



Regional District of Bulkley-Nechako

HRVA Electoral Area' B' Understanding Community Resiliency

May 2022

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

PREFACE	3
Purpose of Backgrounder and Workbook	3
Summary of Selected 36 Hazards for Electoral Area 'B'	3
CHAPTER 3: UNDERSTANDING COMMUNITY RESILIENCY	4
Existing Risk Reduction Measures.....	4
Community Emergency Plans	4
Reports/studies.....	4
Critical Emergency Response Services	6
Community Vulnerabilities	6
Social Factors	8
Economic Factors.....	10
Environmental Vulnerabilities	11
Physical Infrastructure Vulnerabilities.....	12
Underlying Risk Drivers	13
Climate Change.....	13
Supply Chains.....	15
Hazard Scenarios	16
Wildfire.....	17
Human-Caused Hazards.....	18
Rail Incident.....	18
Hazard Material Spill	20
Diseases, Pest Infestation & Epidemics	21
Animal Disease Crisis.....	21
APPENDIX 1 – ELECTORAL AREA 'B' KNOWN HAZARDS MAP	22
CITED WORKS	24



Preface

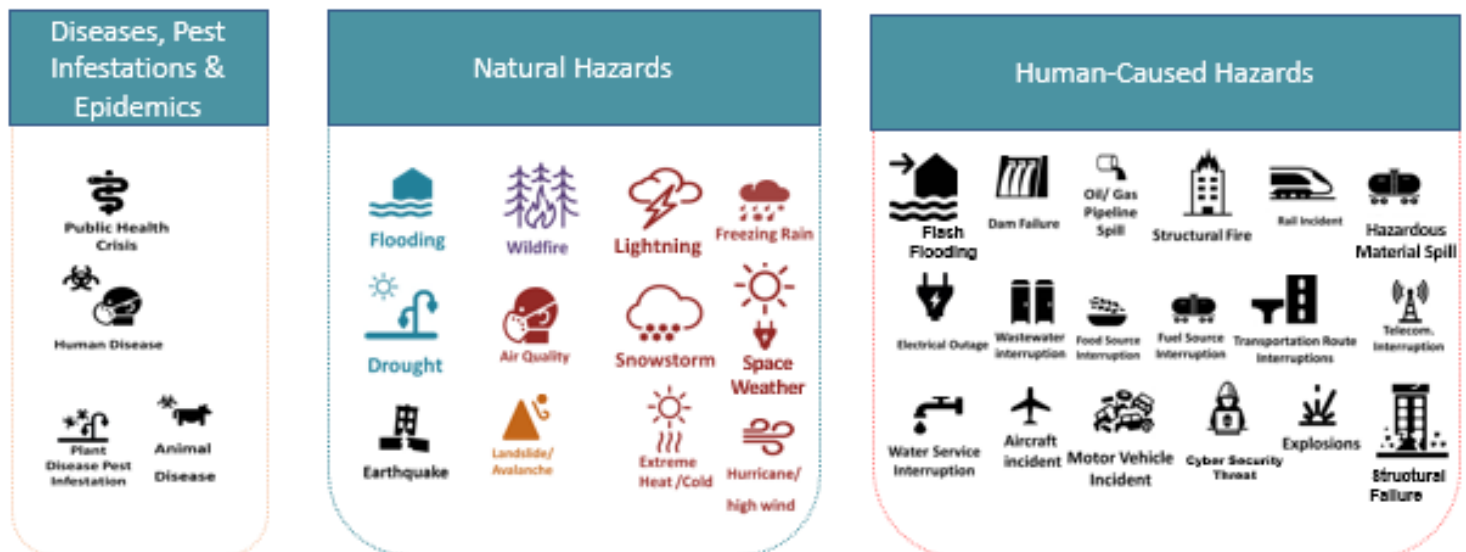
Purpose of Backgrounder and Workbook

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 'B', Burns Lake Rural.

The Electoral Area 'B' Understanding Community Resiliency Backgrounder paper is designed to help guide you as you read through the research and background materials to prepare for the upcoming likelihood and consequences scoring of each identified hazard. This background paper suggests questions for reflection and consideration, which will support our upcoming meeting/workshop discussions. The hope is that additional information and Traditional Knowledge will be collected and informed by discussions with the Electoral Area 'B' HRVA advisory 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 'B' to manage specific hazards and generate enough understanding of the community in order to complete the next step in the HRVA process; scoring likelihood and consequences.

Summary of Selected 36 Hazards for Electoral Area 'B'



Hazard Groupings

Atmospheric Disease & Epidemic **Geological** Hazardous Materials **Hydrological**
Fire Infrastructure Failure **Interruptions to Critical Services** Security **Transportation**

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 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
 - Evacuation Route Planning (Current)
- Village of Burns Lake Emergency Preparedness Plan 2020
- Wet'suwet'en Emergency Plan 2010
- Burns Lake Band Emergency Plan 2010
- Lake Babine Nation Emergency Preparedness Plan

Reports/studies

Fire

- [Burns Lake Community Forest Landscape Fire Management Plan 2019](#)
- Village of Burns Lake [Community Wildfire Protection Plan 2019](#)

Flooding

- [RDBN Floodplain Management Bylaw No. 1878, 2020](#) and [Mapping](#)

Geotechnical

- [Geotechnical Report Guidelines RDBN brochure](#)

Rail Disaster

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

Air quality

- [Village of Burns Lake Open Air Burning Bylaw No. 1001, 2019](#)
- [Bulkley Valley Lakes District \(BVLVD\) airshed management plan](#)

Policies and other resources

- RDBN [Area B: Burns Lake Rural and Francois Lake \(North Shore\) Official Community Plan](#) 2017
- [Burns Lake Official Community Plan 2018](#)

Community Planning Studies

- [Village of Burns Lake Age-Friendly Assessment and Action Plan 2013](#)
- [Village of Burns Lake Housing Needs Report 2020](#)

- [Our Burns Lake Sustainability Plan](#) – Building our future together 2013
- Village of Burns Lake [Economic Development Strategy 2019](#)

Regional Resources

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

Oil and Gas Pipeline Spill

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

Critical Emergency Response Services

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



Burns Lake RCMP

Victim Services based in Houston
Burns Lake RCMP office



Burns Lake Fire Department

30 members
1 Type I Engine
1 Type II Pumper tender
1 Type I Medium Rescue
1 Type III CAFS Wildland Engine
1 command vehicle 1 paid staff member



BC Ambulance

Station 753 Burns Lake
8 Full time staff
4 -6 casual
1 community Paramedic



Burns Lake Search and Rescue

32 members
Motor home command unit
Additional Regional Resources



Burns Lake ESS

5 volunteers



Nadina Northwest Fire Zone

Burns Lake: 3 IA crews, 1 Unit crew, 5 officers



Burns Lake Village of Burns Lake

EOC



RDBN EOC

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.

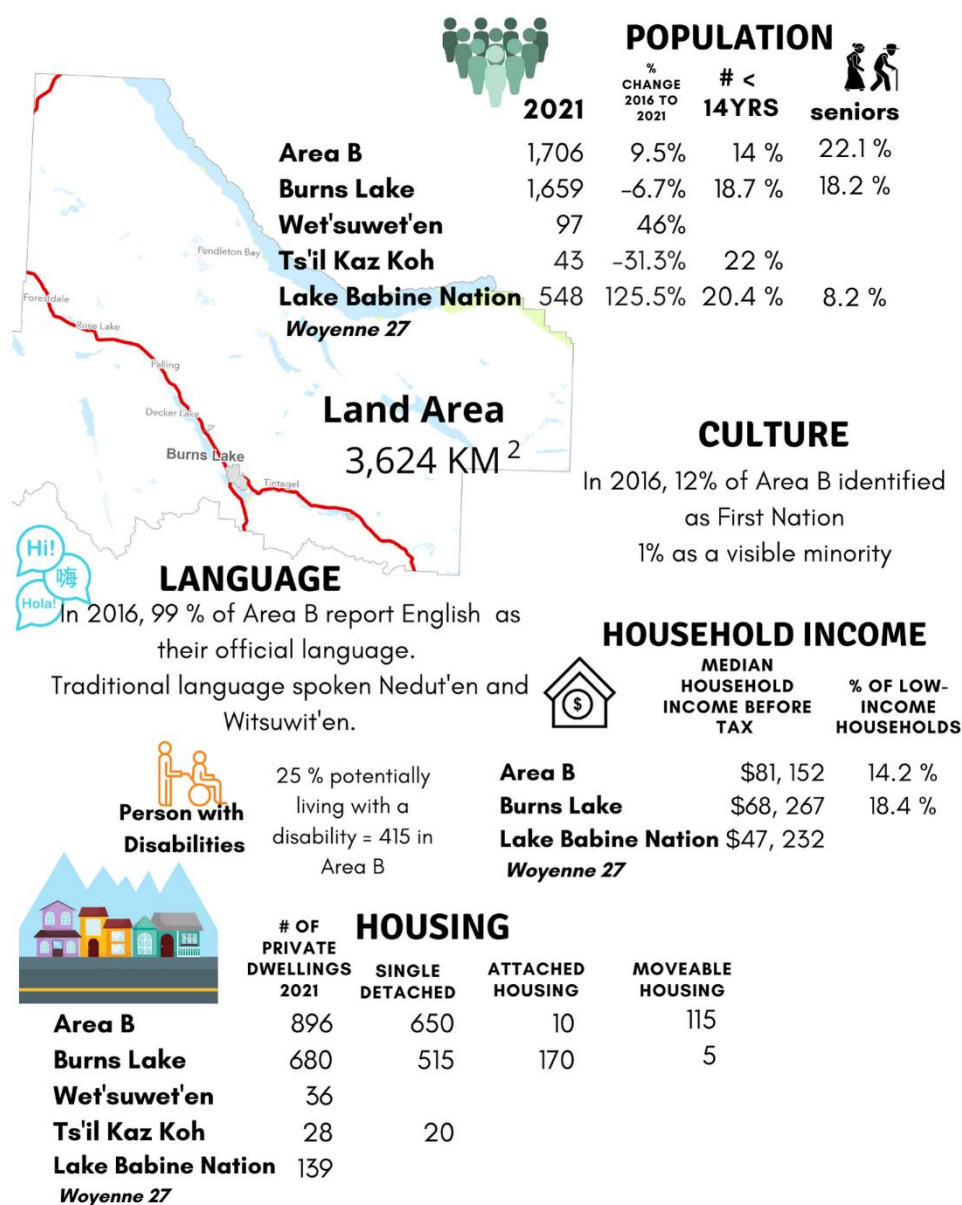
The provinces HRVA guide defines vulnerability by the people, property, infrastructure, industry and resources, or environments that are exposed to adverse impact from a hazard event. There are four groups of vulnerabilities to consider: social, economic, physical, and environmental.

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 May 3rd, 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 B. The discussion and input from that meeting have been integrated into this document.

Social Factors^{1 2}



¹ (Canada S. , 2016) the population and % change are from the [Burns Lake 2021 Population](#) numbers and [Bulkley-Nechako B](#) population numbers; The Aboriginal Population Stats for [Ts'il Kaz Koh](#), the remainder stats are from 2016.

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).

²Statistics 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 Fort St James 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 Burns Lake Rural, that would mean about 426 residents could be living with a disability.



- The Village of Burns Lake non-market housing contribution makes up 29% of RDBN services, including 44% emergency shelter/housing spaces and 38% of transitional supported and assisted living units.
- According to BC Housing, 1 Burns Lake Rural individual or household received private rental market assistance.
- As of June 2021, the BC Housing waitlist had 15 Village of Burns Lake applicants – 13 of which were families – remained unserved.

Community Services



Bulkley Valley Child Development Centre

offers early intervention programs for all children in Burns Lake and the surrounding areas.

Lakes District Family Enhancement Society – The LINK

is a community-based organization that offers services that facilitate the advancement of families, individuals, children and youth in the community. Programs include healthy start for mommy and me programs, Ashurst Children's Centre Daycare, community connections services, community education programs and a food centre.

Carrier Sekani Family Services

offers child & family community mental health services, aboriginal supported child development program, and early years centre.

Elizabeth Fry Society Burns Lake

provides transition housing, early years programs, family connections & support programs, PEACE, stopping the violence program, and women's outreach program.

Axis Family Resources

foster parent support programs.

The 8th Avenue Group Home

a residential program for adults who have a developmental disability. The program is designed to support individuals to maximize their independence and participate fully as possible in their home community.

Lake Babine Nation

provides aboriginal service innovation – early years in Woyenne – youth centre, and new vision wellness centre providing counselling services, referrals for treatment and aftercare.

Lakes District Community Services Society

provides community youth justice, child & youth special needs programs, R.E.A.C.H. program community inclusion – developmentally disabled adults, meals on wheels, seniors transportation program, and seniors services.

Lakes District Community Response Network

provides information, education, resources and support for vulnerable adults who may experience, or be at risk of experiencing, abuse, neglect or self-neglect. Support is available for vulnerable/older adults and families of those affected.

Community Food Programs



- **Lakes District Food Bank** service is provided by Lakes District Family Enhancement Society. Burns Lake Food Centre hampers numbers:
2019: 1977 **2020:** 2787 **2021:** 1966
- **Meals on Wheels** program is provided by the Lakes District Community Services Society.
- **Food Share Program** through Literacy Outreach Coordinator.

Economic Factors³

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.

Labour Force



Economy

	PARTICIPATION RATES	EMPLOYMENT RATES	UNEMPLOYMENT RATES
Area B	62.4 %	55 %	11.9%
Burns Lake	64.4 %	56 %	13 %
Ts'il Kaz Koh	75 %	62.5 %	33.3 %
Lake Babine Nation	46.2 %	35.9 %	22.2 %
<i>Woyenne 27</i>			

Agriculture



Burns Lake Community Market

Forestry

- Babine Forest Products
- Pinnacle Pellet Burns Lake
- Decker Lake Forest Products
- Tahtsa Timber
- Many small operators

Other Contributing Industries & Employers



Volunteers are a critical economic component of the region and provide critical services in Rural areas

³ (BC Ministry of Agriculture, 2013). (Strategies, 2020)

Environmental Vulnerabilities⁴

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.



Ecosystem Environment

The Lakes District forests are largely areas of young forest, the result of past several decades of harvesting activities and large fires. The forest are primarily composed of lodgepole pine, spruce-leading stands, balsam-leading stands and deciduous stands (i.e., aspen and cottonwood).

Predominant Natural Features



South end of Babine Lake, Burns Lake, Tintigal Creek, Decker Lake, Rose Lake, Pinkut Lake, Augier Lake, Taltapin Lake.

Pine Beetle

In the Lakes TSA, the Mountain Pine Beetle outbreak began in the late 1990's and the peak in mortality occurred in 2005. It is currently (2019) estimated that about 76 percent of the mature pine volume – or 49 percent of the commercially available volume – was killed by the mountain pine beetle.

Parks



- 5 BC Parks
- 19 Recreation Sites and Trails
- 1 RDBN Park Imeson's Beach

Air Quality



- Health Risks during forest forest
- two provincial air quality monitoring stations and one purple air station



Wildfire Impacts

- Wildfires in 2010, 2014, & 2018 had major impacts on the residents and environment in the area.
- The largest single wildfire occurred in 1922 and impacted 16,118 hectares in Area B.
- Hazardous fuel types comprise 63% of the total Burns Lake Community Forest.
- There are large areas (approximately 54,000 ha) of 'high' Threat (classes 8-10,) which represent approximately 58% of the total Community Forest land base.

(Barry P. Booth, 2001) (Zirnhelt, Miller, & McGregor, 1997)

⁴ Parks BC: Babine Lake Marine (Pendleton Bay), Burns Lake, Ethel F. Wilson Memorial, Sutherland River Provincial Park and Protected Area, Deadman's Island.

Rec sites: Augier Lake, Boer Mountain, Co-Op Lake, Division Lake, Eagle Creek/Opal Beds Trail, Kager Lake, Maxan Lake, Pinkut Lake, Richmond Lake, Taltapin Lake, Babine Lake Marine Park.

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.^{5 6}

Physical Critical Infrastructure



Health Services

- Lakes District Hospital and Health Centre – built in 2015
- Burns Lake Primary Care Clinic
- Nurses Residence – built in 1965
- Carrier Sekani Family Services
- Canadian Cancer Society
- Kordyban Lodge
- Tweedsmuir House
- The Pines – built in 1992
- Heritage House
- Carol Cottage
- Lake Babine (Woyenne) Health Unit
- Wet'suwet'en / Necigeh Biigh Health Centre



Communication

- Cellular: Rogers, Telus, Virgin, Public, Bell
- Internet: Shaw communications, Telus group of companies (Telus, Mascon and ABC) are the only non-satellite, Xplornet, Galaxy, StarLink
- CBC Radio, CJFW Radio (Astral Media), Lakes District News, LD Express, The PEAK – CFBV Radio, CFNR
- Forestry Radio Network
- Voyent Emergency and Public Alert System



Community Water and Sewer

- 3 deep wells located on Gerow Island for Burns Lake
- water treatment plant for Village of Burns Lake, Lake Babine Nation, Burns Lake Band
- BURNS LAKE NO. 18– Community Water Supply & Distribution System & Community Sewage Collection & Treatment System
- DUNCAN LAKE NO. 2 – Community Sewage Collection & Treatment System
- PALLING NO. 1 – Community Sewage Collection & Treatment System
- 15 Private water systems



SD 91:

School

- William Konkin Elementary (k-7)
- Lakes District Secondary (8-12)
- Decker Lake Elementary School (k-7)

Lake Babine Nation:

- Ted Williams Memorial Learning Center
- Morris Williams Elementary (1-7)
- Morris Williams Memorial Pre-School
- Woyenne Secondary – K'ay Skak School

Other:

- Decker Lake Mennonite School



Transportation

- MOTI Roads, Highway 16, & Forestry Roads
- Rambler: Seniors Transportation Tues & Thurs
- Northern Health Bus
- BC Bus Northern PG-PR
- Bulkley Nechako Regional Transit System
- Via Rail
- CN Rail
- Burns Lake (LD Air) Water Aerodrom
- Burns Lake Airport
- Baker Airport



Transfer Station

- Burns Lake Transfer Station

Utilities

- BC Hydro Power along Hwy 16 – 2 138 kv substations
- Pacific Northern Gas along Hwy 16
- Street Lighting– Gerow Island and Decker Lake

Community Halls



- Necigeh Beyigh Hall (Wet'suwet'en)
- Lakeside Multiplex
- Rose Lake Hall
- Decker Lake Community Hall
- Margaret Patrick Memorial Centre
- Burns Lake Band Gathering Place

⁵ There are 15 community water systems in Electoral Area 'B' that service anywhere from 2 – 14 connections. Information on water facilities can be found on [Northern Health Drinking Water reports and summaries under Burns Lake and Decker Lake](#).

⁶ [First Nations Community Water System Water Risk Summary](#) Burns Lake Band and Woyenne, Pailings And Duncan reserves.

Underlying Risk Drivers

There are additional factors which increase a community's susceptibility to hazards. As a committee it may be 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 Nations 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 'B'? 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 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 most 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 Natural Resource Region 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 Region is projected to increase by 3.1°C, with minimum temperatures increasing more than maximum temperatures. Mean annual precipitation for the Nadina District is projected to increase by 5%. 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.

As outlined in the BC Agriculture Climate Change Regional Adaptation series Cariboo Region (BC Agriculture and Food Climate Action Initiative, 2014), the following climate projections for the Cariboo Region are made:

- Increases in average annual temperature consistent with temperature increases for the province of BC (approximately 1.8oC increase by 2050);
- Annual precipitation may increase 4-6% between 2020 and 2050 with summer precipitation increasing 2-3% between 2020-2050;
- Increase in winter precipitation (7% by 2050) in the form of rain and significant decreases in snowfall (-2 to -9% between 2020 and 2050);
- 2.5 times the number of summers “warm days” (days in June, July and August that are warmer than the 90th percentile historic baseline temperatures for that day);
- Six times the number of extremely hot days (days so hot they used to occur only once every 25 years);
- Increased frequency, intensity, and magnitude of extreme rainfall; and
- In the province, as average winter temperatures increase, more intense winter precipitation is expected to fall as rain during extreme events, and less falling as snow, potentially influencing watershed and groundwater storage ability, timing and amount of run-off, and soil and fuel moisture during early fire season.

An increased frequency of natural disturbance events is expected to occur because of climate change with coincident impacts to ecosystems. These include:


- Storm events, including catastrophic blowdown and damage to trees from snow and ice;
- Wildfire events and drought; and
- Increased winter precipitation may result in slope instability, mass wasting, increased peak flows (loss of forest cover from fire or other disturbance may increase the chance of mass wasting).

According to the [Climate Atlas of Canada](#), a web resource that combines climate science, mapping, and storytelling to bring the global issue of climate change closer to



Climate Data

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).

	BURNS LAKE			WET'SUWET'EN FIRST NATION		
	1976-2005	2021-2050	2051-2080	1976-2005	2021-2050	2051-2080
MEAN ANNUAL  °C	2.5 °C	4.4 °C	6.4 °C	2.5 °C	4.5 °C	6.5 °C
PRECIPITATION						
Winter	135 mm	144 mm	155 mm	137 mm	147 mm	159 mm
Spring	81 mm	86 mm	93 mm	81 mm	85 mm	92 mm
Summer	143 mm	149 mm	148 mm	143 mm	149 mm	149 mm
Fall	136 mm	147 mm	162 mm	136 mm	147 mm	161 mm
FROST FREE DAYS ANNUAL	96	132	162	96	133	164

*Climate Data for Burns Lake and Wet'suwet'en First Nations GHG emissions continue to increase at current rates (ClimateAtlas 2019).

home for Canadians, Burns Lake and Wet'suwet'en First Nation Area climate predications are as seen in the chart below:

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 business 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. Most of the 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.

Potential Demand on Land Subdivision and Development in the Rural Areas

Due to covid and a changing global economy, there is a perceived influx of people interested in rural living and moving to more rural and remote community areas such as Area B. There was discussion and concern that this migration may create pressure on rural properties to subdivide, creating a higher density of housing the wildfire urban interface areas. During the discussion there was recognition that there is a lot of crown land in the region that will not be developed, but there still might be increased pressure on rural living and housing.

Psychological Impacts on Residents

There was discussion regarding the psychological long term impacts on residents from wildfires and other hazard events. Heightened anxiety due to previous experiences creates an underlying risk driver that can amplify response to any local emergency. Local governments could have a role in advocating for continual funding for community-based programs in regarding mental health and wellness for recovery.

Misinformation

- Mistrust from the public towards government messaging;
- Creating community and cultural division;
- Need for a strong approach to communication and creating relationships for credible information sharing and belief.

Hazard Scenarios

For each identified hazard, the participants completed the following hazard scenario worksheets. These scenario worksheets were designed to help guide the committee throughout the HRVA process and are being provided to committee members as a tool during the likelihood and consequence scoring step of the HRVA.

Please reference the revised Hazard Identification backgrounder for information and historical information on each hazard selected.



Wildfire

Scenario Description:

In May multiple forest fire starts North of Burns Lake from lightening strikes. Winds are high, the spring drought conditions create a dry forest fuel that results in the fires growing rapidly and uncontrolled. The winds are pushing the fires South towards Burns Lake and west towards Pailing 1 and Decker Lake, the main reserve community of the Wet'suwet'en First Nation, threatening the residents and making travel in the region challenging. Evacuation Orders have been issued to Pailing 1, Decker Lake, and rural residents west of Burns Lake and evacuation Alerts for Burns Lake, Burns Lake Band, and Woyenne 27, Lake Babine Nation residents. [Fire behavior is a rank 5-6](#). If needed, please add more detail to the scenario as we go along.

List Secondary or cascading hazards that may result:

- Loss of hospital, evacuation of residence in long term care and hospital, maintaining emergency services only
- Critical infrastructure impacts
- Impact of emergency services (BCEHS) sent to a new facility, increasing turnaround time causing impacts across Northern interior health service area
- Economic impacts for residents
- Power outage leading to loss of water from pumps
- Supply Chain impacts
- Egress routes impacted
- Emergency operation centres could be evacuated
- People would be being directed to evacuate to larger centres
- Public panic (anxiety around the severity of Fires)

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

Man or natural caused

Impact Summary

- **What social, economic, environmental, and physical factors may increase the community's susceptibility to damage because of this hazard?**
 - Mass evacuation,
 - Low income, (no raining day funds)
 - Psychological long-term impacts
 - environmental impacts (increased risk of landslides, flooding, etc..)
 - Air quality
- **Are there specific neighbourhoods in Area 'B' that have particular vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?**
 - Aging population with complex health needs
 - low income
 - subdivisions surrounded by forest, higher risk.

Likelihood Rating <i>(Please Circle)</i>	Consequence Severity <i>(Please Circle)</i>
E – Almost Certain to Occur D – Likely to Occur C – Possible 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

Human-Caused Hazards



Rail Incident

Rail Incident

Scenario Description:

In the early morning CN freight train derailed, causing a train car pileup directly West of Burns Lake and adjacent to Decker Lake. Parts of the center of the train lay on its side where the train crosses Roland Rd, west of Burns Lake, cutting off residents of Roland Rd from 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 by paramedics and sent to the Burns Lake Hospital for serious injuries sustained in the derailment. RCMP cars are on both sides of the incident blocking the Highway to all traffic as the rural residents in the area have been ordered to evacuate. Due to the proximity of Decker Lake, there are significant ecological impacts from the rupture. 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:

- Evacuate for 1600 m Include those in Decker Lake
- Significant damage and loss of utility's
- Water quality
- Evacuation route for Roland Rd
- Highway would be closed.

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

Increase in traffic on the rail line.
So many technical issues could happen.

Impact Summary

- **What social, economic, environmental, and physical factors may increase the community's susceptibility to damage this hazard?**
 - How do we get those people out of the dead-end road?
 - LPG - effects?
 - Sulphur into the lake may have significant environmental impacts
 - Highway closed until fire out and substances are controlled.
 - Potential for backway routes - Polling Road and forest service roads to get around the highway.
 - UN Guidelines for substances.
 - Getting people out of there, mass evacuation and potential casualties on Highways and in residential Areas. Decker Lake and East Polling Road were evacuated. Time to get resources together to evacuate.
 - The inability of people to get into or out of the area - communication system sign up - Ability to message residents about shelter in place - involved evacuation procedures.
 - The explosion would cause devastation in the area - When liquid propane explodes would have a large effect with fire and concussion from the explosion.

<ul style="list-style-type: none"> ○ Sulphur dioxide creates environmental and human effects from fire and spill. Try to put a boom around the contamination in the lake - no equipment here - CN response comes from PG, takes time. Multi-jurisdictional response from Ministry of Environment. ○ Gear and response is a struggle - hazmat equipment and training is a challenge in our rural communities - lobby CN to have hazmat equipment closer to Area B region. containment and evacuation - no response capability for this incident in Area B - lack of specialized equipment for this - closest assistance is PG or Kitimat or Edmonton. Product-specific. ○ Patients in the hospital - need to decontaminate before entry into the hospital -likely be shipping patients depending on injury - impact on BC Health services. Burns Lake is well set up for decontamination - now have a room off the ambulance bay. People aren't happy to see the cement room with the shower. Big step up from when the mill exploded. <p>➤ Are there specific neighbourhoods in Area 'B' that have particular vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?</p> <ul style="list-style-type: none"> ○ Decker Lake, Burns Lake. Also, water runs into each lake shared watershed. ○ Pailings, Tintagel - the bulk of residents along the highway creates vulnerabilities. ○ In rural area may impact less people, but... ○ mudslides covering highways and train tracks - We have seen that in the province - change because of wildfires and flooding occurring after. Can affect the infrastructure. 	
Likelihood Rating <i>(Please Circle)</i>	Consequence Severity <i>(Please Circle)</i>
E – Almost Certain to Occur D – Likely to Occur C – Possible 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

Hazard Material Spill



Scenario Description:

It is summer and there was a reported head on collision on the bridge crossing Burns Lake from town to Gerow Island with a fuel transport vehicle and a 10-passenger van.

There are several serious life-threatening life injuries.

The truck has caused significant structural integrity issues to the bridge crossing Burns Lake making it unpassable. Fuel leaked into the lake causing environmental damage and the trucks content caused an explosion.

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

List Secondary or cascading hazards that may result:

- Access-emergency response and services, fire suppression unable to respond to area south of bridge. Not short term due to structural issues.
- Supply chain and food security
- Environmental impact to the lake shoreline clean-up, wildfire impacts
- Safe drinking water contamination issue
- Long-term economic impacts
- Critical infrastructure impact

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

Train derailment and road incidents, vandalism and eco terrorism of storage facilities (chlorine for water treatment)

Impact Summary

- **What social, economic, environmental, and physical factors may increase the community's susceptibility to damage this hazard?**
 - proximity to burns lake and the contamination of the water.
 - Municipality would be safe for water supply. downstream shallow wells and those that pull straight from the lake could have contamination issues
 - cut off from essential services and fire protection
 - economic drivers impacted for forestry industry if bridge is out of service, mills unable to get timber, costs of travel for industrial traffic would be increased
 - cost of travel for residents for work, groceries, supplies would be increased
 - access to emergency health services, or regular appointments.
 - unable to reach people for information, need them to sign up for mass notification, how to shelter in place, public education needs.
- **Are there specific neighbourhoods in Area 'B' that have particular vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?**
 - Gerow Island, anyone living south of the bridge.
 - Locations close to railroad tracks (Decker Lake, Burns Lake) major transport routes, Burns Lake Band

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 – Possible to Occur	2 – Moderate Impact
B – Unlikely to Occur	1 – Low Impact
A – Very Rare to Occur	0 – No Impact

Diseases, Pest Infestation & Epidemics



Animal Disease

Animal Disease Crisis

Scenario Description:

*It is summer and there are reports of farms in Area B losing mass amounts of cattle in a short period of time. Testing of the carcasses exposes that there is a large Bovine Spongiform Encephalopathy (BSE) outbreak in Area B. Fear surrounding the potential health risks of BSE to humans, such as Creutzfeldt-Jakob disease, drives panic in the region and in supply chains. **Bovine spongiform encephalopathy (BSE)**, commonly known as **mad cow disease**, is an incurable and invariably fatal [neurodegenerative disease](#) of [cattle](#). The [time between infection and onset of symptoms](#) is generally four to five years.^[2] Time from onset of symptoms to death is generally weeks to months.*

List Secondary or cascading hazards that may result:

- Devastating to livestock producers -
- Economic impacts
- Human health transfer
- Cascading hazard - mass panic

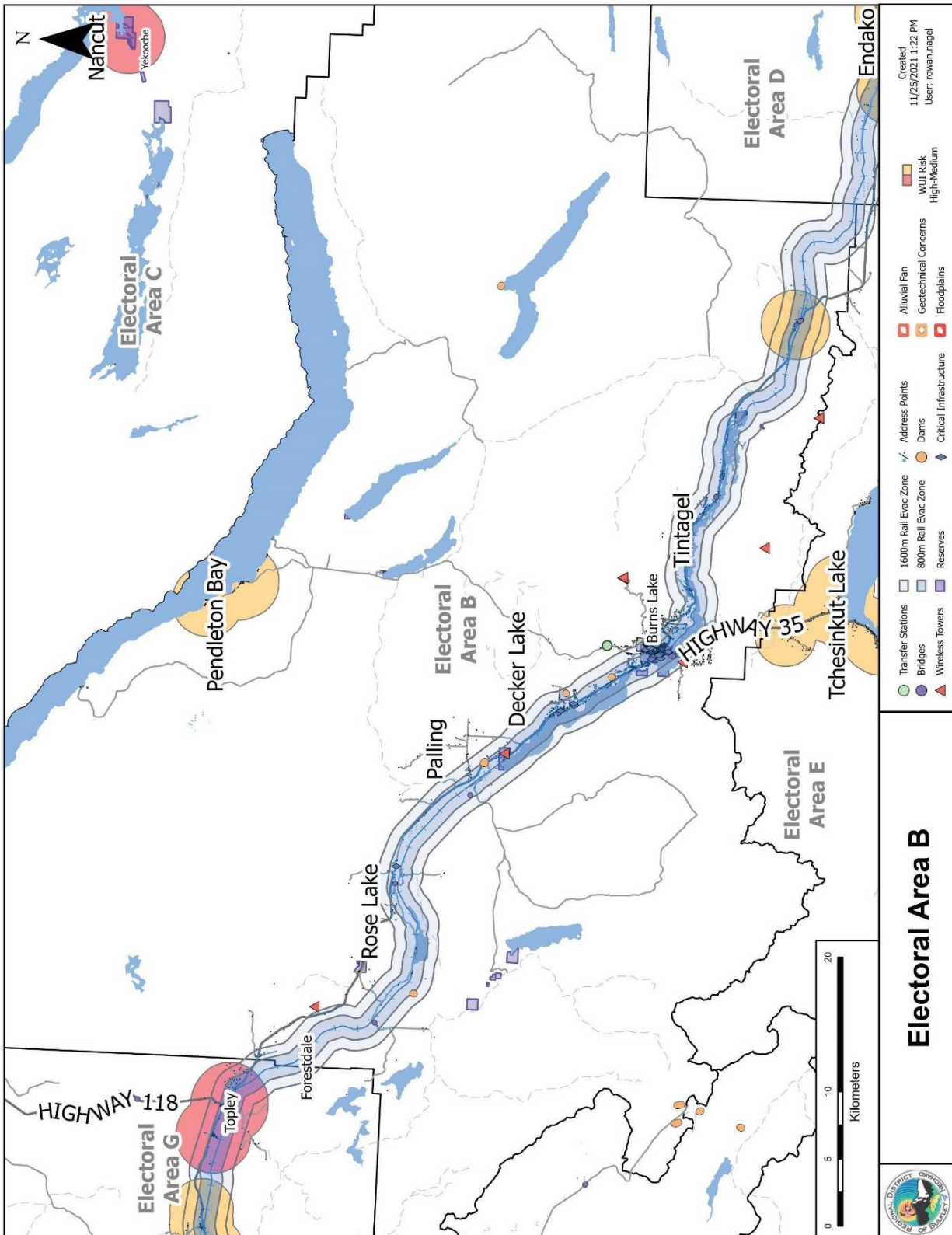
Triggering Event (Root causes of this type of event):

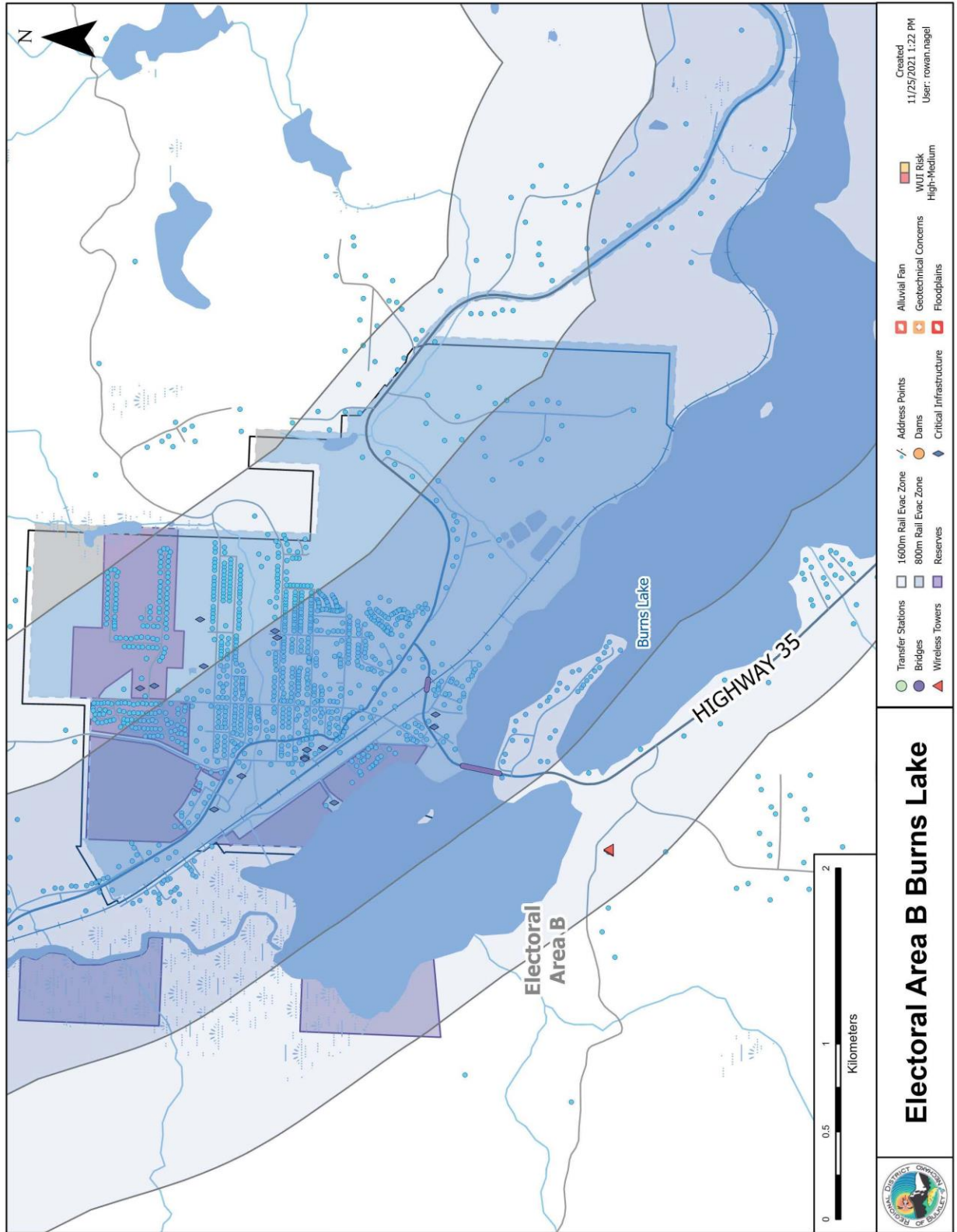
Impact Summary

- **What social, economic, environmental, and physical factors may increase the community's susceptibility to damage from this hazard?**
 - devastating to livestock producers and economic impacts - 35 family economically effected.
 - impact landfills - Identified areas in the RDBN that are for Caucasus disposal but have not been developed. could be developed during a response, delays timing and increases the potential for spread. Delays because of provincial impacts and or across the region.
 - Need for additional public information for a hobby farm and backyard animals may not have as much understanding and knowledge on what to do.
 - Need for information to the public for credible information.
 - mass panic.
 - spread to other animals to moose dear. Food stability for our indigenous communities and others who rely on wild animals for food sources. farmers.
 - need for flock isolation and control of animals. - public education
 - well regulated but higher impacts and problems that do exist.
 - Helpful to have communication pathways between public and farming communities. IE side effects - physicians to be aware and the public to be aware of prevention of information. health is not involved in a lot of events; they can support in public education and share credible information. i.e. what are the effects - how can physicians share. - Challenge to know what is credible as an information source.
- **Are there specific neighbourhoods in Area 'B' that have particular vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?**
 - food security long term impact.

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 – Possible to Occur?	2 – Moderate Impact
B – Unlikely to Occur	1 – Low Impact
A – Very Rare to Occur	0 – No Impact

Appendix 1 – ELECTORAL AREA 'B' KNOWN HAZARDS MAP





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