

Community Wildfire Protection Plan

Wrigley (Pehdzeh Ki)



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1 Introduction

In 2011, a Community Wildfire Protection Plan (CWPP) was developed for the Pehdzeh Ki First Nation to address the hazard and the risk to the community of Wrigley 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 Wrigley.

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

Wrigley, 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 Wrigley (Map 1).

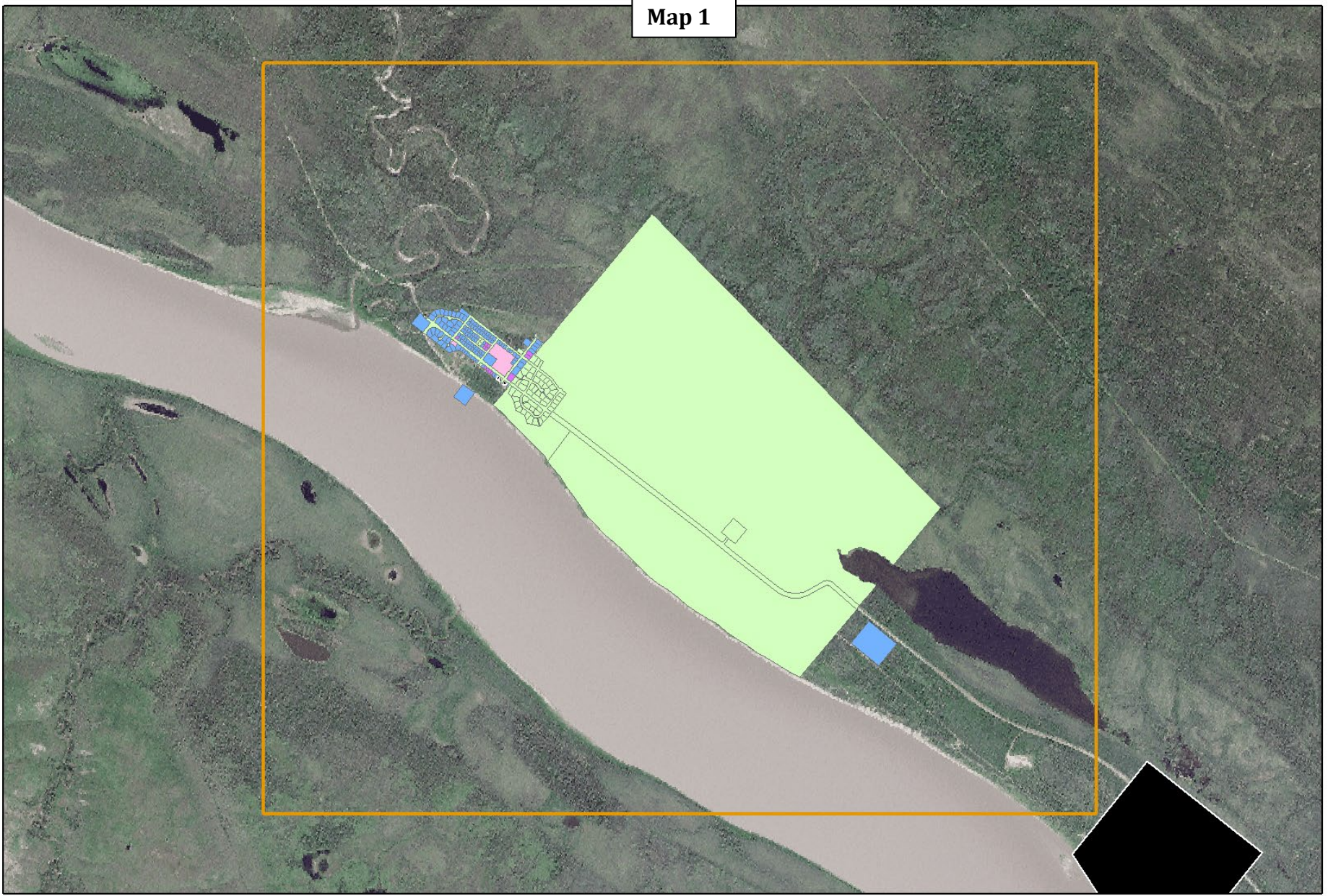
Stakeholders involved in the planning process included:

- Government of the Northwest Territories, Environment and Natural Resources
- Pehdzeh Ki First Nation

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

- Commissioner
- Federal
- Mixed
- Private
- Territorial

Map 1



Wrigley Land Status Authority

Land Ownership	Mixed	Planning Area
Commissioner	Private	
Federal	Territorial	

N

1:40,000

Northwest Territories Environmental and Natural Issues

3 Hazard & Risk Assessment

In the original 2011 CWPP a hazard and risk assessment was undertaken to determine the potential impact wildfire could have on the community. This was based on an analysis of the historical wildfire ignition sources, fire incidence and the wildland fire potential of the forest surrounding the community.

3.1 Wildfire Ignition Potential

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

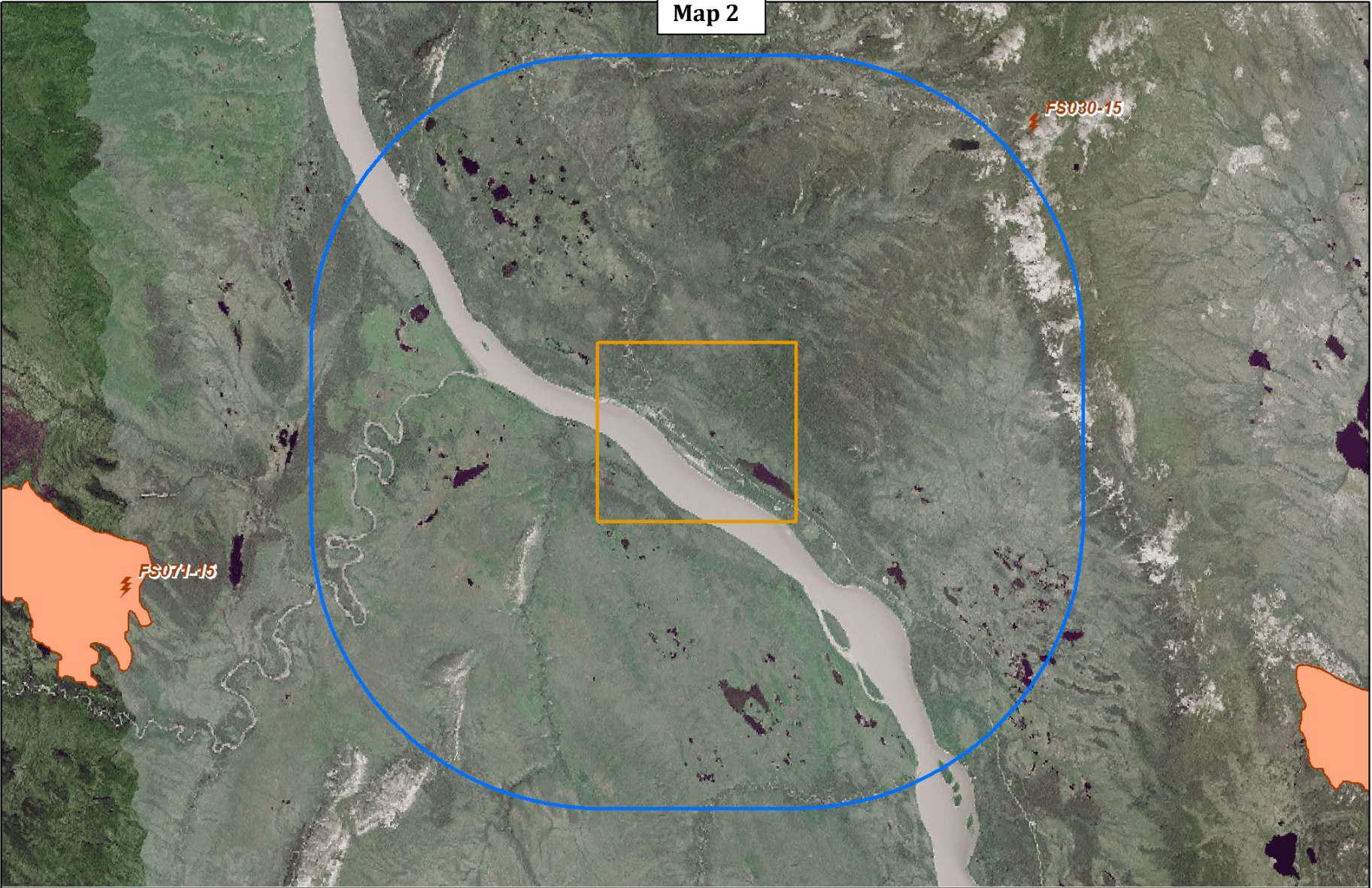
Data within a 10 kilometre radius of the planning area boundary indicates that wildfire incidence is high. Fire incidence data indicates that ENR responded to 0 wildfires in the planning area (Map 2) since 2010 however; there were a few large wildfires in the Wrigley area in 2015, just outside of the 10km buffer zone. General cause is predominantly lightning.

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







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

The potential for wildfire historically has been low within the 10 kilometre radius around Wrigley.


Map 2




Wrigley Ten Year Fire History

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


Northwest Territories Environment and Natural Resources



1:175,000



0 1,250 2,500 5,000
Meters



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 within and adjacent to Wrigley.

The planning area is dominated with boreal spruce (C-2), mature pine (C-3), and deciduous (D-1) fuel types with cured-grass fuels on the existing fuel breaks surrounding the townsite (Map 3). 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 break to wildfires on the west-side of the river.

Fuel types within the townsite area include mainly cured-grass and non-fuel on the north end and boreal spruce (C-2), mature pine (C-3), and deciduous (D-1) on the south-end.

Forest fuel types and fire weather data indicates a High potential for intense landscape-level wildfire exists in C-2 and C-3 fuels surrounding Wrigley.

3.3 FireSmart Hazard Assessments

FireSmart hazard assessments (P.I.P., 2003) were conducted on developments and adjacent wildland fuel types within the planning area. The FireSmart hazard assessment process evaluates wildland and structural fuel types, structural features, and topography within and adjacent to the development area to consistently quantify the wildland/urban interface hazards within the planning area and to help set priorities for mitigative options.

Section 3.2 identified a high potential for intense landscape-level wildfire in the lands surrounding Wrigley. FireSmart hazard is rated **LOW to EXTREME** for the townsite area based on the low hazard fuel types on the north-end and the high hazard fuel types in the newer developments on the south-end of the townsite. FireSmart hazard for each of the development areas is discussed below.

Hazard factors for each of the development zones are discussed below.

Table 2: FireSmart Hazard Assessments

Development Area	Structure/Site Hazard (0 - 30m)
Wrigley Townsite	Low - Extreme
Wrigley Airport	Low
Wrigley Firebase (ENR)	Moderate
Wrigley Highway Maint. Camp	Low

Wrigley Town site

FireSmart hazard for the Wrigley town site area ranges from **LOW to EXTREME**. Fuel types inside the winter road include deciduous (D-1), mature pine (C-3), boreal spruce (C-2), spruce-lichen woodland (C-1), non-fuel (NF), and cured-grass (O1). Exterior structure materials are primarily asphalt shingle or metal roofing and wood, log, or hardi-plank siding. Access roads are all-weather loop and dead-end. The highest wildfire threat is to structures in the new subdivisions on the south-end of the townsite area.





Wrigley Airport

FireSmart hazard for the Wrigley Airport is **LOW**. Fuel types surrounding the structures are mainly cured-grass or non-fuel with spruce (C-2) and pine (C-3) fuel types surrounding the airstrip lands. Exterior structure materials are primarily asphalt shingle or metal roofing and metal and wood siding.

Wrigley ENR Firebase

FireSmart hazard for the firebase is **MODERATE**. Fuel types surrounding the structures are primarily mixedwood (M-1) and boreal spruce (C-2) however significant fuels reduction has been completed around the structures reducing the hazard level. Exterior structure materials are asphalt shingle roofing and wood and log siding.



Wrigley Highway Maintenance Camp

FireSmart hazard for the Highway Maintenance Camp is **LOW**. The site consists of a large non-fuel clearing surrounded by mixedwood (M-1) and boreal spruce (C-2) fuel types. Exterior structure materials are primarily asphalt shingle or metal roofing and wood, vinyl, or metal siding. The threat of wildfire to this site is minimal due to the Zone 1-2 clearing and structural materials used.



Pellissey Residences

FireSmart hazard for the two Pellissey residences located southeast of Wrigley along MacKenzie River (Map 4) bank is **HIGH to EXTREME**. Both residences are located in C-2 fuel types with inadequate Zone 2 defensible space and poor access. Exterior structure materials are asphalt shingle roofing and wood siding.



The threat of significant structure loss from wildfire in Wrigley is HIGH in the new subdivisions on the south-end and for scattered structures on the east perimeter of the town site. The rural developments are at LOW to MODERATE threat.

4 Vegetation Management Options

The goal of vegetation management is to create a clear space between the community and the forest to reduce the intensity and rate of spread of wildfire approaching or leaving the community. Vegetation management options are proposed at the appropriate scale, based on hazard and risk, to reduce the threat of wildfire to developed areas. While fuel modification projects reduce the threat of wildfire to developments, they do not ensure structure survival under all hazard conditions.

Vegetation management consists of one or any combination of the following options:

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

Complete descriptions of the methods included in each of the above options are included in the link:

<https://www.firesmartcanada.ca/mdocs-posts/firesmart-priority-zones-2017/>

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

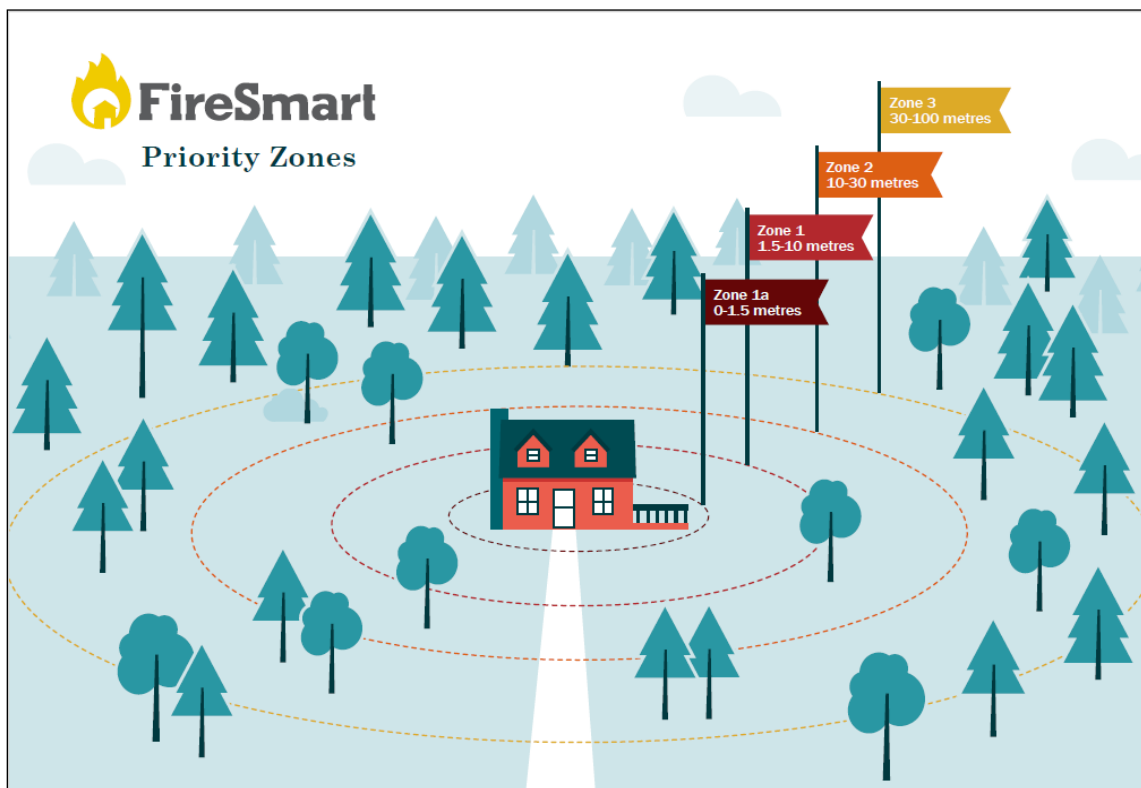


Figure 1 – Interface Priority Zones (PIP, 2017)

4.1 Existing Vegetation Management

Fuels removal and reduction projects have been completed in the planning area by ENR (Map 3 & Table 3).

Table 3: Existing Vegetation Management Areas

Name	Area (ha)	Year	Agency	Comments
Fireguards	3.7 3.7	1990's 2010	GNWT	Old fireguard needs maintenance, new fireguard needs debris disposal
Fuels Reduction	7.4	1995	GNWT	Requires maintenance
Fuel Reduction west fire break	8.6	2013	GNWT	Will require maintenance

Fireguards have been constructed in the 1990’s and in 2010 by ENR around the north and east perimeter of the townsite. The new 2010 fireguard requires debris disposal and the old 1990’s guard requires maintenance to ensure their effectiveness.



Fuels reduction has been completed in C-2 fuels on the northeast side of the townsite between the old fireguard and the developed area to space the black spruce. Additional fuels reduction is recommended in patches between this area and the developed areas.



ENR has completed fuels reduction around their firebase and continues to improve and maintain this area.



4.2 Proposed Vegetation Management

4.2.1 Zones 1a (0-1.5 metres)

Zone 1a vegetation management is **inadequate** for many of 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 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 zone and any that are present should be properly mitigated.

4.2.2 Zone 1 (1.5-10m)

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 (O1).



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 1a and 1 standards refer to <https://www.firesmartcanada.ca/>

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

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

Zone 2-3 fuels management is recommended for areas on the south and east perimeters of the community to reduce the threat of wildfire in C-2 and C-3 fuels inside the fireguard 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
1	4.4	<ul style="list-style-type: none"> • Fuels reduction by spacing spruce to 2-3 m in crown spacing. • Remove all standing dead & down coniferous and deciduous • Retain over story stems 	<ul style="list-style-type: none"> • Pehdzeh Ki First Nation

		<ul style="list-style-type: none"> • Prune limbs to 2 metres 	
2	5.5	<ul style="list-style-type: none"> • Fuels reduction by spacing spruce to 2-3 m crown spacing in C-2 and M-1 fuel types inside the firebreak and adjacent to developments • Remove all dead standing and dead & down coniferous and deciduous • Retain deciduous over story stems • Prune limbs to 2 metres <ul style="list-style-type: none"> • Dispose of debris by piling and burning onsite 	<ul style="list-style-type: none"> • Pehdzeh Ki First Nation
Total	9.9		

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. 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

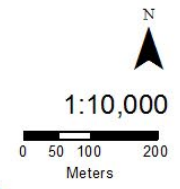


Wrigley Fuel Modifications

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, 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 the most common siding materials are wood or hardi-plank.

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 access.

5.2.2 Water Supply

Wrigley does not have municipal hydrant water-supply. All development areas rely on water-tender supply from the local fire department for structure protection activities. Each home is equipped with an in-house water tank (3100 – 5400 litres).

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 diesel-powered generator with above-ground distribution lines.

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. 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 Wrigley residents.

7 Inter-Agency Cooperation & 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:

- Pehdzeh Ki First Nation
- 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.

Wrigley currently does not have an active Fire Department. The community has a fire truck and a fire hall, but no active members on the department.

In the event that Wrigley establishes an active Fire Department, cross-training for Wrigley 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 Wrigley Public Works 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.

At present Wrigley 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 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 Wrigley 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.	Pehdzeh Ki First Nation
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.	Pehdzeh Ki First Nation
Maintenance	Recommendation 3: Residents should be educated and encouraged to maintain their properties regularly to reduce the threat of wildfire to their structures.	Pehdzeh Ki First Nation

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.	Pehdzeh Ki First Nation GNWT

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 Wrigley residents.	Pehdzeh Ki First Nation

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.	Pehdzeh Ki First Nation GNWT
Cross-Training	Recommendation 8: The Wrigley Public Works Department, and the GNWT should partner on cross-	Pehdzeh Ki First Nation

	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
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Emergency Planning

Issue	Recommendation	Responsible Agency
Community Wildfire Pre- Planning	Recommendation 8: Develop a Community Wildfire Pre-Plan for Wrigley to provide greater operational detail to emergency responders during a wildland/urban interface incident.	Pehdzeh Ki First Nation GNWT