

Yellowknife

Community Wildfire Protection Plan



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



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1 Introduction

The Yellowknife 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 Yellowknife and a two-kilometre buffer surrounding the community (Map 1).

Stakeholders consulted with in the planning process included:

- Janice Ziemann, Forest Officer GNWT ENR North Slave Region
- Darcy Hernblad, Fire Chief City of Yellowknife

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

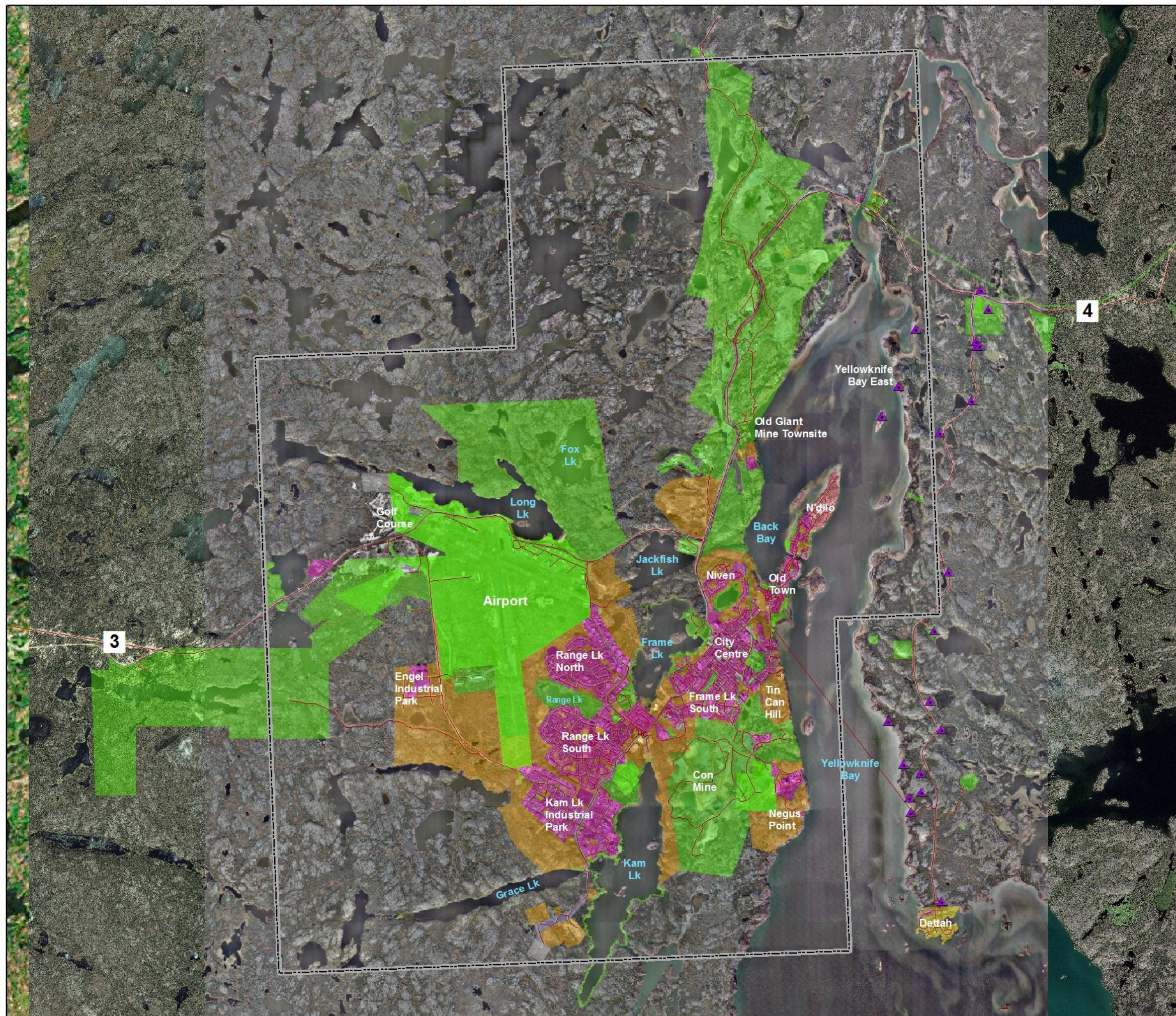
- Commissioner (GNWT MACA)
- Federal
- Indian Affairs Branch
- Mixed
- Municipal
- Private
- GNWT Crown lands (GNWT ENR)

Map 1 - Planning Area Yellowknife

-  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) and the City of Yellowknife Fire Department for the ten-year period from 2002 to 2011.

Fire incidence data indicates that 250 wildfires were discovered within a 10 kilometre radius of the community, 96% were human-caused and 4% were lightning-caused (Table 1 and Map 2). None of these fires presented significant threat to development however the City of Yellowknife Fire Chief states that numerous wildfires are responded to annually in the forested areas of the city that could present significant threat under the right hazard conditions.

Note: City of Yellowknife wildfires are not shown on Map 2.

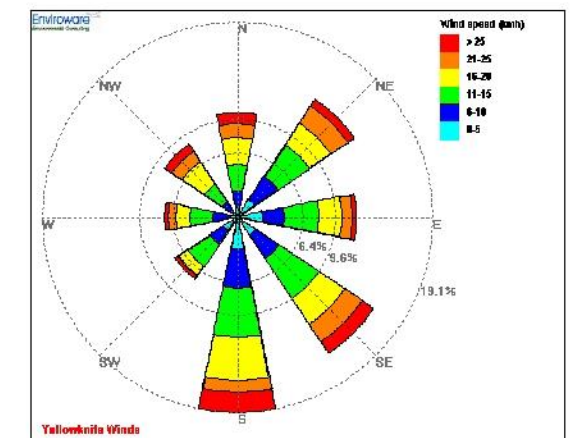
Table 1: Fire Incidence by Cause (2002 – 2011)

General Cause	Number of Fires		Total	Percent of Total
	GNWT	YK Fire Dept.		
Human-Caused	24	217	241	96
Lightning-Caused	9	0	9	4
Totals	33	217	250	100

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

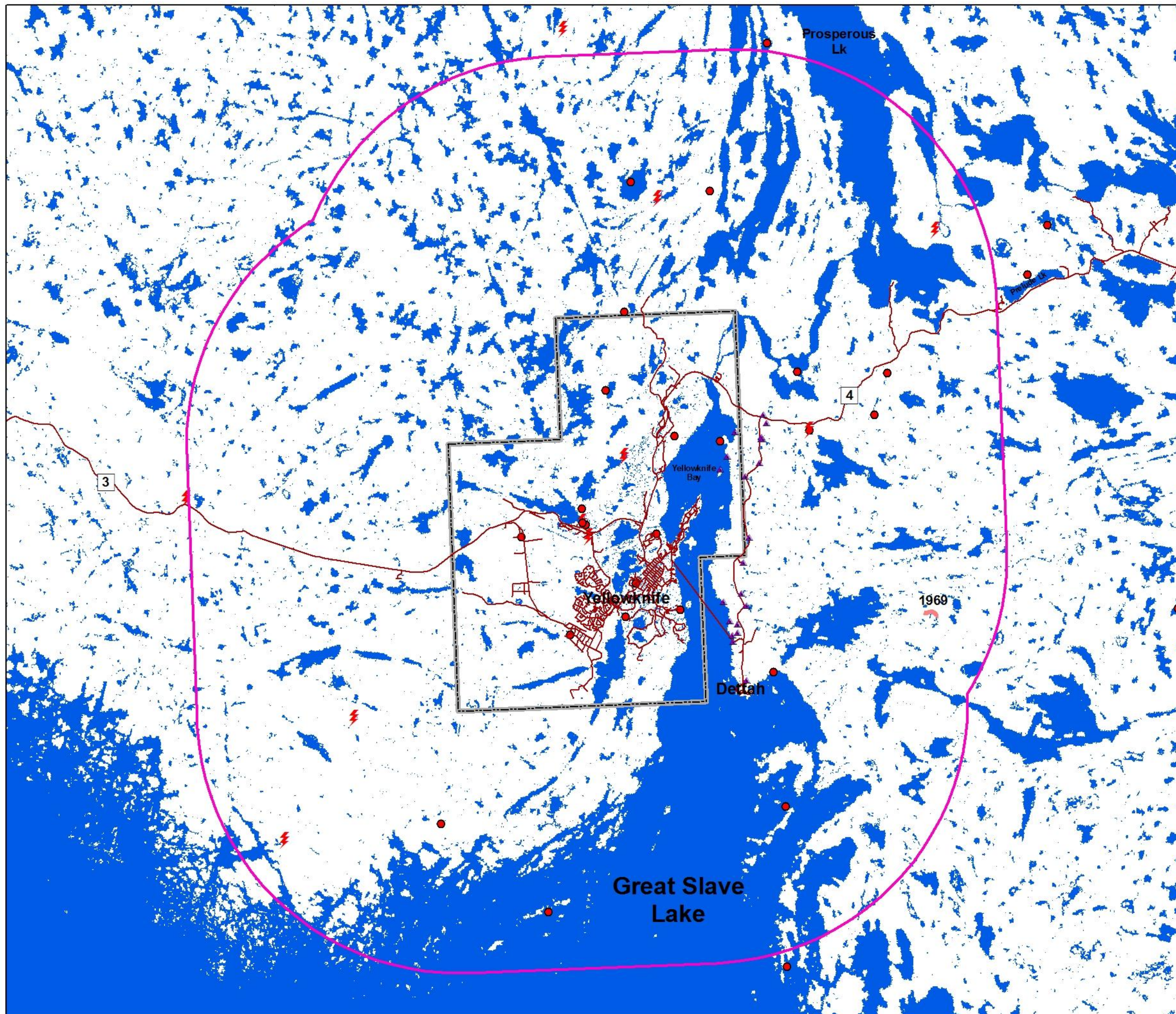
Map 2 - Wildfire Incidence Yellowknife

-  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 Yellowknife (Map 3).

The planning area is dominated with open-density spruce (C-1) and pine (C-4) and non-fuels (NF) with patches of boreal spruce (C-2) fuels adjacent to the community. The potential for landscape-level wildfire in coniferous fuels exists along the west-side of Yellowknife.

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 with secondary winds from the northeast and east (Figure 1).

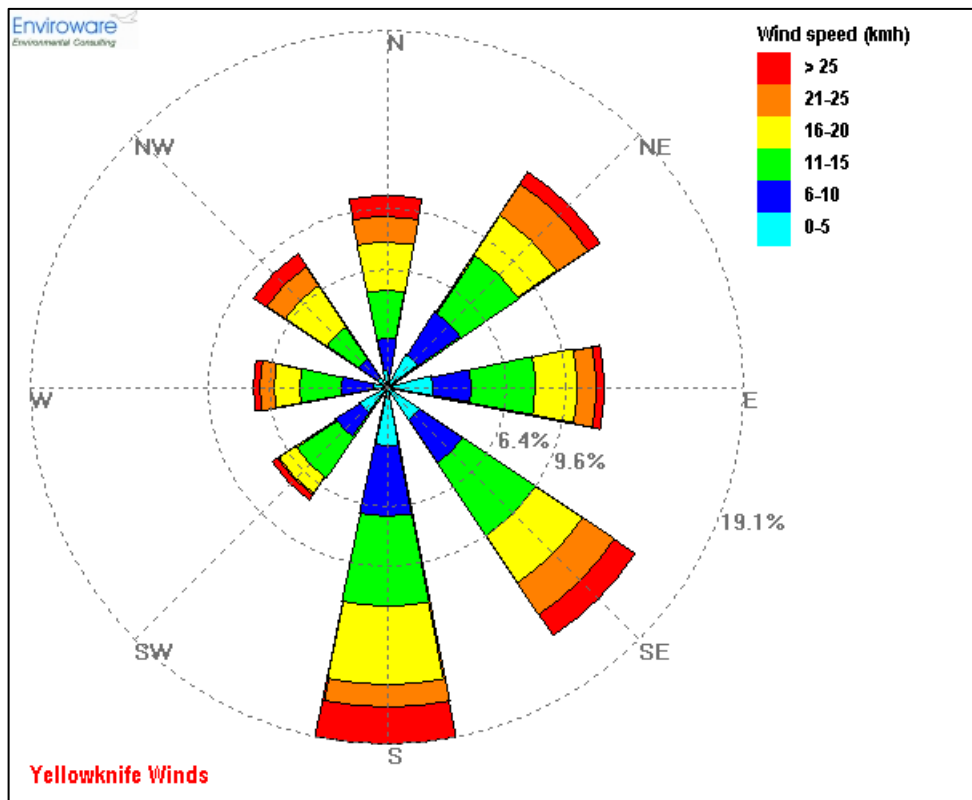


Figure 1 – Yellowknife Windrose

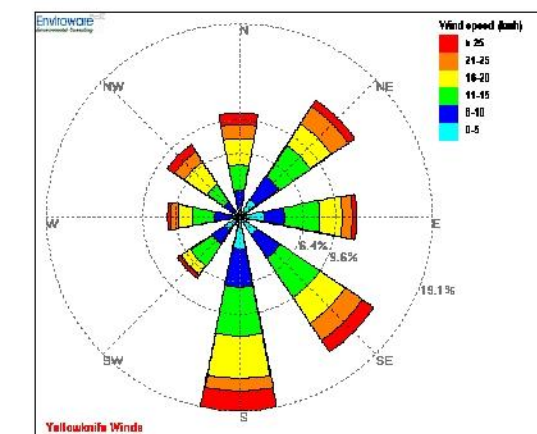
Wildland fuel types and fire weather data indicates that the potential for landscape-level wildfire is High due to high wildfire incidence and coniferous fuel types to the west of Yellowknife.

Map 3 - FBP Fuel Types Yellowknife

-  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 (Table 2 & Map 4). Hazard factor's for each of the development areas are discussed below.

Table 2: FireSmart Hazard Assessments

Development Area	Structure/Site Hazard (0 – 30m)
Airport/Hwy 3	Low
Engel Industrial/DND FOS	Moderate-High
Kam Lake Industrial	Low-High
Range Lake South	Low-Extreme
Range Lake North	Low-High
Frame Lake South	Low-High
City Centre	Low
Niven	Low-High
Old Town	Low
N'dilo	Low-Moderate
Yellowknife Bay East	High-Extreme

Airport/Hwy 3

FireSmart hazard for the Airport/Hwy 3 area is **LOW** except for the golf course clubhouse which is **HIGH**. Zone 1-2 defensible space is generally adequate for the majority of the structures and perimeter fuels primarily consist of non-fuel (NF), cured-grass (O1), and open-density spruce (C-1) and pine (C-4).



Engel Industrial/DND FOS

FireSmart hazard for the Engel Industrial/DND Forward Operating Stn. area is **MODERATE-HIGH**. Zone 1-2 defensible space is generally adequate for the structures presently onsite however medium density spruce (C-1/C-2) and pine (C-4) fuels surrounding both developments present the threat of landscape-level wildfire to development.

Kam Lake Industrial

FireSmart hazard for the Kam Lake Industrial area is **LOW-HIGH**. Defensible space is generally adequate for the structures in the interior however is lacking for structures on the south, west, and north perimeters. Perimeter fuels primarily consist of open (C-1) to medium-density (C-2) spruce fuels.



Range Lake South

FireSmart hazard for the Range Lake South residential area is **LOW-EXTREME**, with interior structures being at Low/Moderate threat and structures on the west, north, and south perimeters being at High/Extreme threat. Perimeter fuels primarily consist of medium (C-2) to open-density spruce (C-1) and pine (C-4).

Range Lake North

FireSmart hazard for the Range Lake North residential area is **LOW-HIGH**, with interior structures being at Low/Moderate threat and structures on the south and west perimeters being at High threat. Perimeter fuels primarily consist of medium (C-2) to open-density spruce (C-1) and pine (C-4).





Frame Lake South

FireSmart hazard for the Frame Lake South residential area is **LOW-HIGH** with scattered development pods having inadequate defensible space from perimeter spruce (C-1/C-2) and pine (C-4) fuels.

City Centre

FireSmart hazard for the City Centre area is **LOW**. Wildland fuels have primarily been cleared to non-fuel (NF) with scattered patches of cured-grass (O1).



Niven

FireSmart hazard for the Niven residential area is **LOW-HIGH**, with those structures on the east hillcrest, north perimeter and around Niven Lake at the highest threat. Perimeter fuels primarily consist of medium (C-2) to open-density spruce (C-1) and pine (C-4) with steep slopes on the east-side of the development.

Old Town

FireSmart hazard for the Old Town area is **LOW**. Wildland fuels have been mostly cleared to non-fuel (NF) with scattered patches of spruce (C-1/C-2). The threat of a large wildfire entering this area is minimal.



N'dilo (Latham Island)

FireSmart hazard for the N'dilo area is **LOW-MODERATE**. Wildland fuels primarily consist of deciduous (D-1) with patches of open (C-1) to medium density spruce (C-2). The threat of a large wildfire entering this area is minimal however the threat of wildfire starting within the area and spreading to structures is present.

Yellowknife Bay East

FireSmart hazard for the Yellowknife Bay East remote structure area is **HIGH-EXTREME**. The majority of structures have inadequate defensible space from medium (C-2) to open-density spruce (C-1) fuels and the threat of landscape-level fire from the east puts these structures at High-Extreme threat.



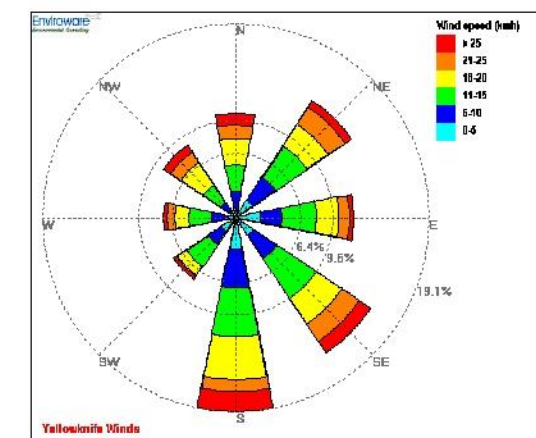
FireSmart hazard is High-Extreme on the perimeters of several of the development areas and Low-Moderate for the City Centre and interiors of several of the developments.

Map 4 - FireSmart Hazard Yellowknife

-  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.

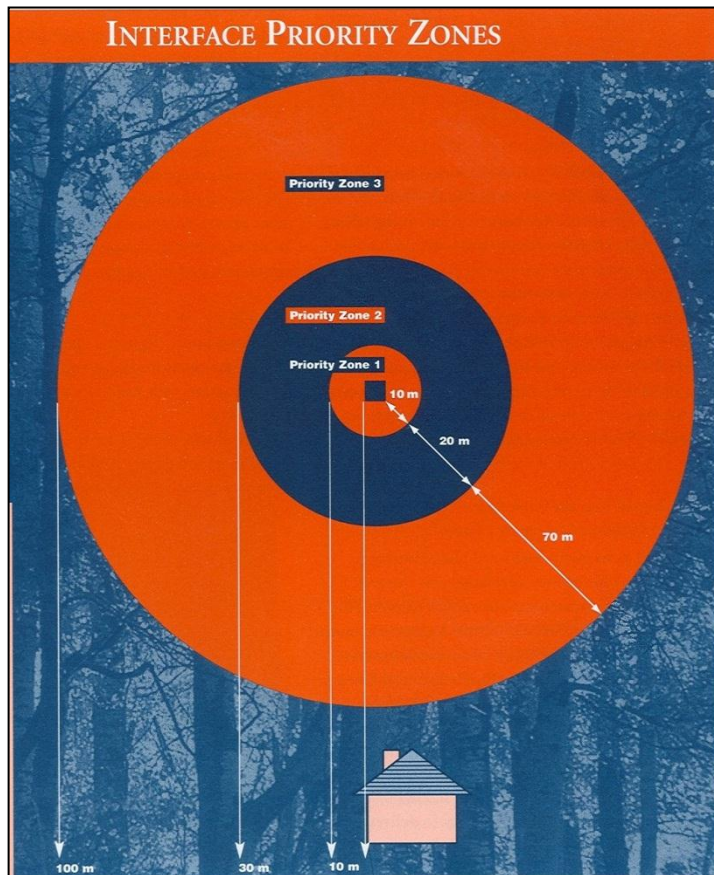


Figure 3 – Interface Priority Zones (PIP, 2003)

4.1 Existing Vegetation Management

There are no existing vegetation management areas completed.

4.2 Proposed Vegetation Management

4.2.1 Zone 1

Zone 1 vegetation management is **inadequate** for several properties in Yellowknife, including coniferous trees and native grasses within 10 metres of the structure.

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 3 & Map 5). **Priority A** areas are recommended for completion before Priority B areas. 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. General prescriptions for fuels reduction and fuels removal are provided below.

a) Fuels Reduction

- Thin spruce and pine to achieve 2-3 m crown spacing
- Remove deciduous shrub understory
- Remove all dead standing and dead & down coniferous and deciduous
- Retain all live deciduous overstory stems
- Prune limbs to 2 metres
- Dispose of debris by piling and burning onsite or use as biomass or other product

b) Fuels Removal

- Remove all wildland fuels to provide a fuelbreak adjacent to ensure a minimum 30 metres clearance
- Dispose of debris by piling and burning onsite or use as biomass or other product

Table 3: Priority Fuel Modification Areas

Priority	Area (Ha)	Proposed Fuel Modification Standards	Land Status Authority
A1 Range Lake South	31.7	▪ Fuels Reduction	▪ Municipal ▪ Mixed
A2 Range Lake North	14.3	▪ Fuels Reduction	▪ Municipal ▪ Commissioner
A3 Kam Lake Industrial	38.8	▪ Fuels Reduction	▪ Municipal
A4 Engel Industrial	15.7	▪ Fuels Removal and Reduction	▪ GNWT ENR ▪ Municipal ▪ Commissioner
A5 Niven Lake	12.5	▪ Fuels Reduction	▪ Municipal ▪ GNWT ENR
B1 Frame Lake South	7.0	▪ Fuels Reduction	▪ Municipal ▪ GNWT ENR
B2 Con Rd	4.2	▪ Fuels Reduction	▪ Federal ▪ GNWT ENR
B3 City Centre East	4.1	▪ Fuels Reduction	▪ Commissioner ▪ Municipal
B4 Frame Lake Southwest	3.2	▪ Fuels Reduction	▪ Commissioner ▪ Municipal
B5 Correctional Centres	1.6	▪ Fuels Reduction	▪ Commissioner
B6 Taylor Rd	0.7	▪ Fuels Reduction	▪ Municipal ▪ Federal ▪ Commissioner
Total	133.8		

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.

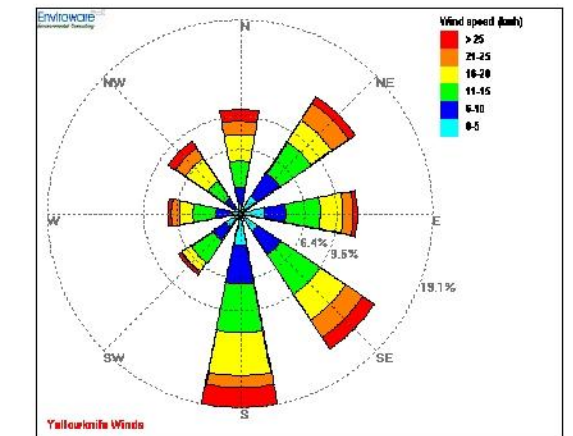
4.3 Vegetation Management Maintenance

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 5 - Fuel Modification Yellowknife

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



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5. Development and Legislation 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 with scattered wood-shake roofs throughout.

The most common siding materials are wood or vinyl with scattered metal, stucco, and log throughout.

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. Most access roads are all-weather loop-road or dead-end design and with adequate turnaround dimensions for fire apparatus. There is inadequate road access to the Yellowknife Bay East cabin sites.

5.2.2 Water Supply

Yellowknife has municipal fire hydrant water-supply for the majority of the city except for the Kam Lake Industrial Park, Old Town, and N'dilo developments. The city water pumphouses have diesel backup fire pumps.

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 transmission is provided by the Northwest Territories Power Corporation Snare River hydro-station and the Jackfish Lake diesel-electric plant. Power distribution and residential service is provided by Northland Utilities through above-ground distribution.

Heating Fuel

Heating fuel is primarily provided by diesel tank supply with a small percentage of structures relying on propane tank supply.

5.3 Legislation Options

Legislating *FireSmart* requirements can assist municipalities to achieve their *FireSmart* objectives. The City of Yellowknife uses the General Plan and the Zoning Bylaw to control land use and development within the planning area.

5.3.1 City of Yellowknife General Plan By-law 4315 (Consolidated to 2009)

The City of Yellowknife 2004 General Plan will shape and direct growth over the next decade by providing a clear, relevant and evidence-based approach to planning and development responding to current and emerging issues and opportunities. The General Plan **does not** recognize the threat of wildfire to current or future development.

Section 1.2 Strategic Growth identifies conceptual future growth areas (Figure 4) and most are in the “hinterland” areas at Moderate to Extreme risk to wildfire.

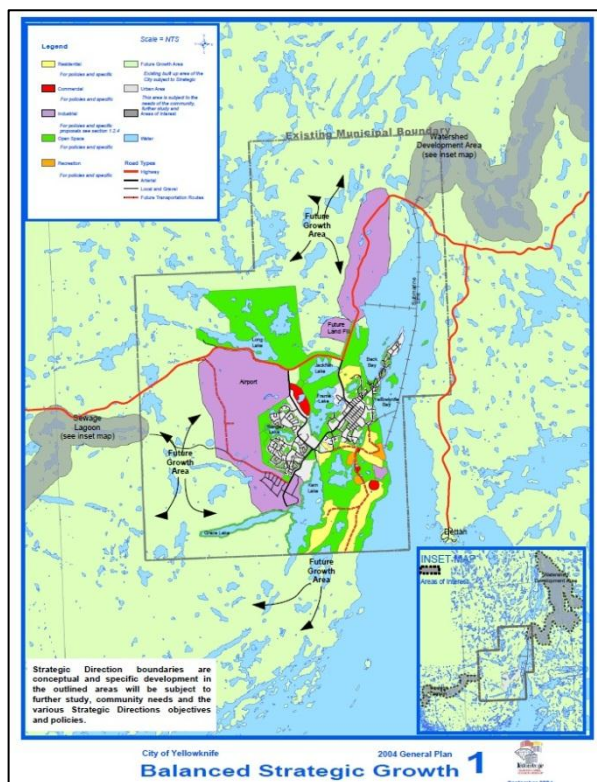


Figure 4 – Yellowknife Conceptual Future Growth Areas (YK General Plan By-law 4315)

Recommendation 5: Recognize wildfire as a development constraint in the City of Yellowknife General Plan to ensure that wildfire is considered in the development planning process.

Recommendation 6: Request Developers to provide a Wildfire Risk Assessment, developed by a qualified professional, for any new developments located in High or Extreme hazard areas.

5.3.2 City of Yellowknife Zoning By-law No. 4404 (Consolidated to 2008)

The purpose of the Zoning By-law is to facilitate the use and development of land and buildings within the City of Yellowknife in a balanced and responsible manner pursuant to the *N.W.T. Planning Act* and applicable General Plan.

The Zoning By-law **does not** specifically recognize wildfire threat or FireSmart development standards. It is within the Zoning Bylaw that specific FireSmart development regulation can be achieved with respect to exterior structural materials. The following recommendations are offered to assist with future revisions to the City of Yellowknife Zoning By-law.

Recommendation 7: Revise the City of Yellowknife Zoning By-law to include the following:

3.3(3) The Development Officer may also require any of the following:

(j) A Wildfire Risk Assessment, prepared by a qualified professional, to determine the threat of wildfire to the proposed development and recommend mitigation solutions to reduce that threat.

7.1(2) Review the landscaping requirements to ensure they do not conflict with FireSmart landscaping standards.

Add a FireSmart Development subsection to Section 7.1 Rules Applicable to All Zones:

7.1(12) FireSmart Development

(a) All roofing materials on new, replacement, or retro-fitted residential, commercial, or accessory buildings shall have a minimum Class C U.L.C. fire rating or as determined by the Development Authority based on wildland/urban interface hazard.

(b) All siding materials on new, replacement, or retro-fitted residential, commercial, or accessory buildings within 30 metres of High or Extreme hazard combustible wildland fuels and as determined by the Development Authority shall be fire-resistant material including, but not limited to, stucco, metal, brick, cement shingles, concrete block, poured concrete, rock, or fibre-cement siding extending from ground level to roofline.

(c) All new dwellings, accessory buildings, and commercial buildings with exposed undersides and/or raised decks and porches less than 2 metres from ground level shall be sheathed from the floor level to the ground level with fire-resistant material, to prohibit the entry of sparks and embers under the structure. An adequately screened open area shall be provided in the skirting to allow for proper ventilation of the area.

(d) All new dwellings, accessory buildings, and commercial buildings shall establish and maintain FireSmart defensible space for a minimum of 10 metres or to lot boundary.

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 all residents.

- Development and maintenance of FireSmart Zone 1 defensible space surrounding the home, including:
 - Tree, grass and brush maintenance
 - Firewood and combustibles storage
 - Skirting of open undersides
- Evacuation planning

Recommendation 8: Public education on acceptable FireSmart Zone 1 standards and evacuation planning 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:

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

Recommendation 9: Develop a FireSmart Committee, consisting of all relevant stakeholders, to coordinate and lead the FireSmart program for the area.

The Yellowknife Fire Department and GNWT ENR currently hold a Memorandum of Understanding regarding wildfire jurisdiction and mutual-aid response. The City of Yellowknife is responsible for all wildfires within the City limits however GNWT ENR has the authority to respond if they identify significant threat or if requested by Yellowknife Fire Department.

The Yellowknife Fire Department has composite department with approximately 29 full-time and 30 paid on-call members. All Chief Officers and Lieutenants are trained to the Advanced Incident Command System (I-400) level however the Fire Chief indicates that wildfire and wildland/urban interface fire training is required. 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 10: The Yellowknife Fire Department 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 Yellowknife Emergency Measures Plan is used to provide authority and direction during an emergency. The plan describes roles and responsibilities and resources that can be available during an emergency but does not deal with specific emergencies, such as wildfire, or specific response actions related to the 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 11: 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.	City of Yellowknife 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.	City of Yellowknife GNWT ENR & MACA Federal Government
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.	City of Yellowknife GNWT ENR & MACA Federal Government

Development and Legislation

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 City of Yellowknife
General Plan	Recommendation 5: Recognize wildfire as a development constraint in the City of Yellowknife General Plan to ensure that wildfire is considered in the development planning process.	City of Yellowknife
General Plan	Recommendation 6: Request Developers to provide a Wildfire Risk Assessment, developed by a qualified professional, for any new developments located in High or Extreme hazard areas.	City of Yellowknife
Zoning By-law	Recommendation 7: Revise the City of Yellowknife Zoning By-law to include the following: 3.3(3) The Development Officer may also require any of the following: (j) A Wildfire Risk Assessment , prepared by a qualified professional, to determine the threat of wildfire to the proposed development and recommend mitigation solutions to reduce that threat. 7.1(2) Review the landscaping requirements to ensure they do not conflict with FireSmart landscaping standards. Add a FireSmart Development subsection to Section 7.1 Rules Applicable to All Zones: 7.1(12) FireSmart Development (a) All roofing materials on new, replacement, or retro-fitted residential, commercial, or accessory buildings shall have a minimum Class C U.L.C. fire rating or as determined by the Development Authority based on wildland/urban interface hazard.	City of Yellowknife

Zoning By-Law	(b) All siding materials on new, replacement, or retro-fitted residential, commercial, or accessory buildings within 30 metres of High or Extreme hazard combustible wildland fuels and as determined by the Development Authority shall be fire-resistant material including, but not limited to, stucco, metal, brick, cement shingles, concrete block, poured concrete, rock, or fibre-cement siding extending from ground level to roofline. (c) All new dwellings, accessory buildings, and commercial buildings with exposed undersides and/or raised decks and porches less than 2 metres from ground level shall be sheathed from the floor level to the ground level with fire-resistant material, to prohibit the entry of sparks and embers under the structure. An adequately screened open area shall be provided in the skirting to allow for proper ventilation of the area. (d) All new dwellings, accessory buildings, and commercial buildings shall establish and maintain FireSmart defensible space for a minimum of 10 metres or to lot boundary.	
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Public Education

Issue	Recommendation	Responsible Agency
Public Education Priorities	Recommendation 8: Public education on acceptable FireSmart Zone 1 standards and evacuation planning is recommended for all residents.	GNWT ENR & MACA City of Yellowknife

Interagency Cooperation & Cross-Training

Issue	Recommendation	Responsible Agency
FireSmart Committee	Recommendation 9: Develop a FireSmart Committee, consisting of all relevant stakeholders, to coordinate and lead the FireSmart program for the area.	GNWT ENR & MACA City of Yellowknife Yellowknife Dene FN
Cross-Training	Recommendation 10: The Yellowknife Fire Department 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 City of Yellowknife

Emergency Planning

Issue	Recommendation	Responsible Agency
Community Wildfire Pre- Planning	Recommendation 11: 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 City of Yellowknife