DRAFT Dawson City

Community Wildfire Protection Plan

Wildland Fire Management

Yukon

Executive Summary

The Dawson City Community Wildfire Protection Plan (CWPP) is a non-binding set of recommendations for increasing fire resiliency efforts for the community and surrounding area. The CWPP identifies the wildfire risks surrounding the community, potential consequences of a wildfire to the community, and recommends possible ways to reduce the risk.

The recommendations in this plan are based on a review of best practices from other jurisdictions, gaps identified through community engagement, the local wildfire risk analysis, prevention of human-caused ignitions, and integration of FireSmart program principles. Forest fuels management is recommended both within the wildland-urban interface immediately surrounding developed areas, as well as at the landscape level. Community education, awareness and buy-in to the recommendation presented plays a critical role in reducing the wildfire risk. Community education focuses on FireSmart principles, understanding fire use restrictions, emergency preparedness, and regularly sharing fire safety related information with the community.

This plan makes recommendations to improve the wildfire-resilience of the community and its residents. The recommendations should be further prioritized by the local, First Nations, and territorial governments depending on local strengths, opportunities, and the availability of human, financial, and physical resources.

Proposed fuels treatments in this plan are identified areas of interests using the best available spatial data, fire science research and local knowledge. Actual areas and treatment will be decided on a later date based on knowledge gathered including recreational and social values, wildlife, heritage, riparian features, etc. If applicable, proposed work will be subject to the Yukon Environmental and Socio-economic Assessment Board.

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1. Purpose

Wildfire is an essential and natural process in the Yukon's boreal forests. It is a key ecological driver for plant and animal species and other ecosystem processes. Wildfire also poses a threat to human life, homes, infrastructure and, when at unusually high severity or frequency, the natural environment as well. As humans expand further into natural ecosystems, more communities and industries are at risk of wildfire impacts.

The purpose of the Dawson City Community Wildfire Protection Plan (CWPP) is to provide a wildfire risk management strategy to support Dawson City and the surrounding area and tools for stakeholders and the community to increase their wildfire resiliency by:

1) Contextualizing the active governance, community, social and cultural aspects of the community as well as the environment in which it inhabits to identify the wildfire risk potential; and,
2) Proposing tools to reduce factors identified in the risk assessment. The goal of these tools is to manage forest fuels surrounding the community, allow safe and operational spaces for wildfire crews to respond to fire, and prepare community members, stakeholders and local infrastructure to become fire resilient.

The recommendations and proposed actions developed in this CWPP aims to be integrated with present and future land and community management plans as well as with the help of community members and relevant stakeholders.

2. Planning Area

2.1 Socio-economic Description

Dawson City is located at the confluence of the Yukon and Klondike Rivers in the heart of the Tr'ondëk Hwëch'in traditional territory approximately 536 kilometres northwest of Whitehorse, at the end of the Klondike Highway.

The 2021 census noted a total permanent population of 1,577 (Statistics Canada, 2021). The Yukon Bureau of Statistics reported the total population, which includes surrounding rural areas and is likely more representative of the area within the study area, as 2,321 (Government of Yukon, 2022). Summer seasonal employees roughly double the total permanent population.

Tourism draws roughly 60,000 visitors annually to the Dawson area, most of which come during summer months for the rich arts, heritage and wilderness experiences the area has to offer. Government and service industries provide a large sector of employment. Some small-scale placer mines, mostly family run, are still in operation and contribute to the local economy.

There is one major sawmill servicing the forest industry in Dawson and several fuelwood operators. Residents of Dawson City largely rely on fuelwood as an economical heating method during winter.

See Figure 1: Dawson Community Wildfire Protection Plan Planning Area for a detailed map fothe area encompassed under this plan.

Governance

The entire area of the CWPP lies upon Tr'ondëk Hwëch'in traditional territory and thus the Tr'ondëk Hwëch'in are a key partner in the planning process. The Tr'ondëk Hwëch'in achieved self-government in 1998, establishing the terms by which aspects of land management (e.g., heritage management, fish and wildlife management, and forestry, etc.) will be carried out jointly by the Tr'ondëk Hwëch'in and other levels of government. The Self-Government Agreement also provides the Tr'ondëk Hwëch'in with the ability to determine the future of its Settlement Lands. This makes Tr'ondëk Hwëch'in an active player in lands management planning, including wildfire preparedness. The Tr'ondëk Hwëch'in Final Agreement ensures that the Tr'ondëk Hwëch'in participate in the management of heritage sites pertaining to their culture anywhere within their traditional territory, and that they must be consulted on aspects that may impact heritage resources.

Interviews with the Tr'ondëk Hwëch'in done for this plan indicate that their focus is on the region's natural and cultural heritage and on the spirit of the place, rather than on the built heritage. The Tr'ondëk Hwëch'in are particularly interested in preserving visual and physical connections between places which their people value including connections to the rivers, traditional use sites and camps, and to valued places such as the Slide and the Dawson-to-Moosehide trail. Tr'ochek was designated a National Historic Site by the Government of Canada in 2002 and is also of key importance to the Tr'ondëk Hwëch'in.

It is important to note that Tr'ondëk Hwëch'in Settlement Lands occur throughout the planning area and the Tr'ondëk Hwëch'in government have been and will continue to be consulted throughout the planning process.

2.2 Ecological Description

The Dawson area is part of the Klondike Plateau Boreal Low subzone. The climate of the Klondike Plateau subzone is strongly continental, which means warm summers and very cold winters. Most of the planning area lies along the relatively wide Klondike or Yukon River valleys and are thus flat and low-lying. The surrounding area is characterized by deep and narrow V-shaped valleys and smooth hilltop ridges.

Forested areas are dominated by black and white spruce forests in moist ecosystems. Stands may be pure or mixed with other species. Wildfire is a key ecological driver for these forests and the significant history in the area and has resulted in a mix of overstory species with Labrador tea, willow, and prickly rose surface layer.

Floodplain ecosystems are usually white spruce, balsam poplar or river alder, with excellent growth due to high nutrient levels. Wetlands, however, host white and black spruce with stunted growth when treed. Non-treed wetlands are composed of shrub or graminoid vegetation such as spruce musky sedge, bluejoint reedgrass and cottongrass.

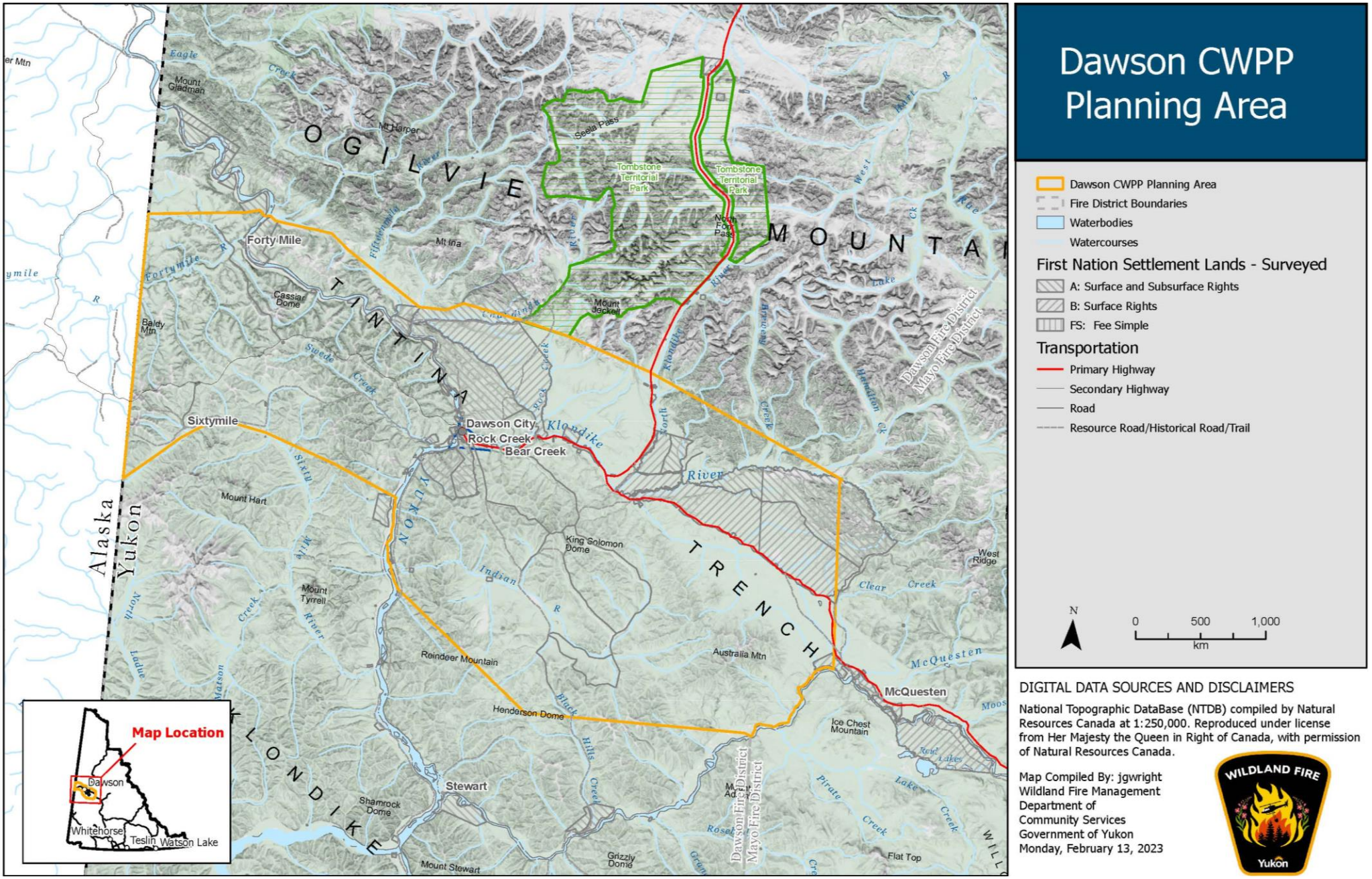

Figure 1: Dawson City Community Wildfire Protection Plan Planning Area

Drier sites on fluvial materials are aspen-dominated and the driest sites, occurring on steep south-facing slopes, are grasslands. Changes in elevation play a key role, with higher elevation sites having cooler climates and nutrient-poor soils, resulting in more shrub birch in Boreal High Zone.

Permafrost is an important driver of wetland development and can also be present on moist sites.

2.3 Natural Disturbance and Forest Succession

Wildfire has historically been the dominant agent of disturbance of the boreal ecosystems found in and around the planning area. These wildfire events can be characterized as relatively infrequent but burn with a high fire intensity and are stand replacing when they occur. Flooding is also a significant disturbance for low lying forests. It is most common in spring and occurs due to ice jams that form during spring break up or winter freeze up.

Interacting with wildfire on the landscape are other agents of disturbance such as pests, pathogens and windthrow. These have generally been incidental to forest succession in the Yukon; although, some insect outbreaks have caused stress and subsequent mortality to large tracts of forest, which in turn could affect wildfire resilience of an area.

Yukon's Forest Management Branch conducts annual aerial surveys to monitor forest health in the territory, though a zonation approach. Areas are surveyed once every 3-7 years (Government of Yukon, 2020). The Dawson area (Forest Health Zone 3) was last surveyed in 2021 (Government of Yukon, 2021); previous to that it was done in 2015 and infested areas are often compared between the two years.

3. Introduction to Wildfire

3.1 Drivers of a Wildfire

There are three interacting elements that drive a wildfire, commonly referred to as the 'fire triangle' (Figure 2): fuel, weather and topography. These three factors determine how a wildfire behaves – how fast it spreads and how intensely it burns.

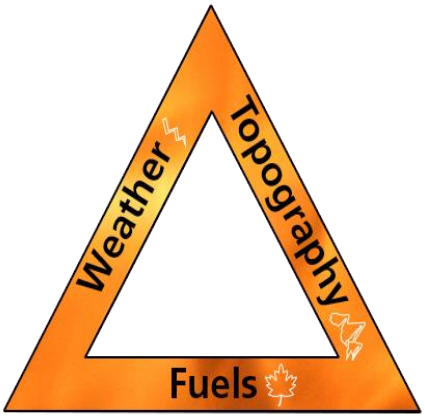

Figure 2. The fire triangle – interacting components that drive a wildfire.

Fuel refers to any flammable material including vegetation (leaves, bark, trees, duff) that are burned and contribute to the fire. It can also include man-made fuels, such as buildings. The fuel type, dryness, size and arrangement can all influence the speed, size and severity of a wildfire. Fuel is the only component of a wildfire that we can control and is considered the most significant (i.e., no fuel, no fire).

Weather influences how fast a fire moves and how intensely it burns. It also influences whether an ignition, like a lightning strike, will extinguish or develop into a large fire. Winds at ground level and at higher elevations will drive a fire forwards, enable the spread of embers and supply the fire with oxygen to increase combustion. Further, atmospheric dryness, lack of rain and high air temperature will contribute to the degree and rate of fuels drying, making them more available to burn. At extreme weather conditions, weather becomes a more significant factor in fire growth than the type of fuel (Cruz et all, 2022).

Topography describes land shape, elevation above sea level, steepness and the direction of a slope (e.g., south facing). Topography also includes land features such as canyons and valleys. All these features can help, or slow wildfire spread. Elevation influences weather conditions (like air temperature). Slope aspect influences vegetation growth and dryness (south facing slopes have more heat from the sun and so are drier). Slope also influences how fast a fire moves: faster uphill due to pre-heating of vegetation from rising hot air and flame, and slower downhill. Features such as valleys influence wildfire spread by directing wind flow.

3.3 Components of a Wildfire

Wildfire can negatively impact a value, such as a home, through direct flame contact, radiant heat exposure, convective energy output (i.e., 'fire smoke column'), embers and smoke exposure.

Figure 3 illustrates how direct flame contact, embers and radiant heat from nearby fuel can impact a home. Convective energy refers to the heat energy produced by a wildfire that rises into the atmosphere (Figure 4). Visible as a fire smoke plume (or 'convection column') this energy can create strong winds that increase fire growth and damage structures. It can also generate lightning storms, sparking more fires.

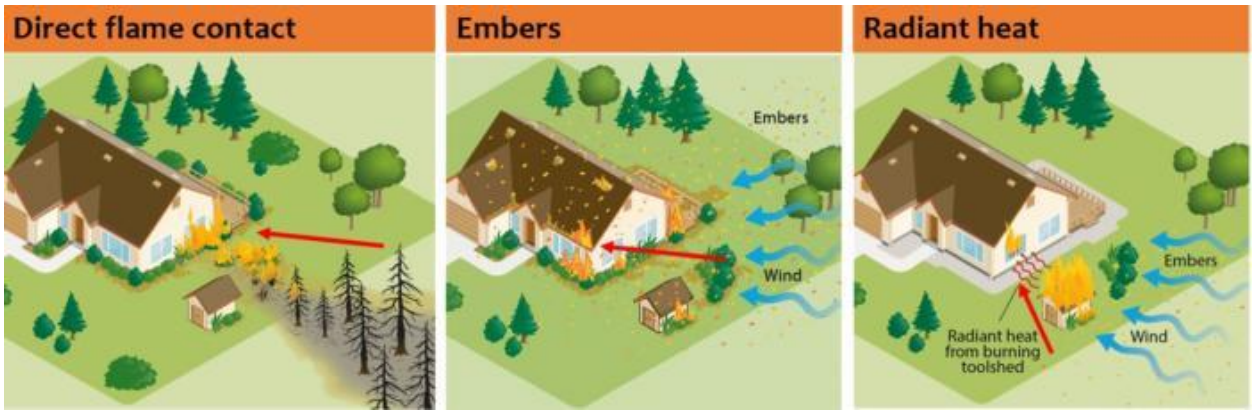

Figure 3. Example of how a wildfire can impact a home

3.4 Wildfire Regime

A 'wildfire regime' is the pattern of fire frequency, size, intensity, type and severity in an area. Boreal forests are a fire dependent ecosystem, adapted to wildfire as the main forest disturbance and driver of ecological processes.

Boreal forests are closed canopy forests, with a moist and shaded forest floor, limiting most fires to small areas with high moisture levels and lowered wind speeds within forest stands. These conditions most often result in surface and ground fires.

Ground fires burn beneath the surface (deeper duff layers, tree roots). These fires can 'overwinter', which means they can continue to smoulder underground during winter and, when the right conditions arrive, can appear above ground by burning up through drying fuels. These fires can be difficult to suppress completely and need monitoring.

Surface fires spread along the forest floor, burning fuels on the ground (leaf litter and duff layer) and woody debris. The intensity of surface fires is typically at a manageable level for successful wildfire suppression.

Figure 4. Types of wildfires from least to most severe

Crown fires are those which travel through the tree canopies and most often completely burn fuel at all levels in the forest from the ground up. Crown fires are typically high intensity, large wildfires that occur during warm and dry weather patterns that remain long enough to dry out vegetation and cause extreme fire conditions.

Crown fires typically spread at an extreme rate and cause long-distance spotting of embers. Long-distance spotting occurs when significant embers are produced from burning material, which are lifted into the atmosphere due to strong winds and convective energy and then projected kilometers in front of the main fire. These embers can start new fires well in front of the main fire and rapidly increase fire spread. These fires are the most intense type of fire and are often difficult or possible to suppress without changes to fuel and/or weather conditions.

3.4 Wildfire Risk

Wildfire risk can be described as a function of the following risk components:

Wildfire Risk = Likelihood x Severity x Exposure x Values x Vulnerability

Likelihood	The chance of a wildfire occurring, often examined by analysing past ignition trends, the frequency of destructive climatic and weather events and trends forecast under a changing climate.
Severity	Severity usually refers to how much fuel is consumed by the fire and how much heat energy is produced. A high severity fire consumes almost all vegetation, often moves quickly and produces enough energy to be difficult to suppress or control. Severity is driven by the fire triangle components: fuel, weather and terrain.
Exposure	The seasonal and diurnal time and duration a value that is vulnerable to the assessed likelihood x severity may be exposed. It is primarily determined by the proximity of the value to the likelihood, the topography, direction and rate of spread, embers, smoke dispersion and what the duration of fireline intensity will be upon arrival.

Value	A 'value' is any social, environmental or economic asset that is considered valuable by a community, land manager or industry.
Vulnerability	How predisposed to damage from a wildfire is a value if it is exposed to the assessed likelihood and severity discussed above.

It should be noted that this risk equation follows the zero properties law of multiplication that states any number multiplied by zero equals zero. In this case, if any one of the risk components can be eliminated (zero) then the wildfire risk is also eliminated (zero). For example, there is no wildfire risk if there is no vulnerability, such as the case where a structure is built with non flammable materials like concrete.

Completely eliminating wildfire risk is usually extremely difficult to achieve and it is the task of land managers and communities to identify which controls or mitigations they can employ to reduce the components that make up wildfire risk to their area of interest and to their unique values. Table 1 below provides examples for each component of wildfire risk and some of their potential controls.

Table 1. Wildfire Risk Matrix with examples for risk drivers (risk analysis) and mitigation examples (potential controls).

	Likelihood	x Severity	x Exposure	x Value(s)	x Vulnerability
Risk Analysis	• Ignition History • *Lightning • *Human • Seasonality • Fuel Hazard • Fire Cycle • Fire Interval • Historic Weather • Climate Change	• Rate of Spread • Crown Fraction Burned • Fuel Consumption • Fire Intensity • Radiant Heat Flux • Embers • Smoke	• Proximity to value • *Direction • *Distance • *Topography • Length/Breadth Ratio • Property Density • Smoke transport • Severity Duration	• Public • Response Resources • Property (WUI) • Infrastructure • Industry • Cultural • Environment • Watersheds	• Human Physiology • Property Construction • Property Maintenance • Subdivision Design • Socio – Economics • Biodiversity • Fire Effects • Resilience
Potential Controls	• Education • Engineering • *Spark Arresters • *Power Grid Mgnt • Enforcement • *Fire Bans • *Area Closures	• Fuel Management • *Hazard Reduction • *Ecological Burning • *Mechanical	• Community Layout & Design • Defensible Space • Strategic Fuel Breaks • Area Closures • Fire Response • Warnings • Evacuations	• Education • Harvesting • Salvage	• Building Controls • Land Use • Resilience • Ecological prescribed fire

Appendix 3: Mitigation Methods to Reduce Wildfire Risk to Values offers a worksheet for stakeholders and wildfire professionals to address mitigations methods for the above risk factors in the planning area. Residents are encouraged to use a similar matrix to assess mitigation to address wildfire risk on their own property.

4. Wildfire Risk Assessment: Dawson City

The following section describes the landscape level factors that contribute to wildfire risk in the planning area. This includes environmental factors such as weather and wind, fire history, fuel types, ignitions risk and climate change and socio-economic factors that play into risk assessment of the planning area including wildfire response, values at risk and key vulnerabilities.

4.1 Environmental Factors

4.1.1 Weather

The most relevant weather station is located at the Dawson airport and has sixteen years of records that have been analyzed below to provide a recent history (2007 to 2022) of weather patterns (Table 2). Weather data was analyzed from May 1st every year until the station is turned off in winter.

Weather data can be summarised into percentiles. A percentile is a measure used to indicate the value below which a given percentage of observations fall (e.g., 70th percentile is the value below which 70% of the data can be found). A 99th percentile high temperature record is one that 99% of other temperature records are below. This is a useful way to compare weather records against the maximum and other percentiles to gauge how high or extreme values are (Table 3).

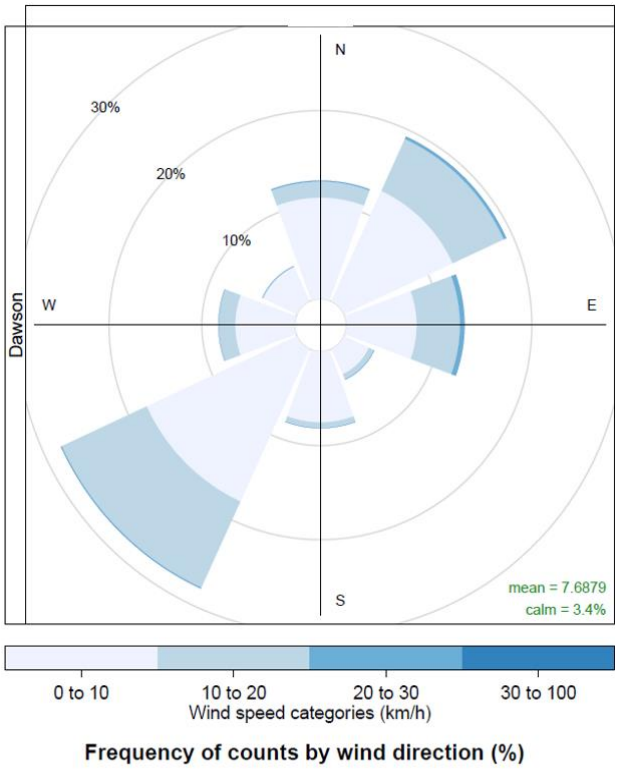

Figure 5. Wind rose using Dawson weather station historic data.

An important set of weather data is wind speed and direction. Wind is a key driver of fire behaviour and the path it spreads. Geographical influences on wind direction around Dawson include river valleys, with the Yukon River having the largest impact, as well as valleys and mountainous terrain.

Wind records can be analyzed to show the number of times a wind direction was recorded at the weather station to gain an understanding of which wind directions are most frequent. Wind records were formatted into a visual (Figure 5) and a wind rose (Figure 6). Figure 6 shows that Dawson weather station predominantly recorded winds from the southwest and the northeast. The colour of the wind rose displays the frequency of wind speeds recorded in each direction.

The Dawson weather station also calculates Fire Weather Index (FWI) and Fire Daily Severity Rating (DSR) values for the weather records available. The FWI is a rating of potential fire intensity. For detailed information regarding Fire Weather Index and Fire Daily Severity for the planning area, see Appendix 1.

Table 2. Dawson weather station details

Station	Agency	Latitude	Longitude	Elevation	Years with Records	Number of Years	Number of records
Dawson	MSC	64.05	-139.133	370m	2007 to 2022	16	2270

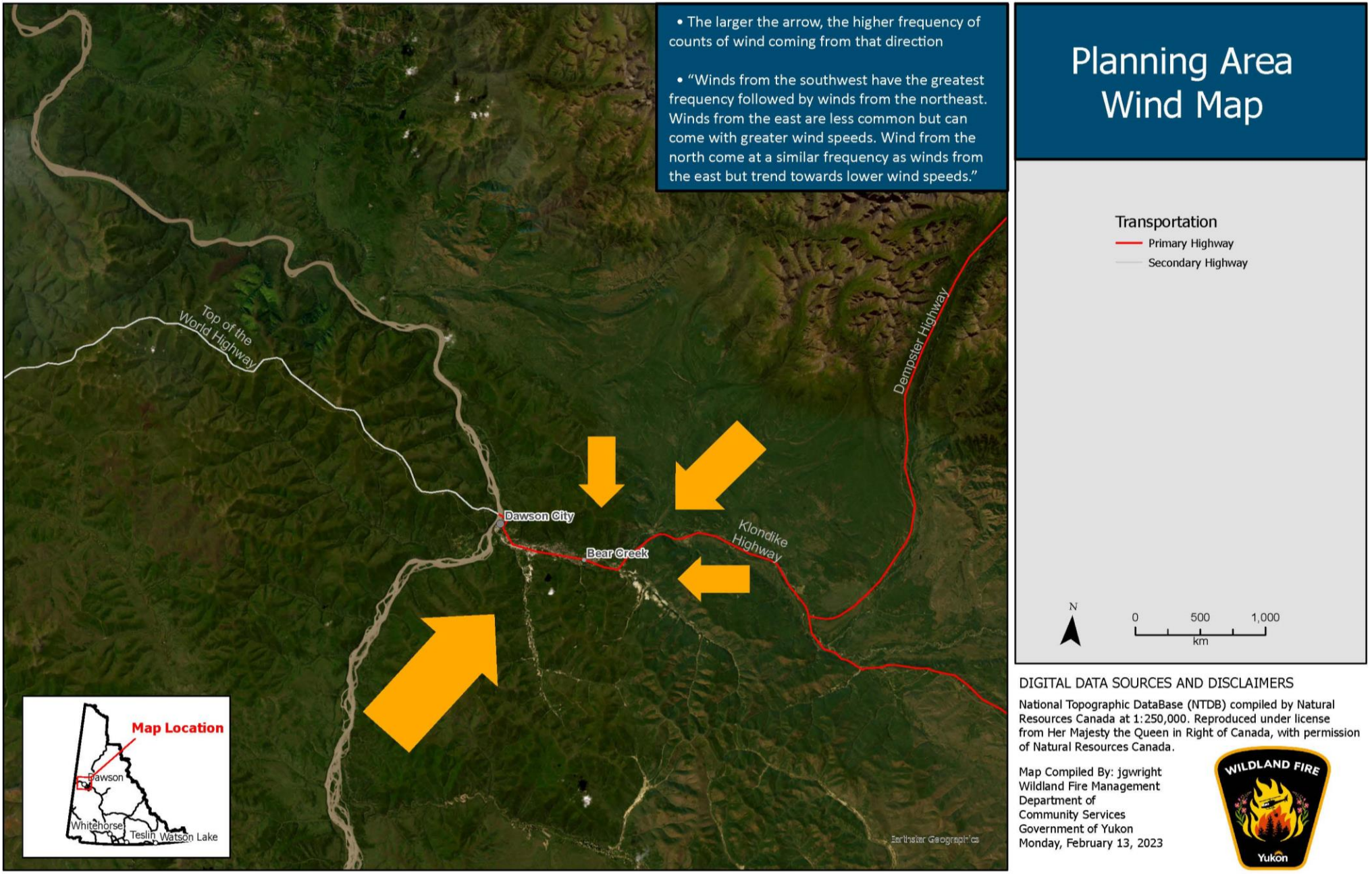

Figure 6: Most frequent wind directions recorded at Dawson City weather station.

Table 3. Summary of high percentile weather data for Dawson weather station

					Percentiles							
Season	Mean	SD	Max	Median	70th	80th	90th	95th	97th	98th	99th	n
Temperature (°C)												
Spring	16.7	6.0	30.9	17.2	20.3	22.1	24.2	26.1	26.8	27.3	28.0	2270
Relative Humidity (%)*												
Spring	53.3	21.1	0.0	51.0	40.0	33.0	27.0	24.0	22.0	20.0	18.0	2270
Wind Direction (°)												
Spring	150.0	102.8	360.0	177.0	227.0	240.0	268.0	317.9	340.1	350.0	359.0	2263
Wind Speed (km/h)												
Spring	7.7	4.7	28.0	7.0	9.3	12.0	14.0	16.0	17.9	19.0	20.0	2270
Precipitation (mm)												
Spring	1.3	3.2	42.9	0.0	0.7	1.7	4.1	7.1	9.7	11.6	14.8	2269

* Relative Humidity values were reversed for calculations

4.1.2 Fire History

Significant wildfires occurred in the region in 1960s. A characteristic of the boreal forest is a mosaic of small burnt patches, some large burnt areas, and long unburned stands. The Dawson area, however, has significant and frequent fire occurrence due to the influence of the Tintina Trench. The Tintina Trench topography influences weather in the region and from mid-June to mid-July, frequent lightning storms occur and cause multiple ignitions.

The fire regime also fluctuates with seasons. Spring wildfire risk can be high in between the time of snow melt and when green-up occurs when deciduous trees produce leaves and dead, cured grasses turn green. Strong winds can dry vegetation and support wildfires in spring. Once deciduous trees reach the green-up stage, then the wildfire risk can lower for a period until warm summer conditions persist long enough to dry fuels.

Table 4. Summary of Wildfire History in the Planning Area (1946 – 2023)

Number of fires	Area burned	Median Fire Size	Maximum Fire Size
646	541,891 ha	826.6 ha	48,139 ha

4.1.3 Fuel Types

For fire behaviour purposes, Canadian forests and grasslands are categorized into different fuel types using Natural Resources Canada's Fire Behaviour Prediction (FBP) System. These fuel types are categorized by vegetation and trees species that correlate to an expected fire behaviour; however, emphasis should be focused on the behaviour and not the species. For example, C2 (Boreal Spruce) which is common around Dawson indicates pure black spruce forest; however, locally it is more common to have pure white spruce forest, but fire will behave similarly as in pure black spruce. As a result, fuel types should be regarded as a 'best fit'. The FBP system is used as a planning tool by wildland fire management professionals.

4.1.4 Ignition Risk

Wildfire ignitions can be divided into two main categories, human-caused and lightning-caused. Figure 11 shows historic distribution of wildfire ignitions by cause around Dawson. Human-caused ignitions include accidental and malicious causes and make up 19.9% of recorded ignitions, but account for only 5.1% of the total area burned. This is because human ignitions were generally self extinguished or received a rapid response time for suppression resulting in a small total area burned.

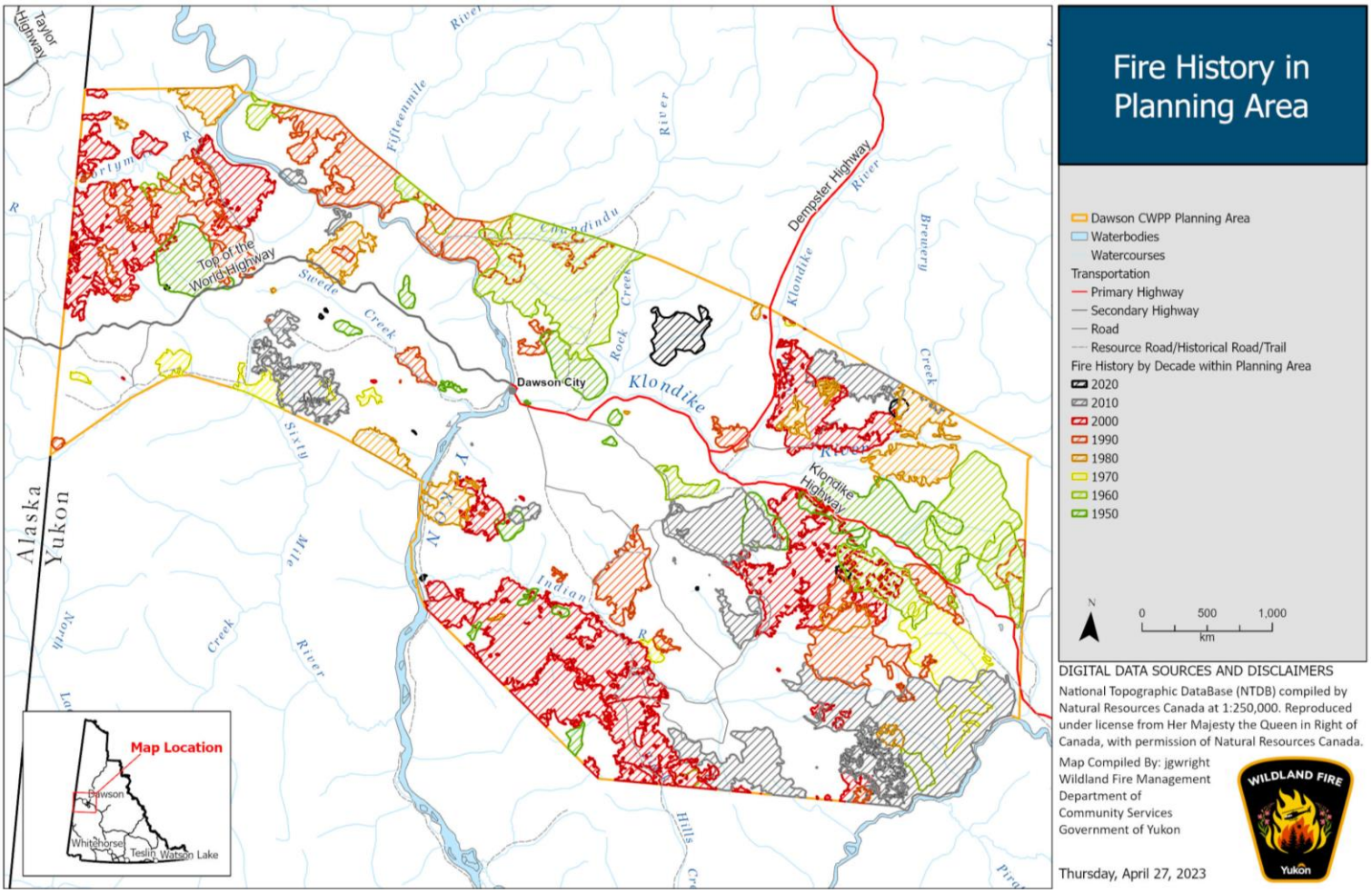

Figure 7: Fire History in the Planning Area 1946-2023.

Table 5. Ignition History Summary (1946 – 2022)

Cause	Number of ignitions	Percent of total ignitions*	Area burned (ha)	Percent of total area burned
Human	129	19.9%	29,199	5.1%
Lightning	467	72.2%	529,836	94.3%

*remaining percentage is 'miscellaneous', 'not specified' or 'NULL'.

Factors that effect the potential for an ignition to develop into a large wildfire include:

- the season of the ignition (influencing fuel moisture and temperature);
- success level of initial attack;
- what fuel type the ignition occurs in (refer to Section 4.1.3. Fuel Types);
- and the terrain and the weather conditions following ignition.

4.1.5 Climate Change

Fire regimes in boreal forests are changing. By the end of this century, the annual area burned by forest fires in Canada is predicted to increase by 74 – 118% (Flannigan et al, 2005).

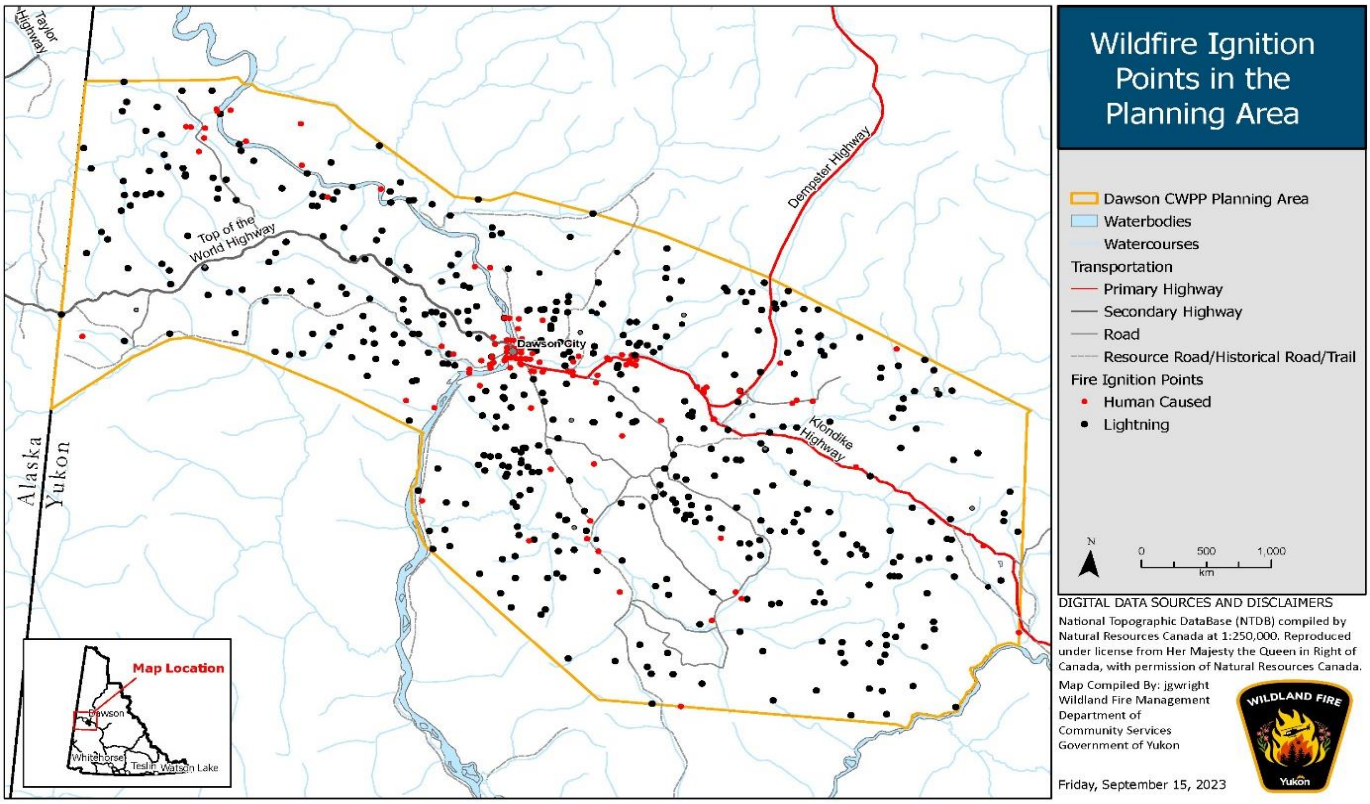

Figure 8: Wildfire Ignitions Points in the Planning Area (1946-2023)

Research into changing weather patterns observed in recent history generally agrees that boreal forests will become more fire prone as climate change impacts become more prevalent (Wotton et al, 2017). This is due to decreased fuel moisture and an increase in extreme fire weather occurrence, including heat and wind. A recent study examining potential changes in fire intensity and type in Canada's boreal forests concluded that by the end of the century we can expect:

- an increase in the number of days where crown fires are likely
- an increase in the number of days when fire intensity is greater than suppression capabilities

Climate change impact of fire weather was also modelled for the Yukon specifically (AECOM, 2021). Results found that temperature, precipitation and humidity annual averages will all increase. Table 6 predicts changes in climate over two warming scenarios. According to this report, the potential for wildfire spread days might decrease around Dawson.

Table 6. Future Climate Trends for Yukon - April to October

		Temperature (°C)	Precipitation (mm)	Relative humidity (%)	Wind (km/h)
Mid-Century Analysis #1	RCP4.5	+1.14	+20.31	+4.07	-0.21
2019-2048	RCP8.5	+1.31	+20.18	+3.91	-0.07
Mid-Century Analysis #2	RCP4.5	+2.35	+38.68	+4.33	-0.30
2049-2078	RCP8.5	+3.04	+83.57	+5.75	-0.14

An increase in precipitation has also been predicted in other research; however, there was not a similar prediction in a reduction of spread event days. One study proposes that the precipitation increase is not substantial enough to reduce the impact of warmer temperatures on drying fuels. Warmer temperatures increase evapotranspiration,

lower water tables and decrease fuel moisture and surface soil moisture content. Significant increases in precipitation would be required to balance an increase in temperature. It is far more difficult to model the impact of climate change on precipitation quantities than it is for temperature (Wotton et al, 2010).

Both studies agree that the Yukon should expect warmer temperatures and an increase in fire season length as the impacts of climate change progress.

4.2 Socio-economic Factors

4.2.1 Wildfire Response

Wildfire response in the Dawson area relies on several different jurisdictions taking responsibility where appropriate. This includes the Dawson City Fire Department, Klondike Valley Fire Department and Government of Yukon, Wildland Fire Management. A mutual aid agreement is in place whereas the different departments will provide additional fire service coverage, when necessary.

For wildland fire response, Government of Yukon, Wildland Fire Management staffs the Dawson Fire Centre, which is located at the Dawson Airport. This is a regional operations centre, and several staff are located here including Response Officers, Initial Attack crews and Air Tankers when required.

A number of wildland fire resources are based at the Dawson Fire Centre but, when hazard in Dawson is low and elsewhere in the territory, country or even internationally is high, these crews could be deployed away from Dawson. Yukon Wildfire Management Branch and the Dawson Fire Centre will monitor resource availability for Dawson subdivisions according to wildfire hazard.

4.2.2 Values at Risk

Major values are identified within the planning area that can have significant impacts to the livability and way of life within the region. These major values can be categorized as human life, cultural, infrastructure, environmental and economic. Examples for each category include but is not limited to:

- **Human Life:** direct risks to the approximate 2,321 residents in the area
- **Cultural:** pristine wilderness, recreation, food gathering, physical health, Tr'ondëk Hwëch'in heritage routes, TR'O-JU-WECH'IN Heritage Site, Moosehide Village, Historic Mining Sites, Dawson historic town
- **Infrastructure:** Dawson City Community Hospital, Yukon University Tr’odëk Hätr’unohtän Zho Campus, Robert Service School, Rock Creek & Yukon River Campground, communications towers, airport, wind energy and YEC power substation, Tr'ondëk Hwëch'in Community Hall, Dänojà Zho Cultural Centre
- **Environmental:** rare plant species and CDC Species of Conservation Concern, caribou habitat, permafrost and watershed effects
- **Economic:** tourism and campgrounds, Yukon Quest Trail, canoeing, fishing, hunting, camping, hiking, flight seeing, off-road recreation, mining sites, and forestry.

These values may be directly impacted by wildfire (e.g., radiant heat/embers) or indirectly (e.g., loss of tourism, exposure to smoke, ash, fire fighting chemicals, run off, permafrost melt, etc.).

4.2.3 Key Vulnerabilities

Values at risk can be further identified as key vulnerabilities within the larger planning area to assist with preparing mitigation and preparedness strategies. Below are key values identified in the planning area that, if impacted, can cause a significant impact on people living in or near Dawson.

Key vulnerabilities may also be categorized by areas of interest as vulnerabilities may change per neighbourhood. These are identified in Section 6: Wildfire Risk Assessment: Areas of Interest.

Table 7. Values and their vulnerabilities in the planning area

Value	Vulnerability
Homes	Homes are constructed within the Wildland Urban Interface. Homes are near continuous forests, except for Dawson City itself, which can support elevated fire behaviour and risk house loss (and possibly loss of life).
Evacuation routes and access routes for firefighting resources	Sunnydale subdivision has limited access/egress routes towards North Klondike Highway. West Dawson Subdivision Road has one way in/out. Other subdivisions have multiple roads towards North Klondike Highway.
	It is important to know any specific access challenges before a fire and report to property owners, for example: long driveways and small turn around points that are difficult for a fire engine.
Drinking water supply	There are 11 public supply or private water supply wells around Dawson. Rock Creek / Airport has 6 and are all within the wildland urban interface and near continuous forest fuels. Bear Creek has 1. There are several that are well protected within Dawson City and 2 supplying the campground in West Dawson. Water supply wells can be impacted by wildfire through several processes. First, contamination from particles after a wildfire seeping into wells (because of the fire or from fire retardant). Secondly, well infrastructure can be impacted, depending on well design.
Firefighting water supply	Water sources for firefighting appliances may limit efficiency of firefighting - if wells cannot be accessed and there is no nearby hydrant system, firefighting appliances will have to leave the fire to re-fill elsewhere, such as the Yukon or Klondike Rivers.
Health facilities	If the Community Hospital were to be directly impacted by fire, or if Dawson were to be temporarily disconnected from supplies/staff, the community might not be able to access health care. The nearest health care facility in the Yukon to Dawson is in Mayo (2hr 45min drive).
School facilities	If the school were to be directly impacted by fire, or if Dawson would to be temporarily disconnected from staff, the community might not be able to access school and facilities. The nearest school in the Yukon to Dawson is in Mayo (2hr 45min drive).
Economic: tourism, forest products	Loss of environment assets and increased smoke in the area can reduce tourism. Loss of forest harvest opportunities will impact jobs within Dawson. Loss of historic buildings will also significantly impact tourism, including those in Dawson and in Moosehide.
Infrastructure	Chemical changes such as increased acidity from fire product run off can impact biological treatment of sewage
	Historic wooden structures in Dawson and Moosehide are particularly vulnerable.
	Impacts to powerlines and telecommunications (e.g., internet, telephone services, radio repeaters) that effect the public as well as communications and coordination of wildfire response
Environmental Values	Forests and river inlets around the areas of interest provide regional biodiversity values and support provincially listed species at risk. Loss of habitat can occur not only when forests are burned at too a high severity or too frequently, but also when soil properties are altered, and chemicals and sediments infiltrate nearby rivers.

5. Plan Implementation

The following section highlights actionable tools proposed for wildfire risk management in Dawson City, including forest fuel treatments and other risk management tools. It also describes the risk factors and key vulnerabilities for each area of interest (i.e., subdivisions) and proposed methods to reduce those risks.

5.1 Proposed Forest Fuel Treatments

Figure 20 identifies completed and proposed forest fuel treatment areas and existing and proposed fire guards. Proposed areas are positioned to take advantage of existing terrain features and infrastructure as well as linear breaks in the fuels and access such as trails and roads. The areas were additionally selected based on the most likely direction of an encroaching wildfire based on weather, winds, forest fuels, fire history and ignitions and ability to protect the areas of interest and values at risk. These proposed forest fuel treatment areas enable a reduction in expected wildfire behaviour to the areas of interest for fuels treatments.

This plan outlines a larger area identified for fuel treatments based on the above factors; however, the final areas to be treated may be considerably different as site visits are conducted by wildfire professionals to develop a site plan and further planning is commenced including heritage assessments, public input, etc. In addition to the actual area to be treated be finalized, wildfire professionals will identify which of the following methods, including FireSmart thinning, Fuel Abatement methods, prescribed fire and/or stand conversion, may be utilized. Note, one area may see multiple of the listed methods utilized. For example, a clearcut area with a strip of thinned FireSmart treatment buffering a trail.

5.1.1 FireSmart

FireSmart is a national program that helps Canadians increase neighborhood resilience to wildfire and minimize its negative impacts. It was founded over 20 years ago to address common concerns about wildfire in the wildland urban interface. The FireSmart program introduces several principles from assessments of materials used to build homes, how a property owner can make their property more fire resilient to forest fuel treatments on public land.

Treatment of forest fuels in volatile fuel types can reduce the risk of wildfire by reducing the potential intensity, severity and rate of spread. FireSmart projects is commonly implemented as 2-5 metres spacing of conifer species stems, retention of less flammable deciduous species, pruning limbs of remaining timber to a minimum height of 2 metres and pile and burning debris. These programs are generally targeting the wildland urban interface zone where human development meets or intermingles with the natural environment.

FireSmart projects have been completed throughout the planning area and will continue to be implemented in the planning area in strategic areas within the wildland urban interface, or intertwined with larger, landscape level fuel abatement work.

5.1.2 Fuel Abatement

Fuel abatement is a term to describe large-scale landscape level forest fuels treatments that extend past the wildland urban interface zone and into the landscape zone. Fuel abatement projects tend to be larger in size than FireSmart projects with more aggressive removal of forest fuels.

These larger fuel treatments remove and/or reduce surface, ladder and crown fuels to reduce the rate of spread, fire intensity, and the likelihood of a transition from a manageable surface fire to an aggressive crown fire.

Larger fuel treatments provide strategic anchor points and tactical opportunities for firefighting operations. The treated areas enable safer access and egress (i.e., escape) for firefighters to suppress a wildfire. They also enable a strategic location for tactics such as back burning which removes the fuels between the fuel treatment area and an approaching wildfire.

Figure 9: FireSmart Project at Moosehide

The following describes the fuel abatement tools proposed under this plan:

A **Fire Guard** is a linear feature where all vegetation and organic matter is removed down to mineral soil. Linear fuel treatment areas can provide some fire behaviour reduction benefits; however, they mostly provide strategic, operational outcomes. These linear units enable safer access and egress (i.e., escape) for firefighters and necessary equipment into fuel treatment areas and into high-risk areas to attack a wildfire. They also enable strategies such as back burning to remove fuels between the fire guard and an approaching wildfire.

A **Fuel Break** is typically a larger parcel of land on which the forest fuels and ground vegetation has been reduced or modified to reduce the fire's ability to spread rapidly. A fuel break may include:

- **Shelterwood thinning** the forest through hand falling and/or mechanical cutting. A shelterwood thinning treatment includes an increased spacing (5-8 metres) between stems of trees in order to reduce the potential for sustained crown fire and reduce the spread rate of fires that travel through the forest canopy.
- **Variable retention** includes clearing to create a landscape-scale fragmentation in forest fuels through removal of all coniferous stems and retention of healthy deciduous stems.
- **Mastication and mulching** using machinery to remove and/or reduce fuels on the surface to reduce the potential for fire to reach critical surface intensity as well as spread to a crown fire.

Figure 10: Shelterwood Forest Fuels Treatment in the Mary Lake Shaded Fuel break, Whitehorse

Figure 11: Variable Retention Forest Fuels Treatment in the Copper Haul South Fuel break, Whitehorse

5.1.3 Prescribed Fire

Prescribed fire involves the introduction of a planned and controlled fire to an area under specific weather conditions. Prescribed fire offers an efficient and cost-effective method following fuel abatement to reduce surface fuels on the forest floor. It may also be used as a removal treatment in a mixed wood to eliminate more flammable conifers and stimulate deciduous growth (i.e., forest fuels). Individual prescribed fire prescriptions will be developed based on site requirements and include an operational plan that considers safety and weather.

Figure 12: Prescribed burn in Duke Meadows near Burwash Landing

Prescribed fire makes it difficult for a natural fire to ignite as fuels are already burnt and it is also used as a strong tool to enrich and prepare the ground for stand conversion.

5.1.4 Stand Conversion

Stand conversion has also been supported by research as a strategy to reduce the risk of a catastrophic wildfire. Stand conversion is defined as the removal of flammable species (e.g., coniferous) and replacing with less flammable species (e.g., deciduous), whether through tree planting or allowing deciduous to regenerate naturally.

Native deciduous trees (trembling aspen or white birch) may be damaged from fire but seldom contribute as a fuel to the wildfire unless under extreme fire conditions. This is due to their higher moisture content (trunks and thick branches) as well as the green leaves retaining much more moisture than pine/spruce needles. Additionally, naturally there are very rarely any 'ladder fuels' (i.e., branches/leaves) on the lower two thirds of a mature native deciduous species. 'Ladder fuels' are a key driver of whether a fire on the surface can travel to the crown of the tree. A fire in the crown of the trees spreads at a much more accelerated rate and higher intensity and is therefore more difficult to suppress.

Therefore, stand conversion from spruce to native deciduous species has the benefits of:

- Having the potential to slow or completely stop a wildfire in certain conditions.
- Buying wildland firefighters more time to conduct a response to an approaching wildfire.
- Increasing safety for the wildland firefighters initiating a response by reducing the intensity of wildfire.
- Reduce frequency of maintenance in a fuel break.

Wildland Fire Management may assist in stand conversion strategies through planting native fire resilient deciduous species.

Figure 13: Photo depicting a 2023 wildfire where lodgepole pine trees were completely charred from bottom of the tree to crown, whereas fire resilient aspen only burned approximately a quarter of the stem and leaves remaining intact.

5.2 Areas of Interest for Fuels Treatments

This section outlines the areas of interest identified as priority areas within the planning area for wildfire risk assessment and risk management planning. The areas of interest were selected for having high concentration of values at risk and key vulnerabilities as well as where much of the population of people within the planning area live, work, and recreate. The following section summarizes the areas of interest with details of wildfire risk and values/key vulnerabilities.

Due to the geographic spread and jurisdictional separation between areas of interest, sections of this plan are separated into the following four planning areas: West, Moosehide, City and East:

Table 8. Area of Interest Groupings

	West	Moosehide	City	East
Parcels/subdivisions included	West Dawson, Upper West Dawson, Sunnydale	Moosehide	Dawson City, Dome Subdivisions (including C4-Trondëk Subdivision), Callison/Dredge Pond	Bear Creek, Airport, Rock Creek, Henderson Corner

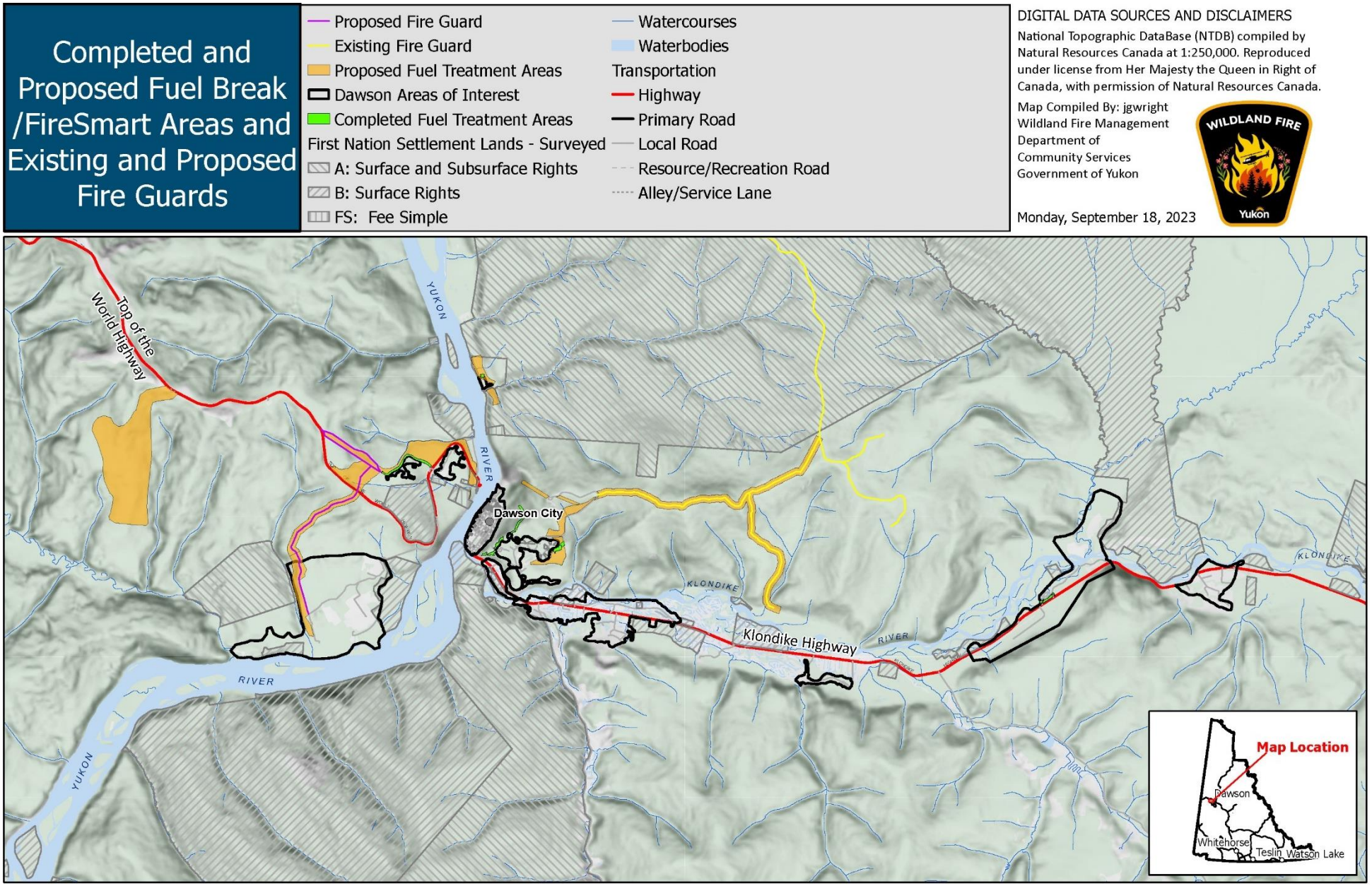

Figure 14: Completed and Proposed Fuel Treatments in the Planning Area

5.1 West Grouping

Wildfire Risk and Key Vulnerabilities: West Dawson and Upper West Dawson are situated off the Top of the World Highway with lot sizes averaging about 1.5-2ha. Sunnydale is situated down the Sunnydale Rd and is comprised of larger lot sizes, many over 10ha. Some of the larger lots have been cleared for agricultural purposes. Large clearings for agriculture offer a break in forest fuels which can be helpful for responders during a wildfire event.

Fuels consisting of dense spruce and mixed wood are unlimited to the north and northwest and often run right up into residential areas in Upper West Dawson and West Dawson. Areas surrounding Sunnydale and to the west of Upper West Dawson and West Dawson offer a relatively high density of mixed wood stands consisting of mature white spruce and white birch. White birch tend to be more resistant to wildfire due to high moisture content, except in high and extreme fire conditions. Active logging in the Top of the World Timber Harvest Plan has also created breaks in the forest fuels (See Section 6.1.5 Policies and Planning) that can help decrease risk.

Access and amenities are limited in the West Grouping. There is no bridge across the Yukon River so residents rely on ferry passage during summer months. As a result, emergency egress is restricted if a wildfire were to approach from the west or northwest. Residents of Sunnydale and West Dawson and Upper West Dawson lack a secondary escape route should the Top of the World Highway become blocked.

There are currently no structural fire protection facilities or equipment that officially service these communities; therefore, residents must be self-reliant or experience a slow response in the event of an emergency. For example, human-caused fires that can be quickly extinguished have the potential to burn out of control without available resources. The West Dawson and Sunnydale Local Area Plan recognizes a need for the establishment of a local fire protection mechanism, particularly due to access and egress constraints in the area.

Proposed Fuel Treatments: Strategic forest fuels treatments are particularly important in the West Grouping due to the key vulnerabilities that are present. For those reasons, the West Grouping is the primary focus of fuels treatments for the planning area.

The proposed location of the forest fuels treatments is due to predominant winds from the west to southwest, and intact mature spruce forest. They also take advantage of existing access and plan to connect to more fire resistant, intact deciduous forest.

The forest fuels treatments presented may be a combination of FireSmart, shelterwood and variable retention. Existing FireSmart adjacent to West Dawson may be extended while areas further from the subdivisions may receive treatments that result in more fuel removal.

Areas labelled as ‘Fire Guard’ would provide an alternate egress route for residents in the event of an emergency evacuation, particularly for Sunnydale. Similarly these fire guards would provide improved access for firefighters.

There is an extensive history of fire ignition in the Swede Creek valley. Forest fuels treatments in Figure 16: Fuels Treatments in Swede Creek Area is scoped in as a strategic location to catch the wildfire before it approaches the subdivisions.


Fuel Treatments: West Grouping
Proposed Fire Guard
Areas of Interest
Potential Fuel Treatment Areas
Completed Fuel Treatment Areas
Yukon River Territorial Park Campground
Land Parcels Polygon - Surveyed
First Nation Settlement Lands - Surveyed
A: Surface and Subsurface Rights
B: Surface Rights
FS: Fee Simple
Upper West Dawson
West Dawson
Top of the World Highway
Dawson City
Downtown Dawson
C4
Sunnydale
0
1
km
Yukon Territory, Maxar

Figure 15. Fuels Treatments in West Grouping: Sunnydale, Upper West Dawson, and West Dawson subdivisions.

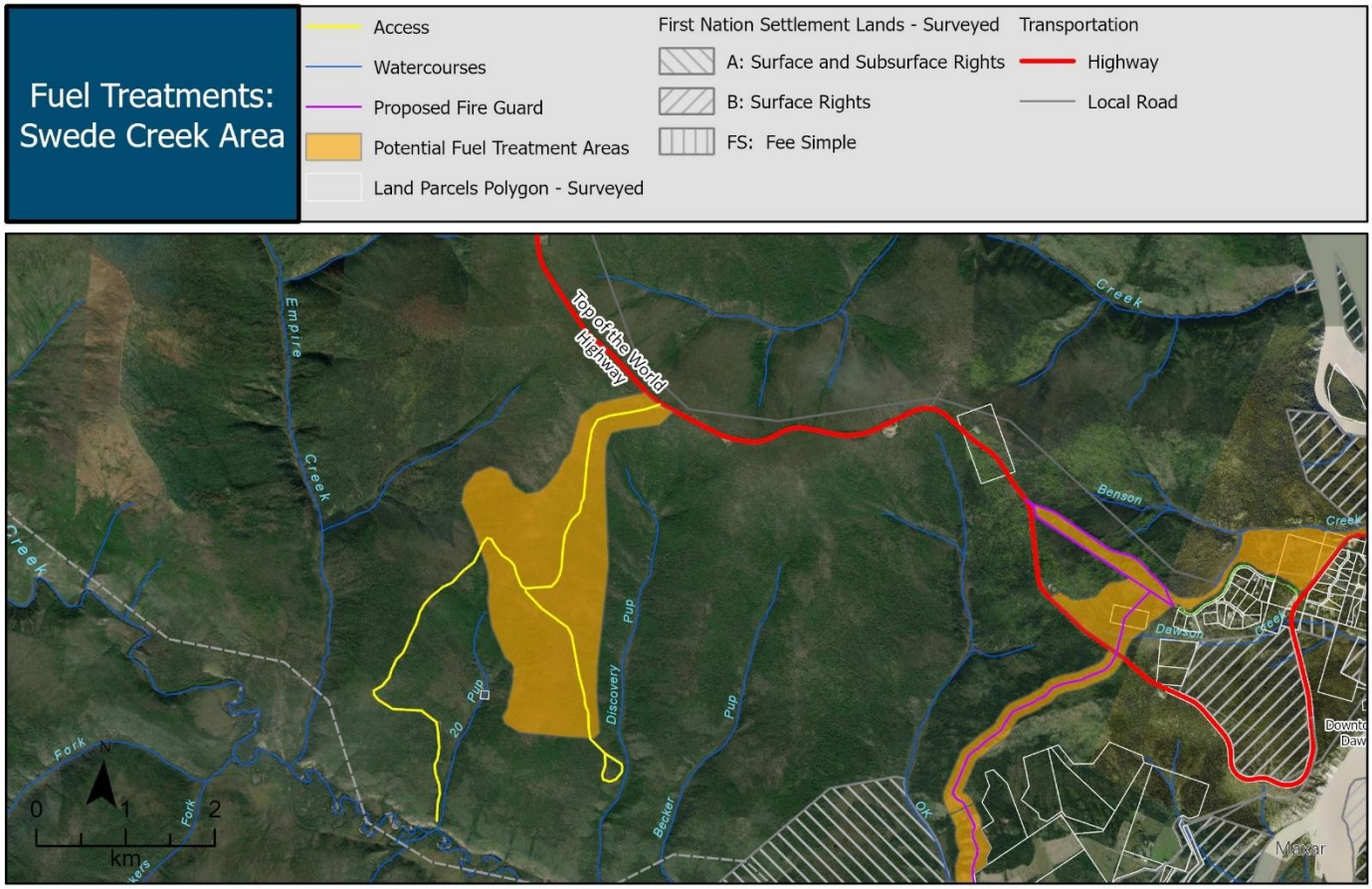

Figure 16. Fuels Treatments in Swede Creek Area

5.2 Moosehide

Wildfire Risk and Key Vulnerabilities: Moosehide contains the small village site located 5km north of Dawson City, along the Yukon River. A traditional village site, Moosehide was inhabited by the Tr'öndëk Hwëch'in after their displacement from Tr'ochëk. Most residents moved to Dawson in the 1950s; however, the site is maintained by several families who regularly visit. Moosehide is an important village for gatherings, special events and cultural activities. The village contains over 20 cabins and other significant structures including: a schoolhouse, church, a water tank stand, an arbour, cemetery, and space for camping arrangements during gatherings.

To the north and northeast of Moosehide is largely open deciduous and grassy hills. Beyond these areas are old burns that may be less susceptible to being burned again in recent years. Moosehide may be more vulnerable to fire in early spring prior to green-up.

The village can be accessed by overland hiking trails (4km, ~2hrs) or via boat on the Yukon River; therefore, there is no year-round vehicle access (summer) that limits emergency egress (escape) and suppression efforts. During winter once the river freezes there is access via walking and snow machine.

There are several pieces of infrastructure in place that has reduced Moosehide's vulnerability to wildfire. In 1999, a cat guard was constructed 9 km east of Moosehide and then widened along a 5km stretch during a 2015 fire. FireSmart projects have also been ongoing over the years in the area directly adjacent to Moosehide.
There are no formal firefighting services available to Moosehide. A need has been recognized for an increase in firefighting training and resources in the Tr'ondëk Hwëch'in's 2016 Community Plan.

Figure 17. Fuels Treatments in Moosehide Area of Interest

Proposed Fuel Treatments: Proposed fuels treatments in Moosehide are likely to be a less intrusive FireSmart or shelterwood treatment. This will likely be conducted using non-mechanized techniques (i.e., hand falling) due to the difficulties in bringing equipment into the site. The thinned forest will reduce chances of embers igniting and, in the correct conditions, reduce a crown fire to a less intense surface fire. It also creates defensible space and buys time for wildland fire fighters to protect the important structures at this site.

5.3 City Grouping

Wildfire Risk and Key Vulnerabilities: This grouping consists of all areas within Dawson City's municipal boundaries, which includes the historic downtown area as well as the newer subdivisions southeast of downtown, farther along the Klondike Highway, including Trondëk (Steve Taylor) and Dome subdivisions.

While much of the City Grouping is largely protected from wildfire by rivers on the west and south flanks, there is also an extensive tract of mixed wood forest (spruce, aspen, birch, poplar, willow) directly north and east of the City Grouping that poses a threat to the town.

The City Grouping boasts all functional amenities: emergency services, grocery, hardware and necessity stores, a school, hospitality services, etc. If a wildfire were to impact the city grouping and major amenities were damaged or destroyed, the town and surrounding area would suffer.

Most of the buildings located in the downtown area of the City Grouping are densely spaced and many are important heritage buildings. The Dawson Historical Complex is a National Historic Site made up of 17 buildings that are irreplaceable. These are generally constructed out of aged wood surrounded by wooden boardwalks that are highly flammable. There is a strong desire to preserve the buildings of downtown Dawson but also the essence and nature of this historical place; therefore, many of these structures are limited in their construction by several local, territorial, and federal plans, acts and regulations.

The Dawson City Fire Department provides fire response services to the area located within the Dawson City municipal boundary. This unit is under the direction of one paid Fire Chief who organizes about 30 volunteer firefighters and several engines.

The Dome Road subdivision consists of over 50 lots (many are TH) with ample distance between homes. The space between these homes is largely filled with forest comprised of predominately spruce, although the area itself is mostly surrounded by deciduous and mixedwood on the side of prevailing winds (southwest). The spruce leading forest within and adjacent to the area could pose a threat to the neighoburhood for localized ignitions, travelling embers and oncoming wildfire.

The Callison and Dredge Pond neighbourhoods are fairly well protected from widlfire as the lots are large and cleared of vegetation and built amongst tailing piles rather than forested land. Due to the dredge ponds and the flanking Klondike River there is ample water for fire suppresion operations.

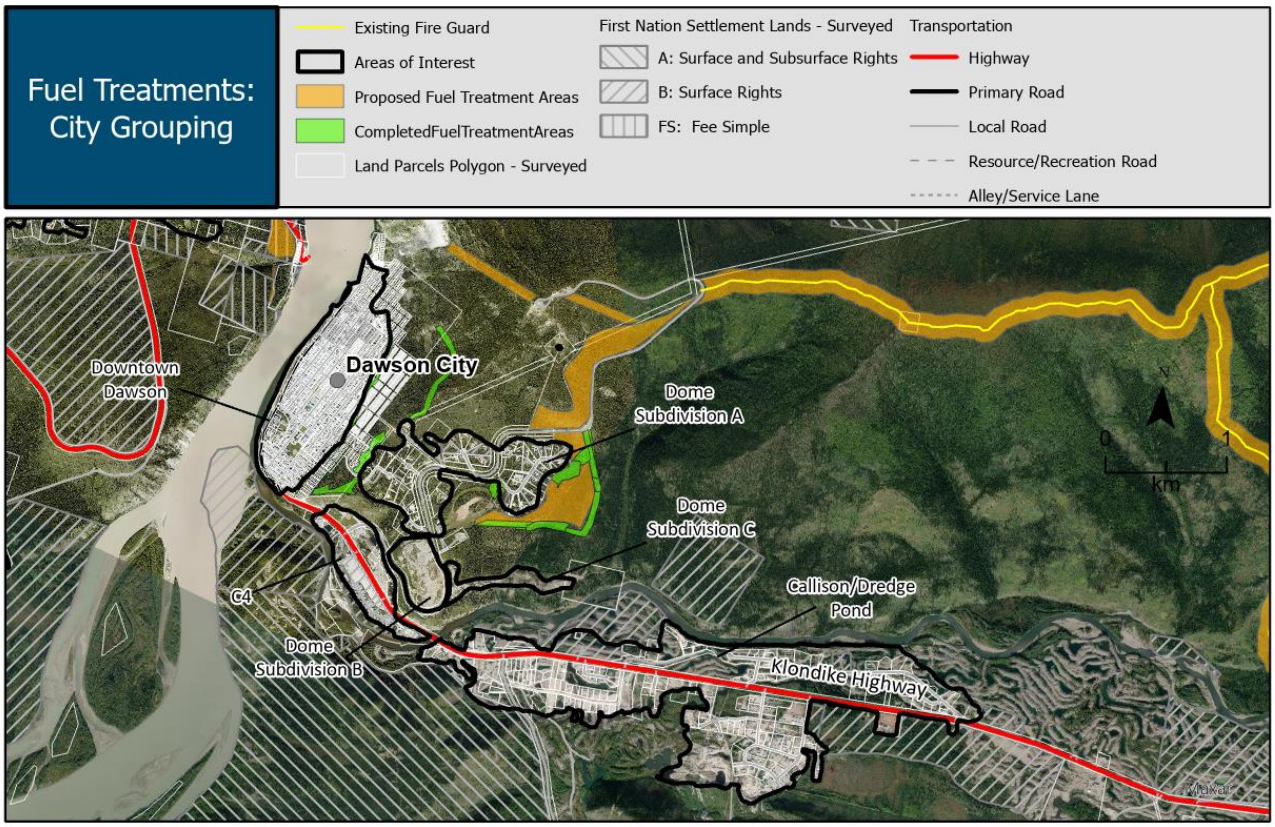

Figure 18: Fuels Treatments in City Grouping: Dawson City, Dome and Callison/Dredge Pond subdivisions.

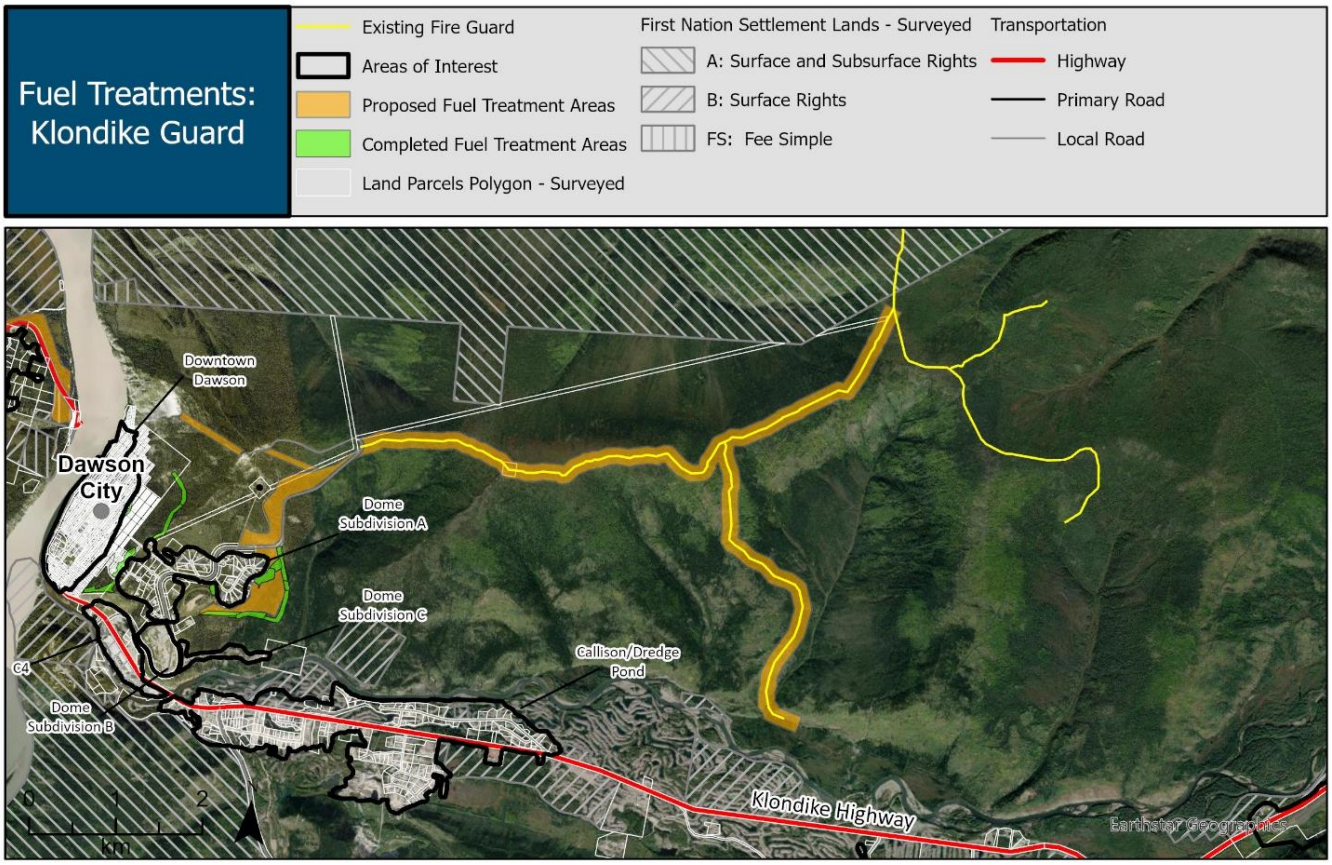

Figure 19: Fuels Treatments: Klondike Guard

Proposed Fuel Treatments: To protect the City Grouping from a potential wildfire in the intact, spruce forest to the north and northwest, extending existing FireSmart blocks is recommended along the Dome Road and Dome Subdivision A. A variable retention (clearcut) is proposed for the two linear features extending from the Dome Lookout to create access for fire suppression and a break in forest fuels. Wildland Fire Management recognizes the importance of the trail system o the Dome Road and will work with stakeholders to protect and buffer these resources from forestry operations.

The existing fire guard may be upgraded for ease of access and forest fuels adjacent the fire guard brushed, thinned, or cleared to create a wider break that protects the Callison/Dredge Pond subdivisions and the North Klondike Highway as an egress route in the event of an evacuation order. This will also be a strategic location for fire suppression activities.

5.4 East Grouping

Wildfire Risk and Key Vulnerabilities: This grouping includes the inhabited areas along the Klondike Highway, east of the City of Dawson's municipal boundary and includes Bear Creek, Airport, Rock Creek and Henderson Subdivision. The Klondike Valley Fire Department has jurisdiction over structural fires is this grouping.

This expansive area is variable in forest types from mature, pure spruce forest in the Rock Creek area, to grasslands in the Henderson Corner area and mixed wood forest and swamps dominated by willow throughout. The Klondike River lies to the north of the grouping but is not as wide as the Yukon River and thus offers less protection from extreme wildfire behaviour and ember travel.

The Bear Creek subdivision was created in the 1980's and many properties exemplify this pre-FireSmart vintage: dry wood building materials, outbuildings located close to the main building and little to no clearing of vegetation within the home ignition zone. Some areas are cleared of vegetation due to old mining operations and consist of tailing piles flanked by early seral species such as trembling aspen, balsam poplar and willow which is representative of resiliency to fire. Other areas of the subdivision contain thick coverage of mature spruce, right adjacent to buildings which is less resilient. The main cluster of homes and infrastructure are all located along a body of water that would provide ample water for fire suppression activities.

The Dawson City Airport is located about 18 km from Dawson. The expansive cleared area of the airport offers an existing fuel break from wildfire. While there is little direct threat due to the extensive clearing in and around the airport, directly across the Klondike Highway to the northeast is a roughly 100ha parcel of dense mature spruce, which could be volatile in the event of a wildfire.

The Rock Creek area consists of two different components: the main subdivision between the Klondike River and the Klondike Highway and a large agricultural area to the north of the Klondike River. The subdivision is a newer development than Bear Creek and contains larger lot sizes that are less densely spaced. While house to house ignition would be less probable, the concern is the large amount of mature spruce that surrounds homes.

Across the Klondike River are several, isolated agricultural parcels that are only accessible by boat. These appear to be less at risk due to the sparser nature of vegetation on the south facing slopes, though may also be threatened by black spruce, scrub birch, and willow vegetation to the north. If there is a large enough spruce component and the surface fuels and conditions are dry enough to ignite, wildfire can spread rapidly through these fuels. Emergency access, egress and means of communication are limiting factors for wildfire resiliency for this population.

Lot sizes in Henderson Corner vary but many are over 1 ha in size and contain areas cleared of standing timber. These spaces offer protection from wildfire if grasses are kept green and/or short. The area surrounding the south side of the subdivision consists of low-lying black spruce, scrub birch, and willow ecosystems with some thick pockets of mature spruce. If conditions become dry enough for this fuel type to ignite in the low-lying black spruce or when grasses are dry, wildfire could spread rapidly.

Proposed Fuel Treatments:

FireSmart work will continue within the Klondike River Campground and Rock Creek Subdivision. The Klondike Guard is intended to offer some protection to the East Grouping from a fire approaching from the north. Further timber harvesting on the Dome Road Timber Harvest Plan could increase fragmentation of hazardous forest fuels on the landscape to lower the risk of fire. Residents in Henderson Corner, Rock Creek and Bear Creek are encouraged to carry out FireSmart actions to reduce the vulnerability of their structures.

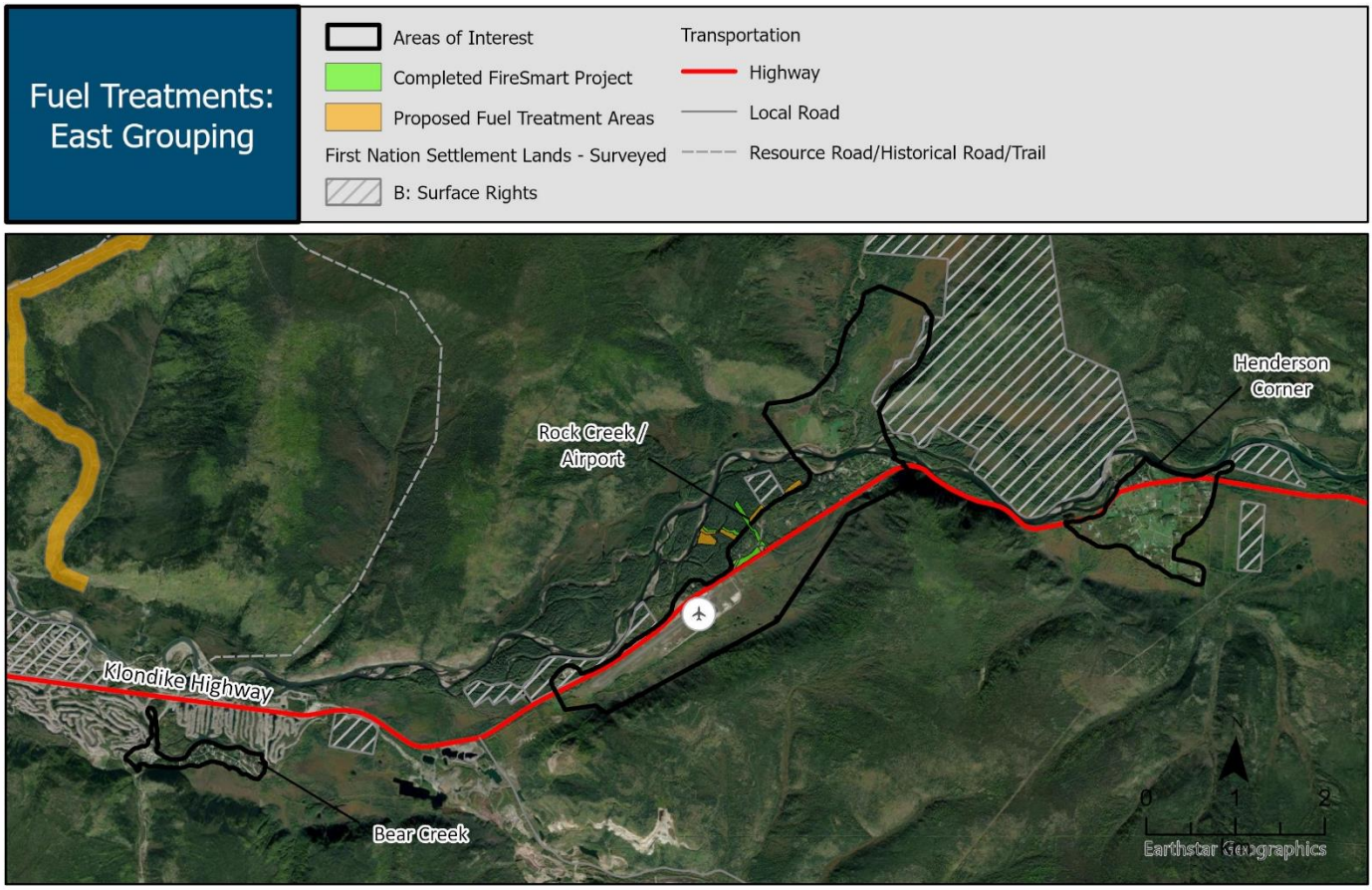

Figure 20. Fuels Treatments in East Grouping: Bear Creek, Rock Creek / Airport and Henderson Corner subdivisions

5.3 Other Risk Management Tools

5.3.1 Bylaw and Zoning

Communities can have a significant impact on reducing fire risk by considering a suite of options available through regulations such as zoning and/or bylaws. New infrastructure, such as future subdivisions should consider fire hazards prior to development. Established infrastructure should consider fire risk whenever upgrades are required. The Canadian Standards Association has developed a new National Standard of Canada for Fire Resilient Planning, for Northern Communities S504:19. This standard helps guide community developments and building standards with considerations for communities living in fire prone boreal ecosystems such as those in Yukon.

5.3.2 Management Plans

Appendix 2 identified key local management plans for the planning area. These existing plans include information that guides the contents of the community wildfire protection plan and may include policies and recommendations that touch on reducing risk of oncoming wildfire for the community. Additionally, future management plans or amendments to existing plans should consider the contents of the community wildfire protection plan and incorporate the content to consider increasing fire resiliency.

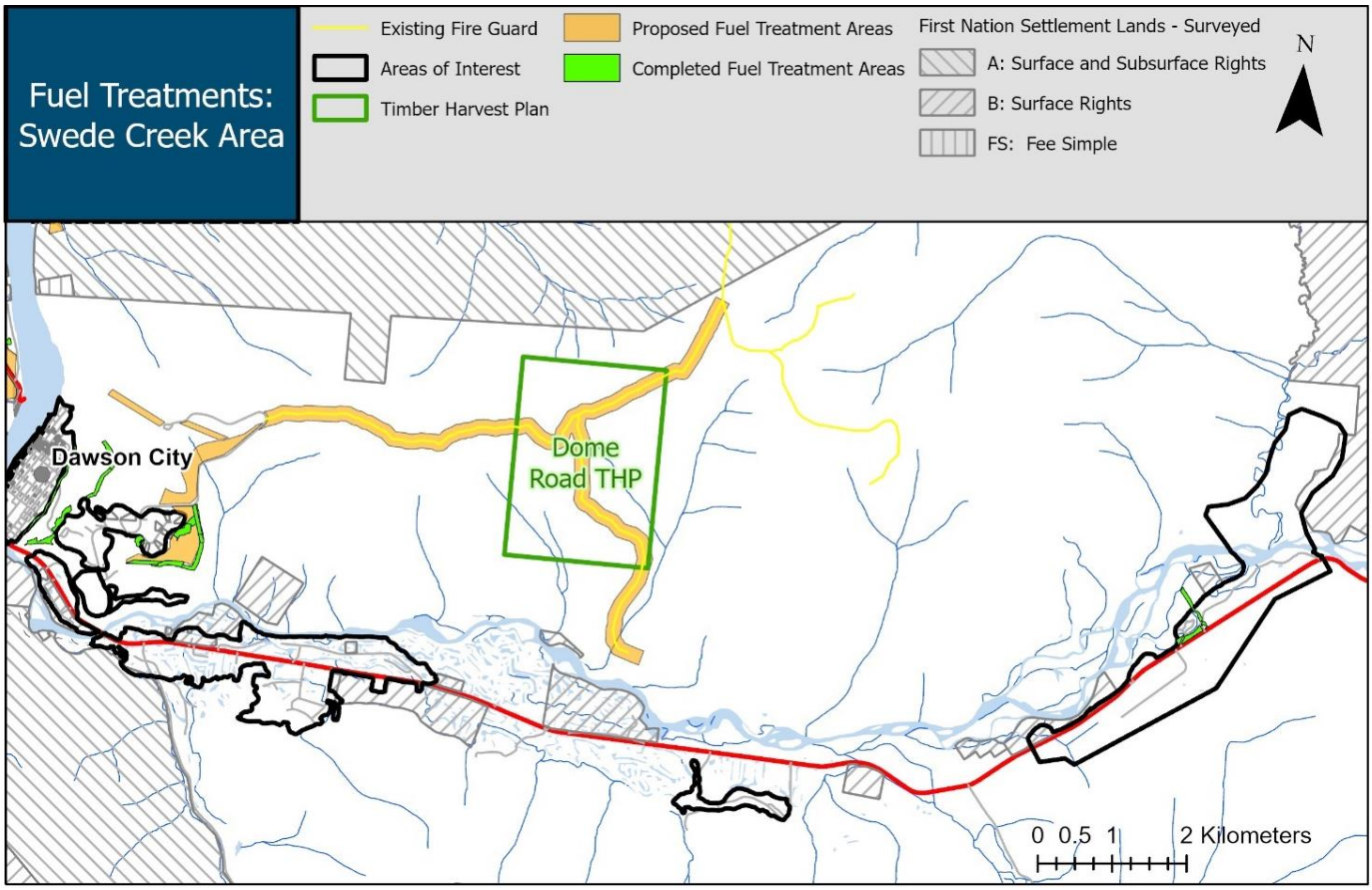

Figure 21. Location of the Klondike Guard and Dome Road Timber Harvest Plan that may be strategically utilized to create fragmentation in the landscape.

For example, the Top of the World Timber Harvest Plan located approximately 3km west of Dawson City in the West Dawson/Sunnydale area has been actively harvested for green timber since its approval in 2014. Active harvesting has resulted in fragmenting and creating breaks in forest fuels, contributing to fire risk-reduction.

Additionally, upgrading the Klondike Guard will create better access to the Dome Road Timber Harvest Plan (See Figure 20). The Dome Road Timber Harvest Plan has been a relatively inactive approved harvesting area. Allowing permits for timber harvesting, within the specifications outlined in the Dome Road Timber Harvest Plan, will create further fragmentation in forest fuels that reduce risk.

5.3.3 Community Education and Engagement

The Community Wildfire Protection Plan is only successful if community members and stakeholders are engaged in taking action to reduce wildfire risk. Education and engagement tools can be organized into these categories:

- **Community Endorsement**: During the draft stages the CWPP is presented to and available to the public to understand, comment and ask questions. Approval of the management tools presented in the plan is crucial to its success.
- **Promoting FireSmart Principles:** Relevant parties will work with community associations and other local groups to coordinate FireSmart projects. Additionally, Wildland Fire Management, in addition to other stakeholders involved in this place will seek to educate the community on FireSmart principles, such as organizing community school visits to inform students about fire resiliency and FireSmart practices.
- **Private Property Hazard Reduction Strategies:** In addition to supporting FireSmart and fuel abatement activities on public land, implementation of the CWPP includes educating community members on reducing wildfire hazards on their own properties. Resources can be found at https://firesmartcanada.ca/resources/.

5.3.4 Tactical Exercises and Emergency Planning

Completing an evacuation plan and practicing evacuations ahead of time can significantly improve efficiency during an emergency and increase the likelihood of a positive outcome. The following are some options for tactical exercises and evacuation planning:

- Public events that explicitly address evacuation routes, challenges, and preparedness measures.
- Increased communication of existing and future evacuation planning efforts to the public, including identification of:
    - A range of possible scenarios and how evacuation might proceed in each;
    - Primary routes (including new routes developed under this plan), their quality, and strategies for improvement (if necessary);
    - Areas for residents to shelter in place in the event their evacuation route is compromised.
- Tactical exercises to practice evacuations and identify vulnerabilities:
    - “Tabletop Exercises” to address larger-scale issues and scenarios,
    - Neighbourhood level mock evacuations to address local considerations;
        - Neighbourhoods identified as being most exposed would represent the best pilots and priorities for these exercises and provide opportunities for local feedback;

6. Final Recommendations

This section outlines a summary of recommendations based on the risks, values and key vulnerabilities presented in this plan. Next steps are for stakeholders, with Government of Yukon, Wildland Fire Management as the lead, to identify the next steps and responsible agencies to complete each recommendation.

Table 9: Recommendations for creating a wildfire resilient community

Theme	Action / Recommendation	Status/Next Steps	Lead
Fuel Abatement	Develop an accurate FBP fuel type layer for the planning area to assist in planning for fuels treatments in the proposed areas.		
	Develop a site plan for fuels treatments in the proposed areas		
	Execute fuels treatments in the proposed areas as per the site plan		
FireSmart	Undertake FireSmart assessments for heritage buildings throughout the community.		
	Continue to support FireSmart fuels treatment projects with respect to creating access, defensible space, and link fuel discontinuities		
	Property owners should review FireSmart principles and apply them to their homes and property		
	New residential subdivisions should be designed with consideration of surrounding risks and ways for reducing wildfire risk, including applying FireSmart principles		
Wildfire Response	Provide cross training of volunteer firefighters with wildland firefighters		
	Pursue training for residents of Sunnydale and West Dawson		
	Increase resources and facilities for structural fire fighting capacity in Sunnydale and West Dawson		
	Conduct tabletop exercises and live neighborhood-level mock evacuations are recommended as a component of this strategy.		
Communications and Engagement	Complete an evacuation plan for the planning area and residents		
	Host public events and expand communication of evacuation considerations to residents and visitors.		

7. Monitoring and Reporting

An annual meeting shall be established with stakeholders to update progress from the previous year and on current and future projects. This meeting will allow engagement and input into these projects. The Community Wildfire Protection Plan is a living document that is developed using the best understanding of fire hazards, behaviour, and wildfire community protection at the time of writing. The knowledge base is anticipated to evolve

as will the community of Dawson's requirements for protection and risk reduction against wildfire. The CWPP will have a review cycle of 5 years.

List of Appendices:

Appendix 1: Supplemental Data
Appendix 2: Key Local Management Plans
Appendix 3: Mitigation Methods to Reduce Wildfire Risks to Values
Appendix 4: Reference