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Prepared for: Regional District of Kitimat-Stikine

Prepared by: Trevor Jobb RFT Amanita Coosemans RPBio



Reviewed by: Rick Brouwer RPF



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The input we receive is instrumental in developing community priorities that reflect the local challenges and risks at the wildland-urban fire interface of each of the communities within the CWPP planning area.

Cover page photos: courtesy of Amanita Coosemans



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Endorsement

The following individuals have reviewed and endorsed this report and the identified actions:

Ted Pellegrino, Planner-Regional District Kitimat-Stikine





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Executive Summary

This Community Wildfire Protection Plan (CWPP) comes more than ten years following the devastating effects of the 2003 'firestorm' that changed the landscape of Kelowna, BC. The firestorm—and Gary Filmon's subsequent report on that event (*Firestorm 2003; Provincial Review*, 2004)—has changed the way communities and government view wildfire management with respect to community protection.

Filmon's report identified clear recommendations on what steps should be taken to protect communities from wildfires. However, as with most such reports, while some steps have been implemented, many remain elusive to the objective.

With global warming and the expected increase in warmer and drier weather in many areas of the province, the potential and frequency of high intensity fires is increasing. The likelihood of wildland fires threatening communities is ever more at the forefront of concerns by local governments and fire suppression agencies. Considering this increasing threat, all stakeholders must be engaged in the development of their community's wildfire protection.

The Hazeltons and Kitwanga Community Wildfire Protection Plan has been completed by Westland Resources Ltd. for the Regional District of Kitimat-Stikine. The intent of the CWPP report is multi-fold:

- Improve community safety through identifying actions that will support and strengthen local fire prevention programs through education, development planning, and implementation of FireSmart principles.
- Support and strengthen fire preparedness programs such as emergency response plans, mutual aid and fire protection agreements.
- Support and strengthen capacity of volunteer fire departments to be effective structural and wildland fire departments.
- Identify and map wildfire threat ratings of surrounding fuel types to aid in developing future fuel management treatments adjacent to the wildland-urban interface.
- Identify actions for improving communications between local governments, residents and the BC Wildfire Management Branch.

The Hazeltons and Kitwanga area constitute a unique collection of communities with both urban and rural development; a significant portion of the plan area is either private land or Indian Reserve land. Infrastructure and protection services in the communities range from well-developed to limited or non-existent.

As with all communities, the objectives of wildfire protection planning must be to address all components of *wildfire management* (i.e. the prevention of, preparedness for, and suppression of wildfires). The focus of resources and programs must be directed at supporting and strengthening these objectives through both provincial and local governments. This can be achieved by providing support to local fire departments and residents through education, training and capacity building.

The home owner/resident plays a vital role in wildfire protection by taking an active role—for example by employing FireSmart techniques, engaging with local government and local fire protection services—owners and residents can reduce threats to their homes and communities.





The Hazeltons and Kitwanga, like most communities in British Columbia, are set within a forest-dominated landscape. The forests can provide a fuel source that could have devastating effects on adjacent communities if ignited during times of high or extreme fire weather conditions. Although forests in this CWPP area have a significant deciduous component, providing a somewhat fire resistant fuel type, hardwood forests can still pose a threat during times of extreme fire weather.

In our planning area, cured, matted grass is abundant within the urban and rural interface; this fuel type provides the most readily identifiable fuel hazard in the area. A matted grass fuel type can provide an easy ignition source, resulting in a rapid rate of fire spread. During spring weather conditions (April to June), this fuel type may pose the greatest threat to structures and people.

Treating forest fuels (i.e. undertaking fuel management activities with the objective of reducing the risks to structures) normally has the greatest impact in and immediately around the structures themselves. However, this means that the most effective, treatable forest fuels are often located on private or reserve land, as well as on utility and highway corridors, where funding agencies have limited ability to act. Over 51% of the planning area is private or reserve land with 87% of the identified high or extreme Wildland Urban Interface Threats located there.

The current Strategic Wildfire Prevention Initiative (SWPI) Program remains centered on fuel management treatments as the focus available for funding that is aimed at protecting communities. In recent years there has been a shift towards funding educational initiatives, such as signage and support of the FireSmart program through WMB.

Consideration should be given for further changes to the program funding to be directed at support of educational initiatives on FireSmart, and prevention/preparedness techniques such as informational bulletins, signage, kiosks and information booths for community gatherings. In addition program funding could be directed to support capacity building of local fire department agencies which are volunteer by nature with most resources and efforts directed primarily at providing structural fire suppression. This support could come in the form of wildland suppression training costs and wildland suppression equipment.

The SWPI program is key to the support of local government, where basic structural fire suppression for the area residents are a challenge to meet. Given the geographic location and the vast forest areas that surround the communities within the planning area, supporting VFD will have a positive impact on providing additional resources available for fire suppression in not only protecting the provinces forest, while at the same time safeguarding the communities.

The lessons learned over the last number of years will aid in providing a program that can meet the needs of communities within a province that has such diverse weather, topographic, forest fuel types, structural development densities and community fabric. Support of local communities in changes to the SWPI program to realize other objectives within the CWPP could result in more fuel management activities directly and in around structures through education of landowners and increased fire suppression response and effectiveness by VFD supporting WMB efforts.

Implementing the actions outlined in this report (such as evacuation planning, FireSmart education, development and strengthening of volunteer fire departments, improving communication plans, and developing mutual aid and fire suppression agreements) will





require agencies such as Aboriginal Affairs and Northern Development Canada (AANDC), WMB and FNESS to support communities and local governments. Local governments and area residents must also take responsibility to contribute to the protection of their communities.

By working together in a collective effort, we can reduce the threat of the devastating impacts of a wildfire within the wildland-urban interface. Rather than simply reacting to disasters once they occur, our monies and efforts are better spent on preparing for and preventing such fires, as well as building local suppression capacity. This report has endeavoured to outline some of the actions that are necessary to begin that work.





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Glossary of Terms and Acronyms

Term	Description
AANDC	Aboriginal Affairs and Northern Development Canada (the federal department responsible for meeting Canada's responsibilities to First Nations, Inuit and Métis, and Canda's North). Formerly known as Indian and Northern Affairs Canada (INAC)
BEC	Biogeoclimatic Ecosystem Classification system.
BGC	Bio-geo-climatic.
Critical fire weathe	r When weather conditions reach levels where predicted fire behaviour will produce high intensity fires.
Cross-over days	When humidity levels are lower than air temperature: This weather condition can produce extreme fire behaviour with high intensity fires.
CWH	Coastal Western Hemlock zone (BEC zone)
CWPP	Community Wildfire Protection Plan
ESSF	Engelmann Spruce Subalpine Fir zone (BEC zone)
FBP	Canadian Forest Fire Behavior Prediction System: A tool that helps fire suppression agencies in predicting fire behaviour given current weather conditions and forest fuel types.
FFMC	Fine Fuel Moisture Codes.
Fire Protection Zon	ie
	A geographic area that has fire protection services for structural fires. These areas are defined by distance and time to a designated fire hall.
FireSmart Manual	This interactive manual provides individuals with the necessary tools in planning and mitigating the risk of fire in interface areas.
FMU	Fire ManagementUnit, designated to group smaller planning units into geographical areas that have similar terrain, development types, forest fuels, predicted fire behaviour characteristics, fire protection services, and local government.
FNESS	First Nations' Emergency Services Society (British Columbia) is a non-profit organization to assist First Nations in developing and sustaining safer and healthier communities by providing programs, services and related training and education.
Fuel Modification F	Projects Projects designed to modify forest fuels in such a way as to affect the chance of ignition starts, or the expected fire behaviour in a given fuel type. Changes in expected fire behaviour are designed to improve the success of control actions





High intensity firesFires that will exhibit very vigorous behaviour; control actions are either indirect or cannot be attempted until burning conditions ameliorate.ICHInterior Cedar Hemlock zone (BEC zone).INACIndian and Northern Affairs Canada, the former name for AANDC.IRIndian Reserve, as designated by AANDCFLNROBC Ministry of Forests, Lands, and Natural Resource Operations.MHMountain Hemlock zone (BEC zone)OBSCROpen Burning Smoke Control Regulation.OFCOffice of the Fire Commissioner. The provincial body tasked with
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OBSCROpen Burning Smoke Control Regulation.OFCOffice of the Fire Commissioner. The provincial body tasked with
OFC Office of the Fire Commissioner. The provincial body tasked with
the FireSmart Program.
RDKS Regional District of Kitimat-Stikine.
Series 100/215 Some of the fire suppression training courses as defined in the FireSmart manual; these courses are designed for cross-training of suppression agencies in wildland and urban interface fires.
Stand Management Plan A prescription/plan for a parcel of land that sets management objectives and treatment options for the growing/tending and harvesting of trees.
SWPI Program Strategic Wildfire Prevention Initiative Program
Thresholds Benchmark conditions where changes in wildfire threat or fire behaviour could be expected.
UBCM Union of BC Municipalities.
Wildfire Act Provincial legislation pertinent to prevention, detection and suppression of wildfires.
Wildland-Urban Interface (WUI)
The area where structures and human development meet or intermingle with undeveloped wildland vegetation.
Wildland-Urban Interface Wildfire Threat Assessment A numerical rating system assessing threats to structures and development from wildland fires. The rating system is based on four main components: forest fuels, terrain, structural placement and historic fire weather. This rating system guide was updated in 2012 from the previous 2008 version.
WMB Wildfire Management Branch—under FLNRO.



1 Introduction, Goals and Objectives

This report has been prepared in response to a call from community leaders to participate in the Community Wildfire Protection Planning (CWPP) process. The effort has been funded by the Regional District of Kitimat-Stikine and the Strategic Wildfire Prevention Initiative Program (SWIPI). Funding is administered by the Union of BC Municipalities and funded through the Ministry of Forest Lands and Natural Resource Operations. Through the field assessments and map-based analyses undertaken as part of this project, a detailed understanding of local fuel types in and adjacent to the communities has been established. The resulting detailed knowledge of local fuel types forms the basis for recommendations outlined in this report. This report documents what fuel types exist and what hazard they contribute to the risk of wildland-urban interface fires.

This CWPP comes more than ten years following the devastating effects of the 2003 'firestorm' that changed the landscape of Kelowna, BC. The firestorm and Gary Filmon's subsequent report on that event (*Firestorm 2003; Provincial Review*, 2004), has changed the way communities and government view wildfire management with respect to community protection.

Filmon's report identified clear recommendations on what steps should be taken to protect communities from wildfires. However, as with most such reports, while some steps have been implemented, many remain elusive to the objective.

With global warming and the expected increase in warmer and drier weather in many areas of the province, the potential and frequency of high intensity fires is increasing. The likelihood of wildland fires threatening communities is ever more at the forefront of concerns by local governments and fire suppression agencies. Considering this increasing threat, all stakeholders must be engaged in the development of their community's wildfire protection.

The communities are surrounded by grass and forest fuels intermixed with development, thus interface stakeholders need to prevent and prepare for a wildfire within the interface zone. The potential for devastating fires that destroy homes and properties is very much a real threat in the rural landscape that dominates the Hazeltons and Kitwanga communities: Hazelton, New Hazelton, South Hazelton, Two-Mile, Kispiox, Suskwa, Kitwanga and Cedarvale ,Moricetown and Kitseuecla areas. Examined in the context of topography, fire weather, and structural density, knowledge of existing fuel types will assist community planners in defining where increased risks occur and what can be done to reduce losses from fires, as well as to improve overall safety within the wildland-

urban interface. The First Nation communities of Moricetown and Kitseucla that are adjacent to the CWPP planning area have developed their own plans in regards to community wildfire protection planning.





Forest fuels frequently intermix with development in these communities, thus interface stakeholders need to prepare for the potential of a wildland fire within the interface zone. Preparation normally requires a combination of strategies that include initiating *public education* programs in risk and hazard reduction, implementing *fuel management* techniques, and ensuring that *fire-preparedness* levels are appropriate in relation to the potential for fires to start and the expected intensities of these fires. This report provides background and describes appropriate

There are three components to Community Wildfire Protection: Public Education Fuel Management Fire Preparedness

strategies to be applied in the planning area. Implementation of these strategies will require the participation and involvement of all stakeholders, working together to mitigate the risks and damages caused by fire.

Community Goals and CWPP Objectives

The people living in this rural and heavily forested region of British Columbia choose to live in a close relationship with the land, and have expressed a desire to maintain forested areas in and around their homes and communities. The wildlands provide important aesthetic, economic and sustenance values to the population of the region.

Many of the communities have expressed a desire to improve capacity and cooperation in respect to actioning wildfires.

At the same time, residents of the region recognize that wildfire poses a serious risk to their lives and property. Many residents in this area have personal experience with losses from fire, ranging from close-calls that caused no permanent damage, to experiences with serious and irreversible consequences. People in this region have expressed a wish to better understand fire and to protect themselves from the preventable risks associated with wildfire. The communities recognize that the rural nature of their communities poses a special risk, and that internal ability to prevent and respond to fire is critical. Specifically, a number of the communities have pointed to a need to improve capacity and cooperation in respect to actioning wildfires, where presently limited resources exist.

The objectives and intent of a CWPP report are therefore multi-fold:

- Improve community safety through identifying actions that will support and strengthen local fire prevention programs through education, development planning, and implementation of FireSmart principles.
- Support and strengthen fire preparedness programs such as emergency response plans, mutual aid and fire protection agreements.
- Support and strengthen capacity of volunteer fire departments to be effective structural- and wildland- fire departments.
- Identify and map wildfire threat ratings of surrounding fuel types to aid in developing future fuel management treatments adjacent to the wildland-urban interface.
- Identify actions for improving communications between local governments, residents and the BC Wildfire Management Branch.





At the same time, communities' objectives for a CWPP are dual:

- To reduce the threat to infrastructure and private property from wildfires;
- To reduce the threat of fires starting within communities and spreading to the wildland.

Several goals will help achieve those objectives:

Short-term Goals

- FireSmart the communities: i.e. create fuel-free and modified fuel areas that lower the risk of fire or fire damage directly adjacent to the community cores. Fuel treatment areas within and immediately adjacent to core development areas will enhance and maintain green space and buffers, and thus enhance the aesthetics of the communities.
- Develop strategies and tactics for evaluation and improvement of firepreparedness levels, capacity building, and training on FireSmart principles.
- Review the options to implement or strengthen both structural and wildland firefighting capacity through mutual aid agreements, fire suppression service agreements, equipment and training initiatives.

Mid-term Goal

 Conduct fuel management treatments outside of the core community areas, if and where appropriate.

Long-term Goal

- Ensure ongoing maintenance of areas that receive fuel treatments. This will
 require additional pruning and ground fuel removal as well as the treatment of
 fuel types that are currently untreatable owing to their current stage of
 development.
- Monitoring and continuous improvement

2 Location and Access

This Community Wildfire Protection Plan covers the developed areas of the communities of the Hazeltons, Kispiox, Suskwa, Kitwanga and Cedarvale, located in the northwest interior of British Columbia. The CWPP area is located within the Kispiox Timber Supply Area (TSA) in the Skeena Stikine Forest District of the Skeena Region. Collectively, the communities are referred to as being within the Hazeltons and Kitwanga areas (Figure 1. Overview map of Planning Areas. Figure 1 shows an overview of the seven Fire Management Units (FMUs) which are the focus of the planning area; more detailed maps in Appendix A also show fuel types and hazard ratings, as well as private land and Indian Reservation (IR) boundaries. Of the total FMU area, 4,590.0 hectares (ha) is IR (11.3 %), 15,336.4 ha is private land (37.7%), and the remaining 20,782.7 ha is Crown Land (51.0%). The total combined land base of the CWPP FMUs for all areas is 40,709.1 ha.

Community Access

All of the communities covered by this CWPP are road accessible: Highway 16 travels roughly east-west, and passes through portions of most of the FMU areas. Highway 37N diverges from Highway 16 at Kitwanga, and travels north through the community, continuing to the Yukon border. Community and forestry roads provide year-round access to the developed areas within each FMU.





Although Hazelton has a small airfield, neither Hazelton nor any of the other communities in this CWPP are typically accessed by air. Boat travel is possible along the Skeena and Bulkley Rivers. Railway access is located close to the Highway 16 alignment through the Suskwa and Hazelton FMUs, but travels close to the Skeena River on the opposite (north) side through the Kitwanga and Cedarvale FMUs. Railway stations are present in New Hazelton, South Hazelton, and Kitwanga.











3 Community Descriptions

The CWPP area described in this report includes a rich and diverse mix of northern communities, including several First Nations and associated Indian Reserve lands, as well as a variety of non-reserve community types ranging from dense, semi-urban developments to agricultural or other land-centric lifestyles. The 2001 Kispiox Land and Resource Management Plan (LRMP) cites forestry as the foremost source of employment and income, followed by the public sector and a miscellany of other sources including tourism and agriculture (derived from 1993 & 1995 data). First Nations and other residents take part in hunting, fishing and food gathering.

First Nations of the CWPP Area

Two First Nations, the Gitxsan and the Wet'suwet'en, have traditional territory within the CWPP project area. Nearby, but not included within the area addressed by this CWPP, are two additional First Nations territories: The Gitanyow have traditional territory almost adjacent to the CWPP area, north of Kitwanga; the Tsimshian territories to the west begin downriver from Cedarvale, near where Legate Creek enters the Skeena River.

Table 1 provides a summary of the Indian Reserves that are included within the boundaries of the CWPP area of interest.

Gitxsan (Gitwangak, Gitanmaax, Glen Vowell and Kispiox First Nations)

The traditional territory of the Gitxsan people is extensive, and is by far the dominant traditional First Nations' territory in the CWPP area¹. The Gitxsan include four individually administered First Nations, each responsible for one or more reserve lands:

- Gitwangak (First Nation #536), on eight reserves, but including only Gitwangak no.1 and Koonwats no.7 addressed within this CWPP. Of the 1287 registered members, 846 were living off-reserve, and just 406 living on their own reserves (as of February 2014 official numbers).
- Gitanmaax (First Nation #531), on five reserves, including Anlaw no.4, Gitanmaax no.1, Ksoo-gun-ya 2A, and Tsitsk no.3 addressed within this CWPP. Of the 2,340 registered members, 1,543 were living off-reserve, and just 693 living on their own reserves (as of February 2014 official numbers).
- Glen Vowell (First Nation #533), on Sik-e-Dakh no.2 reserve, with 412 registered members.
- Kispiox (First Nation #532), on ten reserves, including Agwedin no.3 and Kispiox no.1, addressed within this CWPP. Of the 1,592 registered members, 871 were living off-reserve, and 630 were living on their own reserves (as of February 2014 official numbers).

Wet'suwet'en (Hagwilget Village First Nation)

The Wet'suwet'en are a subgroup of the Dakelh (Carrier) people, whose traditional territory primarily occurs south of the CWPP area. In the area covered by this CWPP, only a single Wet'suwet'en community exists:

 Hagwilget Village (First Nation #534) has two reserves, both of which are included within this CWPP: Bulkley no.1 and Hagwilget no.1. Of the 768

¹ "The Gitxsan; 1:350,000" territorial map, available: <u>http://www.gitxsan.com/territory/territory-maps/</u>





registered members, 538 were living off-reserve, and just 195 living on their own reserves (official numbers as of February 2014).

Indian Reserve (IR) Name and No.	Area (ha) ¹	Location	Total Registered Population	Number of Occupied Private Dwellings ¹	Associated Tribal Council ¹	Do ACTIONS apply?
Gitxsan First Nati	on Jurisd	liction				
Gitwangak First Na	tion (Gitxs	an)	1287	140		
Gitwangak 1, #06775	1236.70	At mouth of Kitwanga River, on both sides of the Skeena River.	not available	-		YES
Koonwats 7, #06780	65.60	Cedarvale, on both sides of Highway 16, 11 miles southwest of Kitwanga (Hazelton District Lot 4855, Cassiar District)		-		NO - no population or dwellings
Gitanmaax First Na	an)	2,340	225	1116		
Anlaw 4, #06758	114.90	Left bank of Skeena River, three miles north of Hazelton	not available	not available -	1116, Gitksan- Local Services Society (LSS)	YES
Gitanmaax 1, #06755	1084.60	Confluence of Skeena & Bulkley Rivers, on both sides of Skeena River, at Hazelton.	not available	not available	1116, Gitksan LSS	YES
Ksoo-gun-ya 2A, #06756	145.60	East of Two-Mile Creek, three miles northeast of Hazelton.	-	•	1116, Gitksan LSS	NO - no population or dwellings
Tsitsk 3, #06757	55.40	Northeast of mouth of Two-Mile Creek, on both sides of Bulkley River	not available	not available	1116, Gitksan LSS	YES
Glen Vowell First N	ation (Gitx	san)	412	65	1116	
Sik-e-Dakh 2, #06760	632.70	West bank of Skeena River, ten kilometers north of Hazelton	412	65	1116, Gitksan LSS	YES
Kispiox First Nation (Gitxsan)			1,592	195	1116	
Agwedin 3, #06762	313.70	On both sides of the Kispiox River ~ three miles north of junction with the Skeena River, ~9 miles north of Hazelton.	-	-	1116, Gitksan LSS	NO - no population or dwellings

Table 1. Indian Reserve lands associated with this CWPP.





Indian Reserve (IR) Name and No.	Area (ha) ¹	Location	Total Registered Population	Number of Occupied Private Dwellings ¹	Associated Tribal Council ¹	Do ACTIONS apply?
Kispiox 1, #06761	1142.30	Ten kilometers north of Hazelton, at the mouth of the Kispiox River and on both sides of the Skeena River.	not available	not available	1116, Gitksan LSS	YES
Wet'suwet'en Firs	t Nation .	Jurisdiction				
Hagwilget Village Fi	irst Nation	(Wet'suwet'en)	768	85		
Bulkley 1	34.80	South of the Suskwa Development, on the right bank of the Bulkley River, (Cassiar District, North Frt. 1/2 Lot 526)			2 · *	NO - no population or dwellings
Hagwilget 1	123.80	At mouth of Two-Mile Creek, three miles east of Hazelton, on both sides of Bulkley River	not available	not available		YES
Total Area	4950 1					

Notes: 1. From First Nation Profiles, Aboriginal Affairs and Northern Development Canada (www.aandcaadnc.gc.ca).

Communities

In addition to the Indian Reserve lands identified above, this CWPP includes several communities that are either governed strictly by RDKS, or which have their own municipal council (District of New Hazelton and Village of Hazelton).

Table 2 summarizes the governing structure of each, as well as basic population data (where available).

Community	Community Type	Governing Body	Population (2011)	Private Dwellings Occupied by Usual Residents (2011)	Population Density (/km2)	Area (km2)
Hazelton	Village (Municipality)	Village of Hazelton / RDKS	270	111	96.5	2.8
New Hazelton	District (Municipality)	District of New Hazelton / RDKS	666	280	27.3	24.36
South Hazelton	Unincorporated Rural	RDKS	211	84	298.5	0.71
Two-Mile	Unincorporated Rural	RDKS	432	175	38	4.6





Community	Community Type	Governing Body	Population (2011)	Private Dwellings Occupied by Usual Residents (2011)	Population Density (/km2)	Area (km2)
Kispiox Valley	Other	RDKS	100	40	2	50
Kitwanga	Unincorporated Rural	RDKS	250	100	16	6.0
Cedarvale	Unincorporated Rural	RDKS	30	15	7.5	4
Suskwa	Other	RDKS	25	10	4	6

*Data for Hazeltons from <u>Statistics Canada Census 2011 Profiles</u>. Data for Two Mile, Kispiox Valley, Kitwanga, Cedarvale & Suskwa inferred/estimated from map/orthophoto base.

The following areas are included within this CWPP, with further details on each provided in Appendix H:

- 1. Hazelton area, north of Bulkley River
- 2. Village of (Old) Hazelton
- 3. Anlaw 4 IR
- 4. Gitanmaax 1 IR ('Ksan)
- 5. Ksoo-gun-ya 2A IR
- 6. Two Mile
- 7. New Hazelton area, south of Bulkley River
- 8. Hagwilget 1 IR
- 9. Tsitsk 3 IR
- 10. Seeley Lake
- 11. South Hazelton
- 12. District of New Hazelton
- 13. Suskwa
- 14. Bulkley 1 IR
- 15. Suskwa Development
- 16. Kispiox 1 IR
- 17. Agwedin 3 IR
- 18. Sik-e-Dakh 2 IR (Glen Vowell)
- 19. Kispiox Valley
- 20. Salmon River Road
- 21. Kitwanga
- 22. Gitwangak 1 IR
- 23. Kitwanga Valley
- 24. Kitwanga Back Road
- 25. Cedarvale
- 26. Koonwats 7 IR





4 Methodology

The planning area was roughly defined by the proponent as a radius within two kilometres of each of the communities; however, the two-kilometer limit was liberally adjusted to accommodate relevant landscape and development features that would influence the spread and control of large-scale wildland fires.

The initial step in this CWPP was to produce a working base map from the Ministry of Forests, Lands, and Natural Resource Operations inventory data, delineating the attributes associated with forest cover. The working base map contained numerous data layers:

- Crown Land/Private Land
- Indian Reserves
- Roads/Railways/Highways
- Utilities/Gas lines/Hydro lines
- · Water bodies
- · Forest cover & fuel types
- · Wildland-Urban Interface (WUI) Wildfire Threat Rating
- WUI assessment plot locations
- Historic fire start locations
- Planning boundaries

The planning area was then divided into seven geographic **Fire Management Units** (FMUs; refer to Figure 1 and maps in Appendix A) that correspond to areas that are similar in terms of terrain, aspect, development densities, protection services and topographic features. Base forest cover mapping was used to establish categories of fuel types. In order to reduce the number and variation of categories, the initial fuel types were then coalesced into fuel types that would exhibit similar hazard characteristics and fire behaviour. The fuel types were further confirmed and refined using local knowledge, satellite imagery, and orthophotos. Seven general categories of fuel types were created and assessed throughout the FMUs and the larger planning area. Additionally two non-forested fuel types were identified, the most significant being the grassland forest type, the other being the urban non forested type.

The purpose of categorizing fuel types was to identify differences in fuel type fire behaviour, and also to rate the effects of topography and development on wildland-interface hazards. To accomplish this, 24 WUI Wildfire Threat plots were established in the field. In conjunction with information on fuel, weather, topographical and structural factors, this information was used to develop a Wildland-Urban Interface Wildfire Threat Rating. The plots were located in representative fuel types with various aspects, slopes, and urban development to determine the range of hazards that could be expected in the project area.

Following completion of the Wildland Urban-Interface Wildfire Threat Rating, the assessment locations were transferred to the base map and the results were summarized. This summary and analysis were used in discussions with stakeholders.

Subsequently, a review of the fire history and fire weather records was undertaken to assess the relative risk based on historical conditions and, through an analysis of the data, determine when critical conditions typically occur. In addition, local bylaws, provincial statutes, relationships between agencies, and fire suppression preparedness levels were reviewed to confirm the ability within the planning area to prepare for and



respond to fires. Actions and recommendations for improvement are identified in Section 18 of this report.

Discussions with stakeholders occurred throughout the process to provide a perspective on what opportunities may exist to reduce the risk of wildfires through the introduction of effective fuel management techniques, landowner education, implementation of FireSmart principles, and existing laws. The current level of fire preparedness and the communication between suppression agencies were also discussed, and the opportunities for improving the ability and capacity of specific areas.

Based on stakeholder and threat rating information, options and recommendations for fuel management were developed. In conjunction with this process, a literature review was done of other completed CWPPs for communities such as Kispiox Village, Moricetown and Campbell River. The outcomes of these reports were assessed for their applicability to this CWPP, and additional recommended treatments or actions were incorporated where appropriate.

Drafts of this CWPP have been provided and discussed with key stakeholders to ensure buy-in of recommendations and clarity of responsibilities.

5 Environment

The communities of the Hazeltons and Kitwanga CWPP are located within the Nass Ranges Ecoregion ("NRA") of the Coast and Mountains Ecoprovince ("COM"). All of the communities encompassed within this CWPP are part of the Cranberry Upland Ecosection ("CRU"), which is characterized by subdued mountains whose tops were rounded by glaciation (with the exception of the highest peaks: notably the Rocher Deboule and Seven Sisters ranges). The mountains in this area run roughly in a northwest to southeast orientation, and produce a strong rainshadow effect on the leeward slopes. The valleys between mountain ranges in the CWPP area are characteristically broad and productive. Occasionally cloud masses produce periods of heavy rain, and the interaction of Arctic with Pacific air during winter months typically brings deep snow. Although summer months are typically warm and dry in this region, snow-melt contributes water through the growing season and thus the ecosystems of the Kispiox area are relatively moist, lush and diverse.

Valley bottoms to mid-elevation slopes in the CWPP area (up to 750 - 1000 m elevation) are described within the Interior Cedar-Hemlock (ICH) biogeoclimatic zone, and transition to the Engelmann Spruce Subalpine Fir (ESSF) zone at higher (subalpine) elevations. An exception to this are those areas west of the South Hazelton - Seeley Lake area, where Coastal Western Hemlock (CWH) occurs above the ICH and below the ESSF. West of Kitwanga, there is no longer ESSF in the CWPP region, as it is replaced by the Mountain Hemlock zone (MH). At the highest elevations, above timberline (~1500m), the area is classified as Alpine Tundra (AT). Although some of the sloped forest land is included within the boundaries of the CWPP planning area, the vast majority of the area that is directly addressed in this plan occurs within the ICH zone, which houses all the communities. No MH or AT are included within the CWPP area.



The ICH zone has an interior climate with cool, wet winters and warm, dry summers. Its forests are productive and diverse, and wetlands are limited in extent owing to effective drainage and the extensive amount of sloping, mountainous terrain. The zone is characterized by a mosaic of forest, with some deciduous scrub and wetlands of various ages and successional stages. All of the communities addressed

Wildfire does not normally have a significant ecological role in the ecosystems of the Interior Cedar Hemlock zone.

within this CWPP are located within the Interior Cedar Hemlock, Moist Cold subzone, Hazelton variant (ICHmc2), although the Cedarvale area is transitional to the Coastal Western Hemlock (CWH) zone.

The ESSF occurs in relatively cold, moist & snowy interior or continental climates with short, cool growing seasons. Lodgepole pine occurs frequently as a post-fire, seral species, and deciduous tree species are uncommon in this zone. The Hazeltons and Kitwanga lie below the ESSF's Wet Very Cold subzone (ESSFwv), which is characterized by an ericaceous shrub layer, sparse herb layer, and dense moss layer.

The CWH is similar to the ICH in vegetation and in climate, but is more coastal in nature, with relatively mild year-round temperatures and high levels of precipitation during both summer and winter months. Only the Wet Submaritime subzone, montane variant (CWHws2) occurs in the CWPP area, where it is found above the ICHmc2 on the slopes of the Hazelton Mountains, west of the Hazeltons, in the Kitwanga and Cedarvale areas.

Overview of Current Fire Fuels within and near the Communities

The communities on which this CWPP report focuses are located within the relatively moist, continental climate of the ICH biogeoclimatic zone, which experiences relatively continuous groundwater throughout the growing season as a result of continuous melting of the typically high snowpack. Subsequently, in most areas of this CWPP, fire is infrequent and of limited ecological significance. The ICHmc2 biogeoclimatic variant is classified in the Forest Practices Code *Biodiversity Guidebook* (1995) as a Natural Disturbance Type 2, having infrequent stand-initiating events, with an average fire return interval of 200 years and fires of moderate size (20 to 1000 ha). However, fire can play a significant role in drier areas of the ICH, releasing nutrients, decreasing forest fuel accumulations, and resulting in mosaics of successional and climax stands in those areas most affected by fire.

A small amount of lodgepole pine forest is present in the CWPP area, some of which has been affected by Mountain Pine Beetle (MPB). However, MPB in this area is now considered ranked as only a medium priority with regards to forest management (2011-2012 Forest Health Strategy).

6 Fire Management Units

The planning area for this CWPP was divided into seven geographic *Fire Management Units* (FMUs) that correspond to areas of similar terrain, aspect, development densities, protection services, and topographic features. Where relevant land features were present, the two-kilometer planning radius was adjusted in order to provide a legitimate, meaningful CWPP planning area.

The seven FMUs are roughly defined by the communities of Kispiox/Kispiox Valley, the Old Hazelton area, the New & South Hazeltons, the rural Kitwanga Back Road area, the Suskwa development, Kitwanga, and Cedarvale. The FMUs are designated so that a



fire that originates outside of a FMU would require extreme weather conditions to pose a threat to developments within the FMU. Conversely, however, given adverse weather conditions, an active fire located *within* an FMU has potential to threaten a community or development within that FMU.

Fires originating outside of each FMU would require extreme weather conditions to pose a threat to the communities within them.

New Hazelton FMU

The New Hazelton FMU is situated on the south side of the Skeena and Bulkley Rivers. The topography is rolling valley-bottom land that slopes steeply to the south to the prominent mountain peak of Rocher Deboule, and directly down to the riverbanks of the Skeena and Bulkley. The forest cover in the valley is dominated by deciduous-leading, transitioning to mixed deciduous-coniferous and conifer-leading stands on the steeper slopes to the south. The landscape is generally rolling with minimal aspect changes, and minor restrictions to fire spread within the FMU, although some strategic fire control points exist such as rivers, ridge lines, gullies and fire resistant fuel types. This FMU contains the communities of New Hazelton, South Hazelton and Hagwilget, as well as the Seeley Lake area that borders the Highway 16 corridor.

Hazelton FMU

The Hazelton FMU is situated north of the Skeena and Bulkley Rivers, ending south of the community of Glen Vowell on the south side of the Kispiox River. The forest cover is predominately deciduous-leading with areas intermixed with conifer or conifer-leading forests. Steeper slopes and large knolls are found scattered throughout the FMU. The topography is otherwise valley-bottom, and predominately slopes east and north, away from the developed area. The valley-bottom terrain is rolling, with gentle to moderate slopes and minimal aspect changes, thus providing only minor restrictions to fire spread. This FMU encompasses the communities of Old Hazelton, Gitanmaax and Two Mile, which border directly on one another.

Kitwanga Back Road FMU

The Kitwanga Back Road FMU is situated west of the Skeena River, across from the Hazelton FMU. This FMU is characterized by valley bottom land with scattered development in a rural, agricultural setting. Forest cover is primarily deciduous-leading, sloping to the west where pockets of conifer-leading stands are found. The scattered developments consistently have some form of forest clearing associated with the structures within this FMU. The terrain is generally flat to rolling with minimal aspect changes or other restrictions to fire spread.

Kispiox FMU

The Kispiox FMU is situated northwest of the Skeena River, and parallels both sides of the Kispiox River. This FMU extends some 25 kilometers north of the Hazelton and Kitwanga Back Road FMU. The FMU is characterized by low valley bottom land that is generally flat to gently rolling to where mountainous steeper terrain borders the east and west boundaries of the FMU. The forest cover is a mosaic of deciduous, coniferous, mixed forests, and non-forested areas intermixed with developed agricultural land. The community of Kispiox Village and the scattered developments of the Kispiox Valley are contained within the FMU. There are minimal aspect and slope changes, and only minor





restrictions to fire spread—although some strategic fire control points exist such as rivers, wetlands, cultivated parcels of land and fire resistant fuel types.

Suskwa FMU

The Suskwa FMU is situated ten kilometers east of Hazelton, north of Highway 16 and the Bulkley River, and east of the Suskwa River. The FMU includes a narrow corridor directly adjacent to Highway 16 in order to capture a few scattered developments there. The FMU is characterized by low valley bottom land that slopes steeply away from the developed areas. Forest cover here is a mosaic of deciduous, coniferous, mixed forests and non-forested areas intermixed with developed agricultural land. There are minimal aspect and slope changes and only minor restrictions to fire spread. This FMU contains the rural area known as the Suskwa.

Kitwanga FMU

The Kitwanga FMU is located north of the Skeena River from the junction of Highway 16 and Highway 37. The FMU parallels Highway 37 North for a distance of approximately eight kilometers. The FMU is characterized by terraced, gently rolling valley bottom land with scattered large knolls. The land generally slopes up and away from developed areas. Forest cover here is predominately deciduous, with pockets of conifer or coniferleading stands scattered throughout, intermixed with non-forested developed areas. Regular changes to slope and aspect within this FMU will help reduce the spread of fire. The communities of Kitwanga and Gitwangak, as well as some scattered rural acreages, are encompassed within this FMU.

Cedarvale FMU

The Cedarvale FMU is located along both sides of the Skeena River approximately 15 kilometers west of Kitwanga. The FMU is accessed via highway 16 on the south side of the river and the Kitwanga Back Road on the north side. The area along the Skeena is valley bottom land that is predominately deciduous or deciduous-leading forest. As a result of land development for housing and agriculture, grassland is consistently intermixed. The terrain from the valley bottom rises quickly to steeper slopes containing a significant more coniferous or coniferous leading forests. The terrain and forest types, along with regular slope and aspect changes, will contribute to fire control and suppression in efforts to contain fires.

7 Rating Wildland-Urban Interface Wildfire Threat

To develop a Wildland-Urban Interface (WUI) Wildfire Threat Rating for an area, a Wildfire Behaviour Threat Score is first quantified for vegetative types. The Behaviour Threat Score has *fuel type*, *weather*, and *topography* components: those vegetative types that exceed a certain Behaviour Threat Score threshold are then evaluated in relation to *structural* components within the CWPP area to give a WUI Wildfire Threat Rating.

A total of 24 Wildfire Threat plots were established in the field throughout the planning area to quantify Wildfire Behaviour Threat Score. The plots were established and recorded using the 2012 Threat Assessment Worksheet and following the associated procedures detailed in the FLNRO Wildfire Management Branch document, *Wildland Urban Interface Wildfire Threat Assessments in B.C.* (Morrow, Johnston and Davies, 2013). Summaries of the Wildfire Behaviour Threat ratings are provided in Appendix B.





Figure 2 summarizes plot ratings of each of the first three components (*fuel type*, *weather*, and *topography*) assessed for the CWPP project area, demonstrating how each contributes to a total Wildfire Behaviour Threat Rating (plot locations are shown on the maps in Appendix A).

Only if a plot has a *High* or *Extreme* Wildfire Behaviour Threat rating (i.e. a total of >95 points) is the *Structural* component assessed. The reasoning behind this being that a development can only be at risk if there are environmental and geographic factors which can carry fire.

A summary of Threat scores determined at each of the 24 plots is provided in Appendix B. The entire planning area represented by the 24 fuel assessment plots indicates that the highest Wildfire Behaviour Threat Rating that occurs in the planning area is *"Extreme."*

The maps in Appendix A illustrate the various WUI fuel types and associated WUI Wildfire Threat Ratings in relation to each of the communities assessed in this report. Based on historical weather, the fuel types are correlated here with the Canadian Forest Fire Behavior Prediction System (FBP) to determine how often "*Intense*" fire behaviour occurs in various fuel types within the planning area. Obviously, the worst combination is to have the required fire weather and a fuel type that can exhibit *Intense* fire behaviour within the interface area.

Fuel Component

"Fuel" is related to the attributes of a forest stand (forest or fuel "type") that exist in a given area. Fuel types are derived from the Canadian Forest Service publication, *Field Guide to Canadian Forest Fire Behavior Prediction (FBP) System* (Taylor, Pike & Alexander, 1996). Understanding the fuels described in the FBP system can aid in assessing several factors:

- The critical fire weather conditions that need to exist for high intensity fires in a
 particular fuel type;
- The frequency of those critical conditions for each fuel type;
- The timing of when those conditions exist;
- Historical wildland forest fire starts and causes;
- The timing of when those fire starts occur; and
- The trend of historical fire starts during critical fire weather conditions.

Through this analysis, the risk of a fire start during critical conditions can be quantified, as well as an assessment of current suppression preparedness levels when those conditions occur.

The fuel types identified in the FMUs provide, by far, the most significant contribution to the total Wildfire Behaviour Threat Rating (see fuel component, Figure 2). *Fuel* and *structural* are the only factors in the assessment equation that can be modified. Prescribed fuel treatments

Treatments can be prescribed to reduce High or Extreme WUI Wildfire Threat Ratings when the fuel type poses a risk.

can thus reduce *high* or *extreme* Wildfire Threat Ratings when the fuel component itself is at high risk for burning. Table 3 summarizes the areas of the various fuel types found and the Wildfire Behaviour Threat rating associated with each. For illustration purposes, non-forested and non-forested urban areas have been combined as well as > 50% deciduous and 100% deciduous fuel types.





Forest fuels found in the planning area have a significant amount of deciduous leading forest types found along the valley bottoms, comprising over 51% of the land base, along with over 11% made up of non-forested areas that would contain marshes, rock outcrops, talus slopes and other resistant fuel types. These types are the dominant fuel found within the developed areas. Grass is also a fuel found within the valley bottoms and directly adjacent to the developed areas. This fuel possibly poses the greatest threat to structures and development, making up about 13% of the area when combined with the urban areas of the region that also contain a significant amount of grass. The grassland fuel type plays a significant role in threats to the community during the periods of April through June. This fuel type was not rated using the Wildland Urban Interface Wildfire Threat Rating Guidebook, but rather assessed looking at historical fire starts, the prevalence of the fuel within the interface, historical weather patterns and the conditions that require easy ignition and fast spread. Identified grassland, if under cultivation, pose a resistant fuel type that is actually beneficial to safeguarding structures from a wildfire. Identified grasslands are not distinguished between cultivated and non-cultivated, as not managing the grasslands for one season will create a high WUI wildfire threat.

The subsections that follow Figure 2 and Table 3 describe in greater detail, the categories of fuel types and the wildfire behaviour threat that are found in the planning area.

Fuel Type	Non Forested - includes Urban		A ->S0% Deciduous	S Conifer Leading	S Conifer Leading – 2m crown base height	ର Pine Leading ⊇60%	a-10 Matted Grass	Total Area (ha)
WILDFIRE BEHAVIOUR THREAT HAZARD	Low-Mod	Low-Mod	high	High-Mod	High	High-Mod	High	
Hazelton FMU Area (ha)	317.2	2230.7	0.0	267.6	21.2	500.4	664.8	4001.9
New Hazelton FMU Area (ha)	1453.4	4787.4	136.7	938.4	131.5	370.2	881.8	8416.7
Kispiox FMU Area (ha)	1254.7	7381.0	59.8	3049.3	918.1	344.6	2273.2	15280.7
Kitwanga Back Road FMU Area (ha)	307.6	1180.6	22.9	176.2	130.5	48.8	347.6	3103.9
Suskwa FMU Area (ha)	781.9	1312.7	8.3	528.4	207.0	164.7	461.8	3464.9
Kitwanga FMU Area (ha)	289.2	1878.2	23.5	162.9	67.0	104.5	510.7	3036.0
Cedarvale FMU Area (ha)	311.8	1278.3	39.4	1098.6	207.7	324.4	141.0	3405.0
Totals	4436.9	20938.5	290.6	6221.5	1683.1	1857.6	5280.8	40709.1
% by Fuel Type	11	51	1	15	4	5	13	100

Table 3. Fuel type & Wildfire Threat Behaviour Hazard summary for FMUs.







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Matted Grass—01-a

For the purposes of this report, this type includes both urban and agricultural development as well as small pockets of natural grassland occurring on knolls and dry slopes. This fuel type is found on approximately 13% of the land base, located primarily along the valley bottom, directly adjacent to development. A significant amount of Agricultural Land Reserve (ALR) is located along the Kispiox River, the Bulkley River, and the Skeena River around Hazelton and Kitwanga².

Within the FMUs, these fuel types are often located directly in contact with the structures and communities that we wish to protect. They pose the greatest hazard during the spring of each year and are considered high risk for a period of six weeks between May and June, until "green-up" occurs.



Photo 1. Matted grass (01-a) fuel type at Glen Vowell.

By their nature, developed areas and grasslands also form wildfire control points owing to changing forest cover, intermixed fuel breaks and different fire behaviour. This fuel becomes more fire resistant as summer approaches. Human-caused fire starts and the resultant damage to buildings is common throughout the area. Alpine tundra is typically not included within the FMUs, as wildfires in these areas burn up and out, and thus pose no risk to communities. This fuel type can represent a *high* or *extreme* Wildland Urban Interface Wildfire Threat, dependent on the location of the area relative to the size and type of development.

This fuel type is characterized as a **01-a** fuel type in terms of fire behaviour, as defined in the Canadian Forest Fire Behavior Prediction System.

Deciduous (76-100%) forest fuels-D1

Pure deciduous forest fuels are typically found in association with water-influenced (riparian) slopes or flats, or in areas of historical burns (for example, the extensive burns associated with railway construction during the early 1900s in this area).

² From the Provincial Agricultural Land Commission's ALR Mapping website: http://www.alc.gov.bc.ca/mapping/RD/Kitimat-Stikine.htm





The deciduous fuel type provides the lowest overall Wildfire Behaviour Threat rating (low-moderate). This forest type provides natural fuel breaks and differing fire behaviour characteristics than the coniferdominated or grassland fuel types. Found throughout the planning area along with the M2-c fuel type, they represent a combined area of 51% of the total land base. This fuel is also a predominant forest fuel found within the valley bottom and adjacent to developed areas. This fuel type is characterized as a D1 fuel type in terms of fire behaviour, as defined in the Canadian Forest Fire Behavior Prediction System.



Photo 2. Deciduous (D1) forest fuel type.

Deciduous-leading (51-75%) forest fuels-M2-c

Deciduous-leading forest fuels are found along the active floodplain in valley bottoms, rivers and creeks and in some areas that had been heavily

disturbed from fire or have had an increase in the water table.

This forest type provides natural fuel breaks and differing fire behaviour characteristics than the conifer-dominated fuel types. Found throughout the planning area along with the D1 fuel type, they represent a combined ~51% of the total land base. This fuel type is also located within the valley bottom and adjacent to developed areas.

The M2-c & D1 forest Fuel Types provide natural fuel breaks and differing fire resistant behaviour.

The deciduous-leading forest fuel type is classified as an **M2-c**, based upon the Canadian Forest Fire Behavior Prediction System.

Deciduous(26-50%) forest fuels-M2-b

This fuel type, with a deciduous component less than 50%, represents the fuel type that may exhibit the highest fire intensity ratings at the lowest weather thresholds. The M2-b fuel type can be expected to have the most available days (historically ranging from 6 to 40 in the CWPP area) in a season where it can produce high intensity fires (see Section 10.1, Figure 3 - Critical Fire Weather days). This fuel type is represented in ~1% of the land base and is found in small, fragmented patches throughout the planning area near transition types from deciduous leading to coniferous leading. This fuel type can represent a *high* or *extreme* Wildland Urban Interface wildfire threat, dependent on the position of the area relative to the size and type of development.

Other fuel types or fuel breaks (such as right-of-ways, rivers and topography breaks) would anchor control lines for this fuel type.

This forest fuel type is classified as an **M2-b**, based upon the Canadian Forest Fire Behavior Prediction System.



Pine-leading—C3

These fuels represent forest stands that are dominated by pine; they may be mixed with aspen or other conifer species.

Pine-leading fuels in this region are located on flat benches, knolls and valley side hills. This fuel type is often fragmented, surrounded by other fuel types, but can occur in sizable areas of between 25 and 50 hectares. The fuel type comprises approximately 5% of the land base within the planning area.

Given high or extreme weather indices, this fuel type could pose significant control difficulties. The current Mountain Pine

The C3 fuel type and its proximity to development could pose significant control difficulties. Beetle infestation within the province has had a



Photo 3. Pine (C3) fuel type near Kispiox.

has had a minimal effect on the pine forests of the area to date, but changes could occur in the future that may

modify the fuel hazard of these forest stands as damaged or dead trees degrade over time (see section 8). Other fuel types, or fuel breaks such as right-of-ways, rivers and topography breaks, would anchor control lines for this fuel type. This fuel type can be expected to have between 4 and 20 days each season where fire weather conditions exist to create high intensity fires (see Section 8, Figure 3).

Pine-leading stands in this region are characterized as a C3 fuel type as defined in the Canadian Forest Fire Behavior Prediction System.

Conifer-leading (mature)—C5

This fuel type is a combination of miscellaneous, coniferous-dominated forests that do not fit the other categories included in this CWPP area. The stands may be pure conifer, or may have a minor deciduous component (up to 25%), and occur in patches throughout the landscape, from valley bottom to subalpine, adjacent to other forest stands. The fuel type comprises approximately 15% of the land base within the planning area.

This Forest type is somewhat fire resistant and can act as an anchor or suppression control point to other more volatile fuel types. This fuel type can be expected to have between 1 and 5 days a season where fire weather conditions exist to create high intensity fires (see Section 8, Figure 3). The Conifer-leading (mature) forest fuel type is classified as a **C5**, based upon the Canadian Forest Fire Behavior Prediction System.



Photo 4. Conifer-leading (C5) forest fuel type.





Conifer-leading (Two-Metre Crown Base Height)—C6

This fuel type represents coniferousdominated forests less than 40 years old, with a crown base height of less than two meters. The stands may be pure conifer, or may have a minor deciduous component (up to 25%), and occur in patches throughout the landscape, from valley bottom to subalpine, adjacent to other forest stands. The fuel type comprises approximately 4% of the land base within the planning area.

This fuel requires significantly lower weather thresholds to create high intensity fires than most fuel types in the area, and is highly similar to the M2-b weather thresholds. These



Photo 5. Young conifer-leading (C6) fuel type.

conditions typically occur between 6 and 40 days per year (see Section8, Figure 3).

This fuel type typically has an increase in ground and ladder fuels that can support crown fires at lower weather thresholds than other fuel types found within the planning area. Immature lodgepole pine stands are included in this type, which may exhibit even greater fire intensities. This fuel type can represent a high or extreme Wildland Urban Interface wildfire threat, dependent on the position of the area relative to the size and type of development.

The Conifer-leading (Two-Metre Crown Base Height) forest fuel type is classified as a **C6**, based upon the Canadian Forest Fire Behavior Prediction System.

Weather Component

Weather as a component cannot be altered. Weather is expressed as a numerical rating of the surrounding local fire weather and historical fire starts. Across the planning area, weather codes provided 4 to 11 total points to the total Wildfire Behavior Threat score, depending on the relative soil moisture regime/ecosystem type at each plot.

All the communities within this CWPP are situated within the ICHmc2 biogeoclimatic variant and have similar historical fire occurrence (at all plots contributing only one point to the Wildfire Behaviour Threat score). The ICHmc2 exhibits a cool interior climate with a short summer period, but with long summer days and limited overnight cooling during these months. Similar to the CWH BEC zone in the west, weather here has a low overall significance to the Wildfire Behaviour Threat score, with the lowest possible rating in this category. The remaining weather points are derived from the degree to which individual plot sites are drier or wetter within this biogeoclimatic variant, with those sites that are drier contributing more points to the total weather Wildfire Behaviour Threat score. Section 8, Fire Weather and Fire History, provides more detail on this factor in wildfire behaviour, history and predictions for the Kispiox and Kitwanga region.

Topography Component

Like weather, topography is a component that cannot be changed. *Extreme* wildfire threat ratings are related to south aspects with steep slopes and gullies. Within the





CWPP planning area, development is typically located on flat benches or gentle slopes, which have a low to moderate influence on the Wildfire Behaviour Threat score. Most development occurs on the valley bottom or on terraces or benches bordering one of the major rivers (e.g. the Skeena, Bulkley or Kispiox Rivers).

Developed areas that are situated on flat ground consistently have lower Wildfire Behaviour Threat ratings. Increased fire behaviour would be expected if a developed area were located on southern aspects with steeper slopes and gullied terrain. Examples of this would be the upper bench of the Two Mile and the new subdivision above the Gitanmaax fire hall. These sites generally face south and are on or above steep hillsides.

Topographic fire-breaks such as ridges, drainages, and mountains, combined with a mosaic of fuel types, provide natural defence lines to prevent wildland fires from spreading into the interface. A range of topographic conditions throughout the project area resulted in considerable variation in the contribution of this component to the overall Wildfire Behaviour Threat Rating, although, at most field plots, topography was not a significant contributor to the total threat rating. The general topography of the CWPP area is favourable for control efforts to contain fires to one FMU, owing to rolling terrain, large distances between communities, a mosaic of fuel types and the presence of many streams and rivers. The developed areas can generally be described as relatively flat with minimal slope and rolling terrain.

Structural Component

Structural factors relate to the proximity and type of structures/development with respect to fuel areas. As discussed, the 2013 guide, *Wildland and Urban Interface Wildfire Threats in B.C.*, uses a system that determines a Wildfire Behaviour Threat Score, which does not assess structural factors. A structural component is not assessed unless it has been shown that fuel, weather and topography combine to provide a reasonable risk of carrying fire (i.e. a Wildfire Behaviour Threat of *High* or *Extreme*). Structural factor assessment results in a total Wildland-Urban Interface Threat class. This Threat Class is presented as a red for high or purple for moderate outline on the fuel type maps (Appendix A) and forms the basis of identifying potential fuel management projects. Field-based plots showed considerable variation in ratings for this category, depending on the type of development and its proximity to each plot: Ratings increase in areas of semi-rural development, where structures are often located next to forest fuels or in interface areas.

The structural factor is related to position and proximity, and can only be "modified" when planning for new development or when replacing existing structures.

Wildfire Urban Interface Threat Class Mapping/Treatment Areas

Wildland Urban Interface Wildfire Threat Class (WUI Threat Class) allow the determination of priority areas for potential WUI Threat reduction activities. These Treatment Units (TU) are based on areas adjacent to communities with WUI Threat Class of *high* or *extreme* (see map Appendix A).

In total 3,252.4 ha were identified within Treatment Units for WUI Threat reduction. TUs were assigned based on the priority of protecting structures and other values in each community. Areas not identified for treatment are areas determined to have a low or moderate WUI Threat Class. The areas considered a high or extreme WUI Threat Class have been further defined into crown, private and Indian Reserve land. **Error!**




eference source not found. lists the area and WUI Threat Class wildfire for each fuel type. Proposed wildfire threat reduction treatments for each TU will include a combination of stand density reduction, ladder fuel reduction, and ground fuel removal, and in the case of grassland fuel types, annual burning, or cultivation.

Grasslands represent over 80% of the identified high or extreme WUI Wildfire Threat Class Rating found within the planning area. Approximately 87% of the identified treatment units are located on private or Indian Reserve Lands. The remaining 13% are found within provincial lands, of which 7% is a grassland fuel type.

Changes to forest health and change caused by natural disturbance can affect the Wildfire Behaviour Threat rating over time. Consideration must be given to evaluating changed circumstance and the threat on urban development. The windstorm of 2010 that affected Rosswood, BC to the west, provides a vivid example of how a changing landscape can significantly increase wildfire threats to urban development.

The major forest health issues in the CWPP planning area include Mountain Pine Beetle ("MPB"), *Dothistroma*, fire, windthrow, aspen leaf miner, western balsam bark beetle and various other forest pests and pathogens including the poplar and willow borer. However, the <u>2011-2012 Skeena-Stikine draft Forest Health Strategy</u> indicates that the highest ranked forest health factors (by potential impact on forest management activities) for the Kispiox TSA are *Dothistroma* needle blight (identified as "Very High" priority), followed by spruce bark beetle and Tomentosus root disease (both identified as "High" priorities). Mammal damage, MPB, stem decay, insect defoliators and western balsam bark beetles were given a "Medium" priority ranking, while other pathogens and forest health factors were ranked "Low" or "Very Low" at the time of the report.

FLNRO offers a <u>Field Guide to Forest Damage in British Columbia</u> (2001), available online, for further information on forest pests and pathogens.

Mountain Pine Beetle influences

Changes to fuels

The forested area in this region has a small but significant proportion of the fuel types that are comprised of pine, and many of these stands have been affected by MPB. The beetle outbreak has resulted in pine-leading stands in this region that have a significant number of standing dead or downed trees, resulting in a fuel type that has become more susceptible to higher intensity fires than an undamaged mature pine stand. However, the MPB epidemic that seriously affected stands to the south and east of the CWPP area has not been as severe in the Kispiox Region, largely owing to the high diversity of tree species in the ICH zone and a minimal area of lodgepole pine-dominated stands.

MPB effects on Wildland-Urban Interface Fire Hazard

Depending on the severity of a MPB outbreak, a complete attack such as that experienced in the central interior of British Columbia would change the hazard rating of pine component fuel types. As pine changes from green foliage to standing red, this change in foliage immediately increases both the flammability of the fuel type and the expected fire intensities. Fires under certain weather conditions that would have normally produced moderate fire intensities with somewhat predictable behaviour would now react with *extreme* behaviour and *high* intensities. These are the fires that are extremely difficult to control with suppression forces, other than with very limited action or strategic defences. The *red and dead phase* of the mountain pine beetle infestation



changes to a *grey phase* in two years. The experience of WMB fire specialists on fires in Central Interior pine forests indicates that grey phase fuel types have produced crowning fires of very high intensities, owing to the high amount of dry/dead fuel available during this phase. Predictions for the next phase, as standing dead pine falls down over time, are that there could be a significantly higher hazard than the current "green" stage³. If this is found to be the case, the need to remove or modify these fuel types will become all the more important.

Windthrow

Much of the planning area is located within the main river valleys, where high winds are a common occurrence. Fuel modification treatments where removal of the stand canopy is prescribed should consider the prevailing winds, type and size of treatment as well as boundary location. Where a prescribed fuel management treatment could pose a risk from windthrow, a windthrow risk assessment should be carried out while developing the fuel treatment prescription and prior to implementing the treatment.

Forest Pests and Pathogens

Aside from the MPB infestation, few forest pests or pathogens have significantly impacted the regional forests in terms of changes to fuel loading and the resultant effects on wildfire hazard and behaviour. This said, significant damage has been done to the region's mature willows over recent years by the poplar and willow borer, leaving significant areas (e.g. wetland edges and other willow-dominated ecosystems) with substantial amounts of dead, dry fuel. *Dothistroma* has also hit pines hard in localized areas, and the aspen leaf miner has, for several years, been impacting aspen stands in the region and throughout eastern British Columbia; continued damage from the leaf miner could result in deaths within the considerable aspen stands of the CWPP area. Finally, any fuel treatment prescription should evaluate the possibility for root rots, such as Tomentosus (primarily spruce and lodgepole pine) and Annosus (attacking primarily hemlock), as well as defoliators and other insects such as the spruce bark beetle that infested forests to the north in the Bell Irving in the mid-1980s.

The maintenance of species diversity should be considered to lessen the impacts of pests and pathogens on forest health and to mitigate the potential effects of climate change.

8 Fire Weather and Fire History

Fire Weather

A summary of historical fire weather and fire starts has been collected from the Ministry of Forests, Lands, and Natural Resource Operations Wildfire Management Branch database. The methodology was to set parameter thresholds of conditions that would cause high intensity fires in excess of 2000 kW/m (kilowatts per lineal meter). This threshold is widely understood as the condition when a fire can no longer be controlled by hand-tools alone, and it may become extremely difficult to control. It marks the point when control tactics such as direct attack are not feasible, and large landscape characteristics are used for control (e.g. through back burning).

³ Brad Martin, Ministry of Forests, Lands and Natural Resource Operations. Pers. Comm., May 14, 2014





For each fuel type encountered in the planning area, fire intensities will reach this critical point at different thresholds. Figure 3 summarizes these thresholds from the historical fire weather data for four different fuel types. This data provides an average over ten years, but can reflect large variation from year to year. There have been no adjustments to the weather indices for factors such as wind, slope, aspect or time of day.

Fire weather determines the critical point at which fuel types will reach thresholds that will result in high intensity fires

Although it is possible to refine the prediction of fire behaviour based on the above variables, it would be difficult to predict or plan for the multitude of variations experienced throughout the planning area. Therefore, the threshold levels will most likely occur more often than illustrated owing to an increase in the Fine Fuel Moisture codes because of the time of day, allowances for slope or aspect and changes to wind speeds. Using fire weather history from the two weather stations located near the communities, four fuel types have been compared: The C5 fuel type (conifer-leading); the C3 fuel types (pine-leading stands); the M2-b fuel type (up to 50% deciduous); and the M2-c fuel type (51-75% deciduous). The M2-b fuel type is similar to that of the C6 fuel type. The data illustrate that the area of the Cedarvale weather station has significantly more critical days per year than that of the Kispiox weather station, ranging from 4.8 (vs. 0.2) days in the C5 (conifer-leading) fuel type, to 37.8 (vs. 6.1) days per year in the M2-b (mixed deciduous-coniferous) fuel type (Figure 3).

Critical fire weather occurs throughout this region in what can be characterized as a relatively long, disbursed fire season that begins as early as May, peaks in mid-summer, and frequently continues on through August and occasionally through September. The fire weather can be quite variable from year to year, with some years presenting extended dry and hot conditions and other years being cooler and damp.

A high-risk condition that exists in the fuel types is the time prior to green up in the early spring of each year. This is when there is more surface vegetation available for easy invition at a matrix of energy The

ignition at a relatively fast rate of spread. The significant advantage for suppression efforts on this type of fire is that control is easier compared to late spring or summer conditions. Although a fire may ignite easily and may spread fast in fine fuel types, it does not burn as intensely at this early time of year due to the lack of time that large and medium size fuels have had an opportunity to dry. This "spring " hazard would be found in lighter fuels with ground cover such as

Spring and late spring historically present an increase in fire starts and elevated fire weather conditions.

plantations, cultivated fields and forested areas with surface vegetation or forest floor fuels such as small woody debris or dry leaves. There is a two to three week period during which deciduous-dominated forests are susceptible to burning, just prior to "green-up." Late spring, specifically mid-April to June, is a time when we can expect an increase in fires starts, and elevated fire weather conditions could support large intense fires. June is also the month when most cross-over days occur, as a result of the longer days leading up to summer (cross-over days are when humidity levels are lower than air temperature; see Figure 5 below).





Figure 3. Average number of days per annum achieving weather thresholds for high intensity fires (>2000 Kw/m), by fuel type and community weather station.

Fire History

Northern British Columbia has experienced significant climatic changes over the past two decades. As global warming effects become more apparent, changes in weather patterns will have a significant impact on wildland fires and their behaviour.

The fire history for the CWPP planning area has been derived from data obtained by FLNRO's Wildfire Management Branch (WMB), which is the branch of government responsible for control and suppression of wildland fires in the province of British Columbia.

It is important to quantify not only the fire intensity one could expect in local fuel types, but also the risk and history of actual fire starts. Fire starts documented within the past ten years in the Kispiox Timber Supply Area (called the Kispiox "Zone" for WMB administrative purposes) are shown in figure 4 which highlights the occurrences of both lightning and human caused fires in the broader CWPP area from 2004 through 2013. (Note that the Kispiox Zone includes the communities of Kitseguekla and Gitanyow, as well as Highway 37N up to the Cranberry River).

It is apparent from the data shown in figure 4that fire numbers and causes in the Kispiox Zone demonstrate considerable annual variation, both in terms of natural (lightning) starts and human-related causes. On average (based on 2004 to 2013 data), lightning causes 7.4 fires each year, although in the ten year period examined, the annual lightning fire total ranged from zero (2005, 2007 & 2011) to 27 (in 2004).



Regional District of

Kitimat-Stikine

C3 = Pine-leading; C5 = Conifer-leading; M2-b = 26 - 50% Deciduous; M2-c = Deciduous-leading (51-75%). (Source: Ministry of Forests, Lands, and Natural Resource Operations)





Figure 4. Fire starts in Kispiox Zone, by year and cause.

The data show that most fires in the region are human-caused (104 out of a total 178 fire starts in the ten year period 2004-2013, or 58.4%);

only during the unusual lightning storm seasons of 2004, 2010 and 2013 did lightning cause more fire starts than humans.

Of note:

Over the past decade, people have caused more than half the total wildfires in the region.

- Twelve interface fires are on record during this period, none of which were lightning-caused.
- Eight of nine total arson starts for the period were documented in the year 2005.
- As a cause, "Juvenile Fire Setters" (experimenting with fire or smoking) ranged from one to five fire starts each year from 2004 through 2007, but there were no fires attributed to juveniles for the next six years.
- "Railways" caused no fires in this ten-year period (there is a start noted just prior, in 2003, from grinding/cutting operations).
- Powerline short circuits accounted for four of twenty fire starts categorized under "Miscellaneous" during this period.
- "Fire Use" (open-burning) accounted for a total 13 fires in ten years.
- "Campfires" accounted for nine total fire starts.
- "Equipment Use" caused a single fire during this ten-year period (hot exhaust contact).
- Burning for cultural purposes and for forage enhancement is common practice in the CWPP area, and has accounted for five of the categorized "Incendiary" fire starts during this period.





For a breakdown of historic fire starts and specific causes, as well as maps identifying the specific areas for which data were captured around each of the FMUs, refer to Appendix C.

While historical fire starts in the Kispiox Zone average approximately eighteen fires per year, annual totals vary considerably and may prove increasingly erratic as a result of ongoing climate change. Recent annual totals have been as high as 38 for the region, indicating that the threat of wildfires in the region can be considerable.

Fire history data were also used to consider when critical fire weather conditions occur (such as "cross-over days," when humidity levels are lower than air temperature). In the CWPP area, fewer cross-over days occur after June 30th, when more intense fires could be expected owing to long term drying trends. Although there are numerous factors that can effect fire intensity, the amount and timing of historical cross over days provides another analysis of how often critical fire weather occurs in a region. Fire starts can still occur and fire behaviour can still be intense regardless of being a crossover day (Figure 5).



Figure 5. Average number of cross-over days, by month (data from 2004 through 2013).

Data Source: Ministry of Forests, Lands, and Natural Resource Operations

There were 19 cross-over days at Kispiox fire weather station between 2004 and the end of the 2013 fire season. The season of cross-over days ranges from April 9 through August 16 in our data, and varies considerably from year to year.

Similar weather patterns were experienced at the Cedarvale station, but with more days in cross-over (frequently overlapping with the Kispiox cross-over days). In total there were 28 days over ten years, ranging from March 2 through August 14.





In summary, several relevant points may be drawn from the documented fire and weather history in the CWPP area:

- Fire starts occur on average eighteen times per year throughout the Zone, however, this number is highly variable.
- Fire starts in this region occur in the spring and summer months, when lightning
 may strike and ignite susceptible forests, and when humans are more active
 outdoors and therefore pose an increased risk of starting fires.
 - Lightning in this region can occur at any time in the summer, from late June through mid-September. Recent fire history shows that a single storm can be responsible for numerous wildfires, significantly affecting the total number of fire starts in a season.
 - Fire starts are common during the spring in most of the CWPP communities, as residents burn the grass in the vicinity of their homes.
- Cross-over days are when *extreme* fire behaviour and intensity can result due to the air temperature being higher than the air humidity. Cross-over days occur from April through August in the Kispiox Zone, when day length is long and there is limited overnight cooling. Most cross-over days occur in the months of June and July, when there is little night in the region: Averages range from 0.5 to 1 day per month during this period. However, the cross-over days show no definitive pattern in timing over the past ten years, with the cross-over days occurring irregularly throughout the summer months depending on the year. Furthermore, trends vary across the region owing to latitude and local weather patterns.
- The Cedarvale and Kispiox weather stations show similar patterns, with crossover days in the Kispiox peaking earlier than in Cedarvale (June vs. July). Cedarvale shows more average cross-over days than the Kispiox weather station, particularly in the later part of the season. Cedarvale is considered to be an area that is drier and warmer than the Hazelton area.

9 Fire Preparedness: Prevention - Preparedness

FireSmart Program

The low-density development that occurs in the interface zone (a large component of the planning area) puts these areas at particular risk to wildfire, and increases the risk to wildlands from human-caused fires. The potential damage caused by WUI fires to homes and property can be reduced by employing the basic components of a FireSmart program.

It is for these reasons that "FireSmart" principles should be promoted to the land owners. Furthermore, local governments should require that FireSmart principles be considered for new development or planned expansion of existing developments. This could be in the form of bylaws regulating development and building materials to a development check list that reviews the associated surrounding fuel types, forest fuel management opportunities, access points, water sources, protection services and the use of fire resistant building materials.

Fire suppression agencies, local governments and landowners all have a role to play in protecting our communities. The implementation of FireSmart programs will provide the most cost-effective impact on reducing losses and damage from wildfires.





The *FireSmart* manual for the homeowner and protecting your community manual is available online at the Wildfire Management Branch website⁴.

These manual's provides details in discussions on several relevant topics:

- hazard assessments for your property;
- solutions and mitigation actions;
- emergency measures;
- wildland urban interface training;
- communications and public education;
- land use planning.

Fire Suppression agencies, local governments and land owners all have a role to play in protecting our communities. The implementation of the FireSmart Program will provide the most cost effective impact on reducing losses and damages from wildfires.

Operational Fuel Management Treatments funded through the SWPI should include FireSmart education and delivery as an eligible project. Delivery of this material, in addition to buy-in from landowners, has the potential to result in more effective fuel management treatments undertaken directly adjacent to structures and development, providing defensible positions for fire suppression forces.

This approach has been discussed with representatives of the FLNRO Wildfire Management Branch. Currently the Wildfire Management Branch is the primary delivery mechanism for FireSmart through the production of educational material (pamphlets)⁵. Work is being carried out in cooperation between local government and WMB to deliver FireSmart material to residents through a mail-out, public gatherings, and fuel management demonstrations.

Industrial Prevention

Industrial fire prevention and preparedness operations are closely linked to the BC Provincial *Wildfire Act* and Regulations. These legal documents determine the number and type of fire tools required to be on site during fire season, as well as the restrictions to industrial operations based on fire weather. These restrictions may require operations to be on early shift or, in the case of extreme fire danger, a complete shut down until the weather changes significantly.

The Wildfire Regulations also specify the need for industrial operations to assess and reduce fire hazards created by industrial users. The *Regulations* specify the conditions in which the burning of slash piles by industrial users (as well as private landowners) can occur. Burning is the common treatment to reduce a known fire



Photo 6. Fuel cut, but not removed beneath utility lines (Kispiox Valley Road).

hazard following industrial operations; the *Regulation* also specifies the use and restrictions on open burning by area residents.

⁵ Shannon Irvine, WMB Fuel Management Specialist, personal conversation, May 2014



⁴ www.bcwildfire.ca/prevention



Abatement of fuel hazards needs to be

monitored and enforced to prevent wildfires

associated with both

industrial activities and

private land use.

The Ministry of Forests, Lands, and Natural Resource Operations is responsible for ensuring the compliance of the Wildfire Regulations for all residents and industrial users.

It is important that compliance of hazard reduction, prevention and preparedness be at a very high level, particularly within the interface zone. This will include utility companies that maintain and clear their right-of-ways.

Efforts to educate industries on the requirements of the Wildfire Regulation, as well as follow-up compliance checks and enforcement should be a high priority for Ministry personnel.

Emergency Response Planning

Local government—in coordination with the Provincial Emergency Management BC (EMBC) develop Emergency Response Plans at a provincial and regional level. The Regional District of Kitimat-Stikine currently has a draft Emergency Plan - January 2013. (Appendix G).

Importantly, individuals should also develop personal emergency response plans to ensure that, if an emergency happens in the community, households are prepared to have an evacuation route and take care of themselves for at least 72 hours. Such plans demonstrate an understanding of the potential risks, and ensure that each member of the household will know what to do in the event of an emergency. Neighbours may also work collectively on a plan for mutual assistance in the event of an emergency. The RDKS has provided direction for Emergency Preparedness on their website⁶.

Evacuation Planning

Owing to the rural setting of this area, the people in the CWPP planning area are accustomed to dealing independently with emergency situations of various types. However, wildfire is a hazard for which most residents and local governments are poorly equipped. The typical fire weather patterns and associated fuel types of the Hazeltons

and Kitwanga area do have the potential, as does any portion of the province where forested land dominates the landscape to provide ideal conditions for a fire to start and spread quickly. For these reasons, particular attention to planning for fire emergencies is needed. As well, evacuation planning must consider and plan for smoke evacuation which

All communities need to have updated evacuation plans.

became apparent during the 2010 fire season when the communities in the northwest part of the province were impacted for extended periods of time by the health risks associated with smoke.

Evacuation planning is an item that requires particular site-specific consideration and development of formal procedures on a community-by-community basis. The type of emergency dictates appropriate responses. For example, in regards to safe mustering locations, the high-ground muster points suitable for floods are inappropriate for fire emergencies.

⁶ http://www.rdks.bc.ca/content/emergency-preparedness





Several elements are necessary for consideration and for inclusion in evacuation plans:

- Identification of emergency possibilities (e.g. flood, wildfire, structural fire, windstorm, winter storm, power outages, smoke, etc.).
- Identification of potential and preferred disaster and evacuation routes and means (e.g. highway, water, and airlift).
- Muster points identified for various emergency types (e.g. schools, upslope area).
- Equipment and supplies requirements (e.g. medical, transportation, food, shelter, etc.).
- Responsible authorities and designated persons (who is authorized to make decisions, assist with evacuation?).
- Public communications (e.g. protocols, use of VHF, internet, telephone lists, door-to-door).
- Security of evacuated persons as well as property.
- Registries: keeping track of community members (potentially including predisaster self-registry of elders and persons with special needs).

The Regional District of Kitimat-Stikine has developed evacuation plans within their Emergency Plan (Appendix G).

10 Fire Preparedness: Fire Suppression

Fire preparedness includes the ability to suppress a fire, to carry out communications, and to be able to respond quickly to emergencies. This requires education, to ensure the transfer of appropriate knowledge to appropriate parties.

Fire Suppression Priorities

Fire Suppression on Crown Lands and forested areas of Indian Reservations is the responsibility of the BC Provincial Government through a provincial-federal Wildfire Response agreement. The communities and landowners themselves are responsible for control and suppression of both structural and wildland fires on private lands.

The Province of British Columbia has provincial firefighting resources that are available for suppression activities throughout the province. These resources are positioned and deployed on the basis of the risk of fire starts and expected fire behaviour. When the resources have been entirely committed to suppression activities, they may be reassigned to any area of the province based on provincial priorities. Priority is based on four factors:

- 1. Threat to Human Life and Safety;
- 2. Threat to Critical Infrastructure;
- 3. Threat to High Environmental and Cultural Values;
- 4. Threat to Resource Values.

The expectation is that an interface fire will receive a high priority if it threatens, or has potential to threaten a community.

As both the province and the local authorities have responsibilities for control of fires, the communities described in this CWPP should either develop or enter into service agreements to maintain a fire suppression force capability (i.e. training, equipment & manpower) sufficient to protect each community. It will also be important to continue to strengthen communication links between the representatives of the municipalities of





Hazelton and New Hazelton, community associations, the Regional District, and the FLNRO Wildfire Management Branch regarding fire prevention and fire preparedness, in particular during fire suppression activities. The fire suppression activities will invariably require direct communication and dialogue between officials and the ground forces of each local government.

Wildfire Management Branch maintains a Fire Attack base in the Hazeltons that is comprised of one 20-person Unit Crew that can be reorganized into smaller attack crews based on expected type and size of fire starts. These crews are stationed at this base from late spring to early fall. The repositioning of these crews as a provincial resource is based on the priorities described above. This local resource can be a valuable tool in meeting some of the objectives of this CWPP. This may include contributing to educational programs, fuel management activities, cooperative training of fire departments in wildland suppression techniques and equipment support. In recent years, the involvement of these resources in direct work in and around communities has been supported and encouraged by WMB officials. This response to community protection should continue to be developed between communities and the Wildfire Management Branch.

Community Fire Departments & Capability

The communities of Hazelton, Gitanmaax, New Hazelton, Hagwilget, Glen Vowell, Kispiox Village, and Gitwangak described in this CWPP have active volunteer fire departments with structural fire capability. The capability and readiness of the community volunteer fire departments varies between communities. These fire departments have been in place for many years and are supported by AANDC, FNESS and/or the local governments in terms of training, equipment and, in some cases, a paid position for Fire Chief (e.g. New Hazelton and Hazelton). The expectation of rural fire departments is that there is a high probability that they will be called upon to either prevent the spread of a structural fire to the wildland, or to prevent a wildland fire from spreading to the homes and structures within the communities. In both cases the fire departments will need to have the necessary training and equipment to effectively and safely meet the expectations of their governments and communities. The departments may include volunteers that have had wildland fire suppression experience. With some further training and with supply of basic wildland suppression equipment, these forces are well positioned to supply initial attack resources on the wildland for their communities and the region as a whole.

Local fire hydrant infrastructure is in place for three core communities (Village of Hazelton and New Hazelton and South Hazelton) and populated IRs covered by this CWPP. All fire departments in the planning area depend entirely on the volunteer force of the communities, though the ability of these forces to attract and maintain sufficient numbers of trained volunteer firefighters is an ongoing challenge.

Fire Suppression Equipment

The ability of fire suppression forces to action wildland fires that threaten communities will be dependent on their access to the appropriate equipment. Wildland suppression forces will require equipment that is specific to the suppression of fires outside of areas serviced by fire hydrant (i.e. outside of community water system support). The primary equipment includes portable high-pressure water pumps (e.g. Wajax Mark 3), portable water tankers with a complement of fire hose, and hand tools for crews (hand tank pumps, Pulaski's, and shovels); these items are essential to the successful suppression





of wildland fires. To increase effectiveness and reduce costs, a complement of "econflow" hose and fittings is an excellent way to reduce the costs of fire suppression control and mop-up operations, owing to their light weight and their low initial purchase price. Foam injection systems on pump units provide an increased effectiveness in control and mop-up operations for structural as well as wildland fires, and reduce total water usage. A review of the fire departments should be undertaken to determine the current state or additional needs for wildland suppression equipment. Additional considerations should be given to fire interruption and sprinkler systems for structure protection. These could be purchased as regional resources as well as home owners could investigate the applicability to their situations.

The Filmon report identified the need for local fire departments to have the equipment necessary to deploy sprinkler systems in protecting structures from wildland fires. Sprinklers could also be deployed to protect a fire from spreading from one structure directly to another. The office of the Fire Commissioner, UBCM and FLNRO have three Community Structure Protection Units (SPU) that are owned, managed and deployed by these three agencies. Theses SPU's can be deployed around the province in the event of a wildland interface fire. Consideration should be given to the purchase of regional SPU or sprinkler systems and the associated training of local fire departments in their deployment (Structure and Site Preparation Training S-115).

Training and Experience

The training of crews in wildland fire suppression is currently a service provided by the First Nations' Emergency Services Society (FNESS) and by private consultants, who will supply a trainer to deliver the basic S-100 fire suppression course on a fee basis. For

Capacity-building within the communities is paramount for effective wildfire suppression. senior and command control functions, however, a higher level S-215 course is available through FNESS and the Justice Institute, providing training in unified command structures and fire control strategies. Local relationships have been established over the years between local fire departments and Wildfire Management Branch Personnel. The encouragement and support of developing these relationships can provide invaluable value during times of combined fire response. An active, ongoing engagement between WMB fire base

managers and local fire departments should be a management priority.

As with all training, the value is derived when experience is gained. It is important that suppression forces are given the opportunity to gain the much needed experience to practice and develop skills on wildland suppression. This could readily be done by using local forces to support or assume suppression activities from FLNRO once a wildland fire has been knocked down. Mutual Aid agreements between the Wildfire Management Branch and community volunteer fire departments can provide the necessary training, equipment and experience for local crews.

Fire Communication

The effectiveness of fire preparedness, prevention, and control are ultimately determined by the communication plan and links developed between the various levels of government, suppression forces, and the residents of the area. If any one component of planning can be rapidly improved, it would be communication. Wildfire Management





Branch continues to work on the strengthening of communication links through fire smart information and fire suppression information. Scheduled protocols on communication thresholds should be developed between the WMB, local government, and Community Associations. Communication links could be established through electronic bulletins.

Wildfire Management Branch - Community Communication

As fire suppression responsibility is dependent on both the fire cause and location, it will be probable that significant fires within the interface as well as on Crown Land will see the involvement of all levels of government:; the province, the local village and first nation governments and the Regional District of Kitimat-Stikine. When communicating

The Cassiar and Kelowna fires plainly demonstrated that communications need to be improved during critical fire periods. Community authorities need appropriate tools and methods to communicate effectively with responders and the public. on fire preparedness, prevention and control, it is important that communication links be established *prior* to fire starts in order to review current prevention strategies, current fire preparedness levels (e.g. crew positions, air tanker locations, resource availabilities), and expected fire behaviour and fire starts for the immediate and foreseeable future.

The communication links are effective if set up in the early part of the year (i.e. spring) between local Wildfire Branch suppression personnel and key community leaders (e.g. fire chiefs and deputy fire chiefs, resource managers, and village governments).

Communication should be ongoing, and be intensified as dictated by fire weather (e.g. meeting a set threshold where there would be a significant change in the expected intensity, duration and costs of a fire, if one were to occur). An effective communication plan is directly aligned with the fire weather. This communication plan could also employ table-top scenarios where a situation is described for key personnel to discuss and strategize actions to take with the resources that have been pre-organized.

Other ways to effectively strengthen communications is through cross-training and training of all persons in the unified command system. This training is available through FNESS, WMB and the private sector, and essentially identifies "chain of command."

Fire Suppression Force Communication

The need for fire suppression force communication between the provincial and community governments will be paramount for the safety and effective deployment of

forces. The initial contact frequency for inbound aircraft and or personnel on fires involving non-Ministry fire suppression groups and agencies is **155.460 MHz—the "Fire Commissioner's interagency coordination channel."** By programming this frequency into all local responder radios, the ability to communicate on the ground will become possible with outside agencies and aircraft involved in fire suppression.

Local Responder radios should be programmed with the Fire Commissioner's Inter-agency Coordination Channel: 155.460 MHz





Resident Communication

Communication with residents will be a key component in fire prevention and suppression within the CWPP area. There are many ways to effectively communicate important information to residents, employing various methods requires different strategies, dependent on the message to deliver: Many communication techniques are currently being used by various agencies and local/provincial governments. The following methods if not already being used are worth consideration to communicate with local residents

- For emergency evacuation and fire suppression action, individuals within the local governments should establish who, what, where and when a response will be initiated.
- Community meetings or gatherings may be an effective way to reach a majority
 of residents to communicate government plans and initiatives. This could be the
 appropriate venue for delivering information on the CWPP, fire preparedness and
 fire prevention program, as well as the principles of FireSmart.
- Delivery of FireSmart through the region's schools is an effective tool in teaching children and their family's ways to prevent and prepare for both wildland and structural fires.
- Communicating information on current fire weather and suppression activities could be done through signage that identifies the fire hazard, and establishes bans on open-burning and campfires. The Ministry of Transportation and Infrastructure have cooperated with WMB in making available the road side information signs for messaging to the public important wildfire and camp fire ban information. Local government and municipalities could also contribute to their own signage to expand the exposure of the messaging.
- Use of internet-based media (e.g. village/local government web-pages, Facebook groups, Twitter and email) should be considered in communicating information to residents prior-to and during suppression activities.
- Radio and newspapers are also an effective way to communicate with residents. The RDKS uses the local radio to communicate FireSmart information and wildfire prevention techniques. The Bulkley Browser (a local weekly newspaper) is well read by local residents and is also an effective way of messaging. Mailouts of FireSmart information has been done by the RDKS in the spring of 2014 to reach every resident within the region. Information was provided by the WMB in the form of pamphlets and the cost of mailing funded by the RDKS.

11 Fire Prevention: Fuel Treatments, Modification

The forest fuels within the planning area were assessed for the potential threats that they posed to the Wildland-Urban Interface (the area where development meets or is mixed with the forest). Reducing these threats can primarily be accomplished through fuel modification, which may reduce the chances that a wildfire will start, and/or reduce the intensity of a wildfire if one were to occur. Refer to maps in Appendix A for hazard ratings within the FMUs and Table 4 (Potential Threat Reduction Treatment Summary).





Prescribed fuel treatments most commonly include removal of ground and ladder fuels, thinning of trees, and the establishment of fuel free zones. As fire is a natural occurring process in the forest types of the region, the most cost effective fuel management tool is the use of fire. As identified in the Filmon report, the need to allow and promote the use of fire in maintaining fuel mosaics of the region is not only necessary, but is vital to the long term safety of the communities.

Treatment areas should be prioritized based on, proximity to development, potential of fire starts, adjacent fuels, values at risk, expected fire behaviour, and direction of spread. Prescriptions for fuel modification will need to be developed from on the ground assessments prior to treatment initiation.

Grass Fuel Types are a significant wildfire hazard to the developments in the planning area and are found primarily in the valley bottoms near houses and structures. There are annual fuel reduction programs carried out by various Volunteer Fire Departments (VFD), individual landowners and local government in an effort to reduce the risk that these fuels pose. In the spring, the cured grass presents an easy ignition source that can have a fast rate of spread. This fuel in many cases directly abuts structures and infrastructure values. This fuel type is well managed within the village of Hagwilget, where annual burning and cultivation modify this problematic fuel type to a fire resistant fuel type that surrounds the village. The Village of Kispiox also carries out with their local VFD, an annual program of burning that reflects the ongoing maintenance of this fuel type. Individual Landowners conducting this treatment have experienced problems in the past where the resultant fire has caused damage to nearby structure, as noted in the spring of 2014. Burning and cultivation are some options available for fuel reduction within this fuel type.

C6 (Conifer < 2m Crown Base Height) comprise approximately 11% of the significant WUI Threat within the planning area. These fuels are found primarily within the valley bottoms, and may be directly adjacent to other high risk fuels such as cured grass. The C6 fuel types may also contain a ground fuel of grass that will also provide an easy source for ignition and spread within the stand. Thinning, pruning and ground fuel removal are common treatments within this fuel type.

C3 (Pine Leading Fuel Types) comprise approximately 9% of the significant WUI Threat within the planning area. These fuels are primarily found on the higher elevations above development although some areas are found on the valley floor directly adjacent to other volatile fuel types such as cured grass or C6 fuel types. This fuel is commonly treated by thinning understory, pruning and ground fuel removal.

C5 (Coniferous Fuel Type) comprises less than 1% of the significant WUI Threat within the planning area. These fuels are primarily found on the higher elevations where they do not pose a significant threat due to their proximity to development. This fuel type also requires higher fire weather thresholds to produce high intensity fires than the other identified high or extreme risk fuel types. On average 0.2 days per year for the Kispiox and 4.8 days per year for Cedarvale where conditions exists that will produce high intensity fires.







Fire Management Unit	Fuel Type	WUI Wildfire Threat Class Rating	Provincial Land Area (ha)	Private Land Area (ha)	Indian Reserve Area (ha)	Total Area (ha)	~ % By Fuel Type
	C5	High	5.1	25.3	0.0	30.5	>1
AU	C6	High- Extreme	69.9	270.0	28.0	367.9	11
All	C3	High- Extreme	95.6	187.5	6.9	290.0	9
	01-a	High	236.5	1788.0	539.5	2564.0	80
	Total(ha)		407.1	2270.8	574.4	3252.4	100
	% by Land ownership		13	70	17		

Table A Sumar	v of Potential Wildlar	d I Irhan Interfac	a Wildfire Three	t Reduction	Treatment Init
Table 4. Suman	y of Potential Wildian	la orban interiaci	e vviluille Illiea	Reduction	meannent onn

Fuel Treatment Demonstration Site

Treating a public area to demonstrate the results and techniques of effective fuel management practices can be a positive way to influence and educate landowners.



Photo 7. Example of informative signage at a fuel treatment demonstration area (Rosswood, BC).

education on fuel management and FireSmart techniques. Several sites throughout the broader region have received fuel management treatments and are now being used to support community



Photo 8. Example of Fuel Management Projects/FireSmart signage (Rosswood, BC).

A suitable site must be highly visible and

accessible and should attract local residents and visitors to the area. Local residents have identified the Tomlinson Grave Site, situated along the banks of the Kispiox River just south of the Kispiox Rodeo grounds, as a potential site that meets these criteria. Constructing a short trail between a parking area and the grave site, and fuel treating this area, will allow visitors an opportunity to view treated forest land with reduced





wildfire hazards, and read signage explaining the principles of FireSmart as they access this historic site.

Resource Issues and Operational Constraints

Local resource values important to the First Nations, and broader communities of the Hazeltons and Kitwanga area include sites of traditional, cultural, and historical significance, and can include sites where fish are gathered and processed for sustenance and cultural purposes, as well as berry picking areas, traditional trails, and hunting areas/camps. Lands identified within this plan represent only a small portion of the traditional territories of the First Nations within it. Owing to its rich and diverse history, numerous historic and culturally significant areas are present in the CWPP area. These include heritage trails (e.g. the Dominion Telegraph Trail), historic sites (e.g. Battle Hill National Historic Site, Temlaham, and the old Cedarvale fire lookout), totem pole sites (e.g. at Kispiox, Kitwanga, and 'Ksan), and historic buildings (e.g. in Old Hazelton).

Any proposed treatment area will need to be assessed for the presence of archaeological resources prior to fuel treatment activities. Proposed treatments that potentially could impact archaeological resources will need to comply with regulations pertaining to the assessment and protection of those resources. Fuel management activities have the potential to positively or negatively affect cultural heritage resources and sites of cultural significance. Care must be taken in the planning of such activities to ensure that such resources are protected, and that affected interests are considered when planning treatments.

The CWPP planning area contains a significant portion of private land within the wildland interface zone (a total of approximately 20,000 hectares or 50% of the area) that will restrict the number and effectiveness of fuel management activities that can be carried out by any provincial program. Much of the private land includes rural acreages. The responsibility for fuel management will be with property owners in understanding and implementing FireSmart principles. The remaining areas outside reserve boundaries and private land are Crown Land, utility right-of-ways and provincial parks.

No immediate operational restrictions are apparent that will have an impact on conducting forest fuel treatment projects on Crown or IR Lands. Ongoing funding programs such as SWPI are essential for local government to meet the objectives of FireSmart communities. There are currently no operational fuel treatment programs targeted at Reserve Lands.

Any treatments that could affect road or utility right-of-ways, private land, leased Crown Land or provincial parks must be discussed with stakeholders prior to implementation. The maps provided in Appendix A identify Ministry of Transportation and Infrastructure road networks as well as the CN Railway right-of-way.

All planned fuel management activities will require site prescriptions that address fuel treatment in relation to the protection and consideration of other resources, wildlife, cultural and land values.

Higher Level Plans

Several "Higher Level Plans" are relevant to this CWPP:

 Gitanmaax Comprehensive Community Plan (2012-2017); Goals & Strategic Directions (2012);





- Hazeltons Vicinity Official Community Plan (OCP), August 1991;
- Kitwanga Official Settlement Plan (OSP), consolidated with amendments to 1984;
- Kispiox Land and Resource Management Plan (LRMP): originally published 1996 and significantly amended in 2001;
- · Kispiox Fire Zone (map) (Wildfire Management Branch operable areas).

Funding Opportunities

To achieve the various ACTIONS and recommendations outlined in this CWPP, funding opportunities could come from a variety of sources. These could be government sponsored programs that deliver operational fuel treatment dollars through agencies like FNESS or Natural Resources Canada Mountain Pine Beetle Program, or existing BC government fuel management programs (SWPI) administered through the Union of BC Municipalities and implemented by either local governments in partnership with the FLNRO Wildfire Management Branch or FNESS.

Local government could support aspects of the *ACTIONS* through administrative and inkind support, and participation in provincial funding programs such as the SWPI. This may be in the form of providing funding for FireSmart mail-outs, leading the discussions on mutual aid and service agreements of fire protection services, implementing fee for service based on the desires of communities.

Strategic Wildfire Prevention Initiative Program

The Wildfire Management Branch and UBCM have recently undergone an evaluation and restructuring of the Strategic Wildfire Prevention Initiative Program. The review has provided a more streamlined, provincially consistent approach to fuel management projects, based on threat ratings and priorities. The program continues to support the development of Community Wildfire Protection planning, but with more reliance on the local governments to contribute to the overall cost of developing the plan. Cost share for CWPP'S went from 75% funded by SWPI to 50%.

The program remains centered on fuel management treatments as the focus available for funding that is aimed at protecting communities. In recent years there has been a shift towards funding educational initiatives, such as signage and support of the FireSmart program through WMB.

Consideration should be given for further changes to the program funding to be directed at support of educational initiatives on FireSmart, and prevention/preparedness techniques such as informational bulletins, signage, kiosks and information booths for community gatherings. In addition program funding could be directed to support capacity building of local fire department agencies which are volunteer by nature with most resources and efforts directed primarily at providing structural fire suppression. This support could come in the form of training costs and wildland suppression equipment.

The SWPI program is key to the support of local government, where basic structural fire suppression for the area residents is a challenge to meet. Given the geographic location and the vast forest areas that surround the communities within the planning area, supporting VFD will have a positive impact on providing additional resources available for fire suppression in not only protecting the provinces forest, while at the same time safeguarding the communities.



The lessons learned over the last number of years will aid in providing a program that can meet the needs of communities within a province that has such diverse weather, topographic, forest fuel types, structural development densities and community fabric. Support of local communities in changes to the SWPI program to realize other objectives within the CWPP could result in more fuel management activities directly and in around structures through education and increased fire suppression response and effectiveness by VFD supporting WMB efforts.

12 Community Contacts

This list identifies First Nations and local government representatives who may be consulted to assist in the planning and implementation of fuel management treatments:

- Wendy Hunt, Chief Administrative Officer District of New Hazelton Tel: 250-842-6571 email: <u>whunt@newhazelton.ca</u>
- Gitanmaax Band Council Tel: 250-842-5297
- Gitksan Government Commission (administrative support & services to Gitanmaax, Sik-e-dakh and Kispiox (as well as Gitanyow)) Tel: 250-842-2248
- Gitwangak Band Council Tel: 250-849-5591
- Hagwilget Village Council Tel: 250-842-6258
- Kispiox Band Council Tel: 250-842-5248
- Sandra Olson, Band Administrator Sik-e-dakh Band Council Tel: 250-842-5297 email: <u>solson.administrator@sik-e-dakh.com</u>
- Tanalee Hesse, Chief Administrative Officer Corporation of the Village of Hazelton

Tel: 250-842-5991 email: thesse@hazelton.ca

 Ted Pellegrino, Planning Manager - Regional District of Kitimat-Stikine Tel: 250-615-6100 email: tpellegrino@rdks.bc.ca

Community Associations represent several of the smaller communities of the CWPP planning area, and should also be consulted regarding potential fuel management in their areas:

- Kispiox Valley Community Association
- Kitwanga Community Association
- South Hazelton Community Association
- Two-Mile Community Association

The RDKS should be contacted as needed to obtain current contact information for Community Association members.

13 Partnership Contact List

The following key personnel may be required to participate in the planning and implementation of fuel management work:

 Jeff Eustache, Forest Fuel Management Liaison - FNESS Tel: 250-377-7600 email: jeustache@fness.bc.ca





 Cam Schley, Operations Manager (Bulkley/Stikine District Office) – Ministry of Transportation and Infrastructure

Tel: 250-847-7402 email: cameron.schley@gov.bc.ca

- Ted Pellegrino, Planner (Planning & Development) RDKS Tel: 250-615-6100 email: tpellegrino@rdks.bc.ca
- Wes Patterson, Fire Chief Thornhill Volunteer Fire Department (Emergency Program Coordination and Fire & Rescue Services) - RDKS Tel: 250-638-1466 email: fire_chief@thornhillfire.ca
- Bryan Last, Area Supervisor (Skeena/Nass) BC Parks (Ministry of Environment) Tel: 250-798-2277 ext.30 email:<u>bryan.Last@gov.bc.ca</u>
- John Howard, Area Supervisor (Babine) BC Parks (Ministry of Environment) Tel: 250-847-7565 email:john.howard@gov.bc.ca
- Gail Campbell, Planning Forester BC Timber Sales, Skeena Business Unit Tel: 250-638-5115 emailgail.campbell@gov.bc.ca
- Jim Highstead,Wildfire Mangement Branch,Northwest Fire Zone,Telkwa/Hazelton Tel: 250-846-9851 email: jim.highsted@gov.bc.ca
- Bryan Bowman, Wildfire Management Branch, Hazelton Fire Attack Base, Northwest Fires Zone – Hazelton BC

Tel: 250-842-7630 email: bryan.bowman@gov.bc.ca

 Shannon Irvine, Wildfire Management Branch, Northwest Fire Zone – Smithers Tel: 250-847-6616 email:<u>shannon.irvine@gov.bc.ca</u>

14 Community Capacity & Experience

The communities of New Hazelton and Hazelton, areas within the Regional District, and First Nations villages have an administration structure within each of their respective local government that has key positions in finance management and operations such as public works. The municipalities of Hazelton and New Hazelton also have a paid Fire Chief position. The communities all have the ability to plan and implement fuel management treatments within their existing structures.

The capacity to take on additional workload to implement actions outlined in this report such as evacuation planning, fire smart education, development and strengthening of volunteer fire departments, improving communications plans, developing mutual aid, and fire suppression agreements etc. will require support for these communities from agencies such as AANDC, FNESS, and the provincial Wildfire Management Branch. It will require the collective effort of all to improve the fire prevention and fire preparedness of these communities in reducing the impacts of a wildfire within the interface.

15 Recommendations and Action Items

For the individuals and communities within the Hazelton, New Hazelton, Suskwa, Kispiox, Kitwanga Back Road, Kitwanga, and Cedarvale FMUs to achieve the greatest benefit from having a CWPP, several Action Items should be considered. The *ACTIONs* identified on the following pages have been designated to one or more groups for implementation, and when implemented collectively, will substantially reduce the risks and consequences of wildfire for individuals and communities.

ACTIONs are provided on the following pages for:

Village Governments and the Regional District of Kitimat-Stikine





- Municipalities of Hazelton and New Hazelton
- Community Associations
- First Nation Emergency Services Society (FNESS) and Aboriginal Affairs and Northern Development Canada (AANDC)
- Land Owners and Residents
- FLNRO: Wildfire Management Branch
- FLNRO: District Manager
- Ministry of Environment (MoE)





ACTIONS for the Village Governments and the Regional District of Kitimat-Stikine

Education

- Communicate relevant information from CWPP and make available to landowners.
- Promote FireSmart principles to landowners/residents within the planning area. This could be accomplished through media/signage/site visits to homes/community meetings/local schools/mail outs and demonstration fuel treatment projects.
- Work with Wildfire Management Branch to develop educational programs on the community CWPP, fire preparedness, fire prevention, and fire suppression programs.
- Pursue funding changes to SWPI Program to include FireSmart education and delivery as an eligible project. Delivery of this material and buy in from landowners/residents has the potential to result in more effective fuel management treatments directly adjacent to structures and development, providing defensible positions for suppression forces.
- Commit to training of land use planners and developers on FireSmart principles.
- Implement one or several projects around community infrastructure to showcase FireSmart principles as a demonstration area.
- Pursue funding for the delivery of FireSmart principles to the local landowners/residents.
- Pursue changes to the eligibility of SWPI Program funding so that it can be applied against training and equipping fire suppression forces in wildland fire suppression.
- Provide information to residents on Emergency Evacuation Plans.
- Provide educational information to residents on how to develop emergency response plans.
- Encourage home owners to invest in self-protection methods, such as water storage tanks and sprinkler systems

Communication

- Establish a standard communications protocol and make it known to all residents, for use when wildfire is threatening or in close proximity to a community. This may incorporate use of signage at key locations, use of websites (including links to village, Wildfire Management Branch and other appropriate websites), and use of other forms of communication (e.g.: VHF radios, local radio stations) commonly utilized by area residents.
- Develop a communication plan between village and Wildfire Management Branch on fire preparedness, fire prevention, and fire suppression activities prior each fire season. This will include defining chain of command, roles and responsibilities, and communication links (radio channels used/contact





information/methods of contact/after hour's contacts/key personnel/alternate personnel).

 Request permission from the OFC and program the Office of the Fire Commissioner's interagency co-ordination channel 155.460 MHz into all mobile and stationary radios to communicate with outside agencies and aircraft that are actioning wildfires.

Capacity

- Support training and the procurement of equipment necessary to establish wildland suppression capacity with all volunteer fire departments.
- Undertake a review of the fire departments to determine the current state or additional needs for wildland suppression equipment.
- Consider the purchase of sprinkler systems to be available for deployment within the regional district for use on interface fires.

WUI Threat Reduction

- Pursue funding through the SWPI Program to complete identified fuel management activities within the Wildland-Urban Interface areas of the planning area.
- Implement fuel management activities within the CWPP planning area as identified in this report.
- Commit to implementing yearly fuel reduction of grass fuels within village boundaries using trained volunteer fire department personnel as part of the fuel management activities.
- Monitor and enforce hazard reduction activities on areas within village boundaries and lands within the RDKS.

Preparedness & Prevention

- Ensure evacuation plans are in place and up to date for all communities.
- Establish a Mutual Aid Agreement with Village Governments and FLNRO for fire suppression services. The Agreement should establish an understanding of the resources and capabilities of village fire departments, communications links, jurisdictional responsibilities, chain of command, and rates of compensation.
- Continue to implement FireSmart principles when planning and constructing development within village lands and lands within the RDKS.
- Commit to applying the FireSmart principles in issuing development permits or planned expansion and include in by-laws or development checklists. Ensure building codes address FireSmart principles and are enforced.
- Commit to the review of wildfire threats from forest fuels on any planned or future development project; review adjacent fuel typing and conduct a Wildland Urban Interface Threat Assessment and the need to prescribe mitigation measures prior to development approval.
- Undertake a review of all public and infrastructure facilities for a FireSmart hazard assessment and conduct the necessary actions to safeguard against wildland fires. To be done by utility companies, provincial emergency services,





and local governments. Review facilities such as hydro, and domestic water supply sources with particular attention to power sources.

 Consider a fire protection services agreement between the Regional District of Kitimat-Stikine, and the Gitwangak First Nation for the community of Kitwanga. Canvass local residents as to their desire for such fee for services.

ACTIONS for Community Associations

Education

 Pursue changes to the eligibility of SWPI Program funding through letters of support of the Regional District initiatives so that it can be applied against on the ground delivery and education of landowners in FireSmart techniques.

Communication

- Ensure permission is available for use of interagency coordination channel (155.460 MHz) by volunteer fire department responders.
- Provide information to residents on local government evacuation planning.
- Provide information to local residents on emergency response planning techniques.

Capacity

- Pursue changes to the eligibility of SWPI Program funding through letters of support of the Regional District initiatives so that it can be applied against training and equipping of fire suppression forces in wildland-urban interface fires and in FireSmart principles.
- Take a lead role in working with the Regional District on ensuring fire suppression services are provided for where the residents have expressed a desire for such services.

ACTIONS for First Nation Emergency Services Society (FNESS)/ Aboriginal Affairs and Northern Development Canada (AANDC)

Education

- Pursue changes to the eligibility of SWPI Program funding, so that it can be applied against on the ground delivery and education of landowners in FireSmart techniques.
- Work with Wildfire Management Branch to develop educational programs on the community CWPP, fire preparedness, fire prevention, and fire suppression programs and implement such programs.
- Provide information to residents and village governments on developing Emergency Evacuation Plans where none exist





 Provide educational information to residents on how to develop emergency response plans for their families.

Communication

 Communicate with village governments on efforts to improve capacity of volunteer fire departments to respond to structural fires.

Capacity

- Support training (through FNESS /AANDC) and the procurement of equipment necessary to maintain STRUCTURAL suppression capacity with all First Nation volunteer fire departments.
- Support training (through FNESS / Wildfire Management Branch) and the procurement of equipment necessary to establish WILDLAND suppression capacity with all First Nation volunteer fire departments.
- Pursue Funding for training and equipment of fire suppression forces in wildlandurban interface fires and in FireSmart principles.

ACTIONS for Land Owners and Residents

Education

 Obtain education materials (supplied by local governments) on fire prevention, fire preparedness, communication, and emergency evacuation plans.

Communication

- Ensure you are aware of local government emergency communication plans.
- Ensure you are aware of local government emergency evacuation plans.

WUI Threat Reduction

- Commit to reducing the potential impact of wildland fires on your property.
- Maintain fuel-free and fuel-modified areas adjacent to your structures.
- Break the continuity of fuel around your property.
- When fire-smarting properties and structures encourage resistant species such as deciduous species, and fire resistant materials when building or renovating.
- Remove ladder fuels and dead and down material in areas within 30 meters of any structures in and around the interface.

Preparedness & Prevention

- Complete structure and hazard assessment of property.
- Prepare emergency evacuation plans for you and your family.
- Prepare emergency response plan for your property- where appropriate, work with neighbours on the development of plans.
- Protect your home—your investment.





- Ensure adequate emergency vehicle access.
- Ensure adequate water supply.
- Make your home exterior FireSmart.
- Commit to FireSmart principles outlined in education materials supplied by local governments on fire prevention, fire preparedness, communication, and emergency evacuation plans.
- Consider the purchase of a sprinkler system to be available for deployment on your property in the event of a wildfire.
- Consider the purchase of a ARA Fire suppression system to be available for deployment on your home in the event of a structural fire where no responding fire department exists.
- Note that residents may pursue employment on a provincial Unit Crew. Apply at <u>http://bcwildfire.ca/Employment/FireFighter/</u> by January of each year.

ACTIONS for FLNRO: Wildfire Management Branch

Education

- In concert with local village fire departments, involve trained and experienced fire suppression personnel in delivery of FireSmart principles to the local landowners. This can be accomplished by Wildfire Branch personnel training and supporting Volunteer fire department members, involvement in community events and trade shows.
- Pursue changes to the eligibility of SWPI Program funding so that it can be applied against on the ground delivery and education of landowners in FireSmart techniques.at the operational treatment stage.
- Provide information and education to local governments on the fire ecology and need for fire within the region.

Communication

 Establish a formal communication plan between the village volunteer fire departments, village and local governments, and the FLNRO,WMB that will itemize actions and objectives as predicted fire starts and intensities increase. This may include tabletop scenarios on preparedness levels, describing plans for expanded attack and contingency plans, frequency use, key personnel, and chain of command. This will also include fire suppression priorities and assessments that determine what actions if any will be taken to suppress a fire.

Capacity

- Pursue changes to the eligibility of SWPI Program funding so that it can be applied against training of fire suppression forces in wildland-urban interface fires and in FireSmart principles.
- Enhance cross training of wildland and structural suppression forces in courses such as series 100 and series 215 (Fire operations in the Wildland-Urban.





Interface) and more advanced training as outlined in the FireSmart Manual. Training options are available through the Justice Institute of BC, FNESS, and the private sector. WMB has participated in the past on wildland suppression training. This relationship provides training to local fire departments as well as builds relationships between the suppression forces.

Preparedness & Prevention

- Establish a Mutual Aid Agreement with Village and local Governments for wildland fire suppression services. The Agreement should establish an understanding of the resources and capabilities of village fire departments, communications links, jurisdictional responsibilities, chain of command, and rates of compensation.
- Support local fire departments with wildland suppression equipment as required to provide a minimum capacity
- Review and redraft current preparedness and response plans in consultation with local fire departments.
- Implement district Command Group meetings based on fire weather thresholds and include members of the local government in the development of the communication plan.
- Pre-organize water sources and tanker re-load locations in wildland-urban interface areas that do not have village or Regional District fire hydrant infrastructure.

WUI Threat Reduction

- Commit to conducting identified fuel management treatments on crown land to showcase fire smart principles and reduce known fire hazards.
- Commit to implementing yearly fuel reduction of grass fuels along provincial highways and provincial forest road corridors in cooperation the Ministry of Transportation and Infrastructure.

ACTIONS for FLNRO: District Manager

WUI Threat Reduction

- Continue to require and enforce fuel hazard assessments and fuel hazard abatement on all industrial operations within one kilometer of a forest.
- Monitor and enforce abatement of fuel hazards on Private Land harvesting and clearing operations within one kilometre of a forest.
- Report to local government on the status of hazard abatement activities within the planning area in the spring of each year.

Preparedness & Prevention

 Ensure Open Burning Smoke Control Regulation compliance and improve enforcement of burning reference numbers.





ACTIONS for Ministry of Environment (MoE)

WUI Threat Reduction

• Maintain burning as a tool for cost effective fuel hazard reduction within the Open Burning Smoke Control Regulations.

Preparedness & Prevention

 Ensure Open Burning Smoke Control Regulation compliance and improve enforcement of burning reference numbers.





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Appendix A: Detailed maps showing Fuel Types, Wildfire Threats and FMUs

(Attached Digitally)





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Appendix B: Summary of Wildfire Threat Hazard Ratings at Field Plots

PLOT#	UTM COORDS	DESCRIPTION	WIL	DFIRE BE THREAT (COMPON	HAVIOUR WBT) ENTS	TOTAL WBT	WBT	STRUC- TURAL COMP- ONENT	WILDLAND URBAN INTERFACE WILDFIRE THREAT
			FUEL	WEA- THER	TOPO- GRAPHY	SCORE	CLASS	SCORE	CLASS
1	580938 6147715	On Muldoon Road, Kispiox Valley	33	8	22	63	Moderate	16	n/a
2	580883 6144603	Above Kispiox Rodeo Grounds	35	11	40	86	Moderate	45	n/a
3	583878 6139870	North of Kispiox Village & Agwedin no.3	37	8	27	72	Moderate	21	n/a
4	584415 6139009	North of Kispiox Village & east of Agwedin no.3	36	8	27	71	Moderate	21	n/a
5	583860 6138200	North of Kispiox Village & east of Agwedin no.3	64	11	27	102	High	32	High
6	583944 6135319	Immediately north of Kispiox Village	71	11	27	109	Hìgh	32	High
7	582944 6130138	Water Tower road west of Glen Vowell	58	8	27	93	Moderate	27	n/a
8	583765 6127255	Water Tower road at Gitanmaax	52	8	22	82	Moderate	21	n/a
9	586264 6125342	West side of Two Mile	47	11	39	97	High	55	Extreme
10	588915 6123338	New Hazelton Arena	39	8	28	75	Moderate	32	n/a
11	588747 6122918	Just west of rest stop, New Hazelton / Hwy 16	40	11	24	75	Moderate	32 ·	n/a
12	564156 6108923	Kitwanga Back Road near Kitwanga	38	11	35	84	Moderate	40	n/a
13	563706 6111145	Tea Lake FSR north of Kitwanga	56	8	27	91	Moderate	23	n/a
14	562376 6108212	Mill Road, Kitwanga	43	11	29	83	Moderate	43	n/a
15	562021 6108106	West side of mill, Kitwanga	33	11	29	73	Moderate	43	n/a
16	543086 6097271	Cedarvale-Kitwanga Road	50	8	27	85	Moderate	32	n/a
17	543815 6097927	Cedarvale-Kitwanga Road	52	11	17	80	Moderate	32	n/a
18	544852 6098917	Cedarvale-Kitwanga Road	46	4	29	79	Moderate	21	n/a
19	551858 6104628	Sedan Cr. Forest Rec. Site, east of Cedarvale	58	11	35	104	High	0	Low
20	601390 6123130	4.5 km Suskwa FSR	57	8	29	94	Moderate	21	n/a
21	601027 6122581	5 km Suskwa FSR	74	11	27	112	High	21	Moderate
22	600951 6122209	Road junction with Suskwa	97	11	27	135	High	32	High
23	594497 6124836	Ross Lake Provincial Park	46	4	24	74	Moderate	16	n/a
24	592771 6123122	Ross/Hwy 16 junction	36	8	24	68	Moderate	21	n/a





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Appendix C: Historic Fire Starts and Specific Causes

Shown in separate attachment titled "Historic Fire Starts and Specific Causes"





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Appendix D: Sources of Information

Unless otherwise noted, information sources presented here are current as of May 2014.

Information Sources: Personal Communications	Date
Brad Martin, Senior Protection Officer – Northern Interior Forest Region (FLNRO)	14 May 2014
Bob Marcellin, RDKS	May 2014
Bryan Bowman, Fire Attack Base Forest Protection Tech—Hazelton Fire Attack Base (FLNRO-WMB)	2014 (ongoing)
Shannon Irvine, Regional Fuel Management Specialist (FLNRO)	2014 (ongoing)
Sylvia Meek, Kitwanga Community Association	16 April 2014
Tony Falcao, Base Manager - Terrace Fire Attack Base (FLNRO-WMB)	2014 (ongoing)

Information Sources: Documents	Publisher	Date
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Development and Structure of the Canadian Forest Fire Behavior Prediction System. Forestry Canada Fire Danger Group. Information Report ST-X-3. Available: <u>http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/10068.pdf</u>	Forestry Canada Science & Sustainable Development Directorate	1992
Field Guide to Canadian Forest Fire Behavior Prediction (FBP) System. Taylor, S.W., R.G. Pike and M.E. Alexander. FRDA Handbook 012. Available: http://www.for.gov.bc.ca/hfd/pubs/docs/Frh/Frh012.pdf	BC Ministry of Forests and Northern Forestry Centre	1996
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Gitanmaax Comprehensive Community Plan (2012-1017); Goals and Strategic Directions, available: <u>http://www.gitanmaax.com/SitePages/CCP.aspx</u>	Gitanmaax Band Council	2012
Guide to Open Burning Smoke Control Regulation - current publication	MoE	Current Version 2010
Kispiox Fire Zone (map)	Kispiox Zone (Kispiox TSA), FLNRO	21 May 2000
Kispiox Land and Resource Management Plan. Available online: <u>http://www.for.gov.bc.ca/tasb/slrp/lrmp/smithers/kispiox/pl</u> an/files/kilrmp_amendment_march_2001.pdf	Province of BC	Amended March 2001; original April 1996
Kispiox Sustainable Resource Management Plan	Ministry of Sustainable Resource Management	2004
OBSCR – Policy Intentions Paper for Consultation	MoE	May 2008
Wildland and Urban Interface Wildfire Threats in B.C. (Morrow, Johnston and Davies).	FLNRO— WMB	January 24, 2013 update (original 2008)
The Home Owners FireSmart Manual (BC Edition)	Forest Service – Protection Program	Current Version
Union of BC Municipalities - Fuel Management -	UBCM	Current Version
Wildfire Act and Wildfire Regulation - current to May 2014 and June 2012, respectively. Available: <u>http://www.bclaws.ca/Recon/document/ID/freeside/00_04031_01</u> <u>http://www.bclaws.ca/Recon/document/ID/freeside/11_38_2005</u>	BC Government	2005

Information Sources: Websites and Databases	Publisher	Date
Census Data Tables (available on-line)	Statistics Canada	1996, 2001, 2006, 2011
Database search: Historic Wildfire starts for the Kispiox Zone, 2003-2014	FLNRO— WMB	May 2014
First Nation Profiles. Available: <u>http://pse5-esd5.ainc-</u> inac.gc.ca/FNP/Main/Index.aspx?lang=eng	AANDC	Accessed May 2014
http://southhazeltonca.weebly.com/index.html	South Hazelton Community Association	Accessed May 2014.
http://www.alc.gov.bc.ca/mapping/RD/Kitimat-Stikine.htm	Provincial Agricultural Land Commission	Accessed May 2014
<u>http://www.civicinfo.bc.ca</u> (provides organizational information for local governments of BC)	CivicInfo	Accessed May 2014.





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http://www.gitanmaax.com/SiteAssets/HomePage.aspx	Office of Gitanmaax	Accessed May 2014.
http://www.gitxsan.com	Gitxsan	Accessed May 2014
http://www.hagwilget.com	Hagwilget Village Council	Accessed May 2014.
http://www.kispioxband.com	Kispiox Band Council	Accessed May 2014
http://www.newhazelton.ca	District of New Hazelton	Accessed May 2014.
http://www.rdks.bc.ca	Regional District of Kitimat-Stikine	Accessed May 2014
http://www.sik-e-dakh.com	Sik-e-Dakh Band Council	Accessed May 2014.









Appendix E: Hazelton Rural Fire Protection Service Area Establishment.



















Appendix G: RDKS Emergency Plan

(Attached Digitally)









Appendix H: Descriptions of Communities within the CWPP Area.

Gitxsan Communities (Gitwangak, Gitanmaax, Glen Vowell and Kispiox First Nations)

The traditional territory of the Gitxsan people is extensive and is, by far, the dominant traditional First Nations' territory in the CWPP area⁷. The Gitxsan include four individually administered First Nations, each responsible for one or more reserve lands:

- Gitwangak (First Nation #536), on eight reserves, but including only Gitwangak no.1 and Koonwats no.7 addressed within this CWPP. Of the 1287 registered members, 846 were living off-reserve, and just 406 living on their own reserves (as of February 2014 official numbers).
- Gitanmaax (First Nation #531), on five reserves, including Anlaw no.4, Gitanmaax no.1, Ksoo-gun-ya 2A, and Tsitsk no.3 addressed within this CWPP. Of the 2,340 registered members, 1,543 were living off-reserve, and just 693 living on their own reserves (as of February 2014 official numbers).
- Glen Vowell (First Nation #533), on Sik-e-Dakh no.2 reserve, with 412 registered members.
- Kispiox (First Nation #532), on ten reserves, including Agwedin no.3 and Kispiox no.1, addressed within this CWPP. Of the 1,592 registered members, 871 were living off-reserve, and 630 were living on their own reserves (as of February 2014 official numbers).

Wet'suwet'en Communities (Hagwilget Village First Nation)

The Wet'suwet'en are a subgroup of the Dakelh (Carrier) people, whose traditional territory primarily occurs south of the CWPP area. In the area covered by this CWPP, only a single Wet'suwet'en community exists:

 Hagwilget Village (First Nation #534) has two reserves, both of which are included within this CWPP: Bulkley no.1 and Hagwilget no.1. Of the 768 registered members, 538 were living off-reserve, and just 195 living on their own reserves (official numbers as of February 2014).

Hazelton area, north of Bulkley River

The Hazeltons are a grouping of several communities—both First Nations and non-First Nations, incorporated and unincorporated—in the vicinity of the Skeena River's confluence with the Bulkley River. The communities of Hazelton (also known as "Old Town") and Two Mile lie north of the Bulkley River, as well as the First Nations community at the Gitanmaax IR. Although portions of both Hagwilget No.1 and Tsitsk 3 IR's span across both banks of the Bulkley River, there is no development on the north bank.

Village of (Old) Hazelton

The historic Village of Hazelton is located on the flats at the north side of the Bulkley River at its confluence with the Skeena River. Hazelton is a dense, developed

⁷ "The Gitxsan; 1:350,000" territorial map, available: <u>http://www.gitxsan.com/territory/territory-maps/</u>



Community Wildfire Protection Plan: Hazeltons and Kitwanga



community with many small businesses and services for residents and tourists. The village is serviced with modern infrastructure, including electricity, public water and sewerage systems, with a dedicated Fire Hall and a system of fire hydrants located throughout the village. The community is one of only two in the CWPP area with an elected council and a paid position for Fire Chief (the other is New Hazelton). Hazelton's Fire Department services a number of outlying communities through fire protection service areas, in agreement with the RDKS (see Appendix E).

Photo H9. Skeena River; downstream view to Hazelton "Old Town".





Photo H10. Hazelton ice rink, with cured, matted grass abutting

Anlaw 4 IR

The Anlaw IR is a mix of cultivated fields, floodplain and upland forests, with a small handful of residences located near the Salmon River Road. Other than electricity, no services are currently available at Anlaw 4.

Gitanmaax 1 IR ('Ksan)

Also known as 'Ksan, Gitanmaax is a large IR that includes an area of concentrated development at its south end (including an area cleared and partially developed directly north of the established community), immediately east of the village of Hazelton. The community has numerous services available within the village, including a band-run gas station and movie theatre, as well as a grocery store that is currently under construction.



Community Wildfire Protection Plan: Hazeltons and Kitwanga



The 'Ksan cultural area and campground is a popular tourist attraction within the community.

The Gitanmaax Band Council has produced a *Gitanmaax Comprehensive Community Plan (2012-1017); Goals and Strategic Directions* (2012), which is available on their website (<u>http://www.gitanmaax.com/SitePages/CCP.aspx</u>); this community plan addresses many facets of community strategy, including the value, capacity and needs of the Fire Department. The band also has a regularly updated Emergency Plan.







Photo H12. Gitanmaax residences.

The community has a water and sewerage system, with fire hydrants present throughout the developed area. Gitanmaax is serviced by a well-equipped volunteer Fire Department that has a Fire Hall and fire truck.

Ksoo-gun-ya 2A IR

The Ksoo-gun-ya IR is an entirely undeveloped area of forested land, located directly north of Two Mile, immediately east of the Nine Mile Mountain Road. Because it is not currently inhabited and there are no permanent dwellings or other structures, the *ACTIONS* identified in this report do not apply to Ksoo-gun-ya.

Two Mile

Two Mile is a suburban-rural style development with some of the smallest private land parcels in the CWPP planning area, resulting in a dense community core of approximately 60 parcels. The community does include some larger parcels of land on the east side of the community, much of which is cleared/cultivated.





Two Mile has no community water or sewerage system at the present time, although the Community Association is currently in discussion with RDKS, pursuing the possibility of installing a hydrant where the Hazelton waterline passes through the community.



Photo H13. Church grounds at Two Mile; note fuel management.

The Regional District has an interim agreement with the village of Hazelton and the District of New Hazelton to provide services to the Hazelton Rural Fire Protection Service Area, of which Two Mile is a part (and in which a number of Two Mile volunteers participate in). This agreement is pending ratification by the parties (see Appendix E: Hazelton Rural Fire Protection Service Area).^{8,9}

New Hazelton area, south of Bulkley River

For this report, the New Hazelton area on the south side of the Skeena and Bulkley Rivers includes the District of New Hazelton—which is one of only two incorporated municipalities in the CWPP area—as well as Hagwilget Village, South Hazelton, and developments around Seeley Lake. The area includes a landfill that services the area, and several Provincial Parks: Ross Lake, Anderson Flats, and Seeley Lake. The CN rail right of way (originally constructed in 1913) passes through this area: It is interesting to note that a significant amount of forest burning was associated with rail construction at that time, which resulted in the preponderance of aspen-dominated forests found in much of the Hazelton area.

Hagwilget 1 IR

The village of Hagwilget—also known to the Wet'suwet'en as Tse-kya—is located immediately north of New Hazelton. The IR is bisected by the Bulkley River, and borders the Tsitsk IR on the south/west sides of Churchill Road. The Hagwilget 1 IR area on the west side of the Bulkley River consists of level and east-sloping aspen forest, with no development, whereas the east side of the IR includes deciduous forest and cleared areas with rural-village development. The village residences here are mainly in a suburban development, with a total of roughly 80-85 dwellings located on or nearby Pioneer Street and the Alderway Loop Road; the Hagwilget Village Council website (http://www.hagwilget.com/index.php/programs-services/capital-and-housing/fire-department/) indicates there are approximately 234 residents of Hagwilget. Village health and administration services are available in the village, and Hagwilget is

⁹ Valerie McCreery, email communication, 7 May 2014.



^B Bob Marcellin, RDKS, email communication, May 2014.



served by a volunteer fire department whose equipment needs are partially funded by Aboriginal Affairs and Northern Development Canada and supplemented by the Village, although the Village Council website indicates it is in need of greater funding in order to maintain the fire hall and equipment.

Tsitsk 3 IR

This small IR is bisected by the Bulkley River. The north portion lies between Churchill Road and the river, and has no developments other than a cleared area immediately west of the Hagwilget bridge crossing of the Bulkley River. This portion of the IR is mainly steep, south-facing aspen forest slope. The south portion of the IR is largely steep, north-facing forested slope down to the Bulkley River. Joseph Road enters the IR at the southeast corner and runs along the edge of the south IR boundary. To the south and west, Tsitsk borders the more rural outskirts of New Hazelton, and to the east it borders Hagwilget IR (divided by Churchill Road). A handful of residences and other structures—as well as a small sawmill—are located in cleared areas immediately off Joseph Road.

Few community services are present within the Tsitsk IR, although the Tse-Kya Gathering Place community hall and Hagwilget administration offices are located immediately off Church Road; the reserve has electricity, but no water or sewerage systems, and has only a few residents.

Seeley Lake

The Seeley Lake area includes approximately 30 private land parcels in the vicinity of Seeley Lake Provincial Park and extending southwest along Highway 16 towards Carnaby in the Skeena River valley-bottom. Homesteads—including residences and various out-buildings—are dispersed along the highway and throughout a small road network in this agricultural area, which is a mix of cultivated fields, forested areas, old clearings, small lakes and beaver ponds below steep north- and west-facing forested slopes.

Services to this area are limited; the development has electricity but has no public water or sewerage systems. There are no fire protection services for this area (west of South Hazelton).

South Hazelton

South Hazelton is a development with both small, urban lots and small rural acreages, as well as a number of large—frequently cultivated—private land parcels. A small mill (West's Sawmill) is located immediately east of the highway. The most recent Census (2011) indicates there were 84 private dwellings and 211 persons living in South Hazelton. Services within the community include a number of small and home-based businesses, a domestic water system, and a fire hall—although the volunteer fire department once based here is now defunct. There is currently an interim agreement between RDKS and the District of New Hazelton to provide services to the South Hazelton Fire Protection Service Area (Appendix F). This agreement is pending ratification by the parties¹⁰.

District of New Hazelton

The largest community in the CWPP planning area and one of only two communities addressed in this report that has its own municipal government, the District of New

¹⁰ Bob Marcellin, RDKS, email communication May 2014.





Hazelton is a fully serviced community of approximately 280 dwellings and close to 700 residents (see

Table 2; Statistics Canada, 2011 Census). New Hazelton's developed area is largely urban in nature, with most residences contained to city lots within a relatively confined core.

The fire department in New Hazelton has a paid position for Fire Chief, and the department services south Hazelton through fire protection service areas (see Appendix F).

Suskwa

The area described within this report as the "Suskwa" is located south of the Suskwa River, around its confluence with the Skeena River, and for the purposes of this CWPP also includes the adjacent area upstream along both sides of the Skeena River. Although the Suskwa includes a First Nations IR (Bulkley No.1), most of the developed area of the Suskwa is private, non-reserve land, including roughly 30 properties. The area includes no Provincial Parks, but the CWPP area in the Suskwa does include a small portion of the Catherine Creek Ecological Reserve within its planning area south of Highway 16 and the adjacent railbed.

Bulkley 1 IR

Bulkley 1 IR includes no known structures or development. This IR land is primarily nonforested wetland in association with the lowland floodplain ecosystems of the Skeena River and its tributary creeks. There is no road access to this IR; as a result, the *ACTIONS* identified in this report do not apply to this Reserve land.

Suskwa Development

The development in this area is rural-agricultural, with most of the properties located south of the Suskwa Forest Service Road and south along the Moricetown Suskwa Forest Road. Private residences are dispersed on the valley's bottom-land across a mixture of cultivated fields, wetland areas and floodplain forest at various stages of development. The Suskwa is an area of active farmland, with residences typically associated with a variety of out-buildings. The Suskwa Development has no community lands, Community Association, or on-site services. The area has electricity, but no public water or sewerage systems. The Suskwa does not have fire protection services, excepting developments on the south side of the Bulkley River that are within the Hazelton Rural Fire Protection Service Area. (see Appendix E).

Kispiox

The Kispiox area is located on a broad river valley with several First Nations IRs and a significant population of landowners distributed along the road networks of the area—primarily the Kispiox Valley and Salmon River Valley roads.

Kispiox 1 IR

Kispiox Village is a First Nations community located between the Kispiox and Skeena Rivers, immediately north of their confluence. This is a well-developed IR with a long history (3000 years) of Gitxsan occupation at this strategic site. The village has an active volunteer Fire Department and provides basic public services to the estimated





744 residents (as of December 2010; Kispiox Band Council¹¹). The community has electricity, public water and sewerage systems, including a system of fire hydrants throughout the community.



Photo H14. View ~south, to Kispiox Village.

Photo H15. Kispiox Village residences.





Photo H16. Kispiox Village residences surrounded by cured, matted grass.

¹¹ Kispiox Band Council website, accessed May 2014: <u>http://www.kispioxband.com</u>







Photo H17. Kispiox Village fire hall.

Agwedin 3 IR

Agwedin 3 is located immediately north of Kispiox 1 IR, and straddles both the Kispiox River and the Kispiox Valley Road. No permanent dwellings are located on this IR, although a substantial portion of the area has been cleared; as a result, the *ACTIONS* identified in this report do not apply for Agwedin 3.

Sik-e-Dakh 2 IR (Glen Vowell)

Sik-e-Dakh—commonly known as Glen Vowell—is a well-established community with a history going back at least as far as 1898 at this site. The community consists of a small, relatively concentrated area of suburban development (~40 buildings on several looped streets) east of the Kispiox Valley Road, as well as a larger area of riverside acreages with associated cleared land adjacent to mature forest and old cutblocks. The development has administrative services located at the band office on Sik-e-dakh Road. The band's website <u>http://www.sik-e-dakh.com</u> identifies 296 persons living on-reserve, 231 of whom are registered band members (of a total of 390 registered band members). Recent Census numbers identify 65 occupied private dwellings at Sik-e-Dakh.



Photo H18. Extensive areas of cured, matted grass at Glen Vowell.





Photo H19. Area of previous grass burning (note charred utility pole).



Kispiox Valley

The Kispiox Valley is a loose group of ~40 private properties mainly located along the Kispiox Valley Road north of the Kispiox 1 IR. This area is rural, with large properties and no central community, although the Kispiox Valley Community Association leases lands for a community hall and fair/rodeo grounds. Businesses within this area are limited to private fishing lodges, farms and small-scale craft production at private residences. There is no fire hall and no community services in the Kispiox Valley, with all education, health and administrative services accessed outside the community. The residents of the Kispiox Valley have access to electricity, but have no public water or sewerage services.



Photo H20. Farmland adjacent Kispiox River.

Photo H21. Kispiox River Valley (view ~south).









Photo H22. Kispiox Valley community grounds.

Salmon River Road

The Salmon River Road area is a scattering of approximately 12 large rural acreages that are accessed via the Salmon River Road. This area is serviced by BC Hydro, but has no water or sewerage services. The Regional District has an interim (currently pending a final agreement) with the Village of Hazelton to provide services to the Hazelton Rural Fire Protection Service Area, of which the Salmon River Road area is a part (see Appendix E).

Kitwanga

The Kitwanga area is largely comprised of reserve lands, with most residents living in the Gitwangak 1 IR, adjacent to the Skeena River (mainly on the north side) and south of the Kitwanga River, and a relatively smaller number of residents living in the Kitwanga Valley immediately north of the reserve within both village and rural/agricultural developments.

Gitwangak 1 IR

Gitwangak is a large IR that spans both the north and south sides of the Skeena River, although only the north side is included within the planning area of this CWPP. Other than a gas station-convenience store, there is no development on the south side of the reserve lands; this is the primary area of development for the Gitwangak First Nation.

Gitwangak 1 IR has a well-equipped volunteer Fire Department with two fire trucks. Up until recently, this department also served the neighbouring Kitwanga Valley community through a written aid agreement; however, recent changes have left the Fire Department unable to respond to off-reserve fires. The community has public water and sewerage, and a system of fire hydrants is present throughout the developed area of the reserve.

Kitwanga Valley

The non-reserve town of Kitwanga is located immediately north of the Gitwangak 1 IR. This Kitwanga Valley Community Association administers some services for the area through a combination of grants and community fundraising. There are approximately





100 homes in this area¹², which is not currently serviced with a public water or sewerage system, nor does the community currently have an active aid agreement with a regional fire department. Kitwanga has a small operating mill, and has a limited business community; most of the residents are retirement-aged³. Although there is a central village area with small community lots, numerous large private land parcels are located in the valley south of Gitanyow, many of which are cultivated.

Kitwanga Back Road

Although there is not a central "community" in this portion of the CWPP planning area, the Kitwanga Back Road is a loosely affiliated community of rural properties scattered along the Kitwanga FSR. No Indian Reservations are present in this area. The area includes approximately 25 parcels of private land, as well as the 133-hectare Bulkley Junction Provincial Park (a Class A park established in 1997 to protect the alluvial floodplain and adjacent ecosystems).

Cedarvale

The Cedarvale area is located on both sides of the Skeena River, roughly fifteen kilometers downstream of Kitwanga, below the Seven Sisters mountains. The south side is accessible by Highway 16, while the north side is accessible only by boat, rail, and via the Kitwanga Back Road; there is also a small airstrip at Woodcock, located just northeast along the road. Although Cedarvale has numerous small rural lots designated on either side of Highway 16 on the south side of the Skeena, this area is largely undeveloped. A handful of larger parcels are present primarily along the road system on both sides of the Skeena River, many of which are cultivated. Neither the north nor the south side of Cedarvale has any public water, sewerage or other community services.

Koonwats 7 IR

Koonwats 7 IR is immediately adjacent to the highest density lots adjacent the highway on the south side of the Skeena. This IR is largely located on a north-facing slope towards the river, and is currently undeveloped forest land; as a result, the *ACTIONS* identified in this report do not apply to Koonwats 7.

¹² Sylvia Meek, Kitwanga Community Association, personal communication, 16 April 2014.







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