



Regional District of Bulkley-Nechako

HRVA Electoral Area' A' Understanding Community Resiliency

JANUARY 2022

“Know the Risks, Make a Plan, Be Prepared”

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Preface

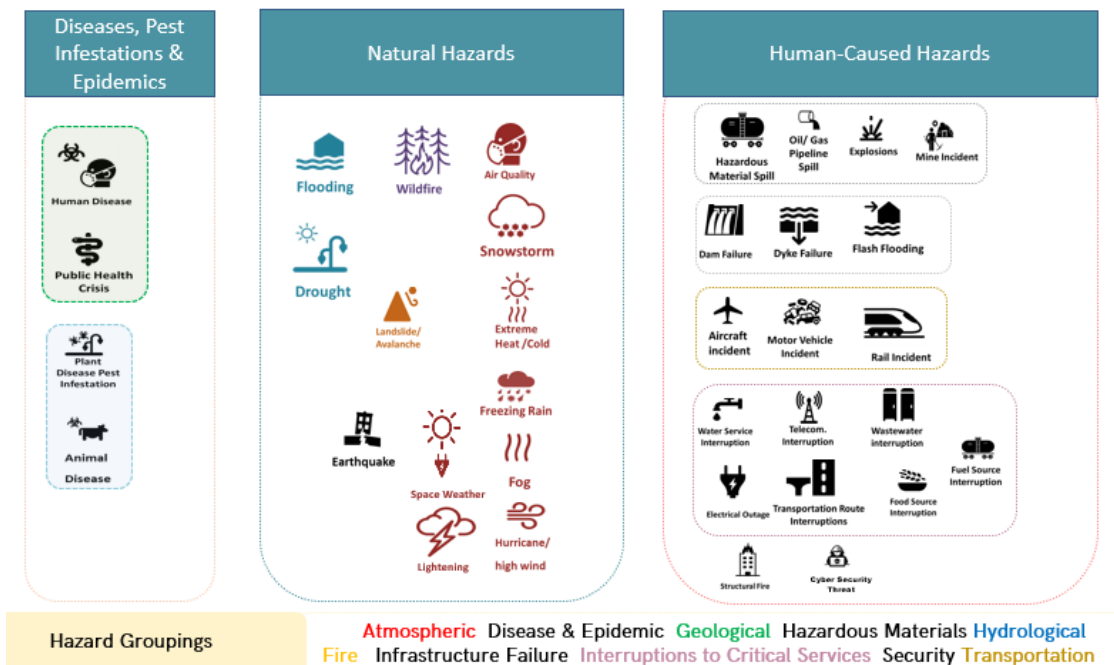
Purpose of Backgrounder and Workbook

The Regional District of Bulkley-Nechako (RDBN) is in central British Columbia with an area of 77,000 square kilometres. The RDBN is broken down into 7 Electoral Areas (EA). The focus of this document is Electoral Area 'A', Smithers / Telkwa Rural.

The Electoral Area 'A' Understanding Community Resiliency Backgrounder will provide information and resources to committee members to inform the scope and conversations of the Hazard, Risk, and Vulnerability Analysis's (HRVA) Committee meeting. The background paper is designed to help guide you as you read through the research and background materials to prepare for the upcoming workshop and for the next step in the HRVA process; Scoring likelihood and consequences of each identified hazard. This background paper will suggest questions for reflection and consideration, which will support our upcoming meeting/workshop discussions. To maximize our time together at the HRVA Committee meetings/workshops, we encourage all participants to review the chapter distributed in advance of any planned meeting. The hope is that additional information and Traditional Knowledge will be collected and informed by discussions with the Electoral Area 'A' (EA) HRVA Committee.

An HRVA contributes to building resilience to disasters by understanding risk, risk drivers, and risk reduction strategies. There are many ways to assess risk & resilience in a community. This Chapter will outline several suggested key pieces of information to help develop an understanding of community capacity, strength, exposure, and vulnerability to hazards, all of which contribute to a community's resilience in the face of disasters. The goal is to describe what is happening in Electoral Area 'A' to manage specific hazards and generate enough understanding of the community in order complete the next step in the HRVA process; Scoring likelihood and consequences.

Summary of Selected 37 Hazards for Electoral Area 'A'¹



¹ See [Appendix 1](#) for the Electoral Area 'A' Hazard Identification Workshop summary from October 8th, 2021

CHAPTER 3: UNDERSTANDING COMMUNITY RESILIENCY

Existing Risk Reduction Measures

The following section lists the known hazard information resources and community emergency planning documents that are available. This is a preliminary list that will be augmented through engagement with municipalities, First Nations, first responders, subject matter experts, and community members. The following list is organized first by community emergency plans, followed by a listing of known hazard reports and studies in the area.

Community Emergency Plans

- Regional District of Bulkley-Nechako Emergency Preparedness Plan 2003 updated in 2011. This plan is being replaced by a Comprehensive Emergency Management Plan, with the following addendums approved by the Regional Board of Directors:
 - Livestock Evacuation Plan 2020
 - Crisis Communication Plan 2020
 - Pandemic Response 2020
- Town of Smithers Emergency Response and Recovery Plan 2016
- Village of Telkwa Emergency Preparedness Plan December 8th, 2017
- Village of Telkwa Evacuation Guide March 16th, 2020

Reports/studies

Fire

- Smithers Wildfire Protection Plan 2012
- Telkwa Community Wildfire Protection Plan 2008
- Crown Land Wildfire Risk Reduction 2020/2021². This program is funded in Area 'A' in the following prescribed mitigation areas:
 - Hudson Bay Mountain 110Ha
 - Smithers Telkwa WRR Plan 41,858
 - Wetzinkwa Comfor - Site Level 300ha
 - Wetzinkwa Comfor – Operational 100 ha

Flooding

- [RDBN Floodplain Management Bylaw No. 1878, 2020](#)
- [RDBN Ebenezer Flats Flood Mitigation Study 2019](#)
- [EBENEZER FLATS/KIDD ROAD EROSION PROTECTION STUDY](#) 2006

² Ministry of Forests, Lands, Natural Resource Operations, and Rural Development Crown Land Wildfire Risk Reduction Community Resiliency Investment Projects will be completing fuel management planning and treatment activities focusing on provincial Crown land located around communities. Prescribed fire (including planning and operational treatments) and the development of a comprehensive provincial prescribed fire program. Risk reduction activities targeting provincially identified critical infrastructure, beginning with critical response infrastructure such as government-owned radio repeaters, weather stations and airtanker bases. March 2021. Source: <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/funding-for-wildfire-prevention/crip/wrr>

➤ [Ministry of Environment Floodplain Mapping](#)

Land Slides and Erosion

- [Alluvial Fan Study \(Lake Kathlyn Area, Smithers\) 1991](#)
- [GEOTECHNICAL ASSESSMENT POTENTIAL TERRAIN HAZARDS \(SLOPE STABILITY\) LOWER VIEWMOUNT ROAD AREA2006](#)

Geotechnical

- [Geotechnical Report Guidelines RDBN brochure](#)

Rail Disaster

- [Railway Accidents, Spills and Casualties in Canada and Northern BC \(Dec 2020\)](#)

Policies and other resources

- RDBN [Smithers Telkwa Official Community Plan](#) 2014
- Smithers [Official Community Plan 2010](#) (to be reviewed in 2021)
- Telkwa [Official Community Plan 2011](#)

Regional Resources

- [Regional Adaptation Strategies: Bulkley-Nechako & Fraser-Fort George](#)
- [RDBN Food and Agriculture Plan 2020](#)

Drought

- Town of Smithers Bylaw No. 1811 - Water Restriction
- [Village of Telkwa Water conservation plan policy and bylaw](#)

Air Quality

- [Bulkley Valley Lakes District \(BVLD\) airshed management plan](#)

Airport Safety Plan

- The Smithers Regional Airport is mandated in accordance with Transport Canada Aerodrome Standards & Recommended Practices TP312E maintain and update an Emergency Response Plan for the airport grounds, operations, and air space under their jurisdiction.

Oil and Gas Pipeline Spill


- PNG Pipeline has a strong emergency and safety program, including a [Transmission Pipeline Emergency Response Plan](#).

Critical Emergency Response Services


The majority of critical services are located in the municipal boundaries. Below is a preliminary listing of response services and available resources within Electoral Area 'A'.

Area 'A'


First Response Agencies



Smithers RCMP
Victim Services




**Smithers BC Ambulance
Station 769**




Smithers Fire Department
3 Staff
44 Volunteers
2 - Class "A" Engines
Aerial 85'
Rescue Truck
Tender, 3000gallons
Bush Fire Truck
Command Truck
Sprinkler Protection Unit Trailer


Telkwa Fire Department
3 part-time staff
23 Volunteers
Structural Fire Engine 800 US gal
Rescue Engine 300 US gal Tender 21
3000 US gal
Wildland 3/4 ton truck 75 US gal




Witset Fire Department
1 Staff
6 Volunteers




**Bulkley Valley
Search and Rescue**
47 operational members
3 support members




**RDBN
EOC**



Bulkley ESS
1 staff
32 volunteers



Bulkley Zone
Telkwa: 20 person unit crew, 4 person
Initial Attack & 5 officers
Hazelton: 20 person unit crew, 2 Officers



Community Vulnerabilities

To fully understand how a hazard might impact a community, it is necessary to consider the degree of vulnerability to the hazard. While being situated in a hazardous zone is a key determinant of risk, a community's vulnerability defines the susceptibility of the people, property, industry, resources, and the environment to harm should a hazard event occur.

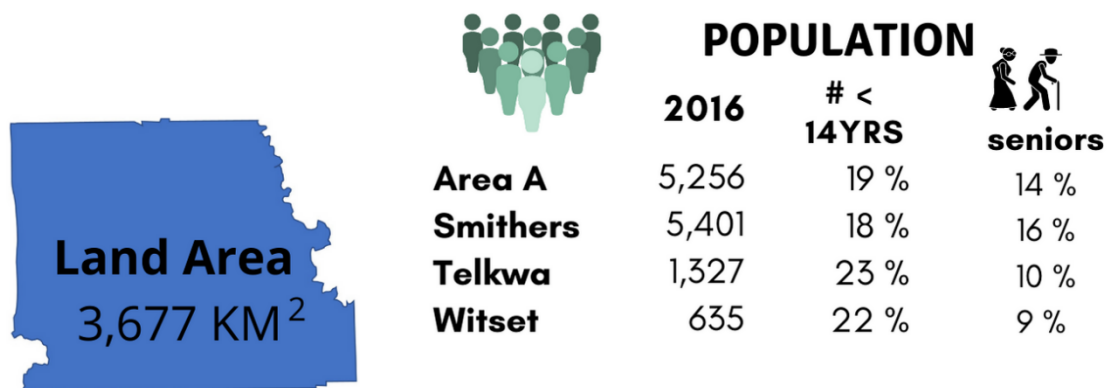
The Provinces HRVA guide defines Vulnerability by the people, property, infrastructure, industry and resources, or environments that are exposed to adverse impact from a hazard event. There are four groups of vulnerabilities to consider: social, economic, physical, and environmental.

In this section we will begin to explore the four groups of vulnerabilities that may be considered in this project. This information is a starting point in the collection of known vulnerabilities within the region. The intention is that the HRVA process will help to strengthen our collective community knowledge of our vulnerabilities to enable future conversations that will focus on resilience strategies. Both vulnerability and resiliency are important, and closely related concepts for evaluating a community's ability to cope with the impacts of a hazard event. It is important to differentiate between the two:

- Vulnerability looks at the factors that increase a community's susceptibility to damage from a hazard;
- Resiliency is a measure of a community's ability to resist or recover from damage (SOPAC, 2002).

At the January 12, 2022, Understanding Community Resiliency Workshop participants were asked to consider and provide further details of the social, economic, environmental, and physical conditions that they perceive to have the potential to contribute to vulnerability within Electoral Area A. The discussion and input from that meeting have been integrated into this document.

Social Factors³



In 2016, 99 % of Area A report English as their official language. 13% speak another language.



In 2016, 8% of Area A identified as First Nation, and 2% as a visible minority (South Asian, Black, Filipino, Latin American, Japanese, & Korean)




	# OF PRIVATE DWELLINGS	SINGLE DETACHED	ATTACHED HOUSING	MOVEABLE HOUSING
Area A	2,201	1,760	20	250
Smithers	2,389	1,495	655	120
Telkwa	498	420	15	25
Witset	210			

HOUSEHOLD INCOME



	MEDIAN HOUSEHOLD INCOME BEFORE TAX	% OF LOW-INCOME HOUSEHOLDS
Area A	\$85,184	11%
Smithers	\$73,984	12%
Telkwa	\$87,936	7%
Witset	\$47,488	

³ (Canada, 2016)

Support Services		INDIVIDUALS EXPERIENCING HOMELESSNESS	ASSISTED LIVING UNITS	INDEPENDANT HOUSING	RENT ASSISTANCE
 Social Housing		44 Units	52 Units	24 Family Units	42
		6 Emergency Shelter spaces 10 Homeless rent supplements 28 Transitional and supportive units	14 Frail Seniors 27 Special needs housing 10 Transitional and supportive units 1 Telkwa	24 low income families 8 (Telkwa) low income seniors housing	23 Seniors 9 Families 7 Telkwa 3 Area 'A'

High Road Services Society

provides services to adults with developmental disabilities-vocational, recreational, residential, and independent living skills acquisition.



Community Living BC

network of supports and services that assist adults with developmental disabilities to be full participants in their communities.

Person with Disabilities

Smithers Community Services Association

Programs for youth & family, community learning, housing and other support services.

The Grendel Group

programs and support for educational and ongoing meaningful work experience for people with cognitive and physical disabilities.

Indigenous Support Services

Deze L'Kant Friendship Centre

Programs and services that are culturally flexible and responsive to community needs.

Office of the Wet'suwet'en

Early Childhood Development Program, Reconnections, Culture Camp, ANABIP and Unlocking Aboriginal Justice

Additional Support Services Northern Society for Domestic Peace Northwest Child Development Centre

NOTE: There is a common acceptance by RDBN residents that there was a census undercount throughout the region. It is believed that the population has not decreased to the extent surveyed and has remained relatively stable throughout the region (Nechako, 2014).

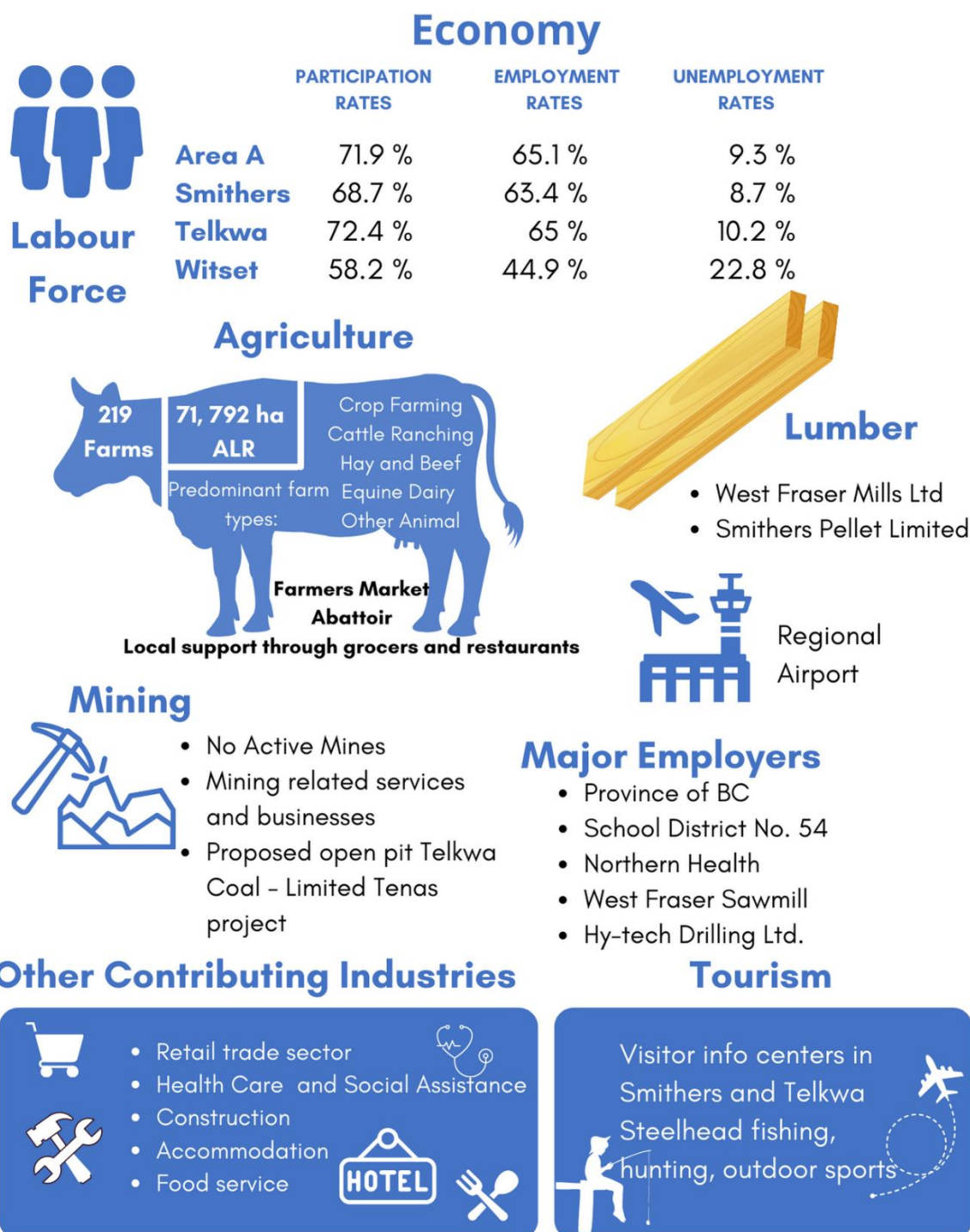
⁴Statistics Canada released its 2017 Canadian Survey on Disability in 2019. This report, and its dataset, offers national and provincial insights into the prevalence of disability across Canada, including the type and severity of a disability, as well as the economic circumstances for persons with one or more disabilities. Unfortunately, data representing more granular geographies like the Smithers Rural are not available, meaning discussions must remain at the provincial level.

The 2017 survey classifies a disability as falling within one of eleven categories: pain, flexibility, mobility, mental health, seeing, hearing, dexterity, learning, memory, developmental, or unknown.

In 2017, 926,100 British Columbians aged 15 years old or older reported having at least one disability, or about 25% of all residents in that age cohort. If the same proportion applied to Smithers Rural, that would mean about 1,105 residents could be living with a disability.

Economic Factors⁵

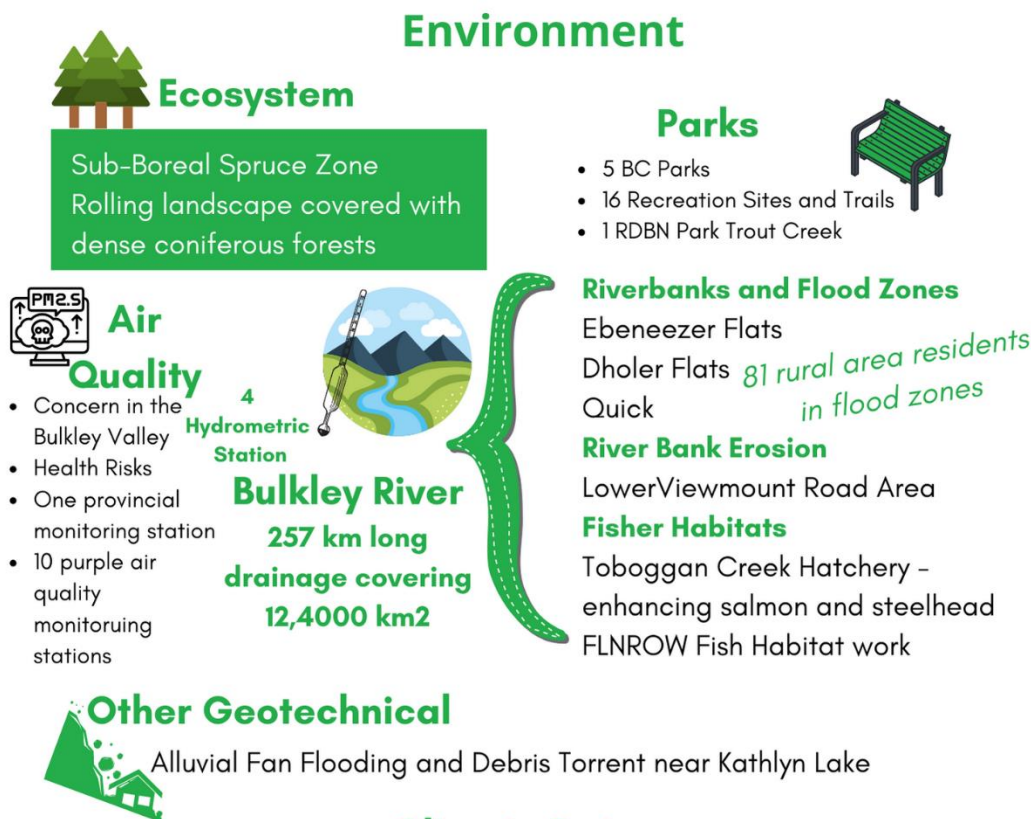
Economic resilience drives a community's recovery post-disaster (FEMA, 2013). Therefore, economic vulnerability is a key determinant of a community's ability to withstand and rebound from a hazard event. Single industry communities may be more susceptible to harm than those with diverse economic sectors (Bergstrand, 2015). It is important to better understand and consider economic vulnerabilities when developing plans and strategies build disaster resiliency.





⁵ (BC Ministry of Agriculture, 2013). (Strategies, 2020)

Environmental Vulnerabilities⁶

Environmental vulnerability measures how damage to the natural environment impacts a community's ability to withstand and recover from a hazard event. The natural environment can provide a protective buffering service that reduces the magnitude of impacts of hazard events. For example, wetland and riparian areas reduce flooding by absorbing flood waters, providing erosion and sedimentation control, and recharging groundwater.



 The Bulkley Nechako region's complex topography creates considerable climate variability over short distances. Baseline temperatures vary with elevation (warmer in the valleys and cooler in the mountains).

	SMITHERS			TELKWA		
	1976–2005	2021–2050	2051–2080	1976–2005	2021–2050	2051–2080
MEAN ANNUAL  °C	3.2 °C	5.2 °C	4.9 °C	1.8 °C	3.8 °C	3.5 °C
PRECIPITATION						
Winter	167 mm	178 mm	177 mm	214 mm	229 mm	227 mm
Spring	91 mm	202 mm	203 mm	223 mm	241 mm	242 mm
Summer	148 mm	154 mm	149 mm	161 mm	166 mm	161 mm
Fall	186 mm	96 mm	96 mm	113 mm	119 mm	117 mm
FROST FREE DAYS ANNUAL	110	144	139	89	125	149

*Climate Data for Smithers and Telkwa (ClimateAlta 2019)

⁶ Parks BC: Burn Cabin Bof Ecological Reserve, Babine Mountains, Driftwood Canyon, Call Lake, Tyhee Lake Park. Recreation Sites and Trails: Bulkley River, Canyon Creek Trails, Dennis Lake, Hankin-Evelyn Backcountry trails, Jonas Creek, Piper Down, Smithers Community Forest Trails, Taltzen Lake, The Bluff, Twin Falls, Tyee Mountain Trails, Kitsegukla Lake, Microwave-Sinclair Snowmobile Trails and cabin, Telkwa River Rec Site, Dome Mountain Trails, Lunana Road Boat Launch. RDBN parks Trout Creek.

Physical Infrastructure Vulnerabilities

Physical vulnerability is a measure of how damage to a community's buildings, facilities, and infrastructure, e.g., transportation, electricity, telecommunication, water supply etc., can impact a community's ability to withstand and recover from a hazard event. Public Safety Canada defines critical infrastructure (CI) as: "services essential to the health, safety, security or economic well-being of Canadians and the effective functioning of government" (Canada P. S., 2021). The following ten sectors are considered critical infrastructure in Canada: Health; Food; Finance; Water; Information and Communication Technology; Safety; Energy and Utilities; Manufacturing; Government; and Transportation. Forecasting the failure of these complex sector is challenging as weaknesses in the system may be unknown until the infrastructure fails. Also, the responsibility for various critical assets and infrastructure is divided between different levels of government and public and private agencies, further adding to the difficulty of preparing for and mitigating against critical infrastructure disruption and damage.^{7 8 9 10}

Physical Critical Infrastructure



Health Services

- Bulkley Valley District Hospital
- Bulkley Lodge
- Smithers Community Health
- The Meadows
- Witset Health Centre



Utilities

- BC Hydro Power along Hwy 16 – substations Telkwa & Smithers
- Pacific Northern Gas in Telkwa & Smithers
- Village of Telkwa District Heating at Town Hall

Community Water



- Town of Smithers – 3 deep wells, 2 reservoirs
- Smithers Airport – one deep well, 3 underground cisterns
- Village of Telkwa – Bulkley River intake with a water treatment facility, 2 reservoirs, back-up well.
- 33 private community water systems
- Witset water– slow sand filtration system



Community Sewer

- Town of Smithers – Sewage Treatment Plant adjacent to the Bulkley River south of Smithers Airport
- Village of Telkwa – aerated lagoons located adjacent to the Bulkley River
- Witset wastewater system



Communication

- Cellular: Rodgers, Telus, Virgin, Public, Bell
- Internet: Telus, CityWest, Cybernet, ABC Comm, Xplornet, Galaxy
- Newspaper: Interior News Bulkley Browser
- 6 radio stations and 4 public broadcasting TV stations

School

SD 54:

- Bulkley Valley Education Connection
- Bulkley Valley Learning Centre
- Muhiem Elementary School (K-7)
- Smithers Secondary (grade 8-12)
- Walnut Park Elementary School (K-7)
- Telkwa Elementary School (K-7)

Other:

- Bulkley Valley Christian School (K-12)
- Project d'école francophone à Smithers (K-12)
- Witset Elementary Secondary School (WESS)
- St. Joseph's Catholic School (K-7)
- Ebenezer Canadian Reformed School (K-12)



Transfer Station



Transportation

- MOTI Roads and Highway 16
- Tyee Lake Seaplane Base
- Telkwa Airstrip
- Smithers Regional Airport
- BV Regional BC Transit System
- BC Bus Nother PG-PR
- CN Rail
- Single Access Route
- Neighbourhoods: Hudson Bay Mountain Road, Slack Rd?

⁷ There are 33 community water systems in Electoral Area 'A' that service anywhere from 2 – 300 connections. Information on water facilities can be found on [Northern Health Drinking Water reports and summaries under Smithers, Telkwa and Regional District Bulkley Nechako.](#)

⁸ [BC Bus](#) North is a provincially funded intercity bus service between Prince Rupert, Prince George, Dawson Creek, Fort St John, Fort Nelson, Valemount and many communities in between.

⁹ Internet: There are six internet service providers in the region (Corporation, 2019), and a seventh, Starlink scheduled for 2021.

¹⁰ Radio: There are ten radio stations broadcasting and several different cable and satellite providers in the region: CJFW-FM-6 92.9 FM; CBRS-FM97.5 FM; CBC TV; CKEW-FM 88.1 FM; CTVBC; Global; Knowledge Network; VF2196 95.1 FM; CICK-FM 939.9 FM; CFBV 870 AM.

Underlying Risk Drivers

There are additional factors which increase a community's susceptibility to hazards. As a committee it maybe helpful to discuss possible "underlying disaster risk drivers" to help differentiate them from hazards and risks and help identify additional vulnerabilities. According to the United Nation Office of Disaster Risk Reduction (UNISDR), underlying disaster risk drivers, or factors, may include:

- Poverty, inequality, and literacy
- Climate change and variability
- Unplanned and rapid urbanization
- Unsustainable uses of natural resources
- Declining ecosystems
- Lack of disaster risk considerations in land management and environmental and natural resource management
- Demographic change
- Lack of regulations and incentives for private disaster risk reduction investment
- Non disaster risk-informed policies
- Complex supply chains
- The limited availability of technology

Which of these factors should be considered in Electoral Area 'A'? What considerations need to be considered? And are these considerations localized to specific geographic areas?

Climate Change

Climate change is not an abstract future concern, but rather a current, evolving reality experienced in Canada today. Canada's climate has been increasing in temperature and is predicted to continue to increase in the coming years. According to the recent Canada's Changing Climate Report, Canada's climate is warming at a rate nearly twice the global average (Bush, 2019). Projections suggest that by the years 2081 to 2100, Canada's climate will increase by 1.8°C if emissions are reduced, or up to 6.3°C if emissions remain high (Bush, 2019).

The Preliminary Strategic Climate Risk Assessment for British Columbia states that, by the year 2050, the greatest risks to all of British Columbia as a result of climate change will be severe wildfire seasons and seasonal water shortages (BC Ministry of Environment and Climate Change Strategy, 2019). Climate change is likely to affect the majority of hazards faced in the region. According to the BC Ministry of Environment and Climate Change, "the likelihood of most risk events increases over time based on projections of future climate change" (Strategy, 2019)

Skeena District Climate Projections (Foord, 2016)

Climate projections for the northern regions and districts were made for 2055 (2041–2070). Mean annual temperature in the Skeena Natural Resource District is projected to increase by 3.2°C, with minimum temperatures increasing more than maximum temperatures. Mean annual precipitation for the region is projected to increase by 7%. Increases will likely be as rainfall because precipitation as snow is projected to decrease by about 35%. Precipitation is projected to increase the most in the fall. The number of growing degree-days will increase, and the number of frost-free days will increase. The greatest increase in the number of frost-free days is projected to occur in the spring.

Supply Chains

Disasters disrupt pre-existing networks of supply. In many communities our reliance on just-in-time inventory practices, combined with the heavy use of technology to fulfill orders can result in supply gaps and significant delays in restoring services. This can cause panic among residents, failure to meet the health and medical needs of the population, and if unmanaged, turn an emergency into a disaster.

The food supply in the region can be threatened in an event of a disaster outside the region. The main grocery stores across the region are supplied 50% from the lower mainland and the remainder coming from Edmonton/Alberta. In response to the 2021 November floods in the lower mainland the large chain stores were quick to develop continuity plans to reroute trucking through the US, into Alberta and back over to the North.

Fuel supply in the region can also be threatened in an event of a disaster outside the region. The majority of fuel is transported from Alberta via Trans Mountain Pipeline and railway. Prince George is the [distribution centre](#), where fuel is then trucked to its destination. There is a refinery in Prince George that refines gasoline, diesel, propane butane and heavy oil.

Hazard Scenarios

At the January 12th, 2022 Understanding Community Resiliency Workshop participants were broken out into three groups to complete the following 9 hazard scenario worksheets. These scenario worksheets were designed to help guide the committee through an alternative discussion process that would help to highlight and articulate additional vulnerabilities within the Electoral Area.



Natural Hazards

Flooding Consider changing this scenario to ice jamming.

Scenario Description:

In March, an ice jam blocked the Bulkley River between the Bulkley River bridge and Riverside Park in Telkwa. Ice was piled 15 ft. (4.5 m) above the river level, with some blocks as big as 10-ft. (3 m) square and 4 ft. (1.2 m) thick. It dammed up thousands of gallons of water, causing the river to flood behind it and to drop 8 ft. (2.4 m) below normal ahead of it. The backed-up waters overflowed their banks and flooded the flats surrounding the bridge area. The water levels rose more than 1 ft. (30 cm) in half an hour. A 290-ft. (87 m) section of the 22-year-old Bulkley River bridge on Highway 16, 1 mi. (1.6 km) east of Smithers, was taken out by the ice. Riverside residents in Smithers and Ebenezer Flats were evacuated before the ice jam broke. On the Smithers side, the Vetterli farm and Lubbers' Trailer Court were inundated. Some roadbed collapsed, splitting the Village of Telkwa's sewer system. An evacuation alert was also put in place for residences in the Dohler Flats area. We are going to look at the effects on the rural residents within the first 12 -24 hours of the event happening. If needed, please add more detail to the scenario as we go along.

List Secondary or cascading hazards that may result:

Note the [Viewmount area Geotechnical concerns](#) related to flooding and landslides.

Livestock impacts, Infrastructure failure, Supply Chain impacts, Transportation impact for public and emergency services, Hydro (electrical caused fires?), Utilities, Communications. Contamination of water and soil due to flood water. Landslide/soil erosion.

Triggering Event (Root causes of this type of event):

winter temperatures (change from cold to warm), snowstorms (winter weather). Flow rates on the Bulkley River,

Impact Summary

- **What social, economic, environmental, and physical factors may increase the community's susceptibility to damage because of this hazard?**
 - Property loss due to flooding (can they get flood insurance?)
 - People remaining behind when under EO to protect, put themselves and responders at risk.
 - School located in Ebenezer Flats
 - Sewage ponds in Dohler Flats,
 - Riverside Park,
 - Transportation routes cutoff, main route cutoff, impeding essential goods.
 - farm chemicals and manure mixing with flood water.
- **Are there specific neighbourhoods in Area 'A' that have vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?**
 - Flood plain areas, landslides.
 - Single access points
 - Farms located near the river.
 - isolated neighborhoods
 - Dohlar Flats proximity to sewage ponds
- **Focus the conversation on the impacts as the event is happening (recovery will be a focus of conversation at future meetings).**

Likelihood Rating <i>(Please Circle)</i>	Consequence Severity <i>(Please Circle)</i>
E – Almost Certain to Occur	4 – Extreme Impact
D – Likely to Occur	3 – High Impact
C – Probable to Occur	2 – Moderate Impact
B – Unlikely to Occur	1 – Low Impact
A – Very Rare to Occur	0 – No Impact



Wildfire

Scenario Description:

August 15, a campfire ignites a wildland fire in Twin Falls Recreation Site in Electoral Area 'A'. With high winds gusting to the Southeast, creating spot fires spreading into the residential areas of Glacier Gulch and Lake Kathlyn. The [fire behavior is a rank 3-4](#). The long dry summer conditions created the perfect conditions for the fires to spread and quickly be out of control in wildfire interface areas. Evacuation orders are issued on several residential properties to the west of Lake Kathlyn. Reception Centres opened in Smithers and Houston. We are going to look at the effects on the rural residents within the first 12 -24 hours of the event happening. (Consider other neighborhoods in Electoral Area 'A' that may only have one access and egress: Hudson Bay Mountain Area including Seymour and Phtarmigan residents, Hislop, Quick, Glentanna, Coalmine/Silkhorn out of Telkwa.) If needed, please add more detail to the scenario as we go along.

Set up Reception Centre in Evelyn

List Secondary or cascading hazards that may result:

Smoke- air quality impact, Heatwave/hotter temperatures, Fire damage to Private Property, Hydro distribution line. Tactical Evacuation occurring causing congestion on the roads, Panic. Impacts to Smithers Airport flights halted, Fire Suppression using Airspace, Rail line impacted. Cell towers in the area. Recreation users stranded in Twin Falls. Transportation impacted

Triggering Event (Root causes of this type of event):

Lightning, vehicle, Hydro line, CN line, fuel accumulation on private and crown land,

Impact Summary

- **What social, economic, environmental, and physical factors may increase the community's susceptibility to damage because of this hazard?**
 - Rail line out of commission
 - Airport port impacted
 - loss of property
 - tourism and recreation impacts
 - air quality affected
 - soil instability leading to landslides
- **Are there specific neighbourhoods in Area 'A' that have particular vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?**
 - Residents on Slack Road would be impacted
 - the one route for access and egress for the area
 - properties in the forested interface areas
 - west of highway up Telkwa Valley
 - Kitsegukla Valley.
 - Evelyn area could be impacted as fire progresses.
 - Telkwa High Road if spotting is occurring would be higher risk for evacuation
 - Trailer Park on Laidlaw Road
 - Agriculture evacuations take longer to evacuate and reluctance to leave, process of livestock evacuation takes time.
 - Microwave tower on the ski hill near chair lift
- **Focus the conversation on the impacts as the event is happening (recovery will be a focus of conversation at future meetings).**

Likelihood Rating <i>(Please Circle)</i>	Consequence Severity <i>(Please Circle)</i>
E – Almost Certain to Occur	4 – Extreme Impact
D – Likely to Occur	3 – High Impact
C – Probable to Occur	2 – Moderate Impact
B – Unlikely to Occur	1 – Low Impact
A – Very Rare to Occur	0 – No Impact



Landslide

Scenario Description:

Incessant rains in April bring 147mm in a 48 hours period have caused an [alluvial fan slide](#) in the Lake Kathlyn Area of Smithers affecting residents in the Slack Road Area. The rains cause a slide and debris torrents to travel down the Simpson Creek bed affecting approximately 40 residents, affecting the bridge on McKinnon Rd, and blocking the CN Tracks. In addition, the weather event caused micro slides in other areas of the valley, including areas along the Bulkley River. The Bulkley River rose significantly, carrying large quantities of trees and driftwood. Train traffic is delayed due to flooding and slides along the tracks. We are going to look at the effects on the rural residents within the first 12 -24 hours of the event happening. If needed, please add more detail to the scenario as we go along.

List Secondary or cascading hazards that may result:

Transportation issues with rail and road traffic washouts.
Telkwa High Road Tyhee Lake, road would be close to washing out into the hay field.
Water Contamination
emergency services tied up in response

Triggering Event (Root causes of this type of event):

rain
lack of stability due to fires, logging, pest infestations,
Freshet

Impact Summary

- **What social, economic, environmental, and physical factors may increase the community's susceptibility to damage this hazard?**
 - short term rail wash out, road wash out,
 - Salmon impact due to water contamination, trout creek
- **Are there specific neighbourhoods in Area 'A' that have particular vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?**
 - Telkwa High Road Tyhee Lake, road would be close to washing out into the hay field.
 - What are the impacts to landslides to increase as precipitation and freshet increase.
- **Focus the conversation on the impacts as the event is happening (recovery will be a focus of conversation at future meetings).**

Likelihood Rating (Please Circle)	Consequence Severity (Please Circle)
E – Almost Certain to Occur	4 – Extreme Impact
D – Likely to Occur	3 – High Impact
C – Probable to Occur	2 – Moderate Impact
B – Unlikely to Occur	1 – Low Impact
A – Very Rare to Occur	0 – No Impact



Snowstorm

Scenario Description:

A significant snow storm occurred between late afternoon on November 7 and the afternoon of November 9, the Bulkley Valley recorded about 48 hours of continuous snow measuring 75 cm over the 2 days,. The storm has paralyzed the valley, leaving roads and driveways clogged, knocking out power lines and causing cancelled air flights. Many long-time valley residents said they couldn't recall "as big a dump of snow so early." During the storm, between 2,000-3,000 customers lost power, with longest outages expected in the rural areas, including Driftwood, Kidd Road, Seymour Lake, Quick-Walcott and Kroeker Road. We are going to look at the effects on the rural residents within the first 12 - 24 hours of the event happening.

If needed, please add more detail to the scenario as we go along.

List Secondary or cascading hazards that may result:

- transportation routes impacted
- emergency response impacted
- potential significantly cold weather
- supply chain interruptions
- freezing pipes
- water access due to pumps not working
- heating system loss
- phone and internet disruptions due to solar batteries on towers failure
- medical supply issues

Triggering Event:

- anomalous weather event

Impact Summary

- **What social, economic, environmental, and physical factors may increase the community's susceptibility to damage this hazard?**
 - **Are there specific neighbourhoods in Area 'A' that have particular vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?**
 - **Focus the conversation on the impacts as the event is happening (recovery will be a focus of conversation at future meetings).**
- low economic factors do can not stockpile food
 - freezing pipes
 - lack of water
 - lack of heat

Likelihood Rating <i>(Please Circle)</i>	Consequence Severity <i>(Please Circle)</i>
E – Almost Certain to Occur	4 – Extreme Impact
D – Likely to Occur	3 – High Impact
C – Probable to Occur	2 – Moderate Impact depends on the multiple factors
B – Unlikely to Occur	1 – Low Impact
A – Very Rare to Occur	0 – No Impact



Hurricane/
high wind

Hurricane /High Winds

Scenario Description:

You should assume that 30 minutes ago, a windstorm blew through the community. The storm had sustained winds of 100 km/h with gusts up to 120 km/h. The windstorm knocked down trees and power lines in many rural areas. Power is now out to in multiple rural areas and in Smithers and Telkwa. Power will be back on in Smithers and Telkwa in the next 12 hours, however rural service maybe out for a few days depending on the BC hydro crews available. Older trees have fallen over and completely blocked rural area roads. Cell service is out in Smithers with two cell towers being affected. You should assume the storm will last a few hours. We are going to look at the services the community will expect in the first 12 hours, and how residents will be affected. If needed, please add more detail to the scenario as we go along.

List Secondary or cascading hazards that may result:

- loss in communication services - potential to not connect with first responders
- loss of power and electrical services
- fire - wildfire effects - if in the summer forest fires
- if winter - issue with heat in homes - in Smithers many do not have heat, in rural areas still wood heat.
- freshwater supply - rural pumps and
- transportation infrastructure is being blocked and affected.

Triggering Event (Root causes of this type of event):

- Climate change and increasing winds
- change of seasons - ie March storms
- lately seem more dramatic and seems like crazier windstorms

Impact Summary

- **What social, economic, environmental, and physical factors may increase the community's susceptibility to damage this hazard?**
- **Are there specific neighbourhoods in Area 'A' that have particular vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?**
- **Focus the conversation on the impacts as the event is happening (the recovery will be a focus of conversation at future meetings).**
 - ex. horseshoe bay in 2022 - Coroners last week - stabilize house so that first responders could come in and retrieve the body.
 - first 12 hours - people not checking in in rural areas - house damage, loss of life.
 - Effects on communication
 - prepared residents- 3 day supplies not necessarily impactful.
 - if no landline
 - Deep Creek (potentially five years ago - wind storm caused the tree to go over lines and caused a fire that burnt five acres and home in the surrounding areas.
 - single access communities and routes needing to be cleared.
 - we still have the end of the bug wood and face new infestations and trees dying and creating increasing hazards. big force in the damage we see. susceptible to the health of the forests.
 - effects of forest fires - landslides and these cascading events killing and damaging more trees further amplifying this risk.

Likelihood Rating (Please Circle) *assumption one year
and ten year period*

Consequence Severity (Please Circle)

E – Almost Certain to Occur
D – Likely to Occur
C – Probable to Occur
B – Unlikely to Occur
A – Very Rare to Occur

4 – Extreme Impact
3 – High Impact
2 – Moderate Impact
1 – Low Impact
0 – No Impact
*low to moderate people have learned to deal with in - you get
alot of the one off.*

Human-Caused Hazards



Rail Incident

Rail Incident

Scenario Description:

In the early morning today CN freight train derailed and rolled down a small embankment adjacent to the Bulkley River just after the Telkwa River crossing. Parts of the center of the train lay on its side where the train crosses Coalmine Rd blocking the Coalmine crossing and the Rail bridge crossing. The train consisted of 4 diesel locomotives, 23 tank cars (pressurized and non-pressurized), 12 hopper cars, and 2 Sulphur Dioxide tank cars. Initial assessment indicates that several of the pressurized tank cars have ruptured. Two of the LPG tank cars exploded on impact during the derailment, causing a fire. The hopper cars containing ammonium nitrate lie on their sides, and the contents have spilled. The locomotive diesel tanks have ruptured, spilling diesel into the Bulkley River. The cryogenic tank cars appear to be intact; however, several of the non-pressurized tank cars have released an unknown quantity of crude sulfate turpentine. The Engineer driving the train managed to get out of the train and is being treated at the Hospital for serious injuries sustained in the derailment. RCMP cars are on both sides of the river at the derailment. We are going to look at the services the community will expect in the first 12 hours, and how residents will be affected. If needed, please add more detail to the scenario as we go along.

List Secondary or cascading hazards that may result:

Further fire outbreak, further explosions, contamination to the Bulkley River affecting drinking water sources and fish habitat. Terrace residents' water supply could be impacted. Air quality downwind, could cause residents in immediate vicinity breathing problems. People Panicking wanting out of the area. Supply Chain issues if the highway is down. Sewer line could be impacted causing more pollution issues. Possible communication issues (investigate) Hydro and PNG lines.

Triggering Event (Root causes of this type of event):

Human error, broken rail track, flash flooding, ice buildup on tracks? vehicular accidents, wildlife on tracks? vehicle trying to outrun the train. Mischief.

Impact Summary

- **What social, economic, environmental, and physical factors may increase the community's susceptibility to damage this hazard?**
- **Are there specific neighbourhoods in Area 'A' that have particular vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?**
- **Focus the conversation on the impacts as the event is happening (recovery will be a focus of conversation at future meetings).**

Vulnerable neighbourhood - everyone on the southside of the tracks would be vulnerable in this incident.

air & water pollution potential structure fires

potential separation from family members and concern and those not in the area as well.

Likelihood Rating <i>(Please Circle)</i>	Consequence Severity <i>(Please Circle)</i>
E – Almost Certain to Occur D – Likely to Occur C – Probable to Occur B – Unlikely to Occur A – Very Rare to Occur	4 – Extreme Impact 3 – High Impact 2 – Moderate Impact 1 – Low Impact 0 – No Impact



Transportation Route Interruption

Scenario Description:

*British Columbia declared a State of Emergency following floods and mudslides caused by extreme rainfall in November. Every main route between the Lower Mainland and the interior of the province has been cut by washouts, flooding or landslides following record-breaking rain across southern British Columbia between Saturday and Monday. Significant ground shipping routes lost due to closure will result in shortage of supplies such as food, fuel, materials, medical supplies, and patient transport for the next few weeks. Residents do not have access to **food and fuel because supplies have run out**. We are going to look at the services the community will expect in the first 12-48 hours, and how residents will be affected. If needed, please add more detail to the scenario as we go along.*

List Secondary or cascading hazards that may result:

- panic buying, delay to fill the shelves to change over to new route back up plan, internet disruption
- communications
- specialize materials were impacted
- rerouting ships to Prince Rupert impact the capacity of the port and rail system up north

Triggering Event (Root causes of this type of event):

- Climate Change
- Atmospheric River

Impact Summary

- What social, economic, environmental, and physical factors may increase the community's susceptibility to damage this hazard?
- Are there specific neighbourhoods in Area 'A' that have particular vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?
- Focus the conversation on the impacts as the event is happening (recovery will be a focus of conversation at future meetings).

panicking

Likelihood Rating <i>(Please Circle)</i>	Consequence Severity <i>(Please Circle)</i>
E – Almost Certain to Occur	4 – Extreme Impact
D – Likely to Occur	3 – High Impact
C – Probable to Occur	2 – Moderate Impact
B – Unlikely to Occur	1 – Low Impact
A – Very Rare to Occur	0 – No Impact

Diseases, Pest Infestation & Epidemics

Public Health Crisis



Scenario Description:

It's January and there is a massive flu outbreak within the community as travellers return home from Christmas vacation in Mexico. The outbreak is linked to outbreaks in Mexico and has resulted in an extremely high number of infections in the Bulkley Valley. The risk of fatalities is high and the epidemic flu is affecting all age groups, with larger outbreaks in the care homes, social housing and youth in the Valley. If needed, please add more detail to the scenario as we go along.

List Secondary or cascading hazards that may result:

- health care overwhelmed - burn out in medical and caregiver burn out.
- Critical service interruptions
- Food supply interruptions

Triggering Event:

Impact Summary

- **What social, economic, environmental, and physical factors may increase the community's susceptibility to damage from this hazard?**
- **Are there specific neighbourhoods in Area 'A' that have particular vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?**
 - depend on initial communications put out by government and health authorities - if communications being messed up like at beginning of COVID - it got political rather than fact-based. How will current COVID and disease can not be made political. High risk the communication. Choosing forms of communication who gives messaging - and what are the effects of it.
 - potential for more overwhelms than covid requiring us to lean more heavily on resources outside of our area.
 - Impacts to resources of first responders, might be sick themselves or have family that is sick themselves.
 - economically the struggle in finding workers in the valley.
 - people coming and going - more pressure to move people resources - creates a risk to outlining communities.
 - sensitive following COVID. COVID has been such a big impact but still everything normalizes. if events like this happen in the next ten years response may improve. the severity will be determined depending on how we invest in recovery and resiliency - set our communities up to be more resilient in mental health, economic health etc.
 - Mental Health affects

Likelihood Rating (Please Circle) **10-year time frame**

Consequence Severity (Please Circle)

E – Almost Certain to Occur

D – Likely to Occur

C – Probable to Occur? more likely to shut things down.

B – Unlikely to Occur

A – Very Rare to Occur

4 – Extreme Impact

3 – High Impact

2 – Moderate Impact

1 – Low Impact

0 – No Impact



Plant Disease Pest Infestation

Scenario Description:

After several relatively warm winters, a massive outbreak of spruce beetle and sub-alpine-fir beetle results in the loss of millions of hectares of spruce and western balsam fir forests in Bulkley TFSA over the next 15 years. We are going to look at the impacts of this infestation on the forest sector and community in the Bulkley Valley and Smithers Area. If needed, please add more detail to the scenario as we go along.

List Secondary or cascading hazards that may result:

- forest fires
- slides flooding and effects
- site types and areas of the hazard.
- Water - localized flooding and erosion in areas.

Triggering Event:

- climate change
- decreased the resilience of ecosystems to respond to this.
- SBS impacted and moving towards an ICH ecosystem and forest type.

Impact Summary

- **What social, economic, environmental, and physical factors may increase the community's susceptibility to damage this hazard?**
- **Are there specific neighbourhoods in Area 'A' that have particular vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?**
 - would affect mills and timber supply - maybe not in the short term - healthy community in the next ten years.
 - change inhabitation
 - The environmental risk with fisheries - salmon habitat being maintained is very important.
 - impacts of tourism, water quality.
 - effects of landslides
 - spruce beetle in riparian - potential effects on fish habitat and potential long term effects - stream flows, temperatures, hydrology.
 - depends if lodgepole Pine is making a come back - would potentially offset the risk if the species is doing well.
 - in crease risk of species at risk - level of damage. riparian areas provide corridors for species to move through.
 - socio-economic impacts - super increase in requirements to put workers in the field and assistance - increase in demand on infrastructure medical, housing.. ie what happened in Quesnel mountain pine beetle - ie doubled AAC and people moved in- instability in the industry creates challenges - people having less stability in job situation - boom-bust. might affect affordable housing in the interim other economic disparities.
 - potential concerns around agricultural areas with creeks and trees - what happens if we take out the trees it could affect the watersheds - water quality could be a major human issue. as well as water quantity potential for small-scale flooding and stream flooding and erosion.
 - ski hill area and Seymour room - a mix of spruce and subalpine fir - steepest slope close to people. and may be affected by ground movement.
 - on the rise not sure what stops it

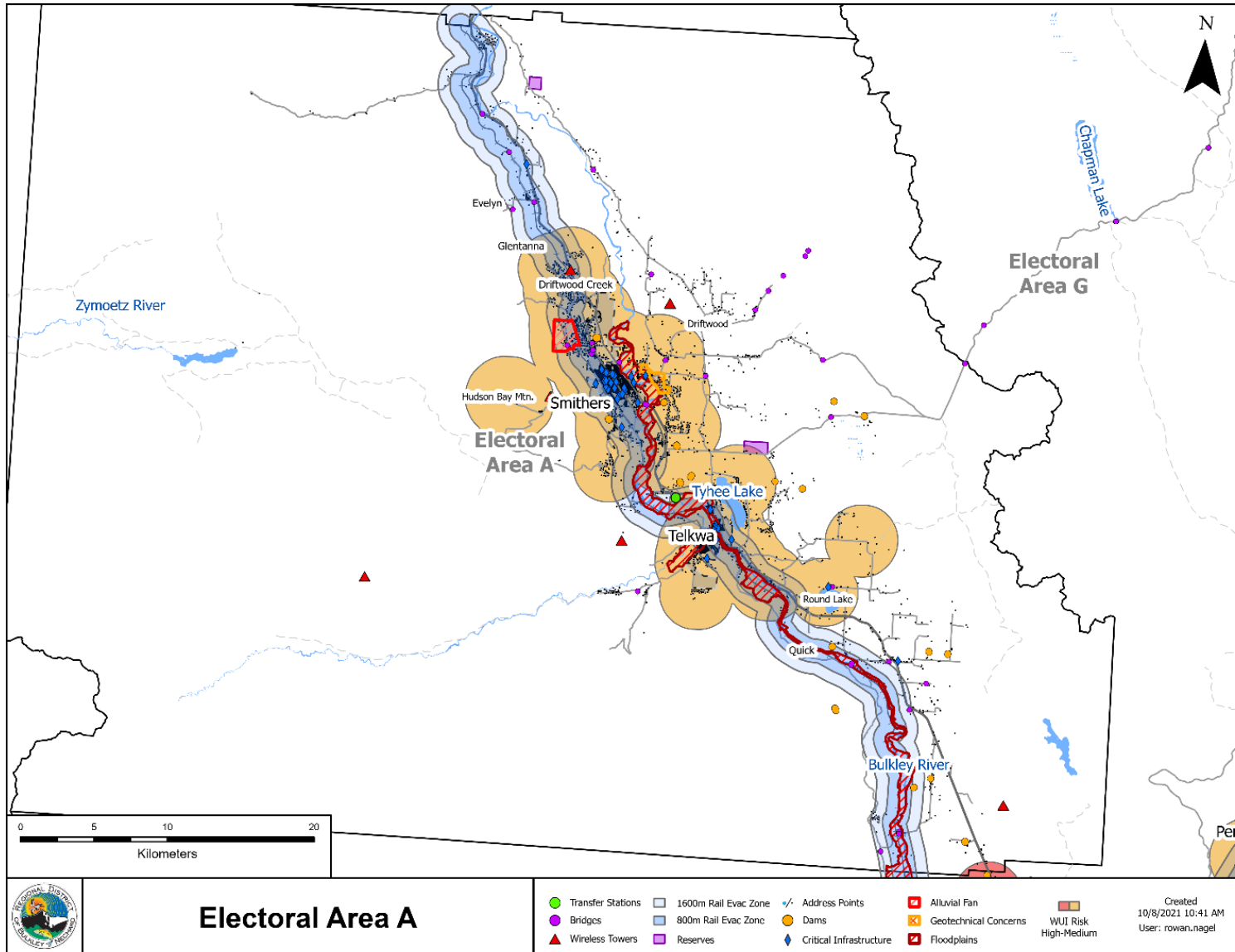
Likelihood Rating (Please Circle)

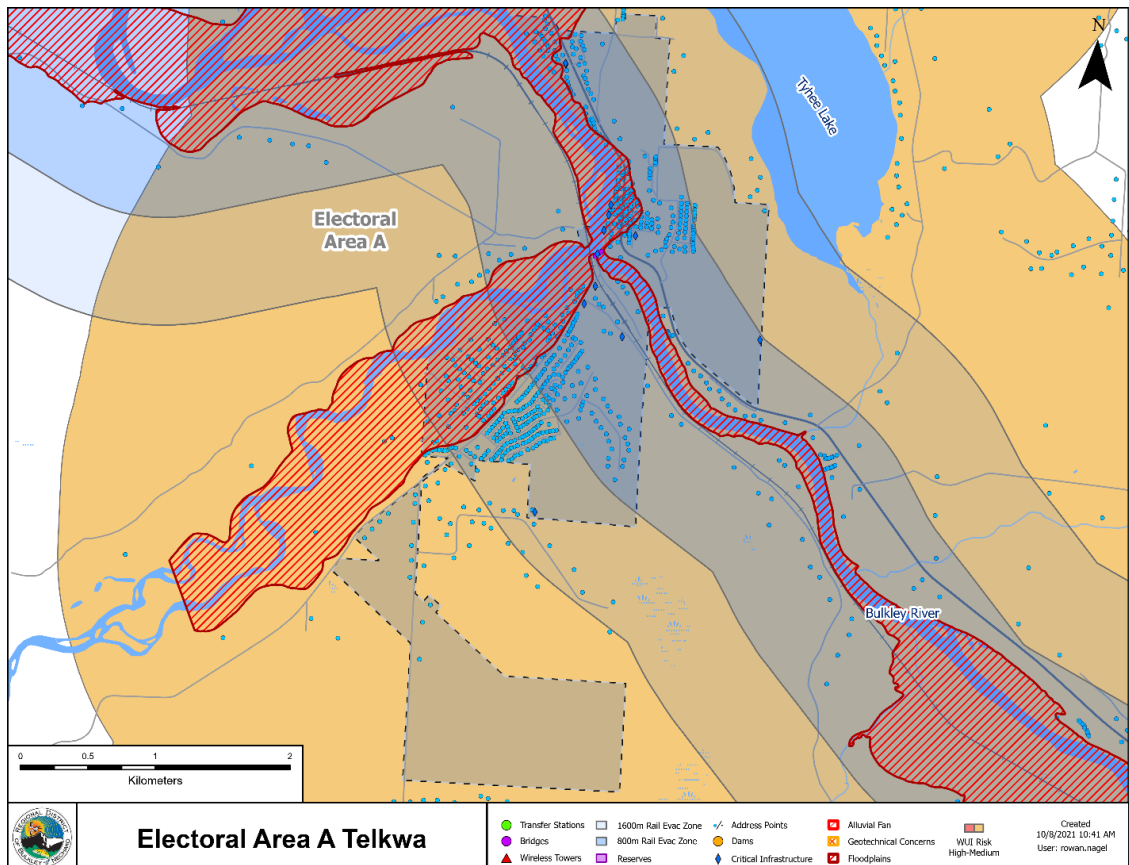
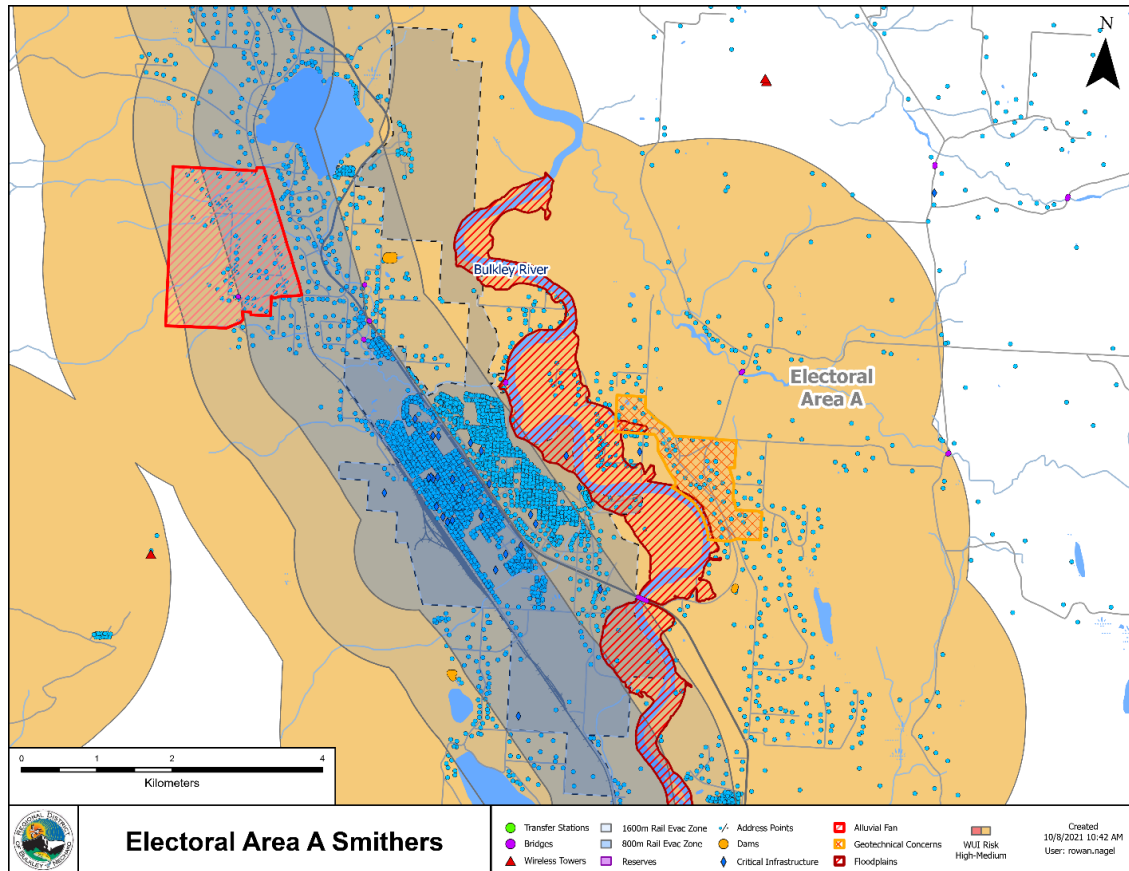
E – Almost Certain to Occur
D – Likely to Occur
 C – Probable to Occur
 B – Unlikely to Occur
 A – Very Rare to Occur

Consequence Severity (Please Circle)

4 – Extreme Impact
 3 – High Impact
2 – Moderate Impact
 1 – Low Impact
 0 – No Impact

Appendix 1 – ELECTORAL AREA 'A' KNOWN HAZARDS MAP





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