



**FIRST NATIONS'
Emergency Services**
BRITISH COLUMBIA

FireSmart Hazard Assessment Report

Fort Babine

This document was developed in a combined effort between the First Nations Emergency Services (FNESS) and the community of Fort Babine. The FireSmart report is designed to be used as a resource in which the residents of Fort Babine can implement a community plan from. The FireSmart report looks at what was determined to be the highest risk area of the community and the issues this area faces. Included in the FireSmart report are recommendations from the Local FireSmart Representative (LFR) as well as a detailed outline of the next steps the Fort Babine community needs to take to become nationally recognized as a FireSmart community.



FireSmart Demonstration House

Location: Knox Mountain, Kelowna B.C.

Pictures By: www.kelownanow.com

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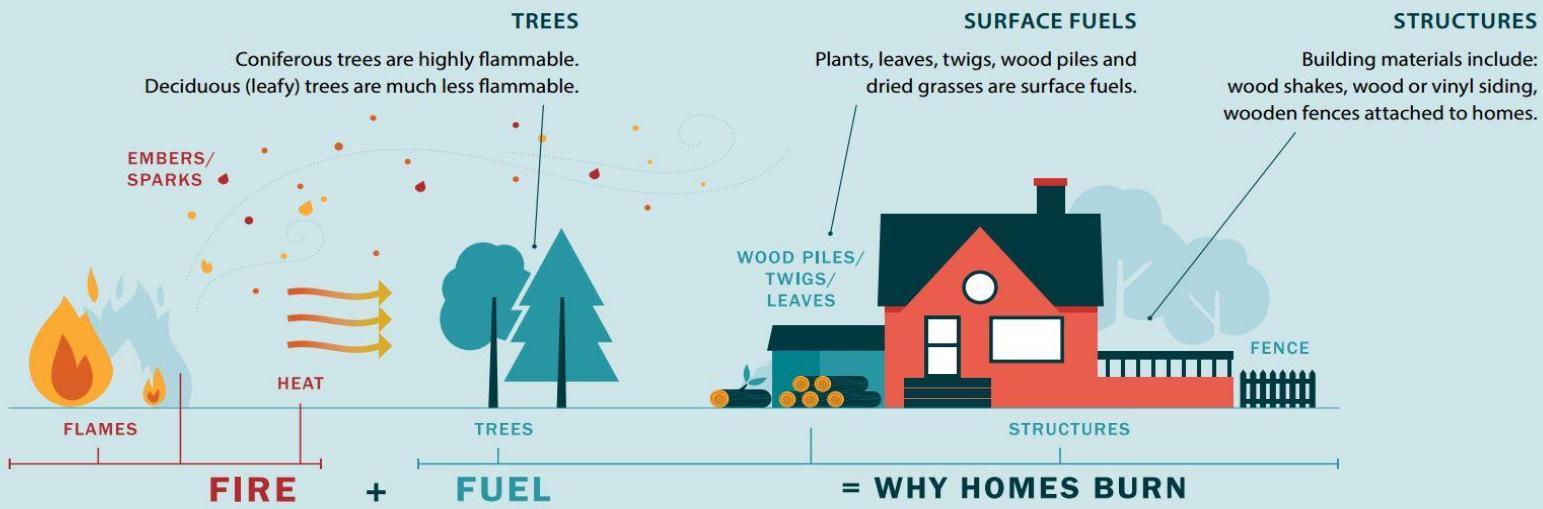
Introduction

The FireSmart Canada Community Recognition Program is designed to provide an effective management approach for preserving wildland living aesthetics while reducing community ignition potential. The program can be tailored for adoption by any community and/ or neighbourhood association that is committed to ensuring its citizens maximum protection from wildland fire. The following report is intended as a resource to be used by the residents of Fort Babine to create a FireSmart Community Plan. The plan developed from this information should be implemented in a collaborative manner, and updated and modified as needed.

On July 25th 2018 Brenden Mercer from First Nations Emergency Services Society (FNESS) completed a Neighbourhood Wildland Fire Risk Hazard Assessment. The priority area for this assessment was determined with the help of Barbra Tom and Murphy Patrick. It was determined that the community required an assessment on the main residential reserve since it presented several houses that could benefit from incorporating FireSmart principles.

Definition of the Ignition Zone

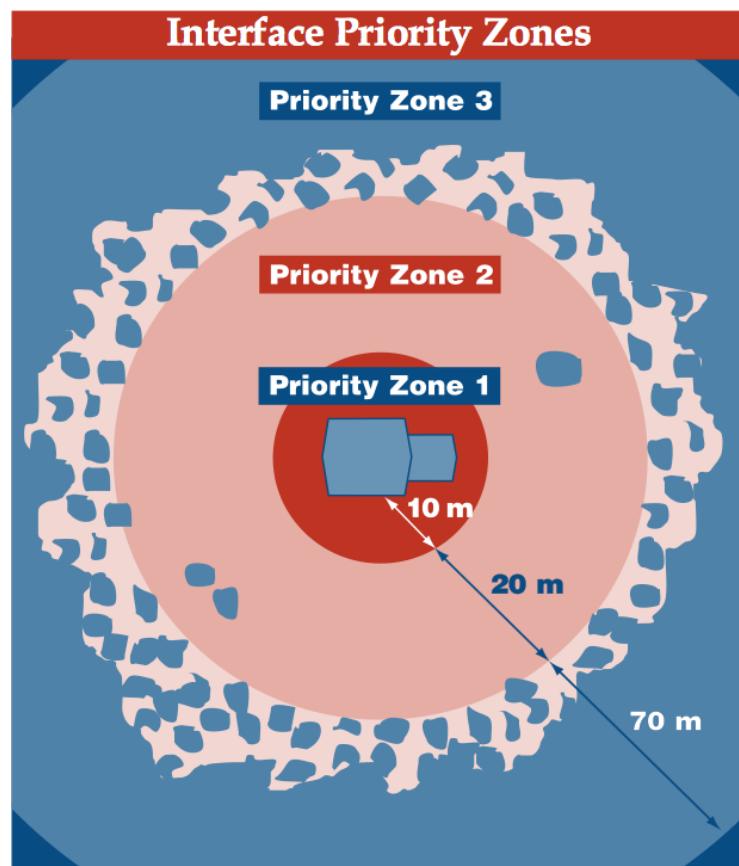
The First Nations community of Fort Babine is located in a wildfire prone environment as evidenced by the numerous historical wildfires occurring around the community. There have been several fires in the geographical area dating back to the 1920's including fire# 270 which was approximately 391ha's. In 1952 fire# R00053 was 1887ha's. Some of the larger fires that have occurred in the area were fire# R32182 which was approximately 2,524ha's and fire# 228 in 1922 which was 23,774ha's in size.



This demonstrates that large scale wildfire can occur given the right conditions. Wildfires will happen – exclusion is not a choice. The variables in a wildfire scenario are when the fire will occur and where. This assessment addresses the wildfire related characteristics of the Fort Babine community. It examines the areas exposure to wildfire as it relates to ignition potential. The assessment does not focus on specific homes, but rather examines the community as a whole.

A house burns because of its relationship with everything in its surrounding ignition zone – the house and its immediate surroundings. To avoid home ignition a homeowner must eliminate the wildfires potential relationship with his/her house. This can be accomplished by interrupting the natural path a fire takes. Changing a fires path by clearing the ignition zone is an easy to accomplish task that can prevent home loss. To accomplish this, flammable items such as excessive vegetation must be removed from the area immediately around structures to prevent flames from contacting it. Also, reducing the volume of live vegetation will reduce the wildfire intensity as it nears the home.

Included in this assessment are observations made while visiting the Fort Babine main residential reserve. The assessment addresses the ease with which home ignitions can occur under severe wildfire conditions and how these ignitions may be avoided within the ignition zones of residents.



Priority Zone 1 & 1a: It is best to establish a fuel free zone around your home by reducing and or eliminating all flammable fuels within 10m of a structure.

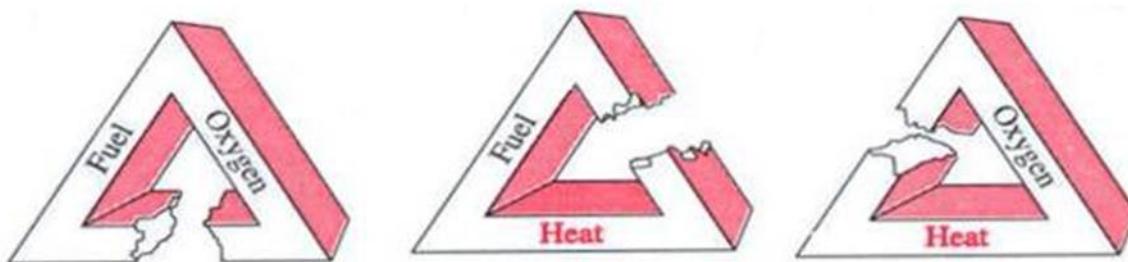
Priority Zone 2: In this zone it is best to modify the fuel through thinning, pruning and removing excess surface fuels which will reduce the intensity of a fire. This zone occurs between 10 – 30 meters from the structure.

Priority Zone 3: The best approach to take when treating fuels that are 30 – 100 meters away is to thin and prune trees.

The results of the assessment show (under current conditions) that wildfire behaviour and subsequent losses will be dominated by the unique characteristics of Fort Babine. The good news is that residents will be able to substantially reduce their exposure to loss by addressing community vulnerabilities. Relatively small investments in time and effort will reap great rewards in community wildfire safety.

Description of Severe Case Wildland Fire in Local Area

Fire intensity and spread rate depend on the fuel type, fuel conditions, and the weather conditions prior and during ignition and the topography. The images below illustrate the 3 required components for fire. Removing one of these elements breaks the fire triangle resulting in the fire going out. FireSmart focuses on reducing or eliminating the potential fuel sources around the home because it is the easiest factor to manipulate.



In addition to the fire triangle the following relationships between fire behaviour, fuel, weather and topography are other factors to consider.

- Fine fuels ignite more easily and spread fire faster with higher intensities than coarser fuels. For a given fuel, the more there is and the more continuous it is, the faster the fire spreads and the higher the intensities. Fine fuels take a shorter time to burn than coarser fuels.
- The weather conditions affect the moisture content of the dead and live vegetative fuels. Dead fine fuel moisture content is highly dependent on relative humidity and the degree of sun exposure. The lower the relative humidity and greater exposure to the sun the lower the fuel moisture content will be. Lower fuel moistures produce higher spread rates and intensities.

- Wind speed significantly influences the rate of fire spread and fire intensity. The higher the wind, the greater the spread rate, intensity and ember transport distances.
- Topography influences fire behaviour principally by the steepness of the slope. However, the configuration of the terrain such as narrow draws, saddles and so forth can influence fire spread and intensity. In general, the steeper the slope, the higher the uphill fire spread and intensity.

Site Description

The Fort Babine community which is traditionally called Wit'at means “place of making dry fish” is located approximately 100km north of Smithers B.C. along a gravel logging road. The community is home to approximately 60 year round residents. Historically the Hudson Bay trading company had a trading post set up in the community which remained operational until around the 1970’s. The assessment area can be seen on the map in appendix 2 of this report.

Biogeoclimatic zone maps for the province place the community of Fort Babine in a Sub Boreal Spruce moist cold (SBSmc2). The Biogeoclimatic zone designation places the community in a Natural Disturbance Type 3 (NDT3) area which means the forests surrounding the community could experience major fires on a 125 year cycle. This NDT3 also experiences some of the largest fires in the entire province with some exceeding 100,000 hectares. The local terrain is slightly rolling to even in some areas with a primarily eastern aspect. Immediately around the community there is a mixture of coniferous and deciduous vegetation becoming primarily coniferous as you gain elevation away from the lake.



Assessment Process

On July 25th 2018 Brenden Mercer from First Nations Emergency Services Society (FNESS) travelled to Fort Babine. The purpose of travel was to complete a FireSmart Hazard Assessment for the community. Utilizing the local knowledge of the area provided by Barbra Tom and Murphy Patrick the main residential IR was chosen. The hazard assessment is not designed to provide detailed information about each home in a subdivision but rather the subdivision as a whole. During the assessment we drove around the area for a few hours documenting hazards along with taking the necessary pictures to complete a FireSmart Hazard Assessment Report. During the assessment important details regarding the hazards and solutions were recorded onto the FireSmart Hazard Assessment Form (Appendix 1). Using the details recorded on the hazard assessment the FireSmart Hazard Assessment Report will be written and sent to the FireSmart Board members. Since FireSmart looks at the subdivision as a whole it would be encouraged that each homeowner looks at their property while going through the checklist located in the FireSmart Homeowners Manual or online at the [FireSmart Canada](#) website.

Observations and Solutions



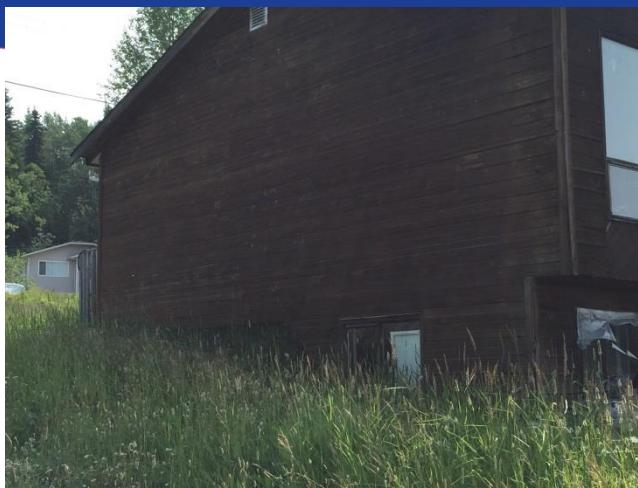
The following section will highlight the main observations and provide some guidance on possible solutions as determined by the FireSmart Hazard Assessment;

Structures

- **Roofing Assembly**

- **Type of roof** – It seems the majority of roofs are asphalt shingles and a few roof made from metal. Some of the roofs on the abandoned structures could use some repairs.

- 
- **Roof cleanliness** - Most of the roofs on structures that residents currently occupy are in good condition and free from debris. When overhead vegetation is closer to structures it is a lot easier for debris to accumulate on roofs and in gutters. Ideally if any vegetation is overhanging a structure it should be removed as it poses a risk of structure ignition.



- **Building Exterior**



- **Siding, decks & eaves** - A lot of the structures in the community have vinyl or wood siding and in the case of the fire hall it has metal siding. Vinyl siding has a tendency to melt when it is exposed to radiant heat which can expose vulnerabilities in the structure. Utilizing a hardy plank siding for new home developments or siding replacement over time would be very beneficial, because it has proven to be very resistant to fire. There were also some structures where the siding didn't touch the ground or gaps were present which could allow fire to get underneath a structure. In these situations it would be best to ensure there is non-combustible siding anchored to the ground.

- **Windows & doors** - The majority of windows observed appeared to be double paned and this should be standard for new developments and renovations over time. Research has shown when single pane windows are impacted by radiant heat they break a lot easier allowing embers to enter the structure. Some of the abandoned homes had broken windows that could allow ember's to enter the structure. Boarding these windows up would help to reduce the risk of ignition.



- **Ember accumulator features** - During the assessment there were several areas observed that could easily accumulate embers given the right conditions. Some of these areas occurred underneath decks and porches where fuels can accumulate over time. Sheathing in these areas would prevent vegetation from growing, debris and embers from accumulating.



- **Nearby Combustibles** – It seems there were a few homes with firewood located adjacent to the home. Ideally firewood should be located at least 10m from a structure during the wildfire season and brought closer to the home as winter approaches. If 10m is not an option the pile should still be separated from the structure. Having nearby sprinklers to wet the pile during increased fire danger days can reduce the risk of ignitions. Additionally there were several vehicles observed that could be ignited if fire was to enter the vehicle. Maintaining the vegetation around the vehicles would help to reduce the risk.

Priority Zone 1a (0 -1.5m)

- **Priority Zone 1a** - Is also known as the non-combustible zone around the structure where any flammable vegetation should be removed so that potential fuel is separated from the structure. Creating a non-combustible area around the structure could be completed by using materials like gravel, brick, concrete and / or other xeriscaping practices.

Priority Zone 1 (1.5 -10 m)



- **Over story vegetation** – There is minimal over story vegetation in PZ1 which is good for reducing the fuel sources close to the structures. Over story trees near homes can drop leaves or needles onto the roof. These fine fuels can be easily ignited under the right conditions and pose a significant risk to the structure. Where larger trees are close to homes it would be ideal to have them removed in order to create defensible space. If removal is not an option spacing and pruning activities can be beneficial to lower the risk.



- **Ladder Fuels** – The majority of residents had minimal vegetation in priority zone 1 and a not much in the way of ladder fuels. The abandoned structures have some shrubs and deciduous vegetation that could act as ladder fuels under the right conditions. Ideally any combustible vegetation in this zone would be removed since it can significantly increase the chances a structure survives a wildfire

- **Surface fuel** – In this priority zone there was some taller grass in the area which could provide fire a continuous fuel source all the way up to a structure. Grass should be regularly mowed especially when it comes into contact with structures, wood piles or is growing underneath decks.

Priority Zone 2 (10-30 m)

- **Over story vegetation** – Some of the structures in the community have a few deciduous trees in this priority zone while others have some mixed wood. The majority of homes have minimal over storey vegetation in this zone. Where vegetation occurs it could benefit from spacing and pruning activities to reduce the risk even further

- **Ladder fuels** – Although many residents don't have much vegetation in this zone the few residents that do could benefit from some vegetation management activities. There were some spruce trees with ladder fuels extending to the ground that could benefit from pruning.

- **Surface fuel** – Many residents have well-kept lawns but as you get further from the homes there are a few areas that could benefit from regular mowing to reduce the fire risk to these areas.



Priority Zone 3 (30-100 m+)

- **Moderate Fuel** – The fuel type surrounding the community near the lake is a mix of deciduous and spruce. Over time more spruce will become established and eventually these stands will become quite hazardous as evidenced by other areas around the community that are already primarily spruce. Spruce trees tend to have ladder fuels extending to the ground so the crown can be ignited quite easily.



around the community that are already primarily spruce. Spruce trees tend to have ladder fuels extending to the ground so the crown can be ignited quite easily.

- **Heavy Fuel** – As you gain more elevation and move away from the lake the vegetation becomes primarily coniferous in some sections of the community. The area around the saw mill is quite dense and could benefit from fuel reduction activities. Conducting fuel treatments in priority zone 3 can help to reduce potential fire intensity as it approaches the community and allow for better fire suppression opportunities.

Topography

- **Slope** – The community sits on a slope that ranges from 10 -30%. Wildfires that occur on slopes quite often move a lot faster than flat ground.

Infrastructure – Access / Egress, Signage



- **Access Routes** – There were some looped roads in the assessment area as well as some single roads. Looped roads are ideal as they provide two ways to get out of an area. The bridge accessing the community is only one lane so in the event of an evacuation it would be slower.

- **Roads** – The community seems to have roads that are wide enough for a fire truck to use. The homes that are along single roads would be more difficult to access for a fire truck. Some areas turning around in fire truck may be difficult.



- **Fires Service Access** – The majority of homes had short driveways which is beneficial for fire services to access an area if required. Long driveways can make access more difficult for emergency services.

- **Street Signs / House Numbers** – The homes seemed to have a house number. These are important for any first responders when entering a community they might be unfamiliar with.

Fire Suppression – Water Supply, Fire Services, Homeowner Capability



- **Water Supply** – There is a working fire hydrant system in the subdivision.
- **Fire Service** – There is currently no volunteer fire department in the community even though they have a fire hall that could be used. Recruiting volunteers would be beneficial.

- **Homeowner Suppression Equipment** – It is likely some residents will have the basic equipment such as shovels, hoses and sprinklers. Providing community members with the proper tools can allow them to reduce the risk on their property.

Fire Ignition and Prevention – Utilities, Chimneys, Burn Barrels / Fire Pits, Ignition Potential

- **Utilities** – The community has had several power outages from trees falling on power lines historically. Being pro-active in reducing the vegetation as it encroaches on power lines can help prevent accidental ignitions. Clearing vegetation away from





propane tanks will also be important to prevent any disasters from occurring.

- **Chimney, Burn Barrels / Fire Pits –**

There were no fire pits or burn barrels observed during the assessment. If community members do have fires it would be beneficial to encourage them review the FireSmart standards before constructing their own fire pit

Recommendations

The FireSmart Community Recognition Program seeks to create a sustainable balance that will allow communities to live safely while maintaining environmental harmony in a wildland urban interface (WUI) setting. Homeowners already balance their decisions about fire protection measures against their desire for certain flammable components on their properties. It is important for them to understand the implications of the choices they are making. These choices directly relate to the ignitability of their home ignition zones during a wildfire.

A homeowner/ community must focus attention on the home and surrounding area while eliminating the fires potential relationship with the house. This can be accomplished by disconnecting the house from high and/or low intensity wildfire that could occur around it as well as being conscious of the effects of wind driven embers. A good reference to understand the effects of embers on homes during a wildfire is the video called [Wildfire Ember Highlights](#) that can be found on YouTube via the hyperlink.

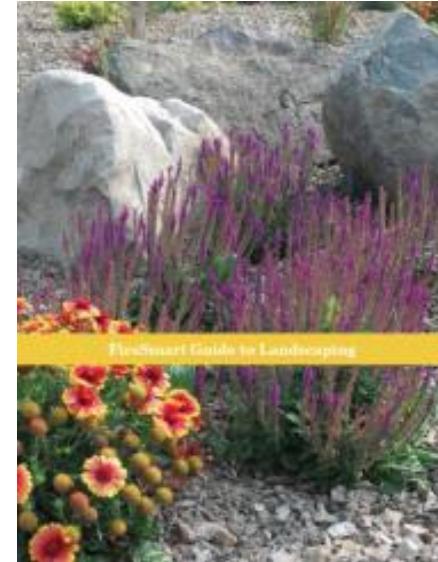
The following section of this report provides recommendations for consideration by the FireSmart board concerning the wildfire safety issues that were identified as priorities for Fort Babine during the assessment.

- Educate the residents of Fort Babine about the realities of wildfire in the area and the steps that can be taken to FireSmart homes. This can be accomplished by hosting FireSmart education days and inviting local fire chiefs, FNESS or BC Wildfire Service representatives to come share their knowledge and experiences with the community. Each homeowner should be encouraged to



use the [FireSmart Home Assessment](#) to critically evaluate their home.

- Organize a FireSmart event day for local residents. The event day can include the volunteer portion of the FireSmart recognition process by having people complete an agreed upon task prior to the event day.
- Organize a FireSmart board led by community members who are aware of the dangers of fire and want to help their community. The FireSmart board can access a lot of useful information on the [FireSmart Canada](#) website to share with the community.
- Encourage FireSmart landscaping practices over time by removing highly flammable fuels adjacent to the house. Refer to the [FireSmart Guide to Landscaping](#).
- Develop and or maintain a good working relationship with local fire departments along with fire officials from other areas to ensure good support for FireSmart activities.
- The Union of B.C. Municipalities (UBCM) along with FNESS and the BC Wildfire Service can assist communities with accessing funding to complete FireSmart activities. This FireSmart funding is currently available through the [Community Resiliency Investment \(CRI\) Program](#).
- The National Fire Protection Association (NFPA) has a lot of good information on how to develop new fire protection bylaws and building codes in your community. This information is certainly worth looking at and potentially implementing in your community. The hyperlinks below are some of the standards worth reviewing:
 - [NFPA 1141](#) - Standard for Fire Protection Infrastructure for Land Development in Wildland, Rural, and Suburban Areas
 - [NFPA 1142](#) - Standard on Water Supplies for Suburban and Rural Fire Fighting
 - [NFPA 1144](#) - Standard for Reducing Structure Ignition Hazards from Wildland Fire



- The FireSmart board should look at developing a community plan which essentially identifies several FireSmart related activities that the board would like to accomplish and provides a tentative completion date for each activity. Please refer to appendix 3 for additional information on how to develop a community plan.

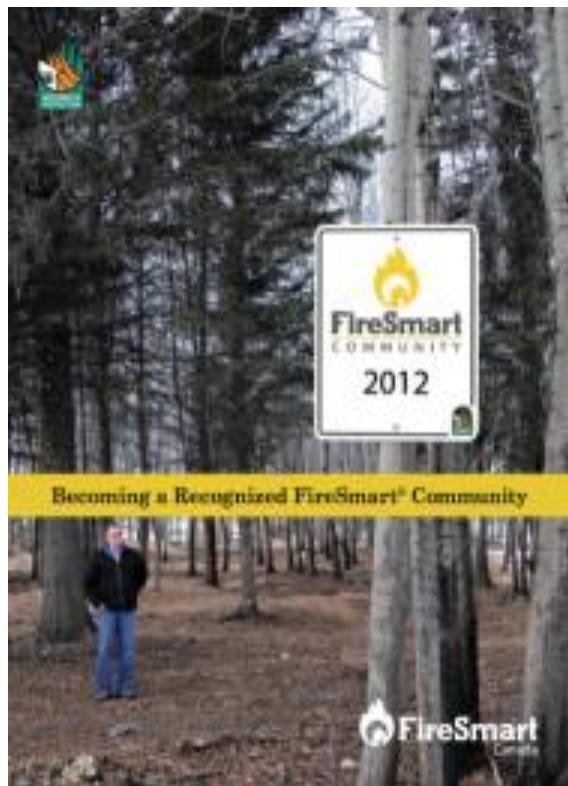
Successful FireSmart Mitigations

When adequately prepared, a house can likely withstand a wildfire without the intervention of the fire service. Further, a house and its surrounding community can be both FireSmart and compatible with the areas ecosystem. The FireSmart communities program is designed to enable communities to achieve a high level of protection against wildfire loss even as suitable ecosystem balance is maintained. Increased green space around the house as well as keeping combustible materials away from the house will increase the chance your home is protected from wildfire.



Both pictures courtesy of NBC News article lone house, surrounded by scorched earth, survives wildfire

Next Steps



After reviewing the contents of this assessment and its recommendations the Fort Babine FireSmart Board in consultation with its advisors will determine whether or not it wishes to continue seeking FireSmart community recognition status. The FireSmart board should contact FNESS in the future if they have any questions or require assistance in planning FireSmart events for their community.

If the report and recommendations are accepted and recognition will be sought, Fort Babine FireSmart Board will create agreed – upon, area specific solutions to the FireSmart Community Hazard Assessment Report Recommendations and prepare a FireSmart community plan in cooperation with their Local FireSmart Representative and local fire agency personnel who may be acting as advisors.

Assuming the Fort Babine community seeks to achieve recognition as a FireSmart community, the FireSmart board will need to complete the following 8 steps to become nationally recognized as a FireSmart community

- 1. Contact Local Fire Smart Representative (LFR) – *Completed***
 - FNESS has several LFR's on staff that would be more than willing to assist your community with FireSmart. It may also be beneficial to communicate with LFR's in your local area and get training for your community members when the LFR course is offered.
- 2. Have LFR complete a community FireSmart Hazard Assessment – *Completed***
 - The community FireSmart hazard assessment was completed by Brenden Mercer, RFT LFR. Individual structure and site assessments can still be completed for each resident that will identify concerns specific to that structure.

3. Local FireSmart Rep to complete a detailed report to provide recommendations to help start the Fire Smart Program – *Completed*

- The FireSmart report was developed by Brenden Mercer, RFT LFR from First Nations Emergency Services Society (FNESS)

4. Start a Fire Smart Board – *In Progress*

- Sponsor a Local FireSmart Board that is in charge of maintaining the FireSmart community program and recognition status. The board can include anyone whom wants to participate including residents, fire chiefs, chief & council, maintenance workers, etc.

5. Complete Fire Smart Community Action Plan – *In Progress*

- The FireSmart board should look at developing a community plan which essentially identifies several FireSmart related activities that the board would like to accomplish and provides a tentative completion date for each activity. Please refer to appendix 3 for additional information on how to develop a community plan.

6. Host a Fire Smart Event/Cleanup day – *In Progress*

- Invest a minimum of \$2.00 annually per capita in local FireSmart events and activities (work completed by municipal employees or volunteers, using municipal or other equipment, can be included as can provincial/ territorial grants dedicated to that purpose).

7. Apply for National Fire Smart Recognition Status – *In Progress*

- Submit an application form with the supporting documentation to FireSmart Canada. This application documents participation in the FireSmart communities program with respect to the above criteria.

8. Renew on an Annual Basis – *In Progress*

- Complete another education or event day, compile the supporting documentation and then submit a renewal application to FireSmart Canada. All the forms can be found online at the [FireSmart Canada](#) website.

Signature of Local FireSmart Representative

A handwritten signature in black ink that reads "Brenden Mercer". The signature is fluid and cursive, with "Brenden" on the first line and "Mercer" on the second line.

Brenden Mercer, RFT, LFR
First Nations Emergency Services Society (FNESS)
(250) 377-7600
October 25th 2018
www.FNESS.bc.ca

References

Wikipedia. August 2018. Fort Babine Wikipedia.

https://en.wikipedia.org/wiki/Fort_Babine

Fort Babine Website. <http://www.lakebabine.com/files/Fort-Babine-band.php>

Fort Babine Department of Indigenous Services Canada (DISC). http://fnp-ppn.aadnc-aandc.gc.ca/fnp/Main/Search/FNMain.aspx?BAND_NUMBER=607&lang=eng

BC Wildfire Service. Historical fire points and perimeters.

<https://catalogue.data.gov.bc.ca/dataset/fire-perimeters-historical>

BC Wildfire Service. Initial Spread Index.

<http://www2.gov.bc.ca/gov/content/industry/forestry/managing-our-forest-resources/wildfire-management/prevention/fire-fuel-management/fuel-management>

BC Wildfire Service. Active Fire Weather Stations.

<https://catalogue.data.gov.bc.ca/dataset/bc-wildfire-active-weather-stations>

Fort Babine Community Wildfire Protection Plan (Available via FNESS upon request)

Ministry of Forests. Biogeoclimatic Ecosystem Classification.

<https://www.for.gov.bc.ca/hre/becweb/resources/maps/FieldMaps.html>

Ministry of Forests. Biodiversity Guidebook.

<https://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/biodiv/biotoc.htm>

Appendix 1 FireSmart Hazard Assessment

See Attached

Appendix 2 Map of Assessment Area

See Attached

Appendix 3 FireSmart Community Plan

The following is a basic example of a FireSmart community action plan with some common activities listed. This plan should be developed by the FireSmart board along with their advisors if applicable. The objective of the action plan is to identify several activities that will benefit the community. Once the activities that are most relevant to your community are agreed upon the next step is to decide on who will be completing the work and the timelines for completion. Your community plan is one of the required deliverables to receive national recognition as a FireSmart community.

FireSmart Community Action Plan					
Event #	Activity	Who is going to do this?	Start Date	End Date	Progress
1	Host a community education & awareness Day				
2	Host a community wide cleanup				
3	Distribute FireSmart informational brochures to residents				
4	Cut grass around fire hydrants to provide easy access				
5	FireSmart board meetings				
6	Apply for FireSmart funding				
7	Review housing policies and building codes				
8	Remove unnecessary debris from homes				
9	Apply for Community Wildfire Protection Plan funding				