TOWN OF ATHABASCA
FIRESMART COMMUNITY PLAN

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CONSULTING

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INTRODUCTION

This FireSmart Community Plan is broken down into two section that include a Wildfire Preparedness Guide and a Wildfire Mitigation Strategy. This FireSmart Community Plan was initiated to identify present and future wildfire threats to structures and properties and structural fire threats to wildlands within and surrounding the community. The plan outlines the area, hazards and resources available. It will address current concerns within the Town of Athabasca (The Town or Athabasca), and offers recommendations to minimize the risk of wildfire through vegetation management, development, public education, legislative, interagency cooperation, and emergency planning options.

Athabasca is within the Boreal Mixedwood Ecoregion. Distribution of the tree species within this area includes; coniferous stands of White Spruce, Black Spruce, Lodgepole Pine, Jack Pine, and Tamarack, mixedwood stands of Trembling Aspen, Balsam Poplar, White Birch, and White Spruce. Deciduous stands of Trembling Aspen, Balsam Poplar, and White Birch are also common. The occurrence of wildfire within the ecoregion has not been frequent; however wildfire poses a significant risk to the developments within the study area.

GOALS AND OBJECTIVES

The primary goal of the FireSmart Community Plan is to assess and identify the factors that may influence Wildland/Urban Interface risk to the communities and develop options in order to mitigate various risk factors and to provide a guide to first responders in the event a wildfire threatens a community.

The Plan includes assessing present Wildland/Urban Interface site hazards as well as reviewing the past wildfire history in the study area. Studying municipal documents and guidelines regarding directing new development as well as reviewing present emergency fire response plans and interagency cooperation and cross training agreements was conducted. Recommendation suggestions are offered for each of the following risk reduction concerns; vegetation management, future development, public education, legislation, interagency cooperation and emergency planning options.

This plan is intended to be used as a working document in order to assist municipal representatives, elected officials, local residents, and land managers to plan, construct, and maintain FireSmart developments.

1. WILDFIRE PREPAREDNESS GUIDE

The intent of Wildfire Preparedness Guide is to provide an Incident Management Team with an overview of the planning area, fire behaviour potential, values-at-risk, and fire operations that can be utilized in the event that a wildfire threatens wildland/urban interface values at risk. It is designed to ensure the efficient use of resources, clearly define roles and responsibilities, engage stakeholders in community protection, support a consistent emergency response standard throughout Alberta, and build capacity to mitigate the overall impact of a threatening wildfire.

1.1 LOCAL AREA DESCRIPTION

1.1.1 PLANNING AREA

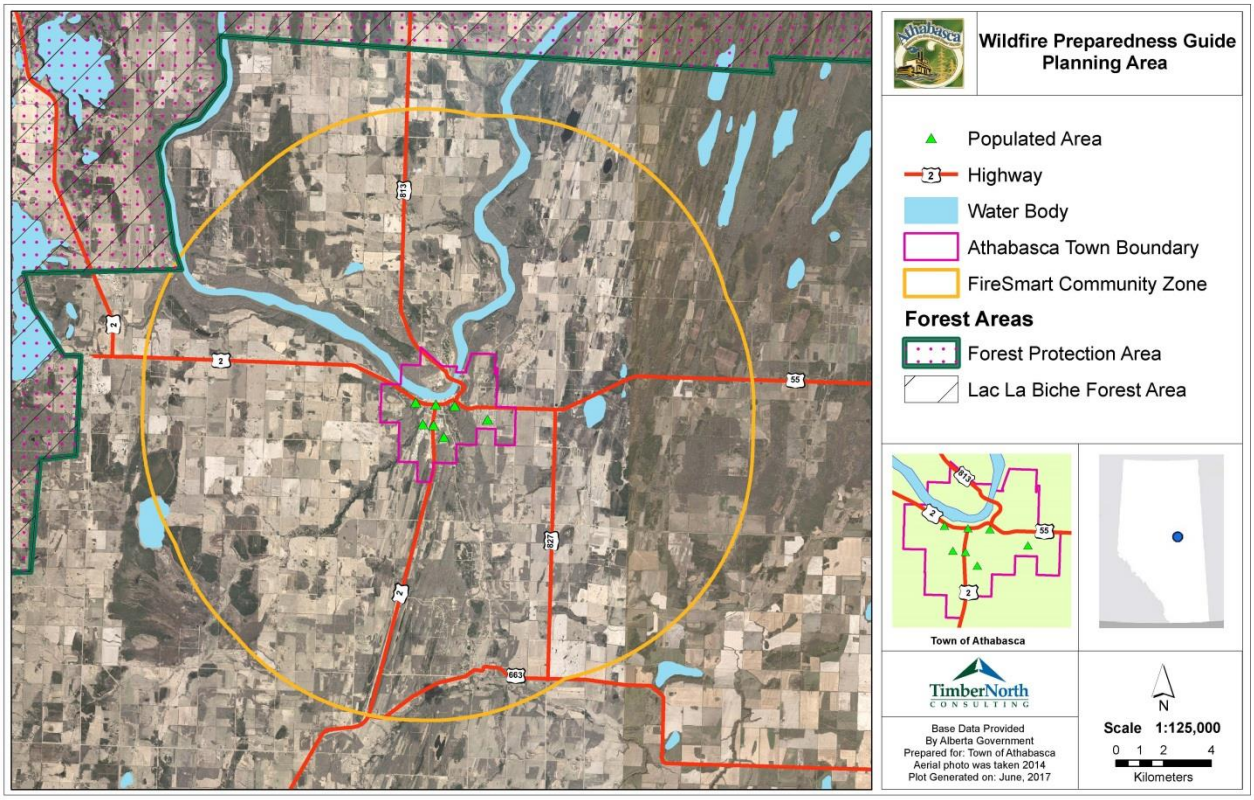
FEATURE	JURISDICTIONAL AUTHORITY
Alberta Agriculture and Forestry(AAF) Forest Area	• The town of Athabasca falls within a Forest Protection Area • Planning area is adjacent to the Lac La Biche Forest Area
Municipality(s)	Town of Athabasca
First Nations	None
Forest Management Agreement Area(s)	None
Timber Quota area	None
Provincial Park	None

Athabasca is located within Twp 066 Rge 22 W4M. It is a small to middle sized town which is located 145km north of Edmonton. The size of the town is approximately 1,850ha and the population in 2016 was 2,965.

The Town, in conjunction with the County of Athabasca and the Village of Boyle has prepared the *Athabasca Regional Emergency Response Plan* document. The three entities are referred to as the Athabasca Region. This document is intended to be utilized as a guide in the event of a major emergency such as a wildfire threat. It defines rolls and responsibilities, emergency contacts and resources available.

The Urban Interface Zone for this plan is the Town of Athabasca municipal boundary. This area contains various structures and developments that are within or adjacent to undeveloped wildland or varying vegetative fuels.

The FireSmart Community zone is a 10km buffer around the Town (refer to map 1). This area falls outside of the Urban Interface Zone but can play a key role into the potential wildfire threat to the Urban Interface Zone.

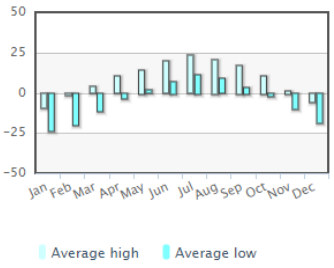


Map 1: Wildfire Preparedness Guide Planning Area Map

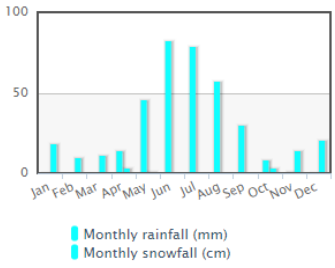
1.1.2 FIRE BEHAVIOUR POTENTIAL DESCRIPTION

FACTOR	DESCRIPTION
Fuels Influence	Referencing maps 2 and 3: • The majority of the fuel types are deciduous (D1) and Grass (O-1). • The majority of the forested area in the Town is deciduous (D1), consisting primarily of Trembling Aspen and Balsam Poplar. The forested area is quite dense and there is a considerable amount of dead and down woody material, as well as a build-up of ladder fuels. There are some mixedwood (M1) stands consisting of Trembling Aspen, Balsam Poplar and White Spruce and coniferous (C2) stands consisting of pure White and Black Spruce. • Undeveloped lots and reserves in the Town are predominantly deciduous (D1), consisting of Trembling Aspen and Balsam Poplar with some mixedwood (M1) Trembling Aspen, Balsam Poplar and White Spruce.
Weather Influence	During the fire season, wind direction and speed will affect any wildfire. Wind Rose data shows the predominant wind is from the W or NW quadrant. ➢ Average temperature and Precipitation during fire season refer to Table1. *Weather Statistics for Athabasca*
Topographic Influence	The Town of Athabasca is primarily within a river valley primarily influenced by: ➢ The Athabasca River ➢ The Tawatinaw River ➢ Muskeg Creek with its developed banks
Anticipated Fire Spread	Athabasca is within a valley and any fire started here will likely travel uphill which can threaten the surrounding county.

	Average Temperature (^{O}C)	Precipitation (mm)
March	-3.5	11
April	3.6	17
May	8.2	47
June	13.6	82
July	17.7	79
August	15.1	57
September	10.7	30
October	4.6	12

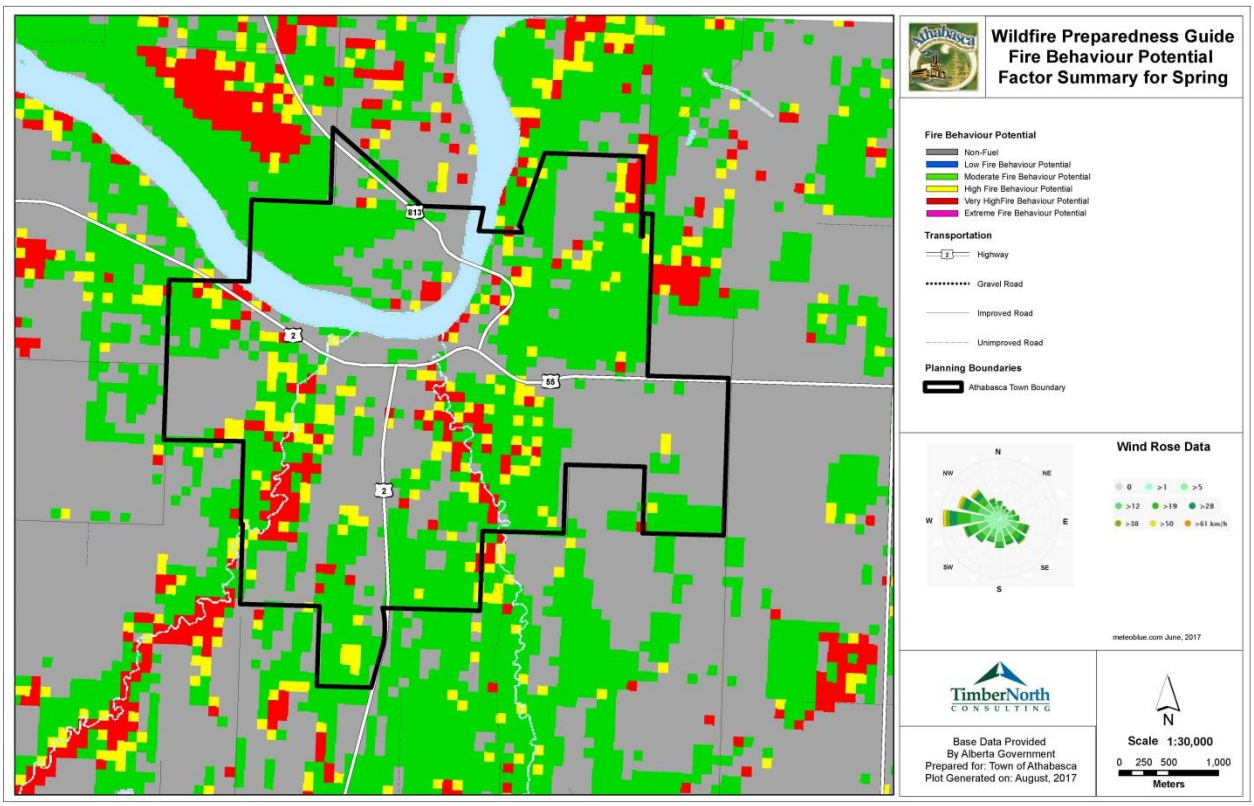


Temperature (°C)



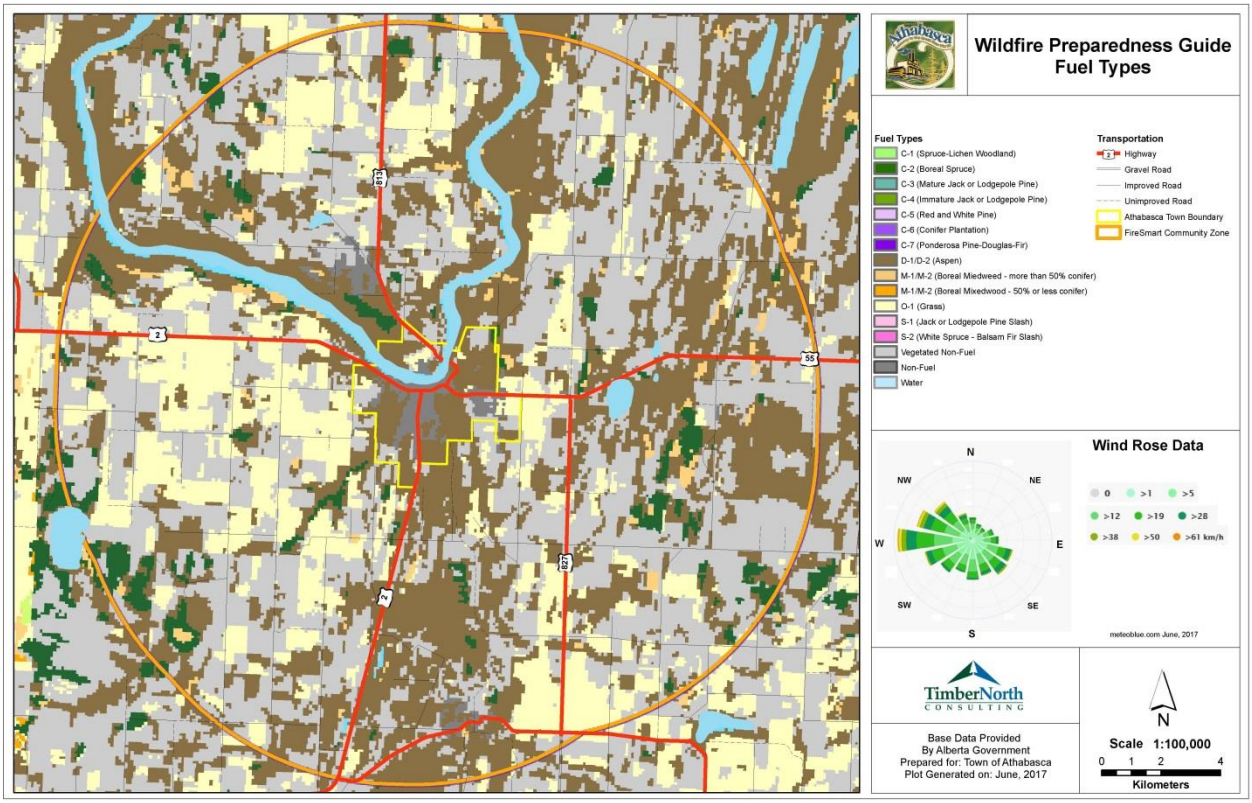
Precipitation (mm)

Table 1: Weather Statistics for Athabasca (www.theweathernetwork.com, July 2017)



Map 2: Wildfire Preparedness Guide Fire Behaviour Potential Factor Map

In the event that a wildfire should occur, Map 2 indicates the fire behaviour potential in and immediately surrounding the Town of Athabasca during the spring, when the conditions are most favorable for fires. The Canadian Forest Fire Behaviour Prediction System is used to estimate potential fire spread rate, fuel consumption and fire intensity for a range of forest fuel types. Concentrations of areas showing as high to very high or extreme would be areas to concentrate on for fuel reduction or modification work.



Map 3: Wildfire Preparedness Guide Fuel Type Map

Map 3 indicates that the primary fuel types in the Athabasca area is D1- Leafless Aspen that the Canadian Forest Service describes as pure, semi mature trembling aspen stands before bud break in the spring or following leaf fall and curing of the lesser vegetation in the autumn. Dead and down round wood fuels are minor components of the fuel complex. The principal fire-carrying surface fuel consists chiefly of deciduous leaf litter and cured herbaceous material that is directly exposed to wind and solar radiation (refer to Appendix 1).

The surrounding area has high concentrations of O-1 – Grass which is continuous grass cover. Standing dead grass common in late summer and early fall can have a visible effect on the rate of spread of a fire. These areas can burn quickly and ignite some of the adjacent forested areas.

Ground visits also show the presence of M1 – Boreal Mixedwood – Leafless which is made up of any combination of black spruce, white spruce, balsam fir, trembling aspen, and white birch. These stands are generally moderately well-drained upland sites. These sites are most susceptible to fire in the spring and fall and can contribute to the rate of spread of a fire.

1.2 VALUES AT RISK

1.2.1 STANDARD VALUES-AT-RISK

ID*	Value Name	Value Type	Geographic Coordinate		No. of Structures	Roof Material
			Latitude	Longitude		
B1.01	Athabasca & District Agriplex	Recreational	N54.73794	W113.29537	6	Asphalt /Metal
B1.02	Athabasca multiplex	Recreational	N54.71782	W113.31216	1	Asphalt
B1.03	Athabasca Lions Campground	Campground	N54.73539	W113.28767	0	Non combustible
B1.04	Days Inn Athabasca	Hotel	N54.71915	W113.24903	1	Asphalt
B1.05	Super 8 Athabasca	Hotel	N54.71967	W113.25691	1	Asphalt
B1.06	New Western Athabasca Inn	Hotel	N54.70998	W113.29208	1	Pebble Asphalt
B1.07	Cabins by the River	Cabin	N54.72488	W113.30775	8	Asphalt /Metal
B1.08	Extendicare Athabasca-Special Care Home	Special care facility	N54.71544	W113.29150	2	Asphalt
B1.09	Pleasant Valley Lodge-Senior's home	Special care facility	N54.70967	W113.28430	2	Asphalt
B1.10	Athabasca Industrial Park	Industrial	N54.70025	W113.29842		Metal

ID* - Number corresponds with Map 4, Wildfire Preparedness Guide Values at Risk

1.2.2 CRITICAL VALUES-AT-RISK

ID*	Value Name	Value Type	Geographic Coordinate		No. of Structures	(Roof Material)
			Latitude	Longitude		
B2.01	Athabasca Regional Water Services Commission	Water Facilities	N54.72606	W113.25514	1	Pebble Asphalt
B2.02	Water Treatment Plant	Water Facilities	N54.72219	W113.28789	1	Pebble Asphalt
B2.03	Town of Athabasca Rupert Reservoir	Water Facilities	N54.71670	W113.29240	1	Pebble Asphalt
B2.04	Town of Athabasca Cornwall Place Reservoir	Water Facilities	N54.71693	W113.25601	1	Pebble Asphalt
B2.05	Athabasca Fire Department	Fire Hall	N54.71686	W113.28744	1	Metal
B2.06	Athabasca Healthcare Centre	Hospital	N54.71824	W113.25504	1	Cement
B2.07	RCMP	Police	N54.71727	W113.25782	1	Metal

ID*	Value Name	Value Type	Geographic Coordinate		No. of Structures	(Roof Material)
			Latitude	Longitude		
B2.08	Telus Cell Tower	Communications Tower	N54.73361	W113.29801	1	
B2.09	Rogers Cell Tower	Communications Tower	N54.70398	W113.29077	1	
B2.10	Landing Trail Intermediate School	School	N54.71773	W113.29520	4	Asphalt
B2.11	Whispering Hills Primary School	School	N54.71533	W113.24993	1	Asphalt
B2.12	Edwin Parr Composite High School	School	N54.71359	W113.28112	5	Asphalt
B2.13	Athabasca Outreach School	School	N54.71654	W113.28243	1	Asphalt
B2.14	Athabasca University	School	N54.71573	W113.30820	3	Pebble Asphalt
B2.15	Town Office	Municipal building	N54.71960	W113.28157	1	Asphalt
B2.16	Athabasca County Office	Municipal building	N54.71752	W113.26076	1	Asphalt

ID* - Number corresponds with Map 4, Wildfire Preparedness Guide Values at Risk

1.2.3 SPECIAL VALUES-AT-RISK

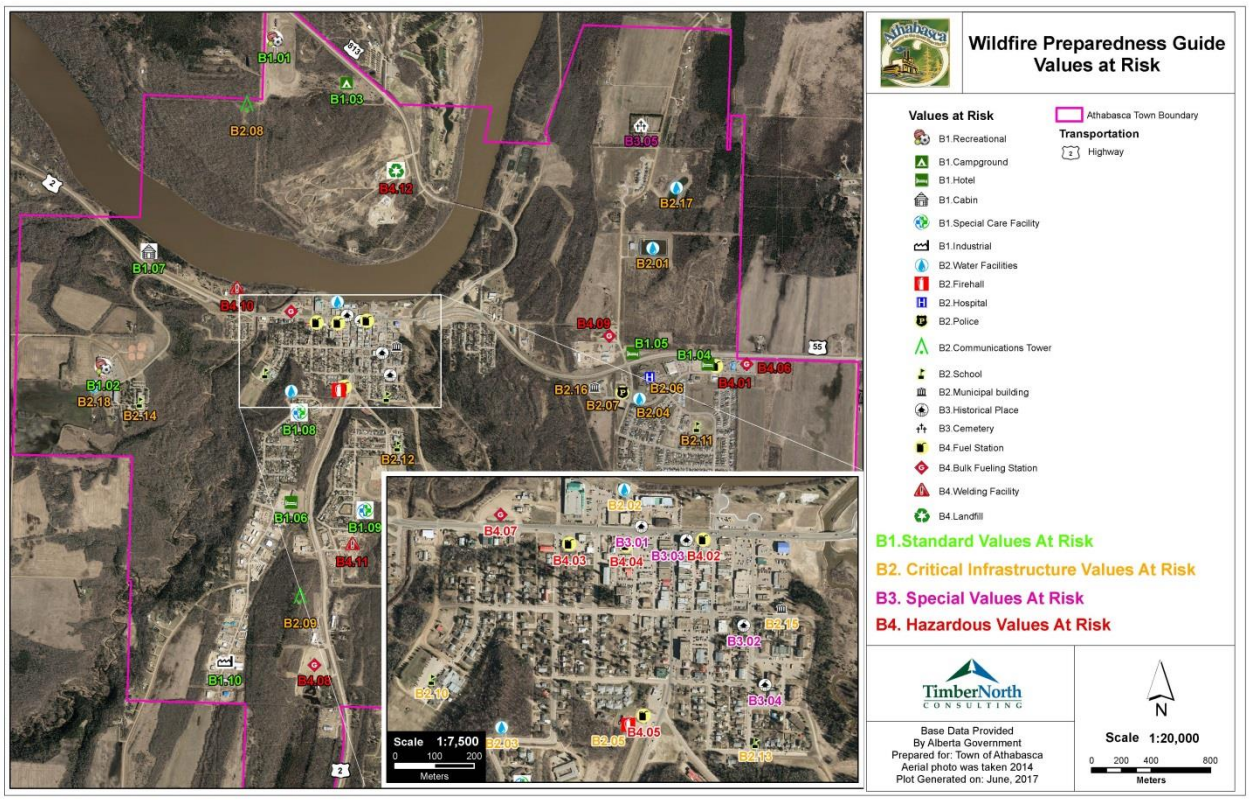
ID*	Value Name	Value Type	Geographic Coordinate		No. of Structures (Roof Material)	
			Latitude	Longitude		
B3.01	Athabasca Train Station	Historical Place	N54.72139	W113.28682	1	Wood
B3.02	Athabasca United Church	Historical Place	N54.71920	W113.28304	1	Wood
B3.03	Grand Union Hotel	Historical Place	N54.72109	W113.28539	1	Pebble Asphalt
B3.04	Athabasca Public School	Historical Place	N54.71787	W113.28213	1	Wood
B3.05	Athabasca Cemetery	Cemetery	N54.73345	W113.25677	None	None

ID* - Number corresponds with Map 4, Wildfire Preparedness Guide Values at Risk

1.2.4 HAZARDOUS VALUES-AT-RISK

ID*	Value Name	Value Type	Geographic Coordinate		No. of Structures (Roof Material)	
			Latitude	Longitude		
B4.01	Petro-Canada	Fuel Station	N54.71905	W113.24813	1	Asphalt
B4.02	Athabasca Husky Market	Fuel Station	N54.72112	W113.28473	1	Pebble Asphalt
B4.03	Shell	Fuel Station	N54.72092	W113.28997	1	Pebble Asphalt
B4.04	Petro-Canada	Fuel Station	N54.72093	W113.28774	1	Asphalt
B4.05	Fas Gas Plus	Fuel Station	N54.71708	W113.28684	1	Asphalt
B4.06	Athabasca UFA Petroleum	Bulk Fuel Station	N54.71924	W113.24495	1	Asphalt
B4.07	Petro-Pass	Bulk Fuel Station	N54.72153	W113.29271	3	Asphalt /Metal
B4.08	Co-op Cardlock	Bulk Fuel Station	N54.70022	W113.28906	0	
B4.09	MecEwen's Fuels & Fertilizers Ltd. and Black Tiger Fuels	Bulk Fuel Station	N54.72068	W113.25939	2	Pebble Asphalt/Metal
B4.10	Tizzco`s Riverside Machine& Welding Ltd.	Welding Facility	N54.72286	W113.29845	2	Metal
B4.11	North West Fabricators LTD	Welding Facility	N54.70763	W113.28552	4	Pebble Asphalt /Metal
B4.12	Athabasca Regional Waste Management services commission	Landfill	N54.73024	W113.28224	1	Metal

ID* - Number corresponds with Map 4, Wildfire Preparedness Guide Values at Risk



Map 4: Wildfire Preparedness Guide Values at Risk Map

1.3 FIRE OPERATIONS

1.3.1 FUNCTIONAL ROLLS

JURISDICTION	AGENCY RESPONSIBLE
Wildfire	Alberta Agriculture and Forestry, Athabasca Fire Department
Evacuation	Police (RCMP)
Values Protection	Athabasca Emergency Response
All of the Above (Municipal level of Emergency Management)	Director of Emergency Management (DEM)

1.3.2 FREQUENCY ALLOCATIONS

Location	FREQUENCY		
	Receive	Transmit	Tone
Town of Athabasca Fire	156.000	157.710	100
Associated Ambulance; Athabasca	152.435	156.765	
Baptiste Lake Fire/Rescue	151.145	156.150	
Boyle Fire/Rescue	169.065	169.065	100
Colinton Fire/Rescue	167.355	172.215	162.2
Provincial Fire	156.855	156.855	
Provincial EMS	156.780	156.780	

1.3.3 STRUCTURE PROTECTION STRATEGIES AND TACTICS

STRATEGIES	TACTICS	COMMENTS
Planning – Non Fire Season	Develop a FireSmart program	Educate residents on how to make a home or property fire wise
Rethinking Priorities	1. Protect the fire crews while saving the lives of civilians. 2. Save property and structures based on whether or not they can be saved. 3. Conserve firefighting resources so that you can continue to fight the major fire until the job is done.	
Developing an Action Plan	Plan will consider the three operational priorities of life safety (including residents, bystanders, and fire crews), incident stabilization (committing to an offensive or defensive strategy), and property conservation.	
Communication	Ensure that there is continued communication between all agencies involved.	
Structure Triage	1. Structure needs little or no protection for now. 2. Structure needs protection but can be saved. 3. Structure is hopeless and cannot be saved.	

1.3.4 FIRE SUPPRESSION WATER SUPPLY

Refer to map 5 – Fire Operations Action Plan.

ID*	FACILITY NAME	TYPE	Latitude	Longitude	CAPACITY/PRESSURE/FLOW
W.01	Athabasca River	River	N54.72230	W113.28412	Except frozen season
W.02	Athabasca River	River	N54.72444	W113.28461	Except frozen season
W.03	Town of Athabasca Rupert Reservoir		N54.71670	W113.29240	430 kPa+/- 2,520 m^3 @ 100%
W.04	Water treatment plant	Truck Fill Station	N54.72219	W113.28789	No Storage
W.05	Athabasca Regional Water Services Commission		N54.72606	W113.25514	Approximately 74,000m^3
W.06	Town of Athabasca Cornwall Place Reservoir		N54.71693	W113.25601	430 kPa+/- 3,094 m^3 @ 100%
W.07	Town of Athabasca University Reservoir		N54.71661	W113.31303	400 kPa+/- 1,340 m^3 @ 100%
W.08	Storm Water Retention Pond		N54.729531	W113.25297	Dry pond, no retained storage

ID* - Number corresponds with Map 5, Wildfire Preparedness Guide Fire Operations Action Plan

Each reservoir is equipped with (3) electric motors coupled to vertical turbine pumps. They are set up to run in a Lead, Lag, Lag 2 fashion. Pump reactions vary from site to site based on pre-programmed operating parameters controlled by onsite. PLC. Each electric motor is capable of delivering 12L/sec (+/-).

Each reservoir is equipped with (1) standby pump capable of delivering 3,000 usgpm @ 130'TDH.

1.3.5 RESOURCES

Fire Department (All are volunteer)			
Location	**Personnel**	**Fire Equipment**	**Specialized Training**
Athabasca	Min -17 people	- 2012 Freightliner 2000 gal Pumper/Tanker - 2016 F550 Crew Cab Wildfire Unit – 300 gal - 2008 GMC Sierra Squad Truck - 2016 Spartan Engine (500 gal) - 1993 Freightliner Engine (500 gal) - Wildfire Suppression Trailer (portable pumps, hose, sprinkler kits) - Honda ATV - compressed air suppressor (15 gal) - Polaris Ranger 6x6 UTV (45 gal)	- Wildfire interface S215 training - Non-industrial extrication training & equipment
Colinton	Min -12 people	- 2014 Dodge Ram 4500 4x4, equipped for highway rescue - 2017 Freightliner fire pumper (2000 gal), dump valve - 1988 F800 fire pumper (800 gal) - 2003 Chev K350 4x4 rapid attack (280 gal) - 1998 Honda Foreman Quad, SwiftCAF ATV foam unit 20 gal (cont.)	- Vehicle extrication training & embankment rescue - Ice rescue training and equipment - Wildland fire fighting - Dangerous goods

Location	Personnel	Fire Equipment	Specialized Training
		- 2007 quad trailer for quad or men and equipment - 2011 Freightliner Tender (3,000 gal) with bladder and dump valve (3,000 gal)	-

The Town of Athabasca currently has a Mutual Aid Fire Fighting Agreement in place with Albert Agriculture and Forestry, Forestry and Emergency Response Division (formerly Sustainable Resource Development, Forestry and Emergency Response Division). This agreement is valid until April 2018.

Medical			
Location	**Medical Staff**	**Hospital Staff**	**Beds**
Town of Athabasca Health Care Centre	5 General Practice/Surgery	76 Full time Employees	30 Active 23 Auxiliary
Aspen Health Services	N/A	2 full time nurses 5 part time nurses Various casual nurses	N/A

Police		
Location	**Staff**	**Vehicles and Equipment**
Town of Athabasca RCMP	9	4WD Vehicles Cruisers ATV

Industry – Alberta-Pacific (Emergency Contact Number 780-525-8200)		
Item	**Type**	**Qty**
Mini Pumper (300 gal)	Tuck	1
Ambulance	BLS (Basic Life Support)	1

400+ staff trained in firefighting and first aid 48 trained in emergency response

There is no formal agreement between the Town of Athabasca and Alberta-Pacific, but if needed they will provide support using mini pumper and water tanker.

1.3.6 STAGING AREAS

ID*	NAME	Lat	Long	DESCRIPTION
S.01	Athabasca Regional Multiplex	N54.71773	W113.31076	
S.02	Athabasca and District Agri-Plex	N54.73908	W113.29505	
S.03	Athabasca County Office.	N54.71761	W113.26086	
S.04	Athabasca Fire Hall	N54.71685	W113.28728	

ID* - Number corresponds with Map 5, Wildfire Preparedness Guide Fire Operations Action Plan

1.3.7 EVACUATION

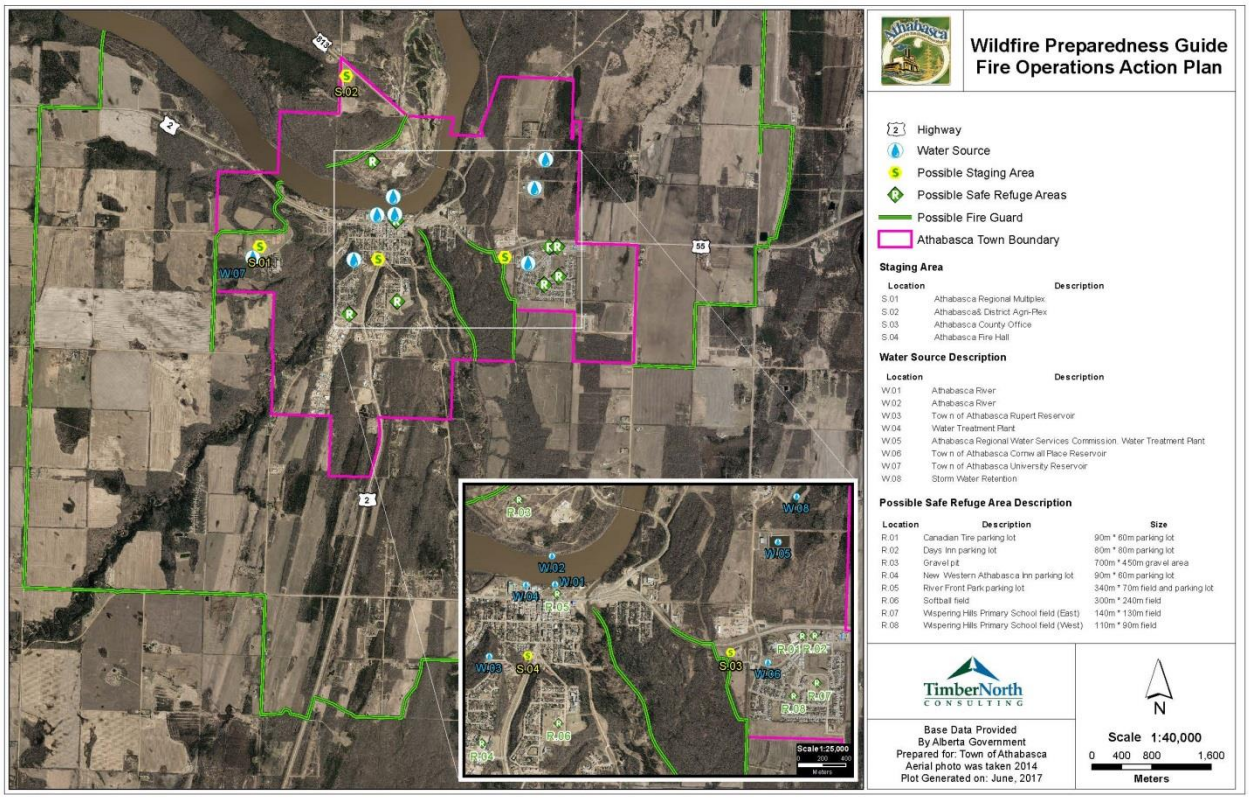
Reception centres will be established as required to accommodate evacuees as directed by the Emergency Coordination Centre.

1.3.8 SAFE REFUGE AREAS

Refer to map 5 – Wildfire Preparedness Guide Fire Operations Action Plan Map.

ID*	NAME	Lat	Long	DESCRIPTION
R.01	Canadian Tire parking lot	N54.71901	W113.25159	90m * 60m Parking lot
R.02	Days Inn parking lot	N54.71907	W113.24998	80m * 80m Parking lot
R.03	Gravel pit 15	N54.72865	W113.28917	700m * 450m Gravel area
R.04	New Western Athabasca Inn parking lot	N54.71013	W113.29296	90m * 60m Parking lot
R.05	River Front Park parking lot	N54.72160	W113.28376	340m * 70m Field and parking lot
R.06	Softball field	N54.71186	W113.28303	300m * 240m Field
R.07	Wispering hills Primary school field (East side)	N54.71550	W113.24947	140m * 130m Field
R.08	Wispering hills Primary school field (West side)	N54.71448	W113.25247	110m * 90m Field

ID* - Number corresponds with Map 5, Wildfire Preparedness Guide Fire Operations Action Plan



Map 5: Wildfire Preparedness Guide Fire Operations Action Plan Map

1.3.9 EMERGENCY CONTACT LIST

Fire – All initial calls to 911			
Emergency Location	**Main**	**Alternate**	**Municipality**
Athabasca	780-519-7233 (cell)		Within the Town of Athabasca
Baptiste Lake	780-675-2551	780-689-7362	SV of Baptiste, Island Lake & Div. 9 of Athabasca County
Boyle	780-689-3611		Within the Town of Boyle
Colinton	780-675-4845	780-689-8975	Hamlet of Colinton

RCMP-All emergency calls to 911			
Detachment	**Contact**	**Main**	**Municipality**
Athabasca	Sgt. Brian Nicholl	780-675-4252	Within the Town of Athabasca
Boyle	Sgt. John Spaans	780-689-3622	Within the Town of Boyle

Provincial Government		
Title	**Contact**	**Number**
Emergency Management Alberta District Officer	Ian Fox	780-645-6213 780-646-0180
AAF	Duty Officer Lac la Biche Forest Area	780-623-5245
	Report a Wildfire	Toll Free 310-FIRE (3474)

2. WILDFIRE MITIGATION STRATEGY

The Wildfire Mitigation Strategy identifies the study area and recommends FireSmart activities that can be put into place to reduce the risk and impact of a wildfire on the community. It includes hazard and risk assessments, FireSmart activities and an Implementation and Maintenance Plan.

2.1 LOCAL AREA DESCRIPTION

The study area for the Wildfire Mitigation Strategy includes the Town of Athabasca and the Athabasca Industrial Park located within Twp 066 Rge 22 W4M:

Town of Athabasca:

Photo 1 – Town of Athabasca, Downtown and East Hill

Photo 2 – Town of Athabasca, East Hill

Photo 3 – Town of Athabasca, Cornwall

Photo 4 – Town of Athabasca, Hees Estates

Photo 5 – Town of Athabasca, Inn

Photo 6 – Town of Athabasca, Inn (Jewells)

Photo 7 – Town of Athabasca, Muskeg Creek

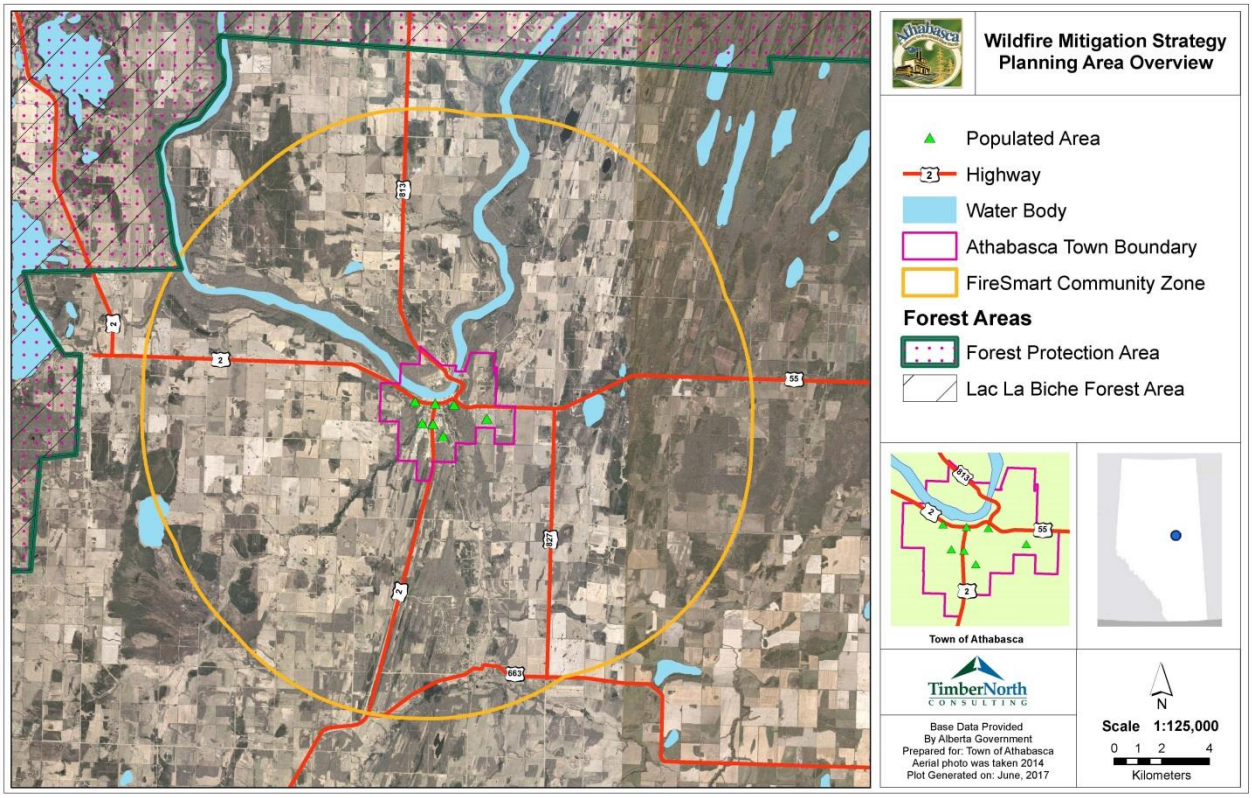
Athabasca Industrial Park:

Photo 8 – Athabasca Industrial Park (south)

Photo 9 – Athabasca Industrial Park (north)

The Town of Athabasca is responsible for the administration of developments within the Town of Athabasca and the Industrial Park. The County of Athabasca No. 12 is responsible for the administration of mitigating recommendations around the Town of Athabasca. The Town of Athabasca and Alberta Agriculture and Forestry have a Mutual Aid Agreement that allows

cooperating agencies to request assistance within their jurisdiction from the other to help suppress wildfires. The Town of Athabasca is responsible for authority regarding structural and wildland fires. For more detailed information refer to the Wildfire Preparedness Guide, section 1.



Map 6: Wildfire Mitigation Strategy Planning Area Overview Map

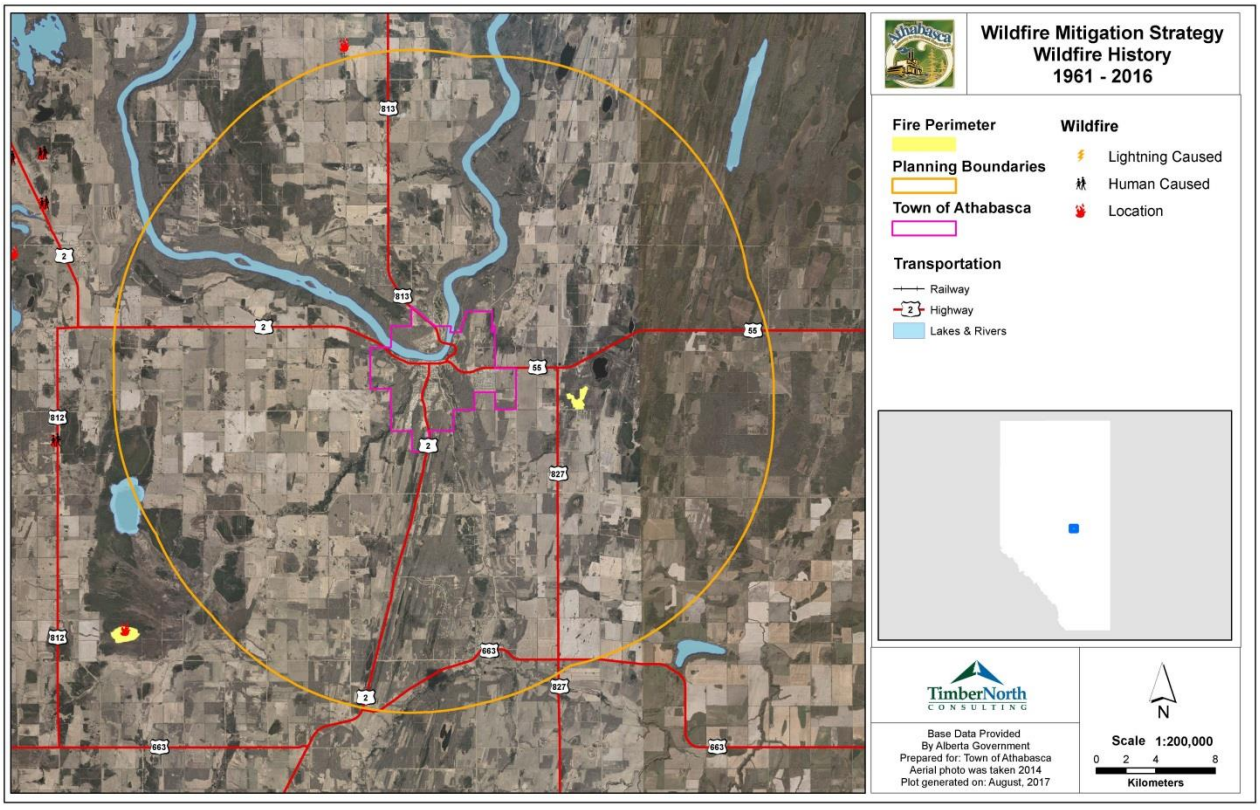
2.2 FIRE HISTORY

Wildfire within the boreal forest region of Alberta is a natural and frequent reality. Throughout the fire season both lightning and human-caused wildfires are common in the adjacent Athabasca County.

Within the study area, man has been the primary cause of wildfires. The Town of Athabasca and the Athabasca Industrial Park area have had 2 man-caused wildfires, 1 of which was caused by residents within a six mile radius of the study area between the years of 1961-2016 (see the Wildfire History map). Man is responsible for 100% of the total fires, and resident-caused fires account for 50% of the man-caused fires indicating a need for resident education regarding safe burning techniques (Table 2). The data in the Wildfire History table is supplied by Alberta Agriculture and Forestry.

YEAR	MAN-CAUSED	LIGHTNING-CAUSED	TOTAL NUMBER OF WILDFIRES
1961-1970	0	0	0
1971-1980	1	0	1
1981-1982	0	0	0
1983-1989	0	0	0
1990-1995	0	0	0
1996-2000	0	0	0
2001-2003	1 (Resident)	0	1
2004-2016	0	0	0
TOTAL	**2**	**0**	**2**
PERCENT	**100%**	**0%**	**100%**

Table 2: Wildfire History - Town of Athabasca and Athabasca Industrial Park Study Area 1961-2016



Map 7: Wildfire Mitigation Strategy Wildfire History 1961-2016 Map

2.3 HAZARD AND RISK ASSESSMENT

Wildland/Urban Interface hazard assessments were completed on structures, vegetation and fuel types in the study area. Assessments were done within 0–30 m of the structures and considered a list of 11 factors. The assessments were done in order to collect data on hazard ratings to establish an awareness of problem areas or areas of concern. The assessment results provide a foundation to develop recommendations to mitigate the fire hazards.

The Structure and Site Hazard Assessments (PIP, 2003) were conducted on developments in the study area. There are eleven factors evaluated within 30 meters of the structure. These factors have the greatest influence on structural survival during a wildfire (Figure 1):

Factors assessed:

1. Roofing material
2. Roof cleanliness
3. Building exterior
4. Eaves, vents, and openings
5. Balcony, deck, or porch
6. Window or door glazing
7. Location of nearby combustibles
8. Setback from edge of slope
9. Forest vegetation (overstory)
10. Surface vegetation
11. Ladder fuels

For the developments within the study area, average conditions were used for the overall assessments. It is imperative to understand that individual structures within the development may have a higher or lower hazard rating depending on the type of materials used to build the structure and the amount of defensible space surrounding the structure.

Area Hazard Assessments (PIP, 2003) were conducted with each structure and site assessment completed. The Area Hazard Assessments (figure 1) concentrate on the area 30 m beyond the structure. These assessments consider five factors that may determine the spread of wildfire to structures or structural fires to the Wildland Urban Interface. The five factors are as follows:

12. Forest vegetation (overstory)
13. Surface vegetation
14. Ladder fuels
15. Slope
16. Position on slope

The Area Hazard Assessment results are shown along with the Structure and Site Hazard Assessment Results (Tables 3 and 4).

Area Hazard Assessment forms were utilized to identify fuel types within representative coniferous, deciduous, mixedwood, and grass vegetation types adjacent to developments in the study area. These assessments evaluate five factors beyond 30 m of the structures. Ten sample plots were surveyed using the Area Hazard Assessment form (PIP, 2003) to obtain an area hazard class (Table 5).

In assessing the study area, the infrastructure must be considered. The infrastructure reviews consider access routes, utilities, available water supply, and open spaces. It is imperative that emergency response crews have access to a water supply and residential evacuation routes are in place.

Based on the following ranges, the structure, site and area hazard values were obtained and a hazard rating was assigned accordingly:

Site Hazard Class	Site Hazard Value
Low	<21
Moderate	21-29
High	30-35
Extreme	>35

The assessment results were completed with the consideration of the worst-case scenario, when the fire weather indices are extreme and fuel moisture contents are low (e.g. grass is in a spring/fall state). The typical vegetation types were identified during the collection of the Area Hazard Assessment plots and then utilized to obtain timber types for similar stands.

STRUCTURE AND SITE HAZARD ASSESSMENT FORM

Surveyor:_____ Date:_____ Plan:_____ Block:_____ Lot:_____

Factor	Characteristics and point ratings				Score
1 Roofing material	Metal,tile,asphalt, ULC-rated shakes or non-combustible material		Unrated wood shakes		
	0		30		
2 Roof cleanliness	No combustible material	Scattered combustible material,<1 cm in depth	Clogged gutter,combustible material ..1 cm in depth		
	0	2	3		
3 Building exterior	Non-combustible stucco or metal siding	Log,heavy timbers	Wood or vinyl siding or wood shake		
	0	1	6		
4 Eaves, vents and openings	Closed eaves, vents screened with 3 mm mesh and accessible	Closed eaves, vents not screened with 3 mm mesh	Open eaves, vents not screened, debris accumulation		
	0	1	6		
5 Balcony, deck or porch	None,or fire-resistant material sheathed in	Combustible material, sheathed in	Combustible material, not sheathed in		
	0	2	6		
6 Window and door glazing	Tempered	Double Pane		Single Pane	
		Small/medium	Large	Small/medium	Large
	0	1	2	2	4
7 Location of nearby combustibles	None or >10 metres from structure	<10 metres from structure			
	0	6			
8 Setback from edge of slope	Adequate	Inadequate			
	0	6			
9 Forest vegetation (overstory)	Deciduous	Mixed wood	Coniferous		
			Separated	Continuous	
<10 metres	0	30	30	30	
10 - 30 metres	0	10	10	30	
10 Surface vegetation	Lawn or non-combustible material	Wild grass or shrubs	Dead and down woody material		
			Scattered Abundant	Abundant	
<10 metres	0	30	30	30	
10 - 30 metres	0	5	5	30	
11 Ladder fuels	Absent	Scattered	Abundant		
10 - 30 metres	0	5	10		
				Total Score for Factors 1 - 11	

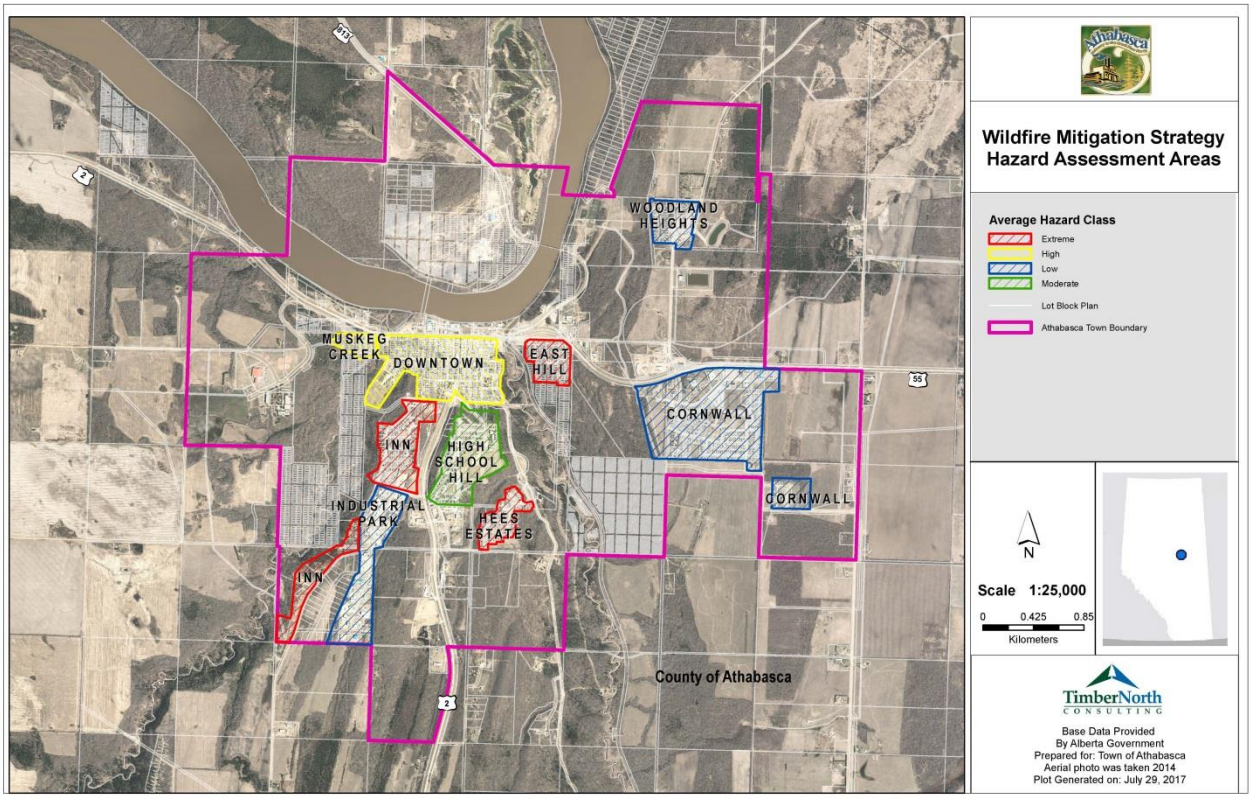
Structure and Site
Hazard Level Low <21 points Moderat e 21-29 points High 30-35 points Extreme >35 points

AREA HAZARD ASSESSMENT FORM

Factor	Characteristics and point ratings				Score
12 Forest vegetation (overstory)	Deciduous	Mixed wood	Coniferous		
			Separated	Continuous	
	0	15	15	30	
13 Surface vegetation	Lawn or non-combustible material	Wild grass or shrubs	Dead and down woody material		
			Scattered	Abundant	
	0	5	5	15	
14 Ladder fuels	Absent	Scattered	Continuous		
	0	5	10		
15 Slope	0 - 10%	10 - 25%		>25%	
		Even	Gullied	Even	Gullied
	0	4	5	8	10
16 Position on slope	Valley bottom or lower slope	Mid-slope	Upper-slope		
	0	3	5		
				Total Score for Factors 12 – 16	

Area Hazard Level
Hazard Level Low <21 points Moderate 21-29 points High 30-35 points Extreme >35 points

Figure 1- Structure and Site Hazard Assessment Form



Map 8: Wildfire Mitigation Strategy Hazard Assessment Areas Map

The hazard assessment area was broken down into two main areas; the Town of Athabasca and the Athabasca Industrial Park. As the Town is made up of varying landscapes and terrain, a further division break-down into smaller areas was deemed appropriate. These areas are listed by their common name (Map 8) and the final summary numbers are recorded in the following tables.

Common Name	**Average Hazard Class**
East Hill	Extreme
Hees Estates	Extreme
Inn	Extreme
Downtown	High
Muskeg Creek	High
Highschool Hill	Moderate
Cornwall	Low
Woodland Heights	Low
Summary	
Town of Athabasca	High

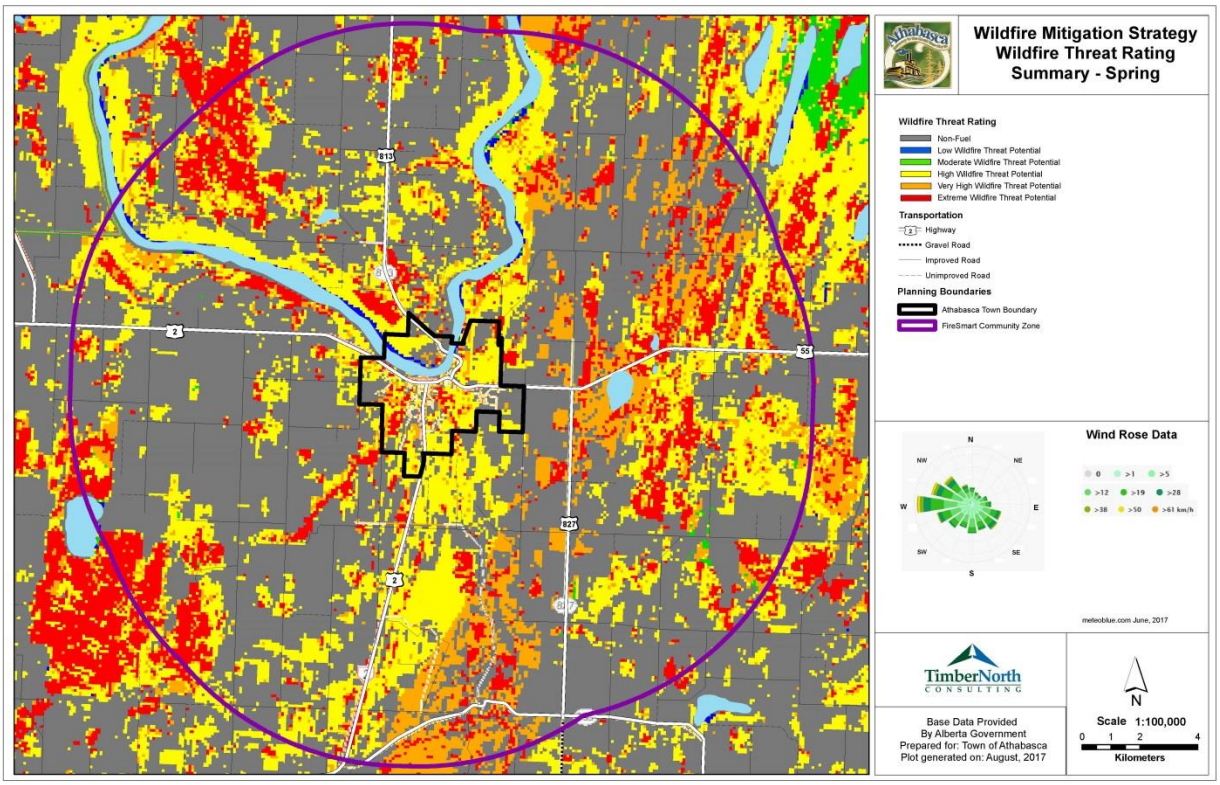
Table 3: Town of Athabasca Structure, Site and Area Hazard Assessment

Common Name	Average Hazard Class
Industrial Park	Low

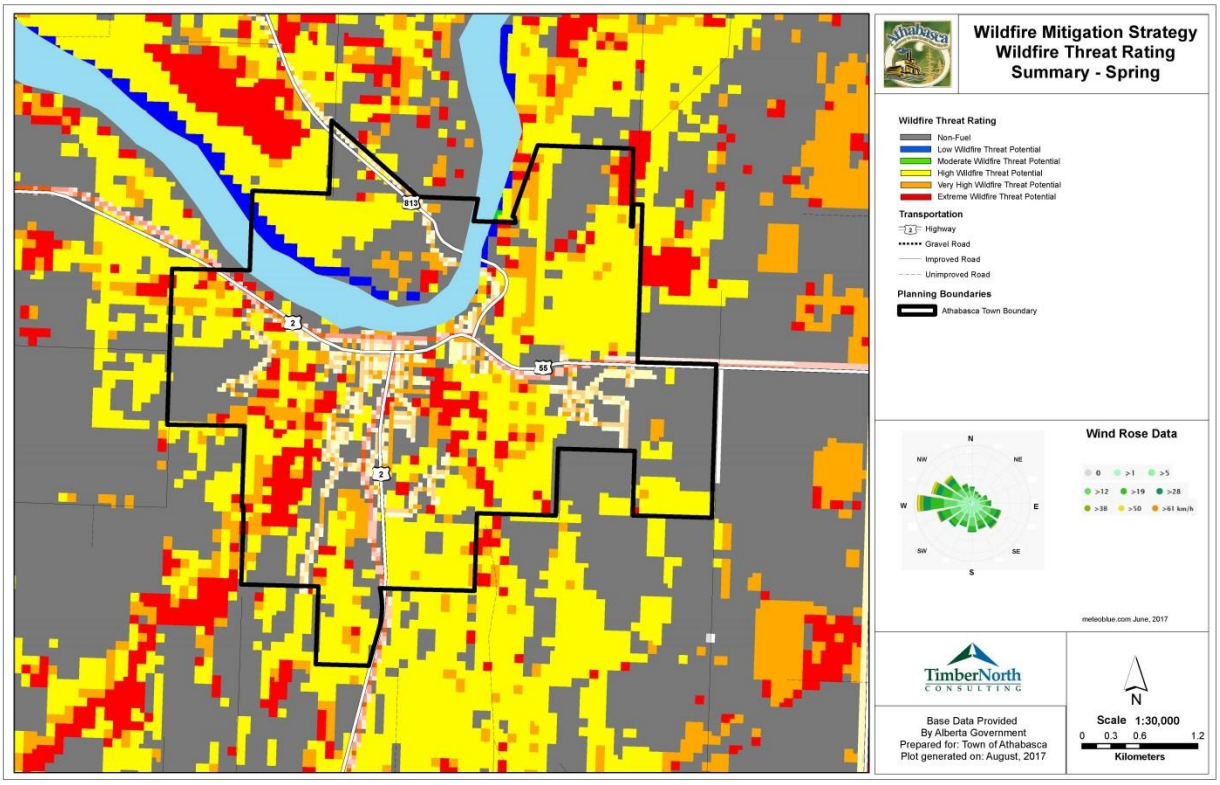
Table 4: Athabasca Industrial Park Structure, Site and Area Hazard Assessment

Based on the hazard assessments completed, the tables indicate varying levels of hazard classes throughout Athabasca. Areas with higher amounts of pavement or cement and newer homes such as the Industrial Park and Cornwall subdivision show a lower hazard class than the East Hill or the Inn area which are older homes with treed lots. Areas with Moderate to Extreme hazard classes would be the areas to concentrate FireSmart activities such as education on how to have a FireSmart property and programs to assist home owners to remove woody yard debris.

The following Wildfire Threat Rating Summary Maps (Maps 9 and 10) identify the Wildfire threat rating within and adjacent to The Town. They indicate the threat potential and will assist managers in prioritizing for mitigating work. As well, the map may provide further information for developers, municipal planners and fire officials prior to planning or approving developments regarding area hazards within the Wildland/Urban Interface. Very high to extreme areas leading into the Town boundary can be referred to as fire wick areas. These areas provide entry points that contain fuels that could help support or promote a wildfire. These would be areas to concentrate FireSmart activities.



Map 9: Wildfire Mitigation Strategy Wildfire Threat Rating Map



Map 10: Wildfire Mitigation Strategy Wildfire Threat Rating Map (Town View)

2.3.1 TOWN OF ATHABASCA

Developments within the Town of Athabasca consist of residential and mobile homes. The risk of wildfire to structures and structural fires to the Wildland/Urban Interface could be significant in dry seasons or during the spring and fall, as the majority of the timber consists of Trembling Aspen, Balsam Poplar, White Spruce, Black Spruce, Willow with some Jack Pine. The lack of defensible space between forest fuels and structures could be a cause for concern.

The majority of the forested area is deciduous (D1) consisting primarily of Trembling Aspen and Balsam Poplar. The forested area is quite dense and there is a considerable amount of dead and down woody material, as well as a build-up of ladder fuels. There are some mixedwood (M1) stands consisting of Trembling Aspen, Balsam Poplar and White Spruce and coniferous (C1) stands consisting of pure White and Black Spruce. Undeveloped lots and reserves in the Town of Athabasca are predominantly deciduous (D1), consisting of Trembling Aspen and Balsam Poplar with some mixedwood (M1) Trembling Aspen, Balsam Poplar and White Spruce.

The Town of Athabasca Wildland/Urban Interface structural hazard average was high (32) due primarily to the main structural materials used. Lack of defensible space, the amount of ladder and surface fuels leading to the development also contribute to the hazard level.

Common Name	Structure Hazard Value (Avg.)	Area Hazard Value (Avg.)	Hazard Class (Avg.)
East Hill	67	29	Extreme
Hees Estates	58	23	Extreme
Inn	56	28	Extreme
Downtown	38	20	High
Muskeg Creek	54	14	High
High school Hill	22	9	Moderate
Cornwall	17	2	Low
Woodland Heights	41	18	Low
Town Summary	**44**	**19**	**High**

Table 5: Town of Athabasca Hazard Assessment

Photo10 – Town of Athabasca showing a lack of defensible space

Photo 11 – Town of Athabasca good defensible space

Photo 12 – Town of Athabasca lack of defensible space

The structures within the Town of Athabasca mainly consist of metal, asphalt or non-combustible roofing material (98%).

Urban Location	Roofing material	%	Siding Material	%
Town of Athabasca	Metal, asphalt or non-combustible material	98	Vinyl, wood or wood shake	79
	Unrated wood shakes	2	Non-combustible stucco or metal	19
			log/heavy timbers	2

Table 6: Athabasca Roofing Materials

Photo 13 – Town of Athabasca: structure of unrated wood shake roofing with unrated wood shake and wood siding

Photo 14 – Town of Athabasca, deck made of combustible material not sheathed in

In most cases the forest overstorey or surface vegetation is >10 m from structures and does not pose a threat or high risk of fire either to the structure or the wildland. The Town of Athabasca

Structure and Site Hazard Assessment resulted in 52% of the decks, balconies, and porches being made of combustible material and not sheathed in. A significant amount of the residents in the Town of Athabasca (46%) have woodpiles or combustibles within 3 meters.

Urban Location	Porches, balcony, deck or porch not sheathed in	Combustibles and woodpiles <10m
Town of Athabasca	52%	46%

Table 7: Athabasca Decks and Combustibles

Photo 15 – Firewood and combustibles against home

There are 6 access routes into the Town of Athabasca which do not pose a problem for large vehicle or two-way traffic. The turnaround at the access to the Athabasca River is adequate for water trucks. The turnarounds at the end of 42nd Street north and south are inadequate and should be enlarged.

Photo 16 – Access

Most of the lots have access to a surplus of water as the Town of Athabasca has multiple fire hydrants located throughout the developments and subdivisions. The Athabasca River will provide a surplus of water. There are also water reservoirs in Athabasca located at 47th Avenue and 54th Street, 48th Avenue and 33rd Street, as well as University Drive. There are two water treatment plants, one on the Riverfront between Extra Foods and Home Hardware, and the newest facility on Wood Heights Road. All of these facilities are electric powered filling stations. The local Athabasca Fire Department provides structural and wild fire suppression.

Most of the Power supply is underground to the properties and structures, primarily in the newer developments. The power lines that are overhead are in the older developments and are mostly free of trees. Hazard tree identification and removal should be initiated in these areas.

Fuel and propane tanks should have a 10m defensible space from structures and 3m from vegetative fuels. There were no propane or fuel tanks within 10m of structures assessed (unless attached to a barbeque).

2.3.2 ATHABASCA INDUSTRIAL PARK

The development within the Athabasca Industrial Park consists of business offices and outbuildings. The risk of wildfire to structures and structural fires to the Wildland/Urban Interface could be significant in dry seasons during the spring and fall, as the majority of the timber consists of Trembling Aspen, Balsam Poplar, White Spruce, Black Spruce, Willow with some Jack Pine. The lack of defensible space between forest fuels and structures could be cause for concern.

The majority of the forested area within the area is deciduous (D1) with Trembling aspen and Balsam Poplar. The forested area is quite dense and there is a considerable amount of dead and down, as well as, ladder fuels. There are some mixedwood (M1) stands consisting of Trembling

Aspen, Balsam Poplar and White Spruce. Undeveloped lots and reserves in the Athabasca Industrial Park are predominantly wild grass with some deciduous (D1) stands consisting of Trembling Aspen and Balsam Poplar.

The Athabasca Industrial Park Wildland/Urban Interface structure hazard average was low (11) due to main structure material, defensible space and lack of combustible materials within 30m.

Name	Structure Hazard Value (Avg.)	Area Hazard Value (Avg.)	Hazard Class (Avg.)
Athabasca Industrial Park	11	10	Low

Table 8: Athabasca Industrial Park Hazard Assessment Summary

The structures within the Athabasca Industrial Park mainly consist of metal, asphalt or non-combustible roofing material (100%).

Urban Location	%	Roofing material	%	Siding Material
Athabasca Industrial Park	100	Metal, asphalt or non-combustible material	100	Non-combustible stucco or metal

Table 9: Athabasca Industrial Park Roofing and Siding Materials

Photo 17 – Athabasca Industrial Park, metal siding and roofing, good defensible space

In most cases the forest overstorey or surface vegetation is >10m from structures and does not pose a threat or high risk of fire either to the structure or the wildland. Athabasca Industrial Park

structures do not have existing decks, balconies, or porches. A significant amount of the Industrial Park structures (50%) have woodpiles or combustibles within 10m.

Urban Location	Porches, balcony, deck or porch not sheathed in	Combustibles and woodpiles <10m
Athabasca Industrial Park	0%	50%

Table 10: Athabasca Industrial Park Decks and Combustibles

Athabasca Industrial Park has two access routes and a possible third that has only been developed as a trail. An alternate route should be installed. The south end of 53rd Street is a dead end. There is no true turnaround, thus making it difficult for large emergency vehicles to maneuver. The turnaround at the end of 53rd Street should be increased or a t-turnaround developed.

Most of the lots have access to a surplus of water as the Town of Athabasca has multiple fire hydrants located throughout the developments. The Athabasca River will provide a surplus of water. There are also water reservoirs in Athabasca located at 47th Avenue and 54th Street, 48th Avenue and 33rd Street, as well as University Drive. There are two water treatment plants on the Riverfront between Extra Foods and Home Hardware, and the newest facility on Wood Heights Road. All of these facilities are electric powered filling stations. The local Athabasca Fire Department provides structural and wild fire suppression.

Power supply is overhead and mostly free of trees. Hazard tree identification should be initiated and remedied in these areas.

Fuel and propane tanks should have 10m defensible space from structures and 3m from vegetative fuels. No propane or fuel tanks are within 10m of structures assessed or require 3m defensible space from vegetation.

2.3.3 RECOMMENDATIONS

Town of Athabasca

1. Through the use of the Area Hazard Assessment Form (PIP, 2003), area site hazards can be identified prior to development, thus allowing land use planners, developers, and fire officials the opportunity to involve fire-smart development practices and guidelines in the development planning and approval process.

2. Revisions of the site hazard assessments should be done as fuel modification projects occur, prior to developments which affect the overall site hazard of an area.

Athabasca Industrial Park

1. Through the use of the Area Hazard Assessment Form (PIP, 2003), area site hazards can be identified prior to development, thus allowing land use planners, developers, and fire officials the opportunity to involve fire-smart development practices and guidelines into the development planning and approval process.

2. Revisions of the hazard assessments should be done as fuel modification projects occur, prior to developments which affect the overall site hazard of an area.

2.4 VEGETATION MANAGEMENT OPTIONS

The goal of vegetation management is to create a "defensible space" by reducing or eliminating flammable vegetation surrounding structures and at strategic locations on the community perimeter. Defensible space is a relatively fuel-free zone from which firefighters can stage their attack to stop structural fires from spreading to the surrounding wildland vegetation or to stop wildland fires from spreading to the structure (PIP, 2003).

Consideration may be given to the combination of structural and infrastructure options in pre-planning a fire-smart development. If development has already occurred, vegetation management is often the only option available for fire-smart planning.

The following options for vegetation management could be considered in combination:

- Fuel removal
- Fuel reduction
- Species conversion

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

Vegetation management is required in areas referred to as priority zones (Figure 2).

Priority Zone 1: This area is the most critical and is the immediate 10 meters in all directions surrounding a building. Within Zone 1 the main objective is to create and maintain defensible space. It is important to eliminate the chance for fire to be fueled and spread up to the structure or from the structure to other fuels. Vegetation management recommended for priority zone 1 is both fuel removal and species conversion.

Photo 18 - Priority zone 1

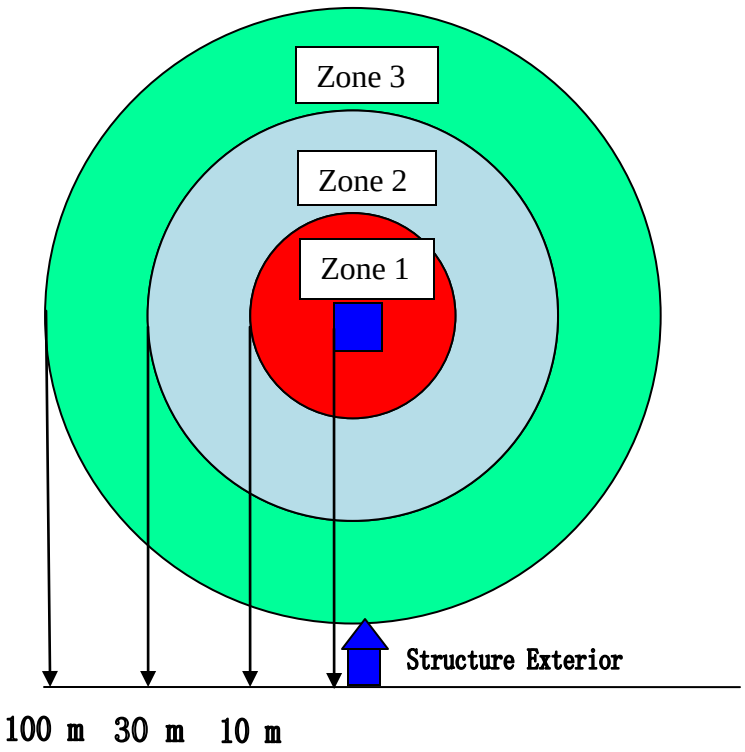
Priority Zone 2: This area starts 10m from the structure and extends to 30m immediately around the structure. Within zone 2 the main objective is to ensure that only fires of low intensity and rate of spread can exist. Vegetation management recommendations for priority zone 2 may include fuel removal and/or reduction as well as species conversion.

Photo 19 - Priority zone 2

Priority Zone 3: This area begins 30m from the structure and extends to 100m and beyond. Within Zone 3 the main objective is only required in the event that steep slopes or dense to moderately dense continuous coniferous vegetation pose a hazard. Vegetation management recommended for priority Zone 3 is fuel removal and/or reduction.

Photo 20 - Priority zone 3

Figure 2: Vegetation Management Priority Zones



There are a number of areas where attention should be given in respect to fuel modifications. Projects may include fuel removal in zone 1 immediately adjacent to structures, fuel reduction in developed areas to reduce wildfire intensity and rate of spread and the risk of structural fires from spreading to the surrounding fuel types, as well as landscape level forest management areas outside the communities.

The projects identified in this plan indicate general areas where fuel modification is recommended to reduce the risk to developments and the wildland interface. Detailed fire modification plans must be developed prior to the commencement of any of the recommended projects.

Fuel removal, reduction and species conversion in priority zone 1 are the primary proposed vegetation management methods.

Zone 1 defensible space of a minimum 10m with the following standards is recommended for structures in the study area:

- Removal of coniferous trees within 4m of the structure and overhanging the roof.
- Minimum 4.5m between crowns of coniferous overstorey and understory.
- Removal of ladder fuels from ground level to a minimum of 2m.
- Non-combustible surface material (maintained lawn, gravel, garden, and pavement).
- Minimum of 10m between woodpiles or combustibles and structures.

Fuel reduction is the primary proposed vegetation management method for zone 2. The only area where extended defensible space could ultimately be created is along municipal and ecological reserve boundaries against the developed properties. If the lots are small and close together the cooperation of adjacent lot owners is required. Priority zone 3 proposed vegetation management methods include fuel reduction, but shares the joint issue of small lots located in such close proximity to each other. The reduction of fuel in zones 2 and 3 is recommended in areas of high or extreme hazard, where stands adjacent to development.

2.4.1 LANDSCAPE-LEVEL FOREST MANAGEMENT

Town of Athabasca

The Town of Athabasca development is primarily surrounded by deciduous and mixedwood forests of high density with an abundance of wild grass, shrubs, some ladder fuels and dead and down woody debris. The Town of Athabasca and local residents should begin cooperative landscape-level forest management planning with the goal of reducing fuels in zones 1 and 2. Manual tending along the edge of the municipal and ecological reserves combined with debris cleanup would reduce the present hazard. Fuel reductions should be done on both Muskeg Creek and the Tawatinaw River.

Photo 21 – Lack of defensible space along Muskeg Creek

Photo 22 – Lack of defensible space on ridge east of Tawatinaw River

Photo 23 – Abundance of surface fuels from adjacent treed lot, wild grass and shrubs <10m from structure

Photo 24 - Well maintained yard, structure of wood shake roofing and cement/stucco siding

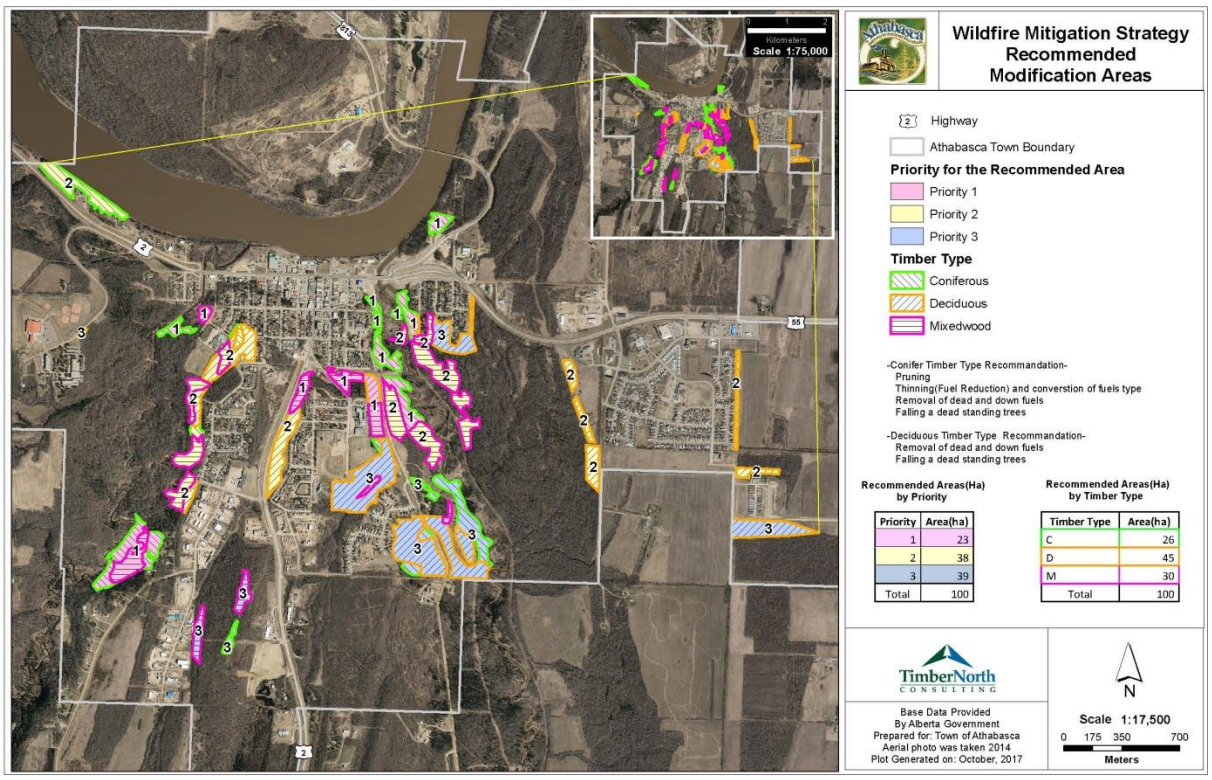
Athabasca Industrial Park

The Athabasca Industrial Park development is primarily surrounded by a deciduous forest of high density with abundance of wild grasses, shrubs, some ladder fuels and dead and down woody debris. The Town of Athabasca and Athabasca Industrial Park local businesses owners should begin cooperative landscape-level forest management planning with the goal of reducing fuels in zones 1 and 2. Fuel reductions should be done on both developed and undeveloped lots where wild grass is and in the forested areas where wild grass may be present.

2.4.2 MAINTENANCE OF FUEL MODIFICATIONS

Town of Athabasca and Athabasca Industrial Park

In order for fuel modifications to be effective it is important to maintain these fuel breaks on a regular basis. Fuel reduction involves reducing the canopy density; increasing sunlight to the forest floor which then promotes the growth of residual vegetation. Periodic maintenance and inspections of fuel modifications are required to reduce ground and surface fuel accumulation. Thinning and spacing of dense coniferous regeneration patches, and the removal of any overstorey trees that pose as a wildfire risk to developments will also contribute to the reduction of fuels. Inspections of these fuel modifications are recommended on a 5-year interval to review and evaluate the effectiveness of the fuel modification as a fireguard. The Town of Athabasca, along with the local residents will need to budget for these maintenance projects.



Map 11: Wildfire Mitigation Strategy Recommended Modification Areas

To minimize the threat of structure loss within the Town of Athabasca, potential areas for fuel modification have been identified on Map 11. The areas identified were selected based on the municipal landbase designation, whether they were private owned or Town owned, and by primary timber or fuel type. The areas were ranked by the order of priority and risk with 1 being the highest priority locations for fuel modification and 3 being the lowest priority. Fuel modification within these areas will provide fuel breaks between properties as well as other timber types that could potentially fuel a wildfire.

Photo 25 - Example of good defensible space of lawn or non-combustible material against structure contradicted by separated Spruce trees throughout yard that extend above roof

Photo 26 – Well maintained yard, vegetation maintained

2.4.3 RECOMMENDATIONS

Town of Athabasca

1. Zone 1 "defensible space" is imperative for all structures throughout the study area and must be maintained. The standards for zone 1 that are outlined in "Fire-Smart-Protecting Your Community from Wildfire" (PIP, 2003) are the recommended standards. Public education for residents on an annual basis is recommended for the success of the project.

2. Inspections completed at five year intervals for areas where fuel modification has occurred. Perform maintenance to the modified areas where required. Budgeting of funds for this purpose must be done.

3. Completion of fuel modification projects such as fuel removal within 10m of structures, pruning and thinning within 10-30m by landowners. Annual public meetings should address the need for these fuel modifications.

4. Fuel reduction should include ground and ladder fuel removal to reduce surface and ladder fuel availability surrounding and within the communities, between lots, and into the reserves to provide a fire guard.

5. Completion of forest fuel thinning along Tawatinaw River and Muskeg Creek within the Town of Athabasca.

6. Landscape Level Management consisting of fuel reduction south of the Town of Athabasca through the use of manual tending, and the removal of surface and ladder fuels.

7. Incorporate fire guards on agricultural crop perimeters by creating a non-vegetative barrier in order to reduce the potential of crop fires carrying through to the wildland and the wildland to crops during the drier seasons such as spring and fall.

Athabasca Industrial Park

1. Zone 1 "defensible space" is imperative for all structures throughout the study area and must be maintained. The standards for zone 1 that are outlined in "Fire-Smart-Protecting Your Community from Wildfire" (PIP, 2003) are the recommended standards. Public education for residents on an annual basis is recommended for the success of the project.

2. Inspections completed at five year intervals for areas where fuel modification has occurred. Perform maintenance to the modified areas where required. Budgeting of funds for this purpose must be done.

3. Completion of fuel modification projects such as fuel removal within 10 meters of structures, pruning and thinning within 10-30m by landowners. Public annual meetings should address the need for these fuel modifications.

4. Fuel reduction should include ground and ladder fuel removal to reduce surface and ladder fuel availability surrounding and within the communities, between lots, and into the reserves to provide a fire guard.

5. Maintenance of fine grass fuels on undeveloped lots and between structures and forested areas within the Athabasca Industrial Park.

6. Incorporate fire guards on agricultural crop perimeters by creating a non-vegetative barrier in order to reduce the potential of crop fires carrying through to the wildland and the wildland to crops during the drier seasons such as spring and fall.

2.5 DEVELOPMENT OPTIONS

Wildland/Urban Interface Planning is becoming more important and recognized as a safety issue in Alberta. The planning and construction of structures, subdivisions, access routes, and utilities of new developments will address Urban Interface concerns. Certain choices may be legislated by Provincial Statute or Municipal Bylaw and some may be implemented by developers and municipal landuse planners as wildfire risks are considered in planning and development processes. Fire-smart issues are important in every stage of development and should be considered and put into action.

Development of structures should consider location, forest overstorey type, construction materials, and additions such as porches, balconies, and decks. Infrastructure includes access route design, utility installation, accessibility of water source, location of parks and open spaces.

2.5.1 EXISTING DEVELOPMENTS

Existing developments within the study area vary in regards to roofing material, siding material, the layout of the development, access routes and utility installation design. Characteristics of structural and infrastructure for each development are summarized in Tables 11 and 12.

Structural Options

Structural engineering and materials that contribute to a structures ability to resist ignition from wildfire includes a number of components. Roofing and siding material are the main components of priority. The position of the structure should also be considered. Whether it is raised up and opens underneath or closed in to the ground, to eliminate entry points for fire. Structure location should be considered in relation to steep forested slopes. Proper construction and maintenance of eaves, vents, and openings where flammable debris may accumulate and provide a source of fine fuel for firebrands and an entry for wildfire should also be addressed.

Photo 27 – Garage and home constructed of wood shake roofing and siding. East and west sides of the home are wood. Accumulation of surface fuels of wood chips in flowerbeds 5 inches thick and moss build up on the north side of the structures

Photo 28 – Wood slabs around base of home

Photo 29 – Exposed insulation on base of home

Although many factors contribute to the ability of a structure to withstand wildfire ignition, flammable roofing materials are the main cause of structure loss in Wildland/Urban Interface areas (PIP, 2003). Wildfires create airborne firebrands, which can travel great distances ahead of a fire. Firebrands that land on combustible roofing material, such as unrated wood shakes, will usually ignite the structure. Roofing material such as metal, tile, asphalt, or ULC-rated wood shakes pressure treated with fire-retardant are less prone to ignition from airborne firebrands. Wood shakes factory pressure treated with fire retardant chemical may provide a Class A, B, or C fire rating dependent upon shake rating and method of installation, and present a reduced risk of ignition than unrated wood shake roofing. Within the study area roofing material is not a current issue as 98% of roofing material is asphalt (refer to Table 6).

Photo 30 – Asphalt roofing

Photo 31 – Unrated wood shakes roofing

After the roof, siding material is the structural component most vulnerable to wildfire. Intense radiant heat, contact with direct flame and airborne firebrands lodging on and against the structure exterior are a major source of structure ignitions (PIP, 2003). The combination of

siding material fire resistance and the amount of defensible space around the structure will determine if the structure will survive the wildfire. Non-combustible siding materials such as, stucco, metal, concrete, and rock provide the most protection for fire resistance and should be utilized in areas with high and extreme Wildland/Urban Interface site hazard. Combustible material such as vinyl, wood or wood shake siding, provide little protection from wildfire and could be utilized in areas with adequate defensible space and a low Wildland/Urban Interface hazard.

Town of Athabasca

Of the 52 structures assessed, 41 (79%) had vinyl, wood or wood shake siding. This is a significant amount and can be an issue of concern in areas where structures lack defensible space from the forest overstorey.

Photo 32 – Vinyl Siding

Athabasca Industrial Park

At present, of the 4 structures assessed, all 4 (100%) had non-combustible, stucco or metal siding.

Photo 33 – Metal siding and roofing

Urban Location	Roofing material	Siding Material
Town of Athabasca	98% metal/asphalt/non-combustible material 2% unrated wood shakes	79% vinyl/wood/wood shake 19% Non-combustible/stucco/metal 2% log/heavy timbers
Athabasca Industrial Park	100% metal asphalt or non-combustible material	100% Non-combustible stucco or metal

Table 11: Exterior Structural Materials

Locations of structures should be considered, as it also is important in the survival of the structure. Structure location should include setback from the edge of slopes, and the proximity of flammable-forested slopes. A minimum of 10 meters defensible space between fuels and structures should be accounted for when determining the location of the structures on lots within a development. Structures on lots with steep forested slopes below should be situated a minimum of 10m back from the crest of the slope (PIP, 2003).

Other factors contributing to structural ignition risks include decks, porches, combustible materials adjacent to the structure, location of woodpiles and fire pits. Admittedly it is difficult for municipalities to control these structural features through the legislative process. Education workshops targeting the education of residents on developing and maintaining fire-smart homes is the most practical and effective method recommended for dealing with this issue.

Infrastructure Options

Effective and efficient response to an interface fire depends on the emergency crews' ability to access the area. Roads must be wide enough to support simultaneous ingress of emergency vehicles and egress of the public. Bridges must provide sufficient capacity to hold large fire equipment. Utilities must allow safe passage of emergency vehicles and not be threatened by wildfire. It is important to have sufficient water to fight the fire and protect structures. Parks and open spaces that serve as defensible space from which emergency crews can safely suppress the fire. Considerations of these factors in the planning and development stage are concerns of developers, municipal planners, and fire department officials.

Access

Access route standards specified in "FireSmart-Protecting Your Community from Wildfire" (PIP, 2003) are the recommended minimum guidelines for interface developments.

ACCESS ROAD STANDARD	TRAVELED SURFACE WIDTH (m)	MAXIMUM GRADE (%)
Roadway Standard (>1 Parcel)	6.1	10
Driveway Standard (>45m off road)	3.7	10

Table 12: Recommended Access Route Standards (PIP 2003)

Town of Athabasca

The main access routes to the Town of Athabasca are adequate. The roads within the study area are wide and most provide for two-way traffic and the turnaround surface areas are sufficient to support the needs of turning an emergency vehicle. There is only one access utilized for the mobile home park at Aspen Village, the second potential access is the emergency fire lane, which is closed off by a locked gate. Within the development east of the Tawatinaw River both 42nd and 45th Streets have only one access as the back alleys are not developed or maintained. The back alley between 48th and 49th Ave is only 3m wide and may support emergency vehicles, however, it only provides for one-way traffic. The development near the graveyard has only one access route. Canyon Road (Industrial Park) is 8m wide and will support two-way traffic. By the Athabasca Inn, 54th Street south is a dead end road which is inadequate for two-way traffic, and the turnaround is insufficient for emergency vehicles. The main driveway access for the Muskeg Creek development residents of Block 2 on both 58th and 59th Streets is the back alley, which is only wide enough to support one-way traffic. Muskeg Creek, 63rd Street and 6483 MC have a no exit sign and no turnaround. 43rd Street over by the bridge was never built. Traveled-surface gradients are satisfactory; most turn-around radii are inadequate for ingress and egress of emergency vehicles. Dead end roadways longer than 90m should be provided with a turnaround at the terminus having no less than 36m outside diameter of traveled way (PIP, 2003).

Photo 34 – 3.0m wide back alley, East Hill between 48th and 49th avenue

Access roads are mostly two-way through routes with loop or cul de sac turns. The dead end road design would be much more effective in supporting traffic if the radii of turnarounds at the end of the roadways were increased. An alternative to the dead end roads would be a second access route. The Town of Athabasca has a few alternate access routes, thus reducing the potential of heavy congestion if there was an emergency evacuation (see Table 13- Existing Infrastructure). The Tawatinaw River and Muskeg Creek are two areas where development of lots and roads have been proposed and never built. Development of some of the proposed access or alternate access routes, primarily for the one way no through routes should be put in place.

Photo 35 – Overgrown back alley

Photo 36 – Back alley/trail

Photo 37 – No through route, no turnaround other than driveway

Photo 38 – Through route, wide roadway

Photo 39 – Through route, wide roadway

Athabasca Industrial Park

The main access route to the study area of Athabasca Industrial Park is adequate for two-way traffic. The turnaround at the end of 53rd Street is non-existent. Traveled-surface, gradient are satisfactory and would support ingress and egress of emergency vehicles. Dead end roadways longer than 90 m should be provided with a turnaround at the terminus having no less than 36 m outside diameter of traveled way (PIP, 2003).

Access roads are mostly two-way with no through route roads and loop turns in parking lots or shop yards. The dead end road design would be much more effective in supporting traffic here if the radius of the turnaround at the end of 53rd Street was increased. An alternative to the dead end roads would be a second access route. The Athabasca Industrial Park has an alternate access route part way down 53rd Street where Canyon Road intersects, thus reducing the potential of heavy congestion on the north end if there was an emergency evacuation. However, there is still a need to develop a turnaround at the south end of 53rd Street (see Table 14: Existing Infrastructure).

Photo 40 – 53rd Street no through route, wide roadway

Water Supply

Water supply is the tool most imperative to firefighters for the suppression of fires. A surplus amount of water is required to support the needs of water trucks and pumps, and must carry enough volume, pressure and capacity to provide water after electrical power is no longer available.

The Athabasca River provides a sufficient water supply to support surrounding communities. Muskeg Creek and the East Hill will support water pumps. Fire hose could reach most of the lots within the study area from fire hydrants. The residents in the area use town water. There are also water reservoirs in Athabasca located at 47th Avenue and 54th Street, 48th Avenue and 33rd Street, as well as University Drive. There are two water treatment plants, one on the Riverfront between Extra Foods and Home Hardware, and the newest facility on Wood Heights Road. All of these facilities are electric powered filling stations. All of these facilities are electric powered filling stations.

Utilities

Electric power and gas are the utilities affected by an interface fire. Appropriate planning and installation of these services may reduce the risk to residents and emergency response personnel.

Electrical Power

Overhead power lines are a possible source of ignition for interface fires, or may burn down during a fire, possibly causing a power outage.

The power lines in the study area are overhead in the older developments and underground in the newer developments. There are a number of lots in the older developments in the Town of Athabasca and in the Athabasca Industrial Park where the power lines are overhead and have trees overtopping them and growing into them from below. It is recommended that the local power company initiate an annual hazard tree identification and removal program along all overhead power line right-of-ways within the developments in the study area. Residential lots should be included in the project as well.

Photo 41 – Power lines overhead and clear

Photo 42 – Power lines overhead mostly clear

Photo 43 – Power lines overhead and low

Gas

Natural gas and propane are used for heating. Within the Town of Athabasca and the Athabasca Industrial Park the permanent structures and mobile homes are primarily gas heated. Within the study area there were no propane tanks noted, this is not to say there are not any structures with propane heating. Recommendations include a minimum of 3m of non-combustible buffer surrounding propane tanks and a minimum of 10m between propane tanks and any structure (PIP, 2003). Public education of residents is recommended regarding these standards.

Due to the potential hazard large propane tanks pose, all large propane tanks (500 lbs and over) should be inspected to ensure adequate defensible space and appropriate distance from structures for all installations.

Table 13: Town of Athabasca Existing Infrastructure

Power/Gas Installation	Water Supply	Roadway Descriptions	Width	Comments
Power - Overhead	Town Water	Main access		Two lane, pavement, paved
Underground and overhead		28 Street, two sections, Cornwall	8.7 m and 12 m	Two way, two route, paved
Gas - Natural Gas		Birch Street turns into Aspen Drive West, Cornwall	7.0 m	One way, through route, paved
		Aspen Drive East, Cornwall	7.1 m	One way, through route, paved
		Aspen Drive East visitor parking, Cornwall	52x6.7 m	
		48 Avenue only built between 42 and 44 Streets, Cornwall	11.3 m	Two way, two route, paved
		Whispering Hills Drive, Cornwall	12.0 m	Two way, two route, paved
		46 Avenue, Cornwall	9.5 m	Two way, two route, paved
		27 Street, Cornwall	9.5 m	Two way, through route, paved
		45 Avenue, Cornwall	9.5 m	Two way, through route, paved
		Cornwall Drive	12.0 m	Two way, through route, paved
		30 street, Cornwall	9.5 m	Two-way, through route. paved
		32 Street, Cornwall	9.6 m	Two way, loop turn
		32 Street turnaround, Cornwall	23.0 m	
		45 Avenue, Cornwall	9.6 m	Two way, loop turn
		45 Avenue turnaround, Cornwall	19.3 m	
		44 Avenue, Cornwall	7.2	Gravel
		42 Street, East Hill	8.8 m	Two way, loop turn

Power/Gas Installation	Water Supply	Roadway Descriptions	Width	Comments
		42 Street North turnaround, East Hill	15.0 m	
		42 Street South turnaround, East Hill	13.0 m	
		49 Avenue, East Hill	10.5 m	Two way, no through
		43 Street only built to 48 Avenue, East Hill		Two way, through route
		44 Street only built to 48 Avenue, East Hill r		Two way, two routes
		49 Avenue, only built from 42 to 44 Street, East Hill	10.5 m	Two way, two routes
		45 Street only built south of 49 Avenue, half paved/gravel, East Hill	10.5 m 4.5 m	Two way, no through
		46 Street, East Hill	NA	Not built
		3468 NY	7.5 m	Two way, no through
		35 Street	NA	Not built
		Balsam Avenue	NA	Not built
		Aspen Lane	NA	Not built
		Poplar Lane	NA	Not built
		Secondary Road 818, Rodeo grounds	5.0 m	Two way, no through gravel
		47 Street, North portion, Down Town	NA	Not built
		47 Street south of 49 Avenue, Down Town	7.2 m	Two way, five routes, gravel
		49 Avenue, Down Town	11.3 m	Two way, two routes, gravel and paved
		48 Avenue, Down Town	7.0 m	Two way, two routes, gravel

Power/Gas Installation	Water Supply	Roadway Descriptions	Width	Comments
		47A Avenue, Down Town	10.2 m	Two way, through route, paved
		47 Avenue, Down Town	9.5 m	Two way, three routes, paved
		Hees Drive, Hees Estates	10.5 m	Two way, through route, paved
		Hees Drive turnaround, Hees Estates	NA	Not built
		Hees Court Crescent, Hees Estates	9.0 m	Two way, Cul de sac turn
		Hees Court Crescent turnaround, Hees Estates	23.5 m	Cul de sac turn
		Pearson Drive, Hees Estates	9.2 m	Two way, through route, paved
		49 Street west of Hees Estates	NA	Not built
		Ellefson Street, Hees Estates	8.0 m	Two way, through route, paved
		41 Avenue, High School	10.2 m	Two way, three routes, paved
		50 Street, High School	10.5 m	Two way, two routes, paved
		52 Street, High School	10.3 m	Two way, three routes, paved
		44 Avenue, High School	10.4 m	Two way, three routes, paved
		45 Avenue, High School	11.4 m	Two way, two routes
		Canyon Road, Jewells	8.0 m	Two way, two routes, gravel
		54 Street, Inn south	5.7 m	Two way, no through, loop turn, gravel
		54 Street turnaround, Inn south	16.3 m	
		54 Street, Inn	10.0 m	Two way, two routes, paved

Power/Gas Installation	Water Supply	Roadway Descriptions	Width	Comments
		43 Avenue, Inn	9.2m	Two way, two routes, paved
		53 Street, Inn south	9.2 m	Two way, two route, paved
		44 Avenue, Inn	9.2 m	Two way, two route, paved
		53 Street, Down Town	12.2 m	Two way, multi route, paved
		48 Avenue off 53 Street, Down Town	6.3 m	Two way, two route, paved
		49 Avenue, Down Town	12.1 m	Two way, multi route, paved
		54 Street, Down Town	7.0 m	Two way, loop turn, paved
		54 Street, Down Town, turnaround	13.3 m	
		55 Street, Down Town	10.6 m	Two route, two route, paved
		57 Street, Muskeg Creek	5.3 m	Two way, loop turn, gravel
		57 Street turnaround, Muskeg Creek	12.7 m	
		58 Street, Muskeg Creek	10 m	Two way, through route, gravel
		49 Avenue, Muskeg Creek	7.0 m	Two way, through route, gravel
		59 Street, Muskeg Creek	5 m	Two way, through rough, gravel
		Back alley off 58+59 Street and 49 Avenue, Muskeg Creek (main driveway access)	3.0 m	One way, through route, gravel
		51A Avenue, Muskeg Creek	3.1 m	Two way, no through route, gravel
		47 Avenue, Muskeg Creek	NA	Not built
		48 Avenue, Muskeg Creek	NA	Not built

Power/Gas Installation	Water Supply	Roadway Descriptions	Width	Comments
		49 Avenue, Muskeg Creek	NA	Not built
		Secondary Road 813, Bridge		Two way, two route, paved

Table 14: Athabasca Industrial Park Existing Infrastructure

Power/Gas Installation	Water Supply	Access Standards	Width	Comments
Power - Overhead	Town Water	53 Street, becomes a trail south of Alexander Avenue	9.2 m	Two way, no through route
Gas - Natural Gas		Alexander Ave	4.0 m	Trail
		53 Street turnaround	NA	Not built

Parks and Open Spaces

Parks and open spaces not only increase aesthetics quality and provide recreational opportunities for the public, they also create defensible space. These areas should be incorporated into the planning and development stages to increase fire safety. Examples of open spaces include playgrounds, walkways, sports fields, public parking, and municipal reserves.

Photo 44 – Playground

Photo 45 – Walkway

Photo 46 – Walkway

Photo 47 – Parks and open spaces

Photo 48 – Parks and open spaces

They should be well kept and maintained with short grass or closely trimmed vegetation, a minimum of 30m from structures, and irrigated.

The agricultural developments of fields surrounding the community of the Town of Athabasca and Athabasca Industrial Park, the school yards, playgrounds and sports fields when in their green state are good examples of open areas as a defensible space

2.5.2 FUTURE DEVELOPMENTS

The municipality/town and the developer should consider wildfire in the planning and approval process. Hazard assessment maps should assist in determining the risk of wildfire to the new development area. In the event that a risk is identified, the municipality should request a Wildfire Risk Assessment from the developer, prior to the approval of the development, in order to include options of mitigation in the planning process. Wildfire Risk Assessments outline fire-smart development options, such as vegetation management, and structural and infrastructure controls.

Vegetation management projects can be reduced if wildfire risks are identified and included in the planning and development of future developments in the municipality.

Town of Athabasca

Future development within the study area appears to be limited; there are few to no treed lots within the Town of Athabasca that have not yet been developed. There are also a number of blocks not developed due to environmental concerns of unstable soils and erosion concerns within the developments of Muskeg Creek and the Tawatinaw River.

Athabasca Industrial Park

Future development within the study area appears to be limited; there are few treed lots within the Athabasca Industrial Park that have not yet been developed.

2.5.3 RECOMMENDATIONS

Town of Athabasca

1. It is recommended that developments relying on electrical power supply for fire suppression water source purposes find an alternate backup power supply.

2. The use of parks and open spaces should be considered, incorporated and maintained as defensible space in the planning and development stages.

3. In planning for a new development, and prior to its approval, the developer should prepare a Area Hazard Assessment for any new developments in areas of high or extreme risk. Recommendations offered throughout the report should be implemented by developers and the Municipality as soon as possible.

4. Residential propane tank inspections should be coordinated through the County of Athabasca Emergency Services Department. Recommendations should be offered to homeowners on how to create proper defensible space.

5. The powerline owners should initiate an ongoing hazard tree identification and removal program, along with the power company to reduce the risk of wildfire ignition from power lines.

6. The roadways in Table 13 that do not meet the minimum standards shown in Table 12 should be upgraded to meet the standards.

7. The turnarounds in Table 13 that are at the end of roadways longer than 91 m should be upgraded and increased to an 18 m radius. Turnaround radii should be increased to support emergency vehicles.

8. The developments that have one access route or a proposed alternate access route not yet developed (Table 13) should consider upgrading existing access or developing an alternate for an emergency access route.

2.6 LEGISLATION & PLANNING DOCUMENTS

Legislation documents include the Alberta Building and Fire Codes, Municipal Bylaws and Guidelines, and various planning documents can all contribute in developing fire-smart communities. The Town of Athabasca working documents include the Municipal Development Plan, Land Use Bylaws and any related provincial statutes. Various statutes influence provincial government agencies including Forests Act, Forest and Prairie Protection Act, and Provincial Parks Act.

Developments are controlled through the use of Town of Athabasca Land Use By-law and the Alberta Building Codes for various communities.

2.6.1 TOWN OF ATHABASCA LEGISLATION

Town of Athabasca Land Use By-Law 13-10

The purpose of the Town of Athabasca Land Use By-law 13-10 is to regulate and control the use and development of land and buildings within the municipality to achieve the orderly and economic development of land (Town of Athabasca Land Use By-law 13-10).

Fire-smart practices should be integrated into the Land Use Bylaws. Bylaws should incorporate the following as fire safety issues:

- Structure set back from property boundary and steep slopes
- Landscaping requirements to reduce flammable vegetative fuels

The Town of Athabasca Land Use Bylaw does not include roofing materials. It is recommended that Land Use Bylaws include limits to roofing material to only use materials meeting a minimum Class U.L.C. fire rating.

The Bylaw does not include conditions of retention or removal of trees. These should be addressed in order to provide for defensible space.

Where wildfire hazards pose a restraint in a proposed area, applicants should complete an Area Hazard Assessment showing the biophysical concerns and the structural, infrastructure, and vegetation management option suggestions in order to mitigate the hazard.

Reference to closing in the underside of all homes should be included in the Land Use Bylaws. Structures that are open underneath have a buildup of debris and vegetative fuel that will allow a

wildfire to move in and engulf the structure completely. Sheathing in of decks, porches, and balconies is important to reduce entry points of firebrands to the structure.

The Land Use Bylaws give no notice to siding material and should have controls on materials of combustibility such as vinyl or wood siding in areas where there is a lack of defensible space between structures and fuels. Within areas of little defensible space only siding materials such as, metal, concrete, brick, stucco or logs and heavy timbers should be utilized.

Land Use Bylaws should be updated to include the strict enforcement of "no fires" during fire bans by the Town of Athabasca. Fire bans should also coincide with County of Athabasca and Alberta Agriculture and Forestry fire bans.

2.6.2 RECOMMENDATIONS

Town of Athabasca

1. Review and revise all municipal legislation and miscellaneous documentation by municipal administrators to ensure that documents contribute to the development of fire-smart communities.

2. Land Use Bylaws should incorporate standards for roofing material that meet the minimum of Class U.L.C. fire rating.

3. Land Use Bylaws should put controls on siding material of higher combustibility such as wood, vinyl or wood shakes in areas lacking in defensible space between fuels and structures. Areas lacking defensible space should be permitted to only utilize siding material of non or lesser-combustible materials such as; metal, brick, concrete, stucco, logs or heavy timbers.

4. Removal or retention of trees to provide visible defensible space between lots should be addressed in Section 2.6 of the Land Use Bylaws. Retention of an abundance of combustible vegetative fuels, which contributes to lack of defensible space, creates an increased risk hazard for fire.

5. The Town of Athabasca Bylaws should identify wildfire as a restriction to development in the same sense as flooding and erosion, and conduct planning measures to reduce the risks.

6. Area Hazard Assessment preparation by the developer, prior to development approval, should be included in the Land Use Bylaws for any new development considered at risk from a wildfire. The recommendations offered should be reviewed, approved and implemented by municipal governments and developers.

7. Fire-smart practices should be incorporated in the Land Use Bylaws in regards to development, vegetation management, structural, and infrastructure options.

8. Land Use Bylaws should integrate the sheathing in of all structures including decks, balconies and porches with non-combustible materials to eliminate or reduce entry points of firebrands to structures.

Athabasca Industrial Park

1. Review and revise all municipal legislation and miscellaneous documentation by municipal administrators to ensure that documents contribute to the development of fire-smart communities.

2. Land Use Bylaws should incorporate limits to roofing material that meet the minimum of Class U.L.C. fire rating.

3. Land Use Bylaws should put controls on siding material of higher combustibility such as wood, vinyl or wood shakes in areas lacking in defensible space between fuels and structures. Areas lacking defensible space should be permitted to only utilize siding material of non or lesser-combustible materials such as; metal, brick, concrete, stucco, logs or heavy timbers.

4. Removal or retention of trees to provide visible defensible space between lots should be addressed in Section 3.1 of the Land Use Bylaws. Retention of an abundance of combustible vegetative fuels, which contributes to lack of defensible space, creates an increased risk hazard for fire.

5. The Town of Athabasca Bylaws should identify wildfire as a restriction to development in the same sense as flooding and erosion, and conduct planning measures to reduce the risks.

6. Area Hazard Assessment preparation by the developer, prior to development approval, should be included in the Land Use Bylaws for any new development considered at risk from a wildfire. The recommendations offered should be reviewed, approved and implemented by municipal governments and developers.

7. Fire-smart practices should be incorporated in the Land Use Bylaws in regards to development, vegetation management, structural, and infrastructure options.

8. Land Use Bylaws should integrate the sheathing in of all structures including decks, balconies and porches with non-combustible materials to eliminate or reduce entry points of firebrands to structures.

2.7 PUBLIC EDUCATION

Public education is imperative for the successful completion of this plan through understanding and cooperation of all involved. In order for a fire-smart community to exist, residents, land developers, municipal government staff, elected officials, and fire officials all require Wildland/Urban Interface education on issues and the planning and development requirements. Stakeholders must be informed and aware of the goals and objectives of the 2017 Town of Athabasc FireSmart Community Plan and updated on the progress.

A variety of approaches toward public education can be taken such as:

- personal contact
- community meetings with local residents
- education of developers
- elected officials and municipal government staff workshops
- local media
- municipal newsletters
- existing public education material

2.7.1 PERSONAL CONTACT AND COMMUNITY MEETINGS

Personal contact with some residents within the study area has been established while completing the Structure and Site Assessments. This is an essential part of the public education program. Residents should be educated with the use of Structure Hazard Assessments forms. Community open houses are a good venue to inform them of the risks of living in the Wildland/Urban Interface, and to offer them options in order to minimize their risk. Public education must stress the need for the development and maintenance of good defensible space from wildland fuels.

Town of Athabasca Emergency Services Department representatives should combine their efforts to complete Structure and Site Hazard Assessments along with the landowner within the study area to educate local residents on their individual hazards and risk reduction options. This approach can offer good advice on structural fire safety, guidance on wildfire safety and offer further education to all involved.

The communities within the study area should be given a public presentation and hands on demonstrations of pump and hose assembly procedures. Other suppression practices such as sprinkler systems and the use of hand tools should be addressed.

2.7.2 MUNICIPAL GOVERNMENT EDUCATION

Education of government administration, elected officials and their staff helps determine to a great extent the success of a fire-smart community. Elected officials greatly influence the direction a community will follow and the administration that applies those decisions to development. The elected councillors and planning officials should have a basic understanding of the principles of developing a fire-smart community and utilize these principles to create developments that are fire-smart and acceptable to the public.

FireSmart Wildland/Urban Interface educational workshops are recommended for municipal council and administration responsible for development approval, as well as local planning developers. The workshops should include land use planning, fuel modification, structural and infrastructure design concerns and options.

2.7.3 PRINT MATERIAL

Various printed materials on Wildland/Urban Interface can be used for public education such as pamphlets, brochures, and other documents. These materials include:

DOCUMENT	TYPE	AGENCY
Town of Athabasca FireSmart Community Plan (2017)	Multi-discipline plan	-Town of Athabasca
County of Athabasca No. 12 Wildland/Urban Interface Plan (2004)	Multi-discipline plan	-AAF -County of Athabasca
FireSmart - Protecting Your Community from Wildfire (2003)	Community Planning/Public education document	-Partners in Protection
FireSmart Homeowner's Manual	Pamphlet	-AAF
FireSmart Homeowner's Assessment	Pamphlet	-AAF
FireSmart Home Development Guide	Document	-AAF
FireSmart – Less Flammable Vegetation	Video	-AAF
Wildfire – Beware and Prepare	Pamphlet and Video	-AAF

Table 15: AlbertaWildland/Urban Interface Education Materials

The "FireSmart – Protecting Your Community from Wildfire" (PIP, 2003) publication provides fact sheets for public education to be utilized by municipalities to communicate with local residents on the issues of Wildland/Urban Interface.

It is recommended that copies of the "Town of Athabasca FireSmart Community Plan (2017)" be made available for review and kept at the Town of Athabasca office. Also multiple copies of "FireSmart – Protecting Your Community from Wildfire" (PIP, 2003) be made available to the public and kept at the local library.

2.7.4 LOCAL MEDIA

Utilization of local media can be an important and valuable resource for continuing education and informing the public on the issues of Wildland/Urban Interface. Informative media can be local radio stations, newspapers, and community newsletters.

The use of media is most effective throughout the fire season to ensure that residents are aware of the current wildfire hazard and the issues of Wildland/Urban Interface. It is important that fire

officials are familiar with the news and in contact with the local stations to educate them on Wildland/Urban Interface concerns to ensure accuracy of event reporting. The local newspapers should be informed of upcoming issues and ensure that the right information is delivered to the public.

2.7.5 RECOMMENDATIONS

Town of Athabasca

1. Town of Athabasca Emergency Services Department representatives should conduct structural hazard assessments with homeowners upon request in order to educate homeowners on Wildland/Urban Interface.

2. Establish and provide workshops on Wildland/Urban Interface with municipal administration, developers and elected officials to heighten and confirm awareness of Wildland/Urban Interface planning issues and mitigation options.

3. Offer public information workshops and hold open houses in order to educate the public on Wildland/Urban Interface issues and future projects in the study area.

4. Utilize the Wildland/Urban Interface public education materials from "FireSmart-Protecting Your Community from Wildfire" (PIP, 2003).

5. Provide limited copies of the "Town of Athabasca FireSmart Community Plan (2017)" to be available for review upon sign out at the Town of Athabasca office.

6. Provide copies of the "FireSmart-Protecting Your Community from Wildfire" (PIP, 2003) to the public and the local library.

7. Add the Alberta Agriculture and Forestry Wildfires web link to the Town of Athabasca's web page.

Athabasca Industrial Park

1. The Town of Athabasca and the County of Athabasca Emergency Services Department representatives should conduct structural hazard assessments with business owners upon request in order to educate business owners on Wildland/Urban Interface.

2. Establish and provide workshops on Wildland/Urban Interface with municipal administration, developers and elected officials to heighten and confirm awareness of Wildland/Urban Interface planning issues and mitigation options.

3. Offer public information workshops and hold open houses in order to educate the public on Wildland/Urban Interface issues and future projects in the study area.

4. Utilize the Wildland/Urban Interface public education materials from "FireSmart-Protecting Your Community from Wildfire" (PIP, 2003).

5. Provide limited copies of the "Town of Athabasca FireSmart Community Plan (2017)" to be available for review upon sign out at the Town of Athabasca office.

6. Provide copies of the "FireSmart-Protecting Your Community from Wildfire" (PIP, 2003) to the public and the local library.

7. Add the Alberta Agriculture and Forestry Wildfires web link to the Town of Athabasca's web page.

2.8 INTERAGENCY COOPERATION AND CROSS-TRAINING

Interagency cooperation and cross training between all stakeholders is imperative for an effective and success response to a Wildland/Urban Interface fire. Cross-training and cooperation amount the stakeholders will ensure Wildland/Urban Interface mitigation options are implemented effectively and cooperatively. The stakeholders within the study area are:

- County of Athabasca No. 12 Administration
- Town of Athabasca
- Athabasca Fire Department
- County of Athabasca Emergency Services Department
- Royal Canadian Mounted Police
- Alberta Agriculture and Forestry Department

2.8.1 PRESENT STATUS

Interagency cooperation between the Town of Athabasca and Alberta Agriculture and Forestry has been initiated in the form of a Mutual Aid Fire Control Plan agreement. This agreement defines operating procedures and responsibilities and allows cooperating agencies to request assistance within their jurisdiction from the other to help suppress wildfires. With the cooperation of the Town of Athabasca representatives, through resource and information sharing and planning, the "Town of Athabasca FireSmart Community Plan (2017)" has been completed.

2.8.2 RECOMMENDATIONS

Town of Athabasca

1. Emergency response agencies should provide mock emergency response exercises, equipment demonstrations, and procedures to ensure preparedness for a Wildland/Urban Interface emergency.

2. The Town of Athabasca and the County of Athabasca should combine efforts in order to develop and maintain a wildfire suppression and prevention plan.

3. The Town of Athabasca and the County of Athabasca should work together to complete the suggested recommendations within this report.

Athabasca Industrial Park

1. Emergency response agencies should provide mock emergency response exercises, equipment demonstrations, and procedures to ensure preparedness for a Wildland/Urban Interface emergency.

2. The Town of Athabasca, the County of Athabasca and the Athabasca Industrial Park should combine efforts in order to develop and maintain a wildfire suppression and prevention plan.

3. The Town of Athabasca and the County of Athabasca should work together to complete the suggested recommendations within this report.

2.9 EMERGENCY RESPONSE PLANNING

Emergency response planning and preparedness are important to a community's survival in the face of disaster. During an interface fire there are a number of important components, such as: organization, clear chain of command, effective and clear communications, and job responsibilities clearly defined and understood, in order to successfully react to the situation.

The Athabasca Fire Department provides emergency response fire services within the study area of the Town of Athabasca and Athabasca Industrial Park. Some of the training that the Members of the Athabasca Fire Department take includes:

- Incident Command System (ICS) 100 and 200
- Wildland Urban Interface (WUI)-S215 – sprinkler training
- National Fire Protection Association (NFPA) – standard
- National Fire Protection Association (NFPA) – 1001 professional
- National Fire Protection Association (NFPA) – 1002 Driver Operator standard
- Training in Basic Emergency Management
- Training in Basic Emergency Coordination

It is important that training be kept up to date. Additional training should also include the Alberta Agriculture and Forestry's Basic Firefighter Safety.

The study area is outside the Forest Protection Area of Alberta, therefore any structural and wildfire responses, along with suppression and protection is the responsibility of the Town of Athabasca.

2.9.1 PRESENT EMERGENCY PLANNING INITIATIVES

Town of Athabasca

Presently the County of Athabasca Emergency Response Plan is in place. This plan includes the Town of Athabasca. The Athabasca Fire Department provides structural fire suppression to the Town of Athabasca. There are fire hydrants throughout the developments.

Athabasca Industrial Park

Presently the Athabasca Regional Emergency Response Plan is in place. This plan includes the Town of Athabasca. The Athabasca Fire Department provides structural fire suppression to the Athabasca Industrial Park. There are fire hydrants throughout the development.

2.9.2 RECOMMENDATIONS

Town of Athabasca

1. Emergency response agencies should establish mock Wildland/Urban Interface emergency response exercises to ensure individuals, equipment, and procedures are prepared for a Wildland/Urban Interface fire.

2. The Town of Athabasca and the County of Athabasca should combine efforts in order to develop and maintain a wildfire suppression and prevention plan.

3. Members of the Athabasca Fire Department's minimum training should include the Alberta Agriculture and Forestry's Basic Firefighter Safety.

4. Implement a sprinkler plan for structures within the community that are at risk to wildfire, and review the plan every 2 years.

Athabasca Industrial Park

1. Emergency response agencies should establish mock Wildland/Urban Interface emergency response exercises to ensure individuals, equipment, and procedures are prepared for a Wildland/Urban Interface fire.

2. The Town of Athabasca and the County of Athabasca should combine efforts in order to develop and maintain a wildfire suppression and prevention plan.

3. Members of the Athabasca Fire Department's minimum training should include the Alberta Agriculture and Forestry's Basic Firefighter Safety.

4. Implement a sprinkler plan for structures within the community that are at risk to wildfire, and review the plan every 2 years.

Examples of fire suppression equipment:

Photo 49- Fire and Rescue Trailer

Photo 50 - Wildland Fire Fighting Equipment

Photo 51- ATV with Water Tank and Hose

Photo 52 – UTV Equipped with Water Pump

Photo 53 – Sprinklers on roof

Photo 54 – Gas powered pump and hose caddy with foam injection

Photo 55 – Oshkosh Truck

2.10 IMPLEMENTATION PLAN

The implementation of a Wildland/Urban Interface plan is a lengthy process. Some of the recommendations offered in this plan can and should be implemented immediately, while others are long-term projects that may take a number of years to complete.

The goal of the implementation plan is to set short-term and long-term objectives based on priorities for each section of the plan. Objectives for the short-term should be completed within two years and the long-term within the next five years.

The Town of Athabasca and Athabasca Industrial Park share the responsibility for the implementation of the plan. Members of each of the agencies should gather annually to discuss and prioritize for the year, based on the implementation plan. Available resources and budget funds for the project will determine the completion of the objectives.

2.10.1 SHORT-TERM IMPLEMENTATION PRIORITIES

OPTIONS	SHORT-TERM PRIORITIES	IMPLEMENTING AGENCIES
SECTION 2.3 HAZARD AND RISK ASSESSMENT	1. Review and use of the Wildland/Urban Interface hazard assessments and maps in order to identify site hazards for areas of previous and future developments (Recommendation 2.3.3-1, 2.3.3-2).	-Town of Athabasca -Athabasca Industrial Park

OPTIONS	SHORT-TERM PRIORITIES	IMPLEMENTING AGENCIES
SECTION 2.4 VEGETATION MANAGEMENT	1. Develop zone 1 and zone 2 defensible space guidelines for present and future developments and put them into effect (Recommendation 2.4.3-1).	-Town of Athabasca -Residents
	2. Begin fuel reduction projects at both the Town of Athabasca and Athabasca Industrial Park to reduce surface and ladder fuels both in the communities and reserves (Recommendation 2.4.3-3, 2.4.3-4).	-Town of Athabasca -Residents
	3. Develop and maintain thinning as a line of defense on both Tawatinaw River and Muskeg Creek (Recommendation 2.4.3-5).	-Town of Athabasca
	4. Complete Landscape Level Management south of the Town of Athabasca (manual tending,) (Recommendation 2.4.3-6).	-Town of Athabasca
	5. Advise private land owners to establish fuel breaks along crop perimeters adjacent to forested lands and communities during dry seasons (Recommendation 2.4.3-7).	-Town of Athabasca -Landowners

OPTIONS	SHORT-TERM PRIORITIES	IMPLEMENTING AGENCIES
SECTION 2.5 DEVELOPMENT OPTIONS	1. Those relying on electrical power to support water pumps for backup water supply find an alternate power source (Recommendation 2.5.3-1).	-Town of Athabasca
	2. Include and maintain parks and open spaces in the development and planning of existing and future developments to provide defensible space (Recommendation 2.5.3-2).	-Land Developers -Town of Athabasca
	3. Ensure Wildfire Risk Assessments are completed prior to new developments within wildfire risk areas (Recommendation 2.5.3-3).	-County of Athabasca -Land Developers -Town of Athabasca
	4. Propane tank inspections should be conducted to ensure defensible space between them, structures and vegetation (Recommendation 2.5.3-4).	-Athabasca Fire Department -Town of Athabasca
	5. Hazard tree identification and removals should be conducted annually with the cooperation of the power line owners (Recommendation 2.5.3-5).	-Town of Athabasca -Utility company
	6. Upgrades traveled roads and turnaround surfaces to meet standards (Recommendation 2.5.3-6).	-Town of Athabasca
	7. Upgrades to increase turnaround radii to meet standards and support emergency vehicles (Recommendation 2.5.3-7).	-Town of Athabasca
	8. Upgrade existing access or install an alternate/emergency access route in developments where there is only one access route or where alternate access has been proposed and not built (Recommendation 2.5.3-8).	-Town of Athabasca

OPTIONS	SHORT-TERM PRIORITIES	IMPLEMENTING AGENCIES
SECTION 2.6 LEGISLATION AND PLANNING	1. Assist in developing fire-smart communities through review of municipal legislation and planning documents (Recommendation 2.6.2-1).	-Town of Athabasca
	2. Standards to be set to restrict the use of combustible building materials such as roofing and siding in areas of high to extreme hazard (Recommendations 2.6.2-2,2.6.2-3).	-Town of Athabasca
	3. Land Use Bylaw revisions to include fire hazards in the removal and retention of abundant combustible vegetative fuels in areas lacking defensible space (Recommendation 2.6.2-4).	-Town of Athabasca
	4. Amendments should be made to Municipal Development Plans and Land Use Bylaws to include and address wildfire as a restriction to development (Recommendation 2.6.2-5).	-Town of Athabasca
	5. Municipal Development Plans amended to ensure Wildfire Risk Assessments are completed for all new developments, prior to the development stage, in areas at risk of wildfire, within a reasonable time frame (Recommendation 2.6.2-6).	-Town of Athabasca
	6. Amendments should be made to Municipal Development Plans and Land Use Bylaws to consider Fire-Smart practices within developments, (vegetative management, structural, and infrastructure options) (Recommendation 2.6.2-7).	-County of Athabasca -Town of Athabasca
	7. Integration of the fire-smart concerns of sheathing in all structures, porches, balconies, and decks with non-combustible materials to eliminate or reduce entry points for firebrands (Recommendation 2.6.2-8).	-Town of Athabasca - Residents

OPTIONS	SHORT-TERM PRIORITIES	IMPLEMENTING AGENCIES
SECTION 2.7 PUBLIC EDUCATION	1. Structural Hazard Assessments should be conducted at the request of the homeowner (Recommendation 2.7.5-1).	-Athabasca Fire Department -Town of Athabasca Bylaw Officer
	2. Wildland/Urban Interface workshops and open houses should be held to inform and educate the public of issues within the study area (Recommendation 2.7.5-2, 2.7.5-3).	-Town of Athabasca -Alberta Agriculture and Forestry -County of Athabasca
	3. Utilize public education materials included in the publication "*FireSmart-Protecting Your Community From Wildfire"* (2003) (Recommendation 2.7.5-4).	-Town of Athabasca
	4. Make copies of the "*Town of Athabasca FireSmart Community Plan*" available for review upon sign out at the Town of Athabasca office. Also update the Town's website to include a link to the Alberta Agriculture and Forestry's Wildfire home page. (Recommendation 2.7.5-5, 2.7.5-7).	-Town of Athabasca
	5. Make available copies of "*FireSmart-Protecting Your Community From Wildfire"* (2003) to the public through the local library (Recommendation 2.7.5-6).	-Alberta Agriculture and Forestry -Town of Athabasca
SECTION 2.8 INTERAGENCY COOPERATION & CROSS-TRAINING	1. Emergency response exercises such as; equipment demonstration set up, use and procedures to ensure Wildland/Urban Interface emergency preparedness (Recommendation 2.8.2-1).	-Town of Athabasca -Athabasca Fire Department
	2. Maintain mutual aid agreement through the combined effort of emergency response agencies on wildfire prevention and suppression (Recommendation 2.8.2-2, 2.8.2-3).	-Alberta Agriculture and Forestry -Town of Athabasca

OPTIONS	SHORT-TERM PRIORITIES	IMPLEMENTING AGENCIES
SECTION 2.9 EMERGENCY RESPONSE PLANNING	1. Conduct demonstrations of emergency response exercises to ensure preparedness of equipment, procedures and individuals involved in the Wildland/Urban Interface (Recommendation 2.9.2-1).	-Athabasca Fire Department -County of Athabasca -Town of Athabasca
	2. The County of Athabasca No. 12 and the Town of Athabasca should combine efforts in order to develop and maintain a wildfire suppression and prevention plan (Recommendation 2.9.2-2)	-Athabasca Fire Department -County of Athabasca -Town of Athabasca
	3. Ensure all members of the Local Fire Department have been trained to a minimum of the Albert Agriculture and Forestry Basic Firefighter and Incident Command System course (Recommendation 2.9.2-3).	-Alberta Agriculture and Forestry
	4. Implement a sprinkler plan for structures within the communities that are at risk to wildfire to be updated every 2 years (Recommendation 2.9.2-4).	-Athabasca Fire Department

2.10.2 LONG-TERM IMPLEMENTATION PRIORITIES

OPTIONS	LONG-TERM PRIORITIES	RESPONSIBLE AGENCIES
SECTION 2.3 HAZARD AND RISK ASSESSMENTS	1. Amend Site Hazard Assessments and maps as fuel modification projects, development, and related components of the site are affected (Recommendation 2.3.3-2).	-Town of Athabasca
SECTION 2.5 DEVELOPMENT OPTIONS	1. Incorporate a back up power supply to access fire suppression sources (Recommendation 2.5.3-2).	-Town of Athabasca
SECTION 2.7 PUBLIC EDUCATION	1. Provide for continued public education of issues regarding Wildland/Urban Interface to maintain awareness (Recommendation 2.7.5-3) .	-Town of Athabasca

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http://www.visitathabasca.ca/amenities/accommodations/campgrounds

APPENDICES

CANADIAN FOREST FIRE BEHAVIOR PREDICTION FUEL TYPES

MAPS – 11 x 17

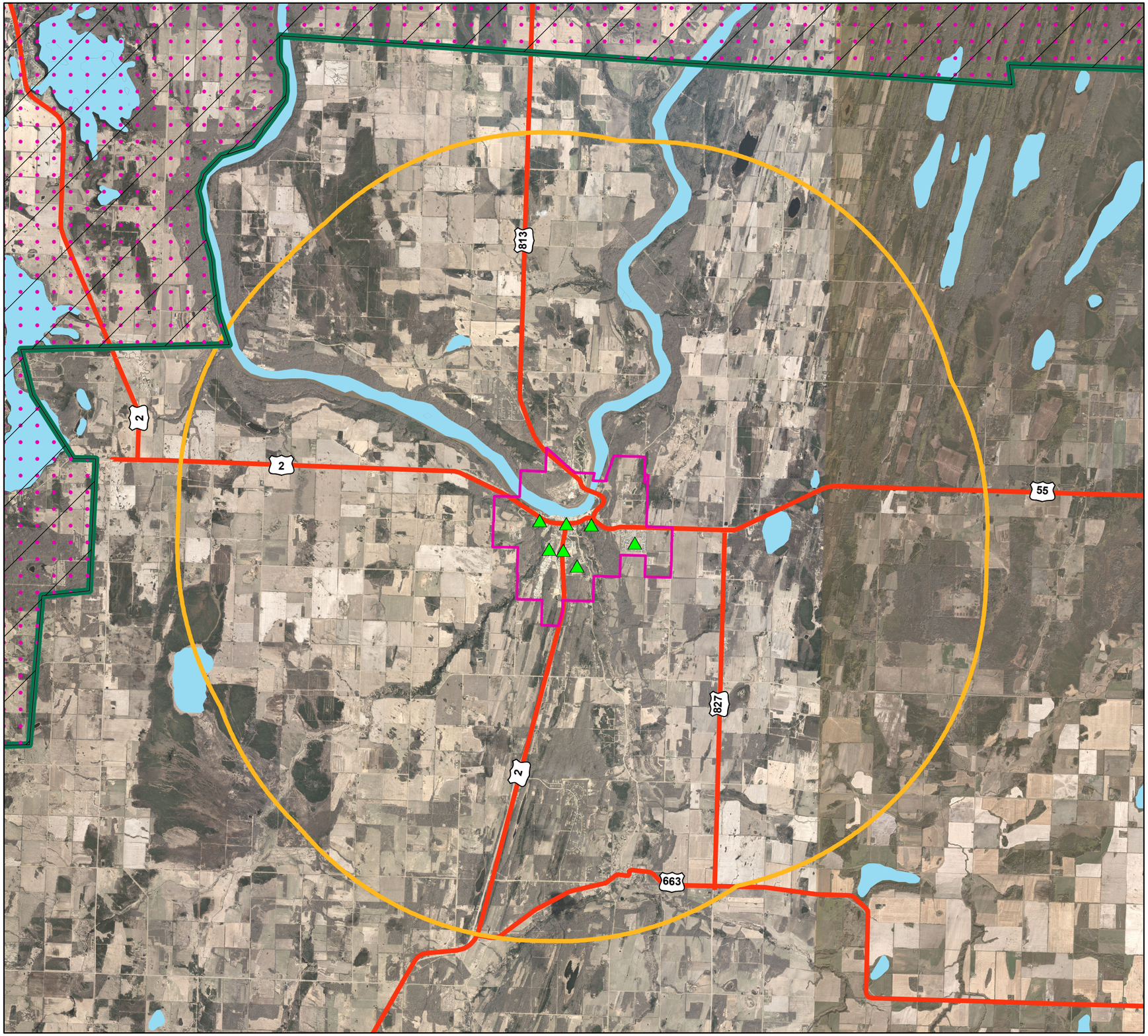
APPENDIX I - CANADIAN FOREST FIRE BEHAVIOR PREDICTION SYSTEM

The Canadian Forest Fire Behavior Prediction System is a systematic method for assessing Wildland fire behavior potential. It is a series of mathematical equations relating fire characteristics to wind, fuel moisture, and topographic conditions for sixteen benchmark fuel (vegetation) types. The fuel types in the study area include the following:

FUEL TYPE IDENTIFIER	DESCRIPTION	CHARACTERISTICS	EXPECTED WILDFIRE BEHAVIOUR UUNDER HIGH WILDFIRE DANGER LEVEL
C1	Spruce-Lichen Woodland	Open/sparse Spruce/Tamarack stands	Surface, Torching and Crowning
C2	Boreal Spruce	Moderately-dense to dense White/Black Spruce stands	Crown Fire
D1	Leafless Deciduous	deciduous stands dominated by Trembling Aspen	Surface Fire
M1	Boreal Mixedwood-Leafless	Mixedwood stands with Spruce, Pine, or Aspen. Flammability in spring and fall	Surface, Torching and Crowning
M2	Boreal Mixedwood-Green	Mixedwood stands with Spruce, Pine, or Aspen. Flammability in summer	Surface, Torching and Crowning
O1	Grass	Cured grass	Intense Surface Fire
NF	Non-fuel	Cleared areas, rock, sand	
WA	Water	Creeks, lakes	

APPENDIX II – MAPS 11 x 17

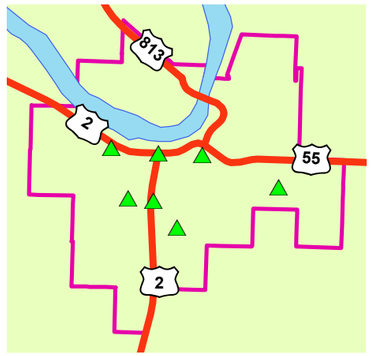
Wildfire Mitigation Strategy
Planning Area Overview



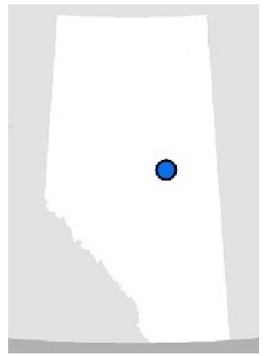
- Populated Area
- Highway
- Water Body
- Athabasca Town Boundary
- FireSmart Community Zone

Forest Areas

- Forest Protection Area
- Lac La Biche Forest Area



Town of Athabasca



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Prepared for: Town of Athabasca
Aerial photo was taken 2014
Plot Generated on: June, 2017

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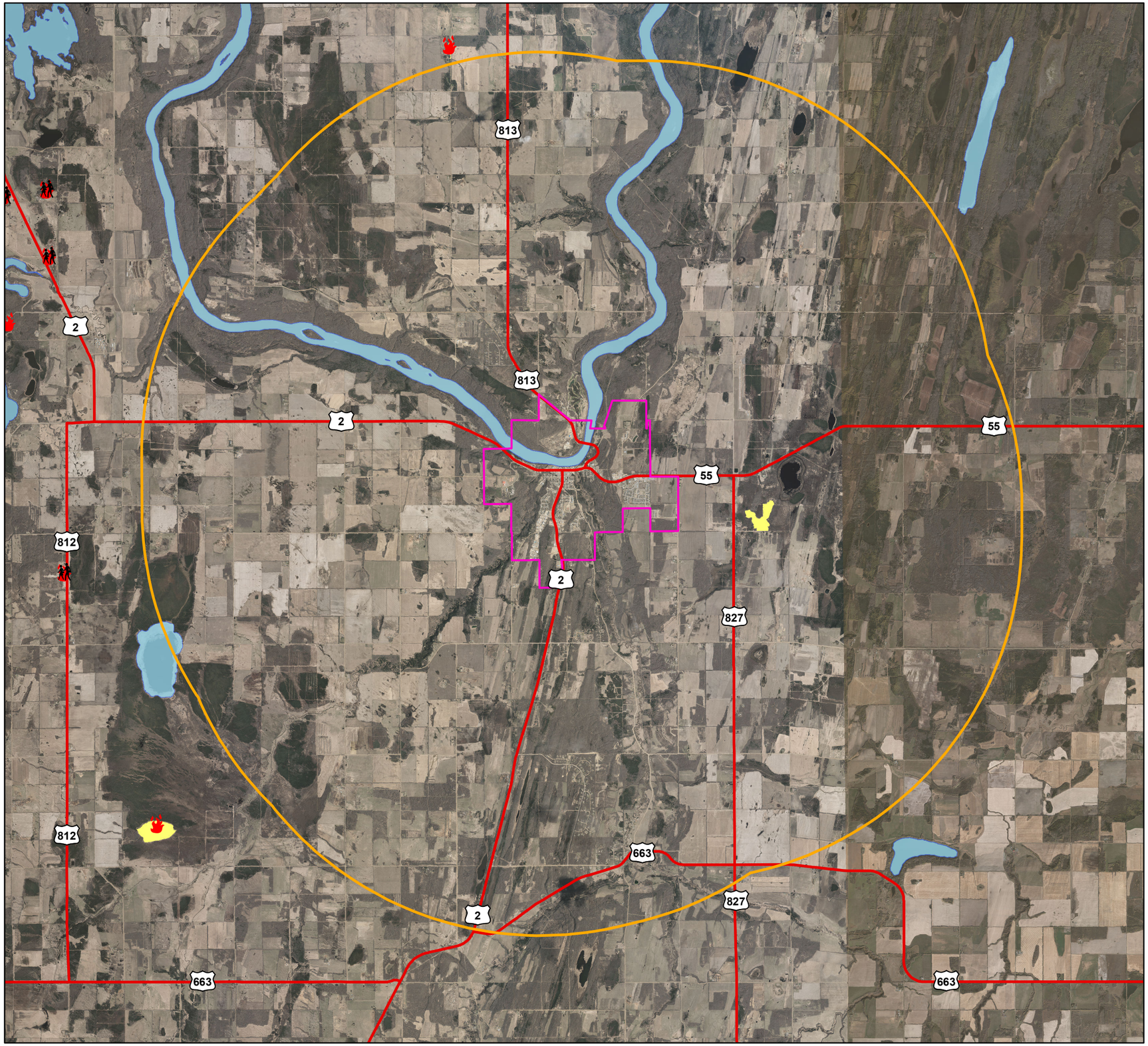
Kilometers

Wildfire Mitigation Strategy
Wildfire History
1961 - 2016



Fire Perimeter

Planning Boundaries

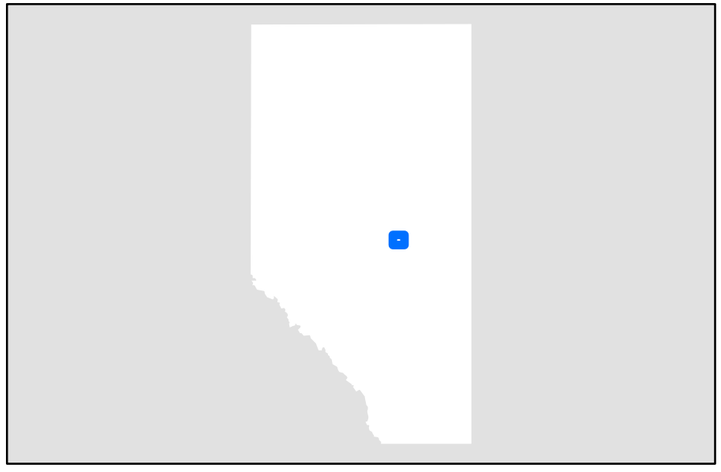
Town of Athabasca

Transportation

- Railway
- 2 Highway
- Lakes & Rivers

Wildfire

- Lightning Caused
- Human Caused
- Location



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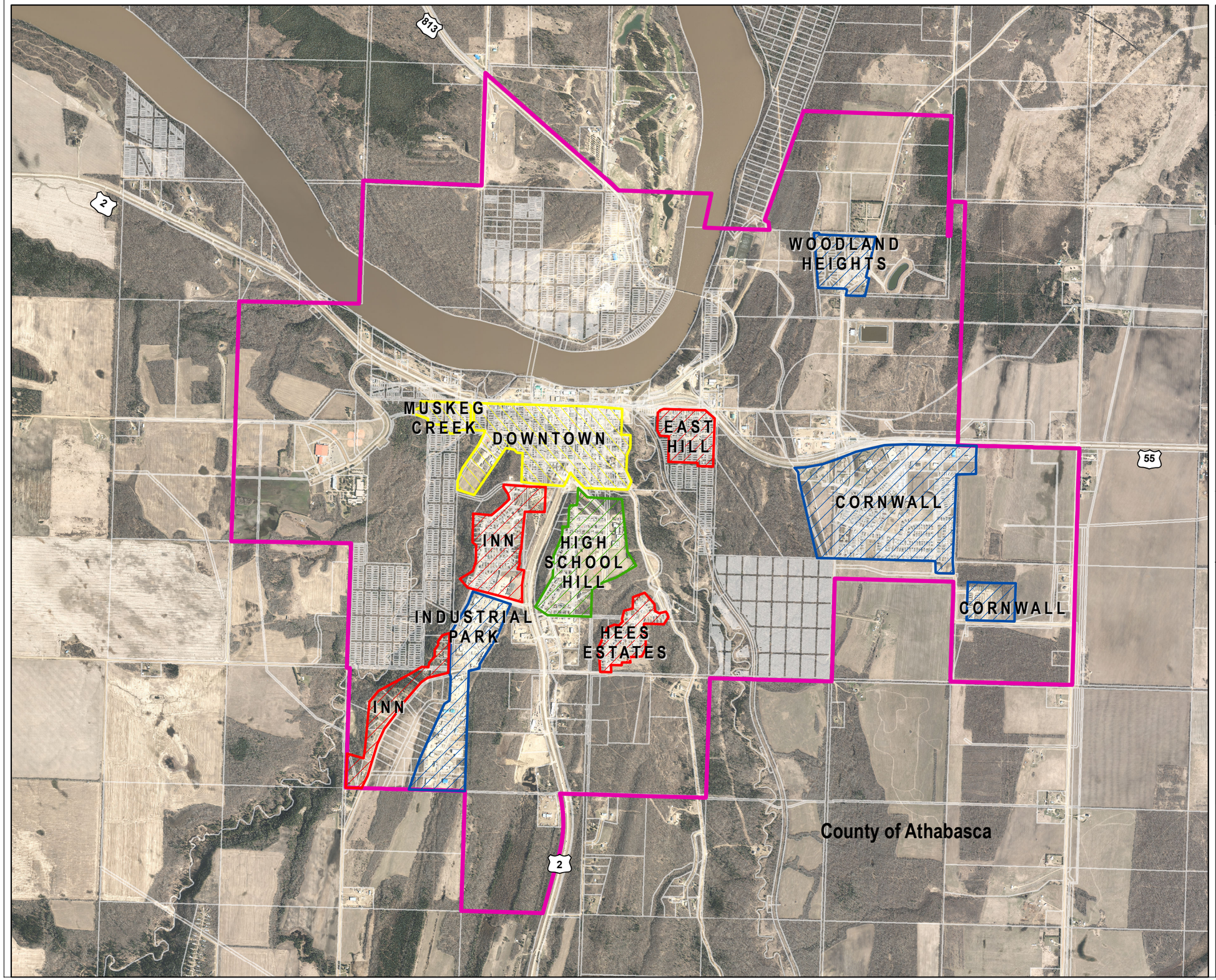

Wildfire Mitigation Strategy Hazard Assessment Areas

Average Hazard Class

- Extreme
- High
- Low
- Moderate
- Lot Block Plan
- Athabasca Town Boundary

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Scale 1:25,000

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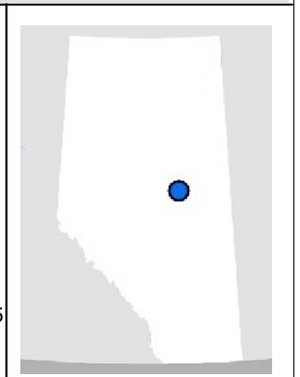
Kilometers



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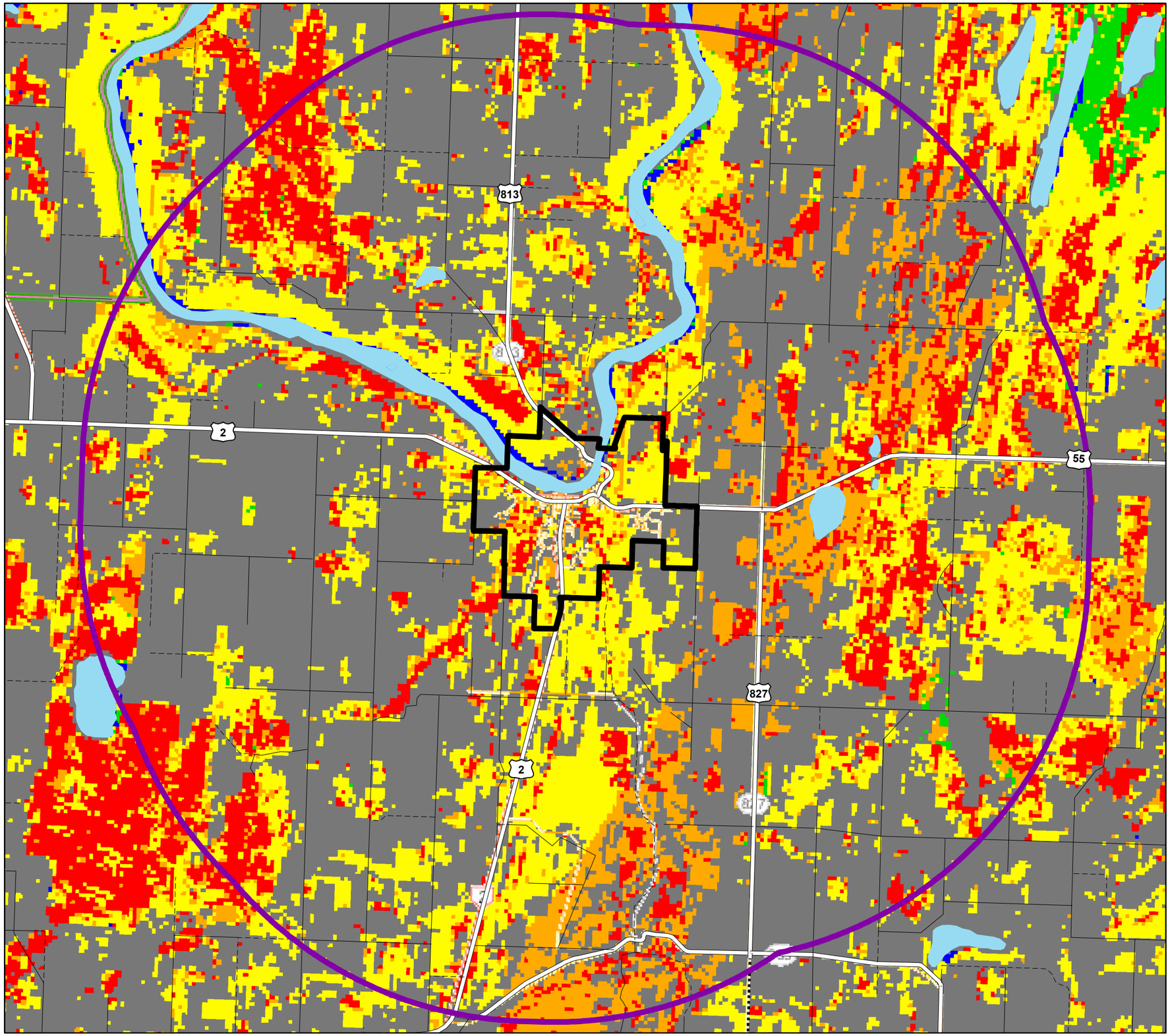
Wildfire Mitigation Strategy
Wildfire Threat Rating
Summary - Spring



Wildfire Threat Rating

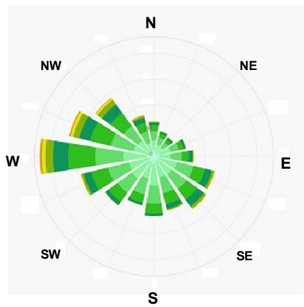
- Non-Fuel
- Low Wildfire Threat Potential
- Moderate Wildfire Threat Potential
- High Wildfire Threat Potential
- Very High Wildfire Threat Potential
- Extreme Wildfire Threat Potential

Transportation

- Highway
- Gravel Road
- Improved Road
- Unimproved Road

Planning Boundaries

- Athabasca Town Boundary
- FireSmart Community Zone



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meteoblue.com June, 2017

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Base Data Provided
By Alberta Government
Prepared for: Town of Athabasca
Plot generated on: August, 2017

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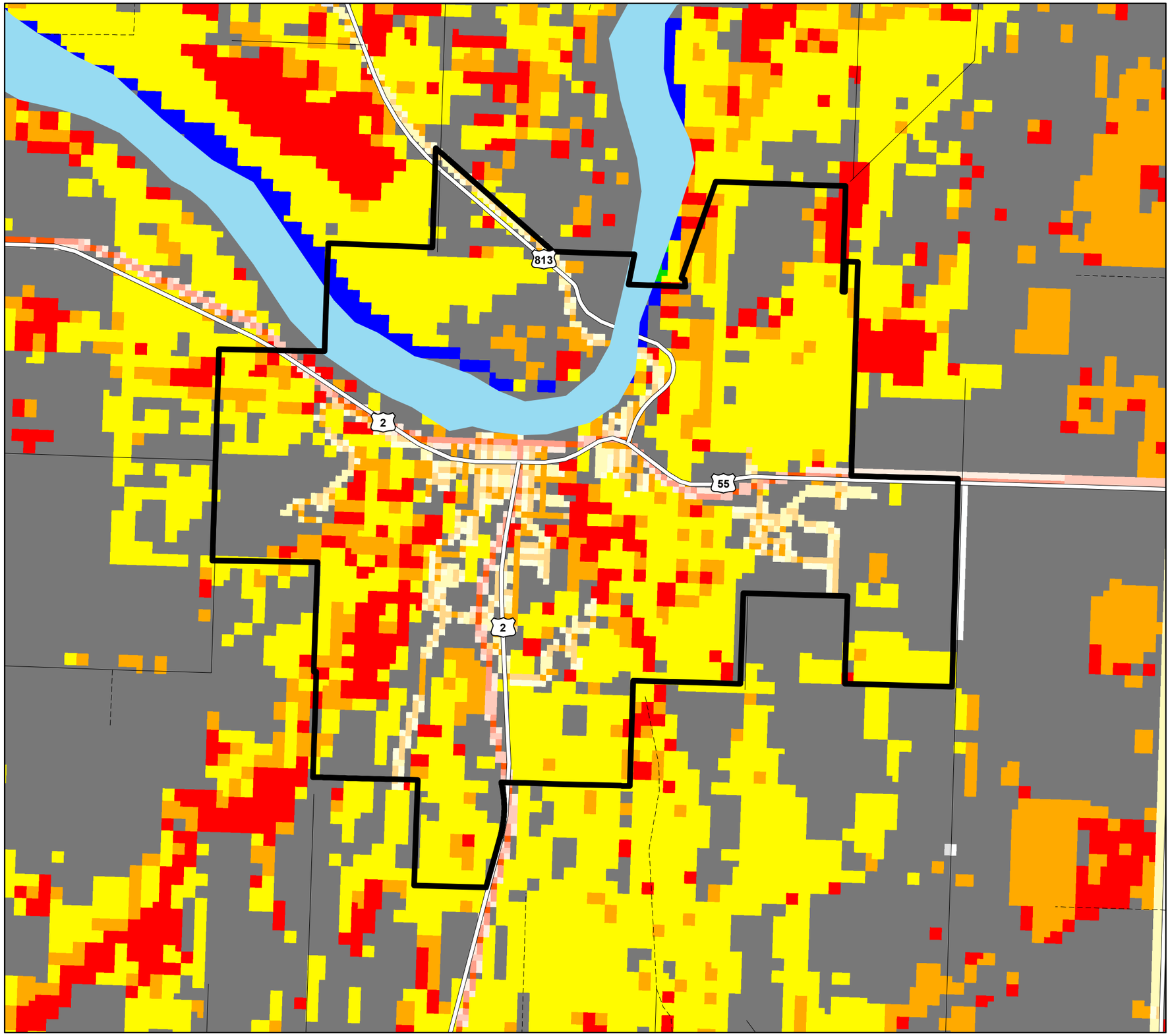
Kilometers

Wildfire Mitigation Strategy
Wildfire Threat Rating
Summary - Spring



Wildfire Threat Rating

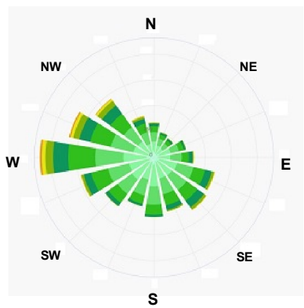
- Non-Fuel
- Low Wildfire Threat Potential
- Moderate Wildfire Threat Potential
- High Wildfire Threat Potential
- Very High Wildfire Threat Potential
- Extreme Wildfire Threat Potential

Transportation

- Highway
- Gravel Road
- Improved Road
- Unimproved Road

Planning Boundaries

- Athabasca Town Boundary



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meteoblue.com June, 2017

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Plot generated on: August, 2017

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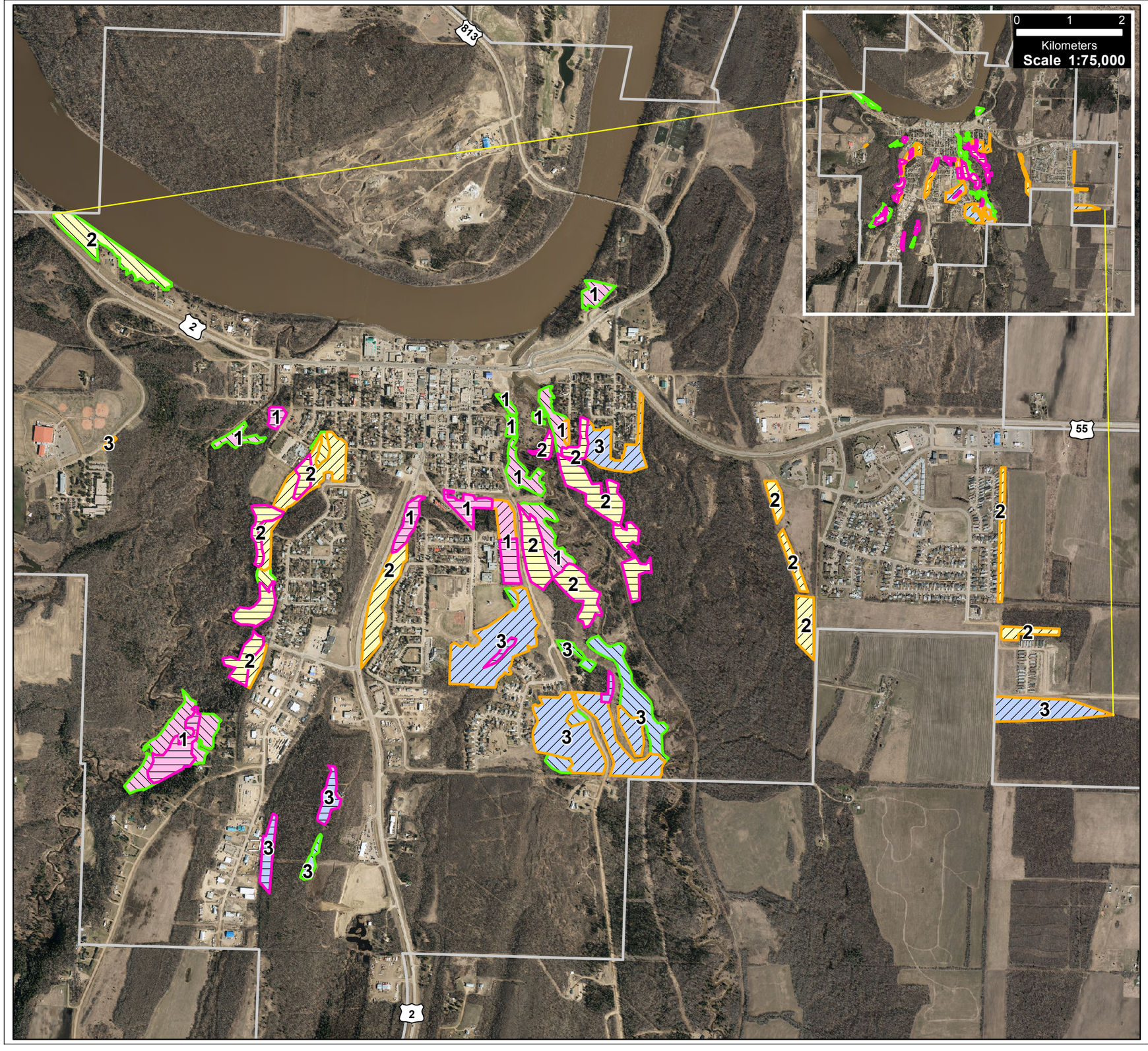
Kilometers



Wildfire Mitigation Strategy Recommended Modification Areas

2 Highway

Athabasca Town Boundary

Priority for the Recommended Area

Priority 1

Priority 2

Priority 3

Timber Type

Coniferous

Deciduous

Mixedwood

-Conifer Timber Type Recommandation-
Pruning
Thinning(Fuel Reduction) and converstion of fuels type
Removal of dead and down fuels
Falling a dead standing trees

-Deciduous Timber Type Recommandation-
Removal of dead and down fuels
Falling a dead standing trees

Recommended Areas(Ha) by Priority

Priority	Area(ha)
1	23
2	38
3	39
Total	100

Recommended Areas(Ha) by Timber Type

Timber Type	Area(ha)
C	26
D	45
M	30
Total	100

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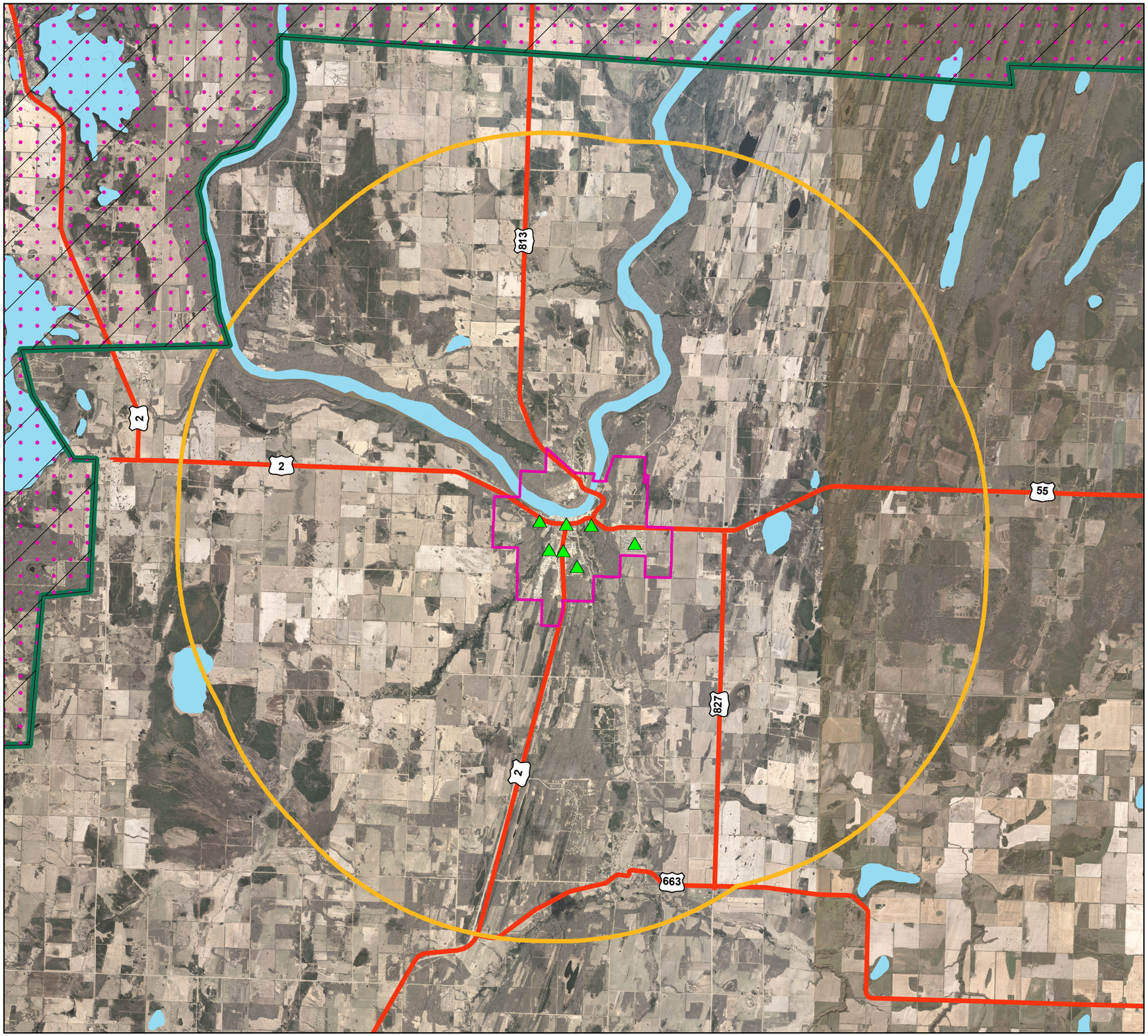
Meters

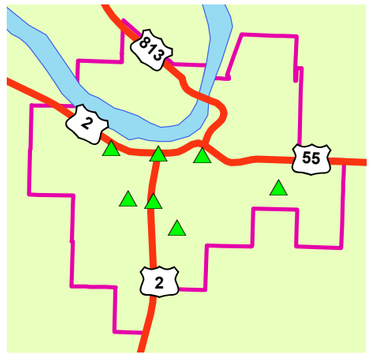
Wildfire Preparedness Guide Planning Area



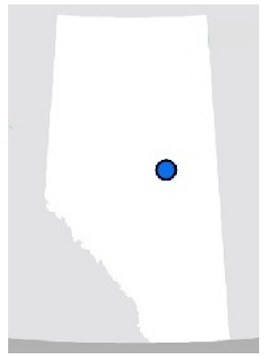
- Populated Area
- Highway (2)
- Water Body
- Athabasca Town Boundary
- FireSmart Community Zone

Forest Areas

- Forest Protection Area
- Lac La Biche Forest Area



Town of Athabasca



TimberNorth CONSULTING

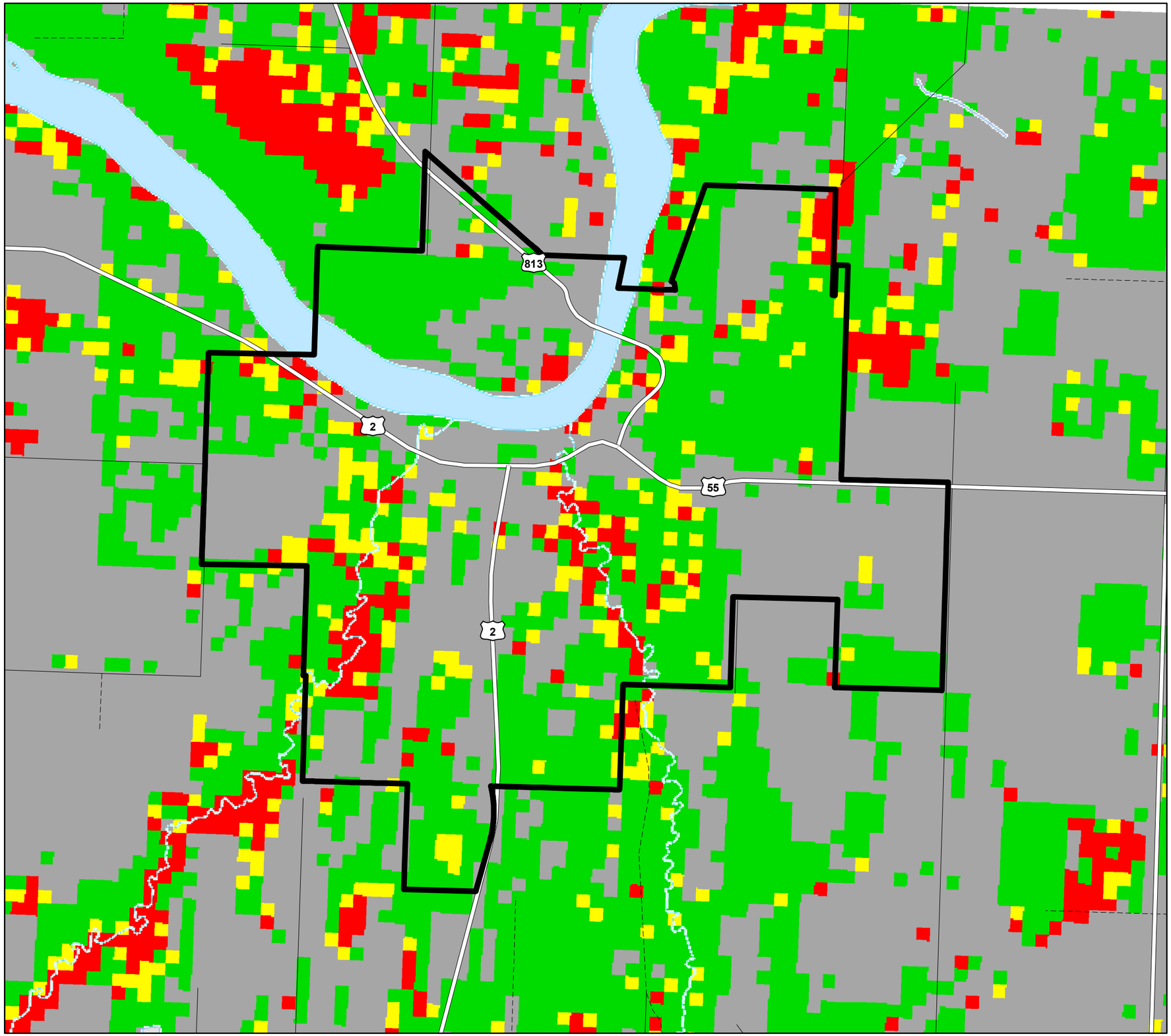
Base Data Provided
By Alberta Government
Prepared for: Town of Athabasca
Aerial photo was taken 2014
Plot Generated on: June, 2017

N

Scale 1:125,000

0 1 2 4
Kilometers

Wildfire Preparedness Guide
Fire Behaviour Potential
Factor Summary for Spring



Fire Behaviour Potential

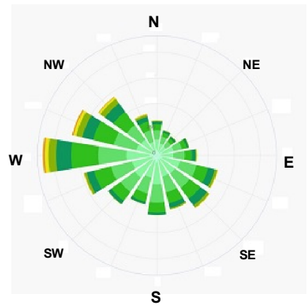
- Non-Fuel
- Low Fire Behaviour Potential
- Moderate Fire Behaviour Potential
- High Fire Behaviour Potential
- Very HighFire Behaviour Potential
- Extreme Fire Behaviour Potential

Transportation

- Highway (2)
- Gravel Road
- Improved Road
- Unimproved Road

Planning Boundaries

- Athabasca Town Boundary



Wind Rose Data

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meteoblue.com June, 2017

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By Alberta Government
Prepared for: Town of Athabasca
Plot Generated on: August, 2017

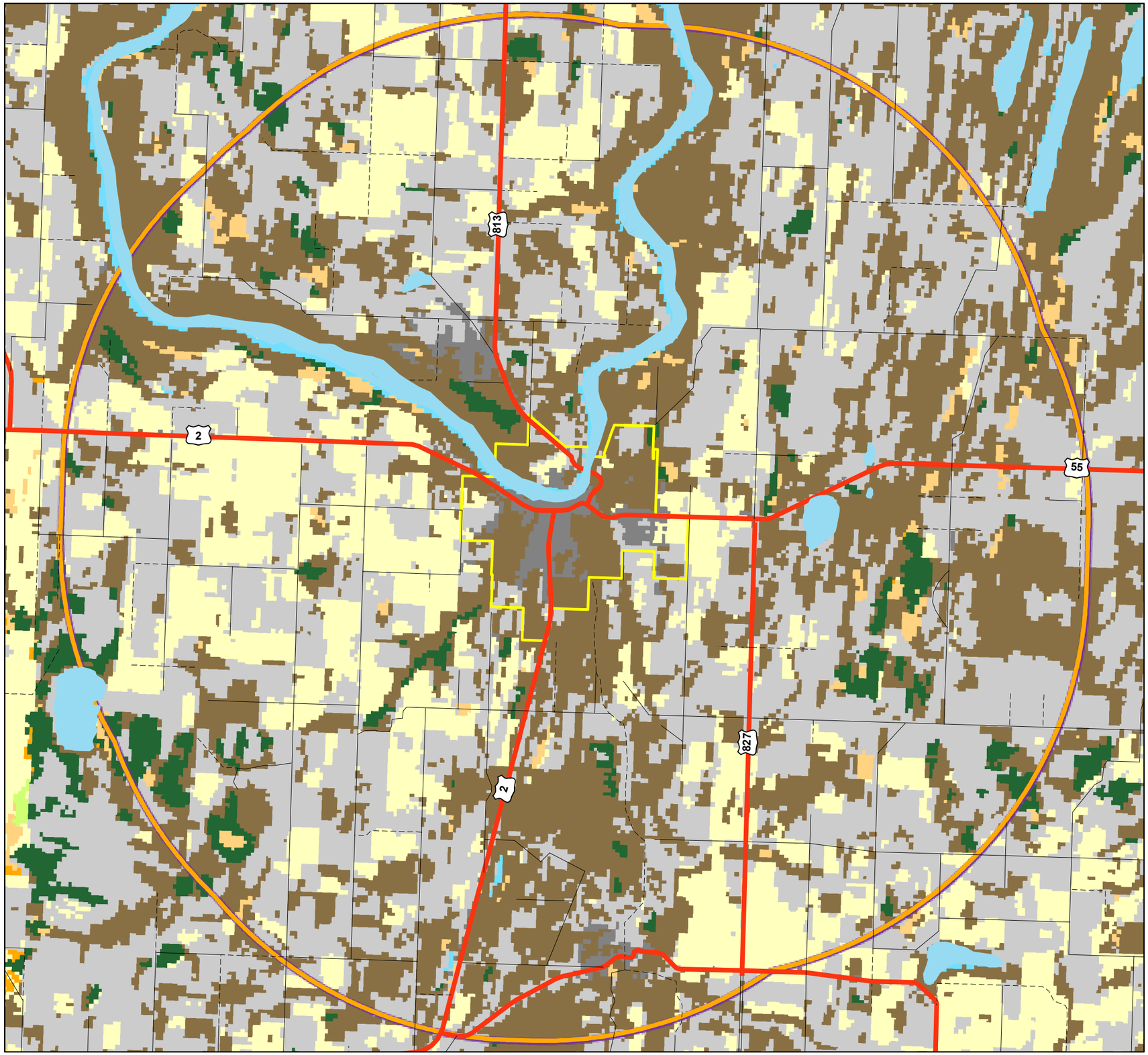
N

Scale 1:30,000

0 250 500 1,000

Meters

Wildfire Preparedness Guide
Fuel Types

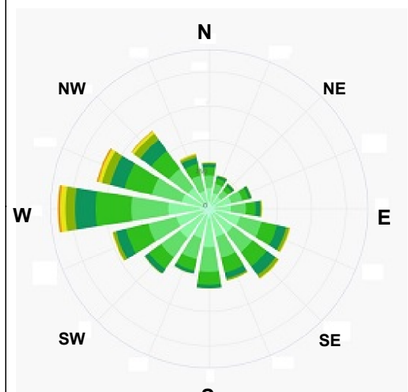


Fuel Types

- C-1 (Spruce-Lichen Woodland)
- C-2 (Boreal Spruce)
- C-3 (Mature Jack or Lodgepole Pine)
- C-4 (Immature Jack or Lodgepole Pine)
- C-5 (Red and White Pine)
- C-6 (Conifer Plantation)
- C-7 (Ponderosa Pine-Douglas-Fir)
- D-1/D-2 (Aspen)
- M-1/M-2 (Boreal Miedweed - more than 50% conifer)
- M-1/M-2 (Boreal Mixedwood - 50% or less conifer)
- O-1 (Grass)
- S-1 (Jack or Lodgepole Pine Slash)
- S-2 (White Spruce - Balsam Fir Slash)
- Vegetated Non-Fuel
- Non-Fuel
- Water

Transportation

- Highway
- Gravel Road
- Improved Road
- Unimproved Road
- Athabasca Town Boundary
- FireSmart Community Zone



Wind Rose Data

0 >1 >5
>12 >19 >28
>38 >50 >61 km/h

meteoblue.com June, 2017

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Base Data Provided
By Alberta Government
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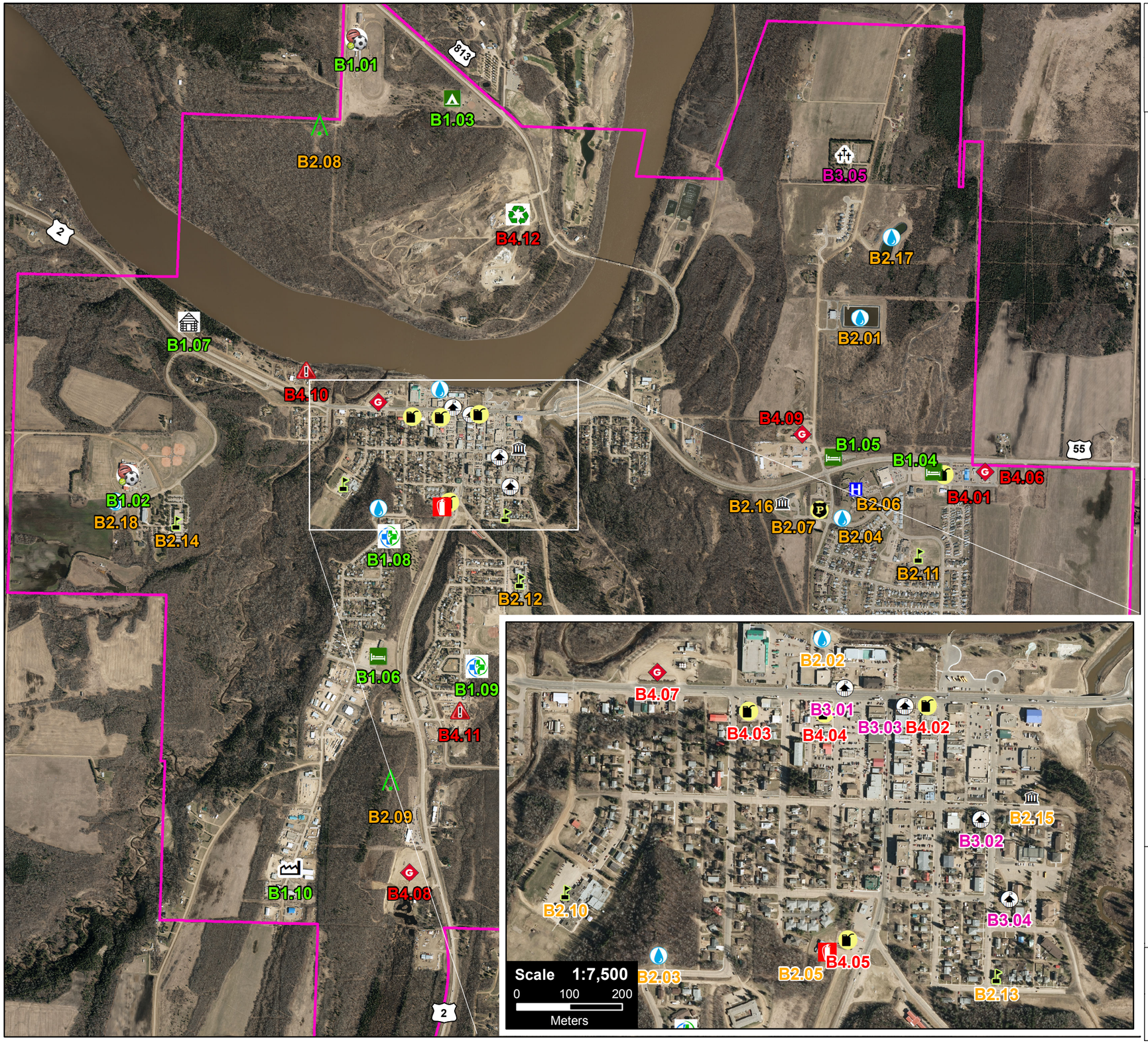
N

Scale 1:100,000

0 1 2 4

Kilometers

Wildfire Preparedness Guide
Values at Risk



Values at Risk

- B1.Recreational
- B1.Campground
- B1.Hotel
- B1.Cabin
- B1.Special Care Facility
- B1.Industrial
- B2.Water Facilities
- B2.Firehall
- B2.Hospital
- B2.Police
- B2.Communications Tower
- B2.School
- B2.Municipal building
- B3.Historical Place
- B3.Cemetery
- B4.Fuel Station
- B4.Bulk Fueling Station
- B4.Welding Facility
- B4.Landfill

Athabasca Town Boundary

Transportation

- Highway

B1.Standard Values At Risk

B2. Critical Infrastructure Values At Risk

B3. Special Values At Risk

B4. Hazardous Values At Risk

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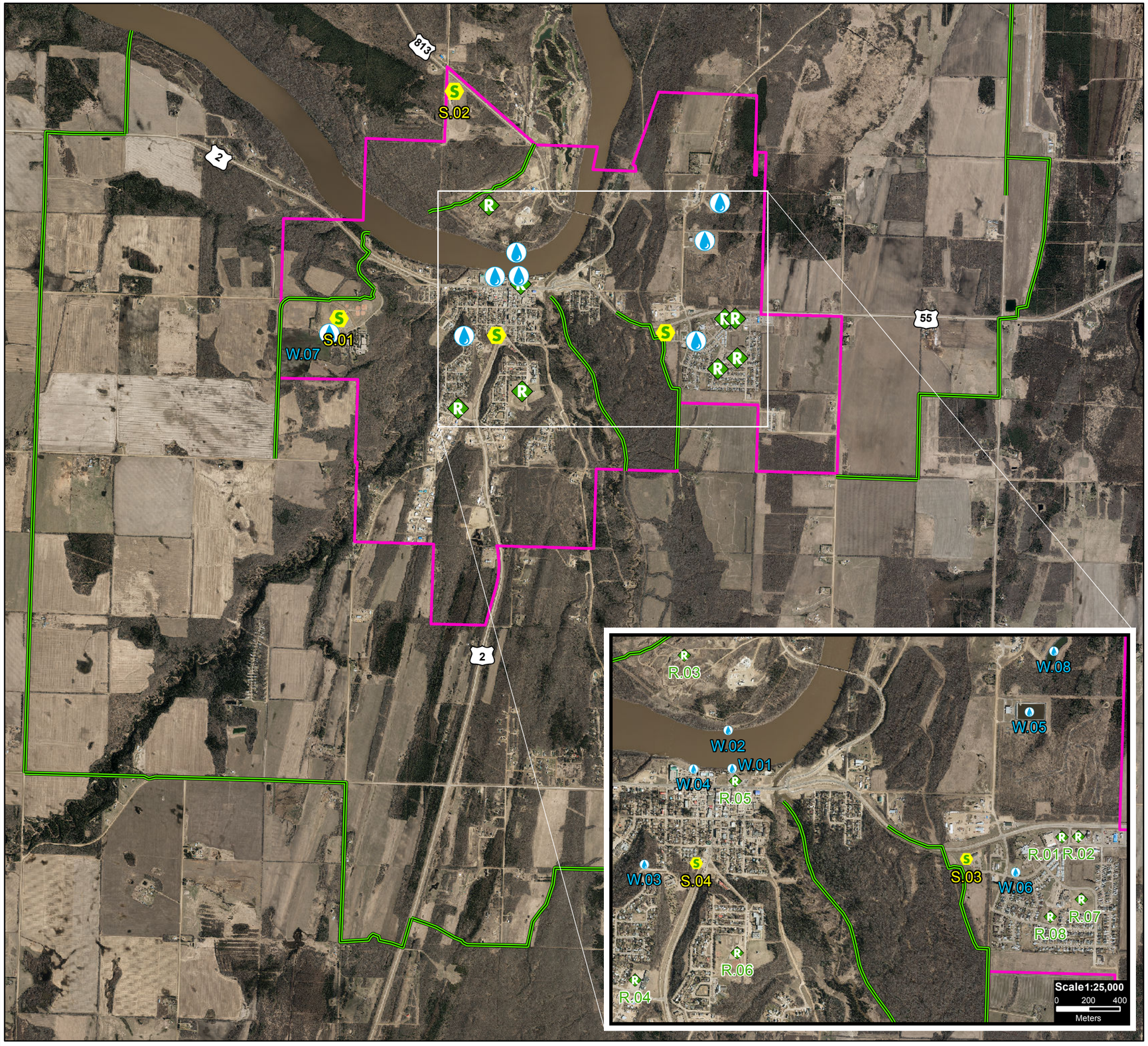
Scale 1:20,000

0 200 400 800

Meters

Wildfire Preparedness Guide
Fire Operations Action Plan



- Highway
- Water Source
- Possible Staging Area
- Possible Safe Refuge Areas
- Possible Fire Guard
- Athabasca Town Boundary

Staging Area

Location	Description
S.01	Athabasca Regional Multiplex
S.02	Athabasca& District Agri-Plex
S.03	Athabasca County Office
S.04	Athabasca Fire Hall

Water Source Description

Location	Description
W.01	Athabasca River
W.02	Athabasca River
W.03	Tow n of Athabasca Rupert Reservoir
W.04	Water Treatment Plant
W.05	Athabasca Regional Water Services Commission. Water Treatment Plant
W.06	Tow n of Athabasca Cornw all Place Reservoir
W.07	Tow n of Athabasca University Reservoir
W.08	Storm Water Retention

Possible Safe Refuge Area Description

Location	Description	Size
R.01	Canadian Tire parking lot	90m * 60m parking lot
R.02	Days Inn parking lot	80m * 80m parking lot
R.03	Gravel pit	700m * 450m gravel area
R.04	New Western Athabasca Inn parking lot	90m * 60m parking lot
R.05	River Front Park parking lot	340m * 70m field and parking lot
R.06	Softball field	300m * 240m field
R.07	Wispering Hills Primary School field (East)	140m * 130m field
R.08	Wispering Hills Primary School field (West)	110m * 90m field

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N

Scale 1:40,000

0 400 800 1,600

Meters