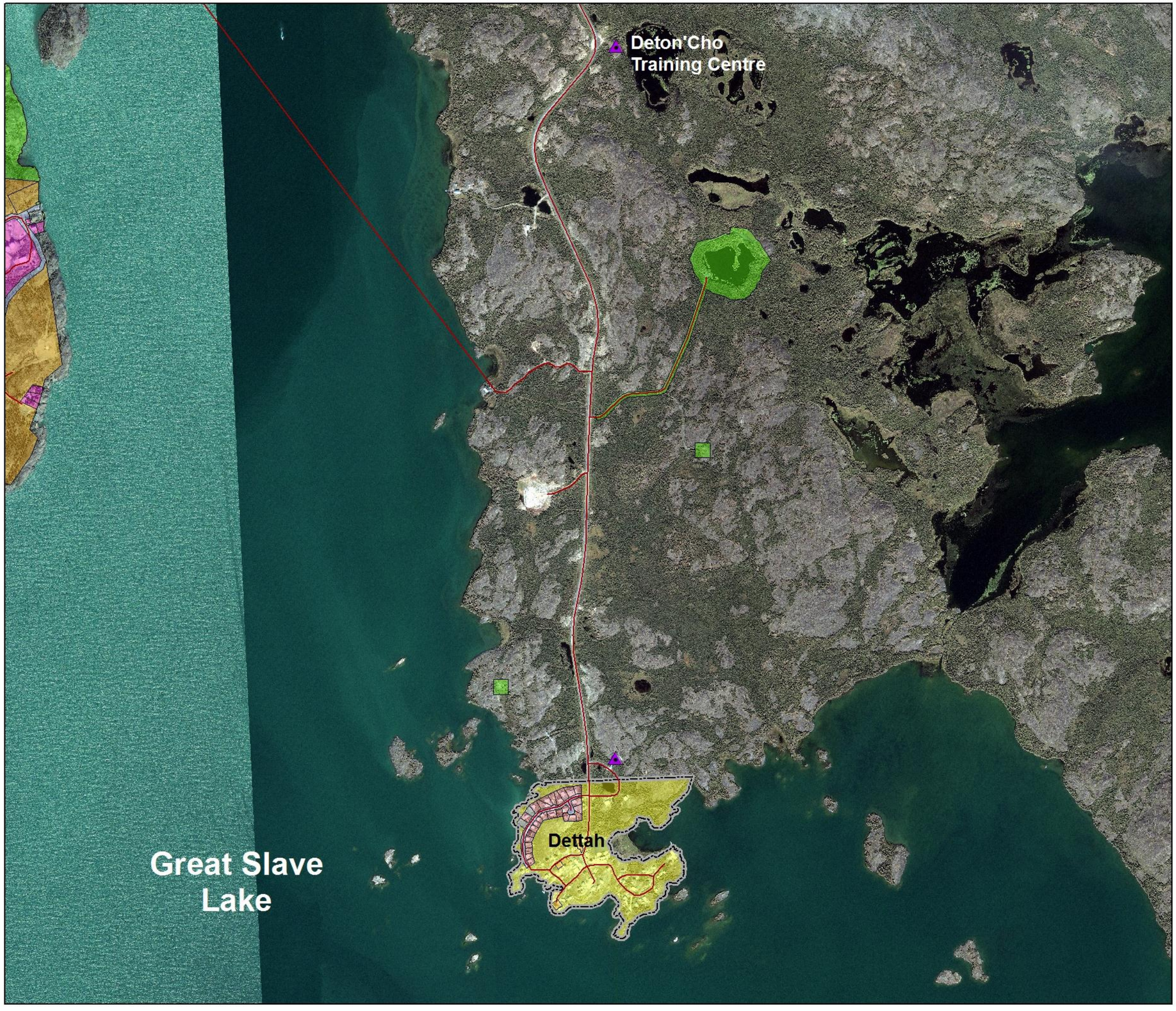
The planning area includes all lands within Dettah and a two-kilometre buffer surrounding the community (Map 1) and the Deton'Cho Training Centre to the north of the main community.

Stakeholders consulted with in the planning process included:

- Janice Ziemann, Forest Officer GNWT ENR North Slave Region

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

- Mixed
- Indian Affairs Branch
- Federal
- Commissioner (GNWT MACA)
- GNWT Crown lands (GNWT ENR)



Map 1 - Planning Area
Dettah

Community Boundary

Roads

Remote Structure Site

Land Status Authority

Commissioner

Federal

Indian Affairs Branch

Mixed

Municipal

Private

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3 Hazard & Risk Assessment

The hazard and risk assessment process analyses the risk of wildfire ignition through analysis of fire incidence, the wildfire behaviour potential through analysis of fuels and weather data, and the values at risk to wildfire through FireSmart hazard assessments.

3.1 Wildfire Ignition Potential

The assessment of recent fire incidence was completed using historical fire data from GNWT Environment and Natural Resources (ENR) for the ten-year period from 2002 to 2011.

Fire incidence data indicates that 2 wildfires were discovered on the east-side of Yellowknife Bay within a 10 kilometre radius of the community, 100% were human-caused (Table 1 and Map 2).

Table 1: Fire Incidence by Cause (2002 – 2011)

General Cause	Number of Fires	Percent of Total
Human-Caused	2	100
Lightning-Caused	0	0
Totals	**2**	**100**

The risk of wildfire in the planning area is low to moderate and primarily occurs as a result of human-caused ignitions.

Map 2 - Wildfire Incidence
Dettah

Yellowknife

Yellowknife Bay

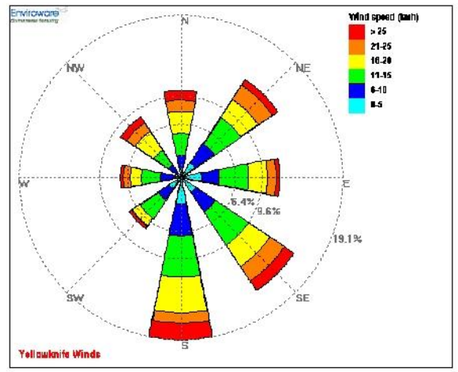
Deton'Cho Training Centre

1969

Dettah

Great Slave Lake

- 10 Km Boundary
- Human-Caused Wildfire
- Lightning-Caused Wildfire
- Wildfire > 4 hectares
- Community Boundary
- Roads
- Remote Structure Site



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3.2 Wildfire Behaviour Potential

3.2.1 Wildland Fuel Types

Fire Behaviour Prediction (FBP) fuel types were used to analyze the fuel types and fire behaviour potential within and adjacent to Dettah (Map 3).

The planning area is dominated with spruce-lichen woodland (C-1) and boreal spruce (C-2) fuels with patches of mature pine (C-3), deciduous (D-1), and non-fuel (NF).

3.2.2 Fire Weather Analysis

Fire weather data from the Yellowknife weather station was used to determine the predominant wind directions during the fire season. The predominant and strongest wind directions are from the south and southeast (Figure 1).

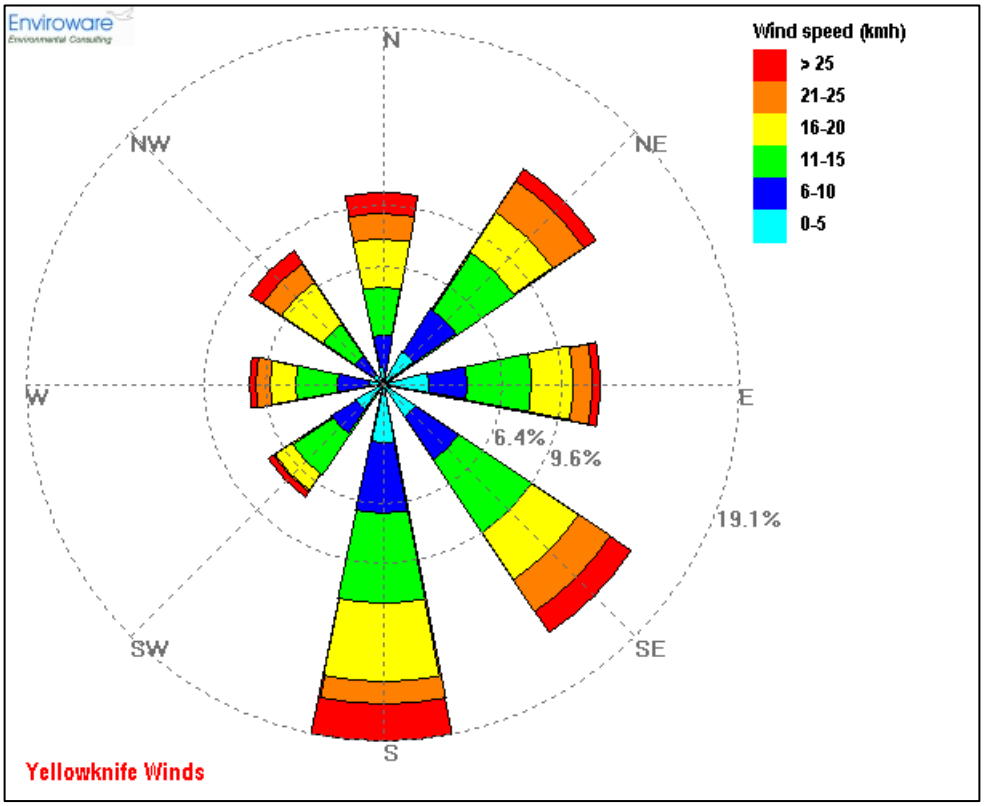


Figure 1 – Yellowknife Windrose

Wildland fuel types and fire weather data indicates that the potential for landscape-level wildfire spread towards Dettah is limited by non-continuous fuels.

Yellowknife Bay

Deton'Cho Training Centre

Dettah

Great Slave Lake

Map 3 - FBP Fuel Types Dettah

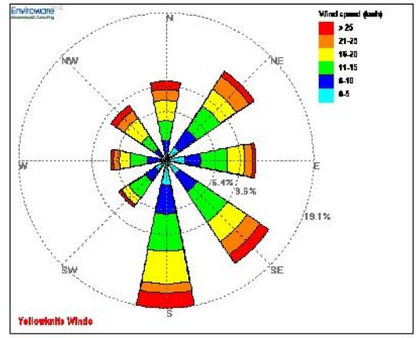
Community Boundary

Roads

Remote Structure Site

FBP Fuel Type

- Spruce-Lichen Woodland (C-1)
- Boreal Spruce (C-2)
- Mature Pine (C-3)
- Immature Pine (C-4)
- Deciduous (D-1)
- Mixedwood (M-1)
- Bog
- Non-Fuel (NF)
- Cured Grass (O1)



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3.3 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 Deton'Cho Training Centre and perimeter structures on the north-side of Dettah is at the highest threat to wildfire (Table 2 & Map 4).

Table 2: FireSmart Hazard Assessments

Development Area	Structure/Site Hazard (0 – 30m)
Dettah	Low - Moderate
Deton'Cho Training Centre	Extreme

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

Dettah

FireSmart hazard for Dettah is rated as **LOW to MODERATE**. Fuels primarily consist of non-fuel and cured-grass within the community with adequate defensible space from coniferous fuels. The structures on the north perimeter of the community are adjacent to boreal spruce fuels, putting them at higher threat to wildfire. Exterior structure materials are primarily asphalt shingle/metal roofing and hardiplank siding on newer structures and wood or vinyl siding on older structures. Access roads are all-weather loop and dead-end design.

Deton'Cho Training Centre

FireSmart hazard for the Deton'Cho Training Centre is rated as **EXTREME**. Fuels primarily consist of mature pine (C-3) and boreal spruce (C-2) with inadequate defensible space between the structures and coniferous fuel types. Exterior structure materials are combustible wood-shake roofing and siding. Access roads are all-weather narrow, dead-end design with inadequate turnarounds for fire apparatus.

The highest FireSmart threat exists at the Deton'Cho Training Centre and along the north perimeter of the main community.

Map 4 - FireSmart Hazard Dettah

Yellowknife Bay

Deton'Cho Training Centre

Dettah

Great Slave Lake

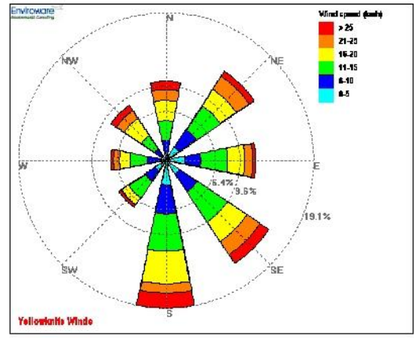
Community Boundary

Roads

Remote Structure Site

FireSmart Hazard

- Low
- Moderate
- High
- Extreme



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4 Vegetation Management Options

The goal of vegetation management is to create a fuel-reduced buffer between structures and flammable wildland vegetation to reduce the intensity and rate of spread of wildfire approaching or leaving the development. 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
- Fuel reduction
- Species conversion

Complete descriptions of the methods included in each of the above options are included in *"Fire-Smart Protecting Your Community from Wildfire"* (PIP 2003).

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

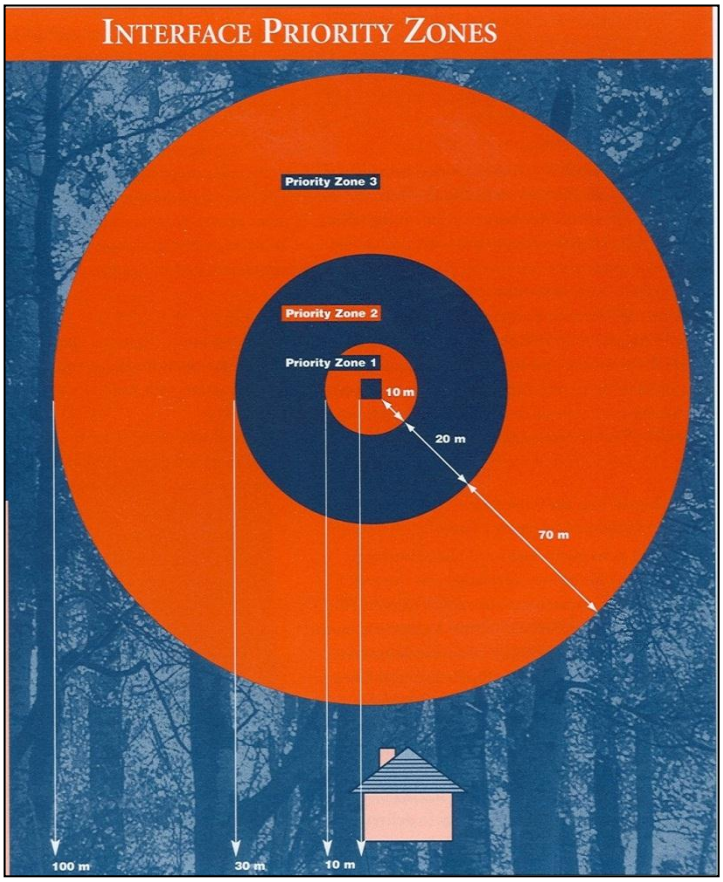


Figure 3 – Interface Priority Zones (PIP, 2003)

4.1 Existing Vegetation Management

A small fuels reduction project was recently completed by ENR on the north-side of the main community (Table 3 & Map 5A).

Table 3: Existing Vegetation Management Areas

Name	Area (ha)	Year Established	Agency	Comments
Dettah North Perimeter	1.4	2010	GNWT ENR	

4.2 Proposed Vegetation Management

4.2.1 Zone 1

Zone 1 vegetation management is **adequate** for many of the residential structures in Dettah however some of the perimeter structures lack adequate defensible space from native grass fuels. The Deton'Cho Learning Centre has **inadequate** defensible space from coniferous and 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.

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 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 5A & 5B). 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
FM1 Dettah	4.0	▪ 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 piling and burning onsite or use as biomass or other product	▪ GNWT ENR ▪ Mixed ▪ Indian Affairs
FM2 Deton'Cho Learning Centre	2.0	▪ Fuels Reduction by spacing coniferous to 2-3 m crown spacing for a minimum of 100m from structures ▪ 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	▪ GNWT ENR
Total	**6.0**		

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 5A - Fuel Modification Dettah

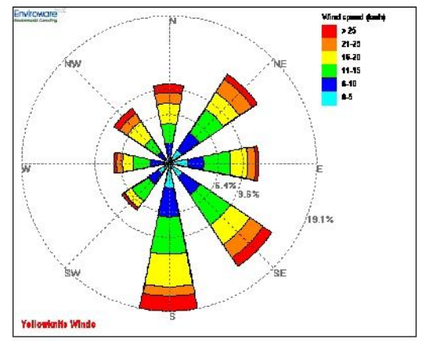
FM1

FM1

FM1

Dettah

- Community Boundary
- Roads
- Remote Structure Site
- Existing Fuel Modification
- Proposed Fuel Modification
- Fuel Removal/Clear
- Fuel Reduce/Thin



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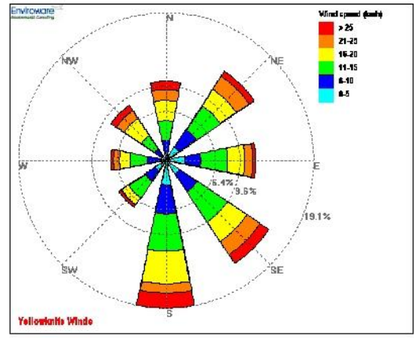
Map 5B - Fuel Modification
Deton'Cho Training Centre

Deton'Cho
Training Centre

FM2

- Community Boundary
- Roads
- Remote Structure Site
- Existing Fuel Modification
- Proposed Fuel Modification
- Fuel Removal/Clear
- Fuel Reduce/Thin



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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, 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.

Siding materials include hardi-plank on newer structures and 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 and dead-end design.

5.2.2 Water Supply

Dettah 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.

Heating Fuel

Heating fuel is provided by tank supply.

6. Public Education Options

Public education is a large part of the solution to success. Residents, landowners, municipal administration, and elected officials all need to be aware of the issues related to *FireSmart* development 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 www.nwtfire.com 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 residents.

- Development and maintenance of FireSmart Zone 1 defensible space surrounding the home, including:
  - Grass maintenance

Recommendation 5: Public education on acceptable FireSmart 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:

- Yellowknife Dene First Nation
- GNWT Environment and Natural Resources (ENR)
- GNWT Municipal and Community Affairs (MACA)

Recommendation 6: Develop a FireSmart Committee, consisting of all relevant stakeholders, to coordinate and lead the FireSmart program for the area.

Cross-training for Dettah 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-100, or equivalent)

Wildland/Urban Interface Fire

- Structure and Site Preparation Workshop (S-115)
- Fire Operations in the Wildland/Urban Interface (S-215)

Incident Command System

- ICS Orientation (I-100)
- Basic ICS (I-200)
- Intermediate ICS (I-300)
- Advanced ICS (I-400)

Recommendation 7: The Dettah and Yellowknife Fire Departments and GNWT MACA & ENR 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)
- Fire Operations in the Wildland/Urban Interface (S-215)
- Incident Command System (I-100 to I-400) as applicable

8. Emergency Planning Options

The Dettah 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 Implementation Plan

The goal of the implementation plan is to identify the responsible stakeholders for each of the recommendations and set timelines for commencement and completion based on priorities and funding availability.

Vegetation Management

Issue	Recommendation	Responsible Agency
Zone 1	**Recommendation 1:** Encourage residents to establish adequate Zone 1 defensible space around their structures.	Yellowknife Dene FN GNWT MACA
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.	GNWT ENR & MACA Yellowknife Dene FN
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.	GNWT ENR & MACA Yellowknife Dene FN

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 MACA Yellowknife Dene FN

Public Education

Issue	Recommendation	Responsible Agency
Public Education Priorities	**Recommendation 5:** Public education on acceptable FireSmart Zone 1 standards is recommended for all residents.	GNWT ENR & MACA Yellowknife Dene FN

Interagency Cooperation & Cross-Training

Issue	Recommendation	Responsible Agency
FireSmart Committee	**Recommendation 6:** Develop a FireSmart Committee, consisting of all relevant stakeholders, to coordinate and lead the FireSmart program for the area.	GNWT ENR & MACA Yellowknife Dene FN
Cross-Training	**Recommendation 7:** The Dettah and Yellowknife Fire Departments and GNWT MACA & ENR 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) ▪ Fire Operations in the Wildland/Urban Interface (S-215) ▪ Incident Command System (I-100 to I-400) as applicable	GNWT MACA & ENR Yellowknife Dene FN Yellowknife Fire Dept.

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 ENR & MACA Yellowknife Dene FN