Regional District of Bulkley-Nechako

HRVA Electoral Area' G' Understanding Community Resiliency Updated

JANUARY 26th, 2022

"Know the Risks, Make a Plan, Be Prepared"

Preface

Purpose of Backgrounder and Workbook

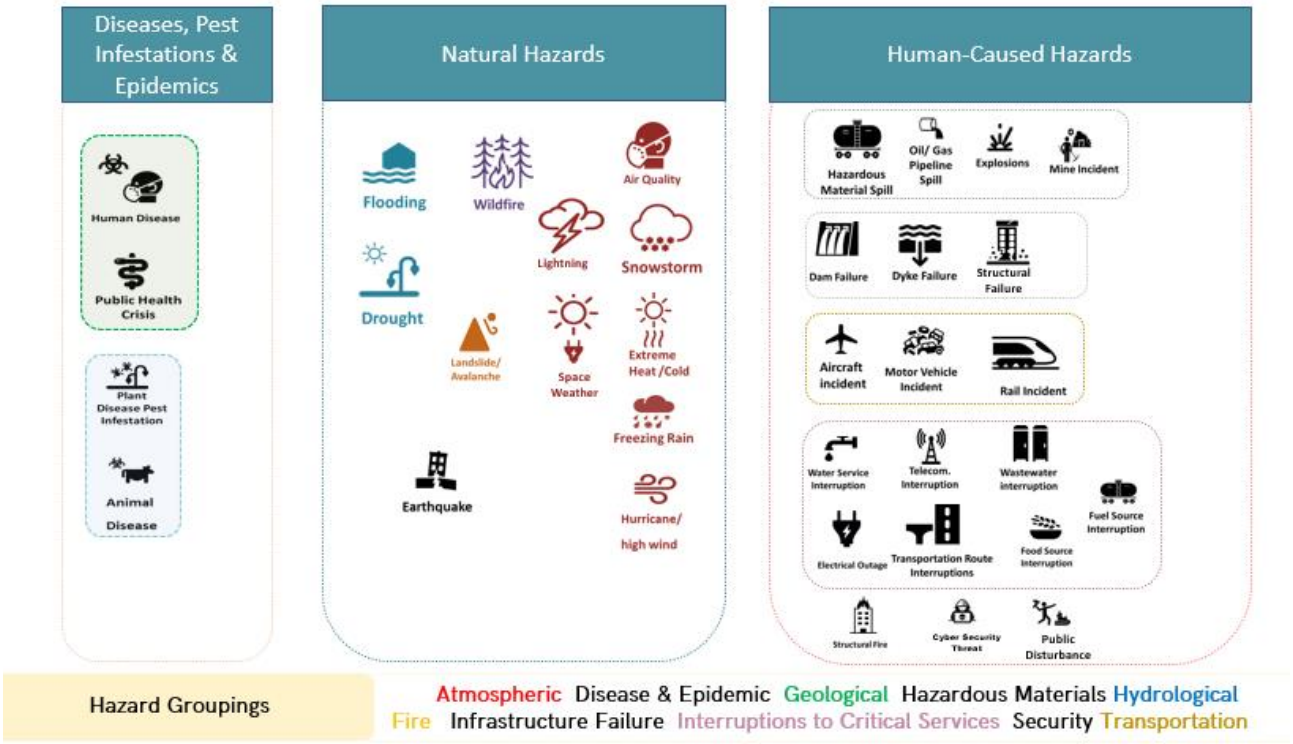
The Regional District of Bulkley-Nechako (RDBN) is in central British Columbia with an area of 77,000 square kilometres. The RDBN is broken down into 7 Electoral Areas (EA). The focus of this document is Electoral Area' G', Houston / Granisle Rural.

The Electoral Area 'G' 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. The background paper is designed to help guide you as you read through the research and background materials to prepare for the next step in the HRVA process; Scoring likelihood and consequences of each identified hazard. If you have additional information or notice errors, please contact the RDBN’s HRVA Coordinator.

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 ‘G’ 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.

Below is a summary of Hazards that have been selected for the Electoral Area ‘G’ HRVA:

Summary of Selected 37 Hazards for Electoral Area ‘G’



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
- District of Houston Emergency Response Plan 2011
- Village of Granisle Emergency Preparedness Plan 2007
- Lake Babine Nation Community Emergency Preparedness Plan

Reports/studies

Fire

- Houston Wildfire Protection Plan 2018
- Village of Granisle Community Wildfire Protection Plan 2017

Flooding

- District of Houston Floodplain mapping
- RDBN Floodplain Management Bylaw No. 1878, 2020 and Mapping
- Ministry of Environment Floodplain Mapping

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, Houston, Topley, Granisle Rural Official Community Plan 2011
- Houston Official Community Plan 2019
- Granisle Official Community Plan 2019

Regional Resources

- Regional Adaptation Strategies: Bulkley-Nechako & Fraser-Fort George
- RDBN Food and Agriculture Plan 2020

Drought

- District of Houston Bylaw No. 1064 - Water Restriction

Air Quality

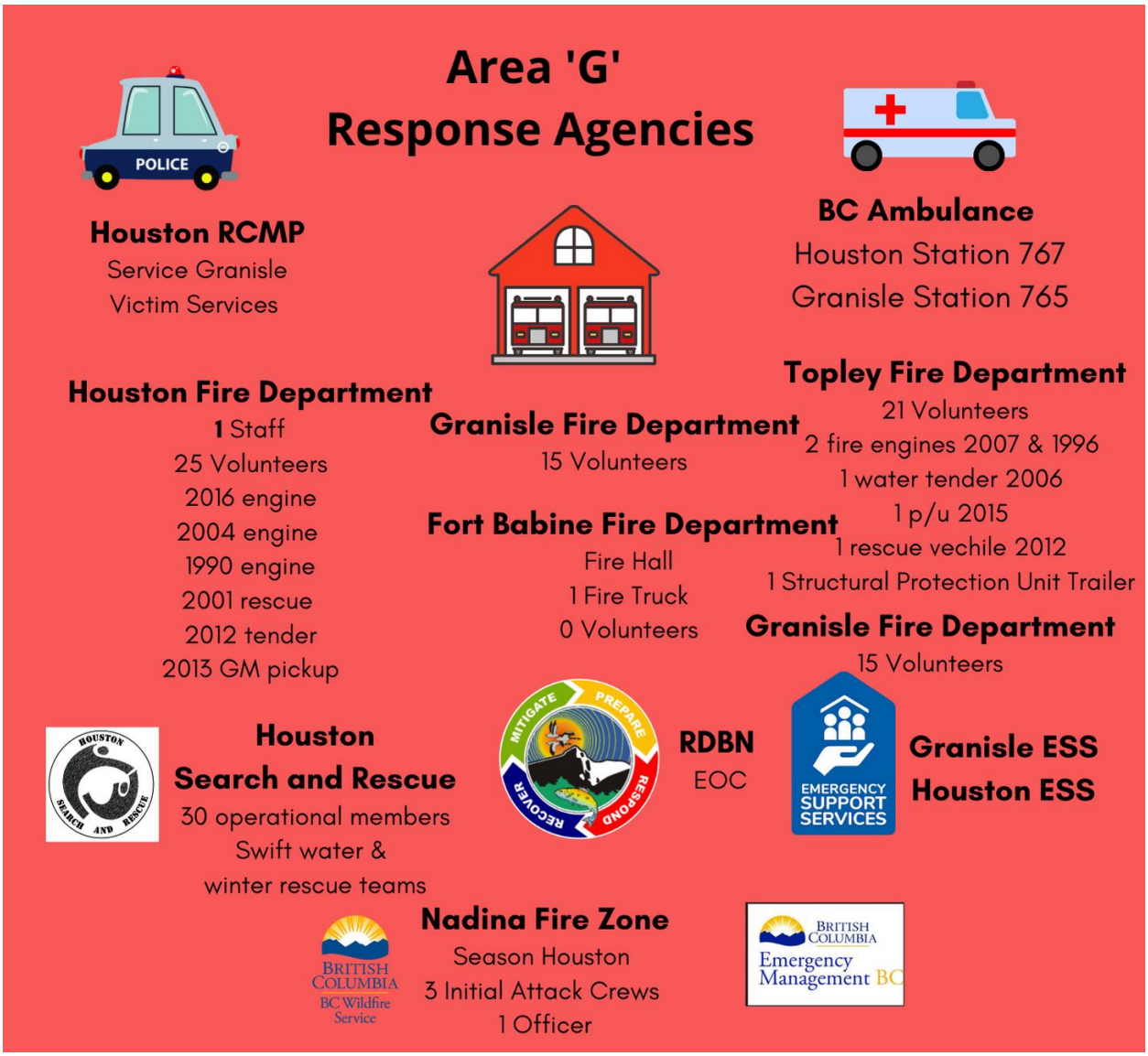
- Village of Granisle Open Air Burning Regulations Bylaw 2019
- Village of Granisle Outdoor Solid Fuel Bylaw 2008

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 of the critical services are located in the municipal boundaries. Below is a preliminary listing of response services and available resources within Electoral Area ‘G’.



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.

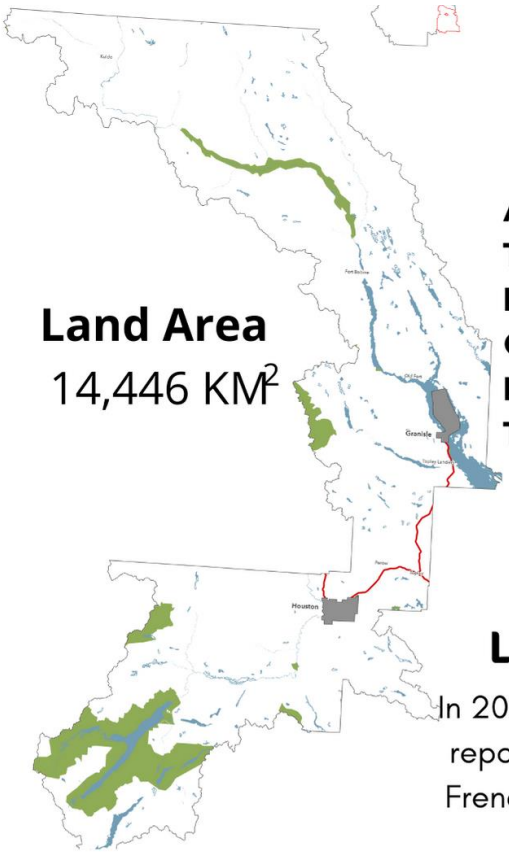
The Provinces HRVA guide defines Vulnerability by the people, property, infrastructure, industry and resources, or environments that are exposed to adverse impact from a hazard event. There are four groups of vulnerabilities to consider: social, economic, physical, and environmental.

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 25, 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 G. The discussion and input from that meeting have been integrated into this document.

Social Factors[1]



Land Area
14,446 KM^2

POPULATION

	2016	# < 14YRS	seniors
Area G	903	14 %	17 %
Topley UNP	72	7 %	21 %
Houston	2,126	22 %	12 %
Granisle	303	3 %	50%
Fort Babine (6)	86	23 %	6 %
Tachet (25)	112	22%	4 %

According to RDBN Mapping there are 254 addresses in the Topley Fire Protection Area

LANGUAGE

In 2016, 96 % of Area G report English and 3% French as their official language.
6% speak another language.

Person with Disabilities

25 % potentially living with a disability = 225 in Rural Houston

CULTURE

In 2016, 13% of Area G identified as First Nation
3% as a visible minority (Indo Canadian, Asian, African, Caribbean)

HOUSING

2016

	# OF PRIVATE DWELLINGS	SINGLE DETACHED	ATTACHED HOUSING	MOVEABLE HOUSING
Area G	365	315	5	45
Topley UNP	44	25	5	5
Houston	558	495	260	130
Granisle	284	130	35	10
Fort Babine (6)	47	25	5	
Tachet (25)	48	30		

HOUSEHOLD INCOME

	MEDIAN HOUSEHOLD INCOME BEFORE TAX	% OF LOW-INCOME HOUSEHOLDS
Area G	$78,592	13.5 %
Topley UNP	$50,048	
Houston	$75,776	16.5 %
Granisle	$42,752	26.7%
Fort Babine (6)	$36,736	
Tachet (25)	$31,104	

[1] (Canada, 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).

Support Services

Social Housing

TRANSITIONAL SUPPORTED &ASSISTED LIVING UNITS	INDEPENDENT SOCIAL HOUSING	RENTAL ASSISTANCE
6 Units	**16 Units**	**13 Units**
6 Supportive Seniors Housing	16 low income seniors Granisle Seniors Housing	13 subsidies in private market

No Emergency Shelter

- Houston's non-market housing makes up 6% of RDBN services, including 3 % transitional supported and assisted living units, and 11 % of independent social housing units.
- As of June 2021, the BC Housing waitlist had 5 in Houston applicants and 1 in Granisle

Community Services

Houston Community Services Association

focuses on family support programming and childcare

Houston Link to Learning

supports literacy, meal program and harm reduction programming in Houston BC and the area- has partnered with the Health Unit on the "food for thought" initiative including a commercial kitchen

Deze L'Kant Friendship Centre

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

Northern Health Mental Health & Substance Use Community Program

includes a combination of functions with Interprofessional teams, and specialty services, i.e. Developmental Disabilities Mental Health (DDMH), Acquired Brain Injury (ABI), counselling, early psychosis, eating disorders, vocational and recreation rehabilitation, etc.

Northern Society for Domestic Peace

provide multiservice social support programs and community outreach, based out of smithers but see clients in the Houston area.

Northwest Child Development Centre

offers infant development, early intervention programs, as well as School-Aged services and complex development behavioural conditions. Based out of smithers but see clients in the Houston area.

Community Paramedicine

Home Health Monitoring

Granisle Better at Home

provides support services to seniors so they may live independently in their own homes, managed locally with the support of United Way

Community Food Programs

- Houston Link to Learning meal program Tues & Thurs 80 meals
- Salvation Army Food Hampers
- Love by the Bowl SOup Kitchen Wednesday& Take out meals
- Granisle, Tachet, and Topley every second Wednesday Lakes District Family Enhancement society mobile food centre
- Granisle Better at home lunch twice a month

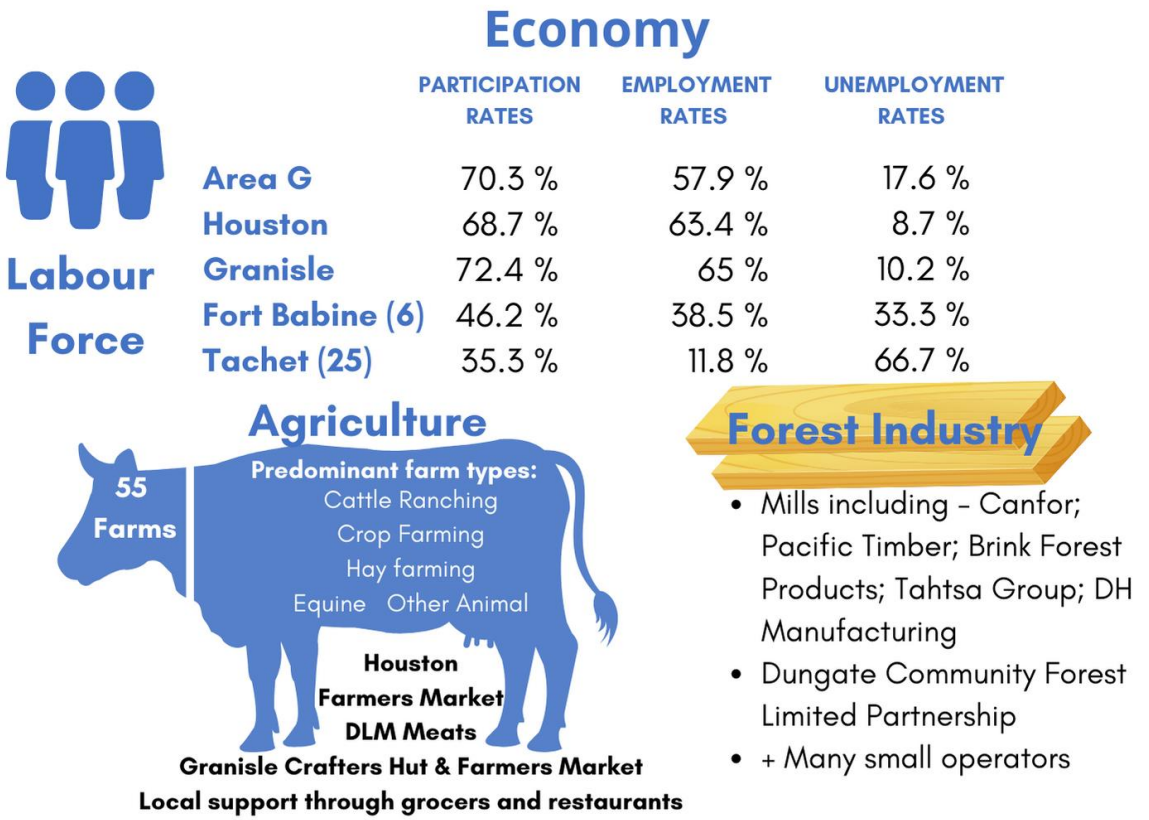
[1]Statistics Canada released its 2017 Canadian Survey on Disability in 2019. This report, and its dataset, offers national and provincial insights into the prevalence of disability across Canada, including the type and severity of a disability, as well as the economic circumstances for persons with 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 Factors[2]

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.



[2] (BC Ministry of Agriculture, 2013). (Strategies, 2020)

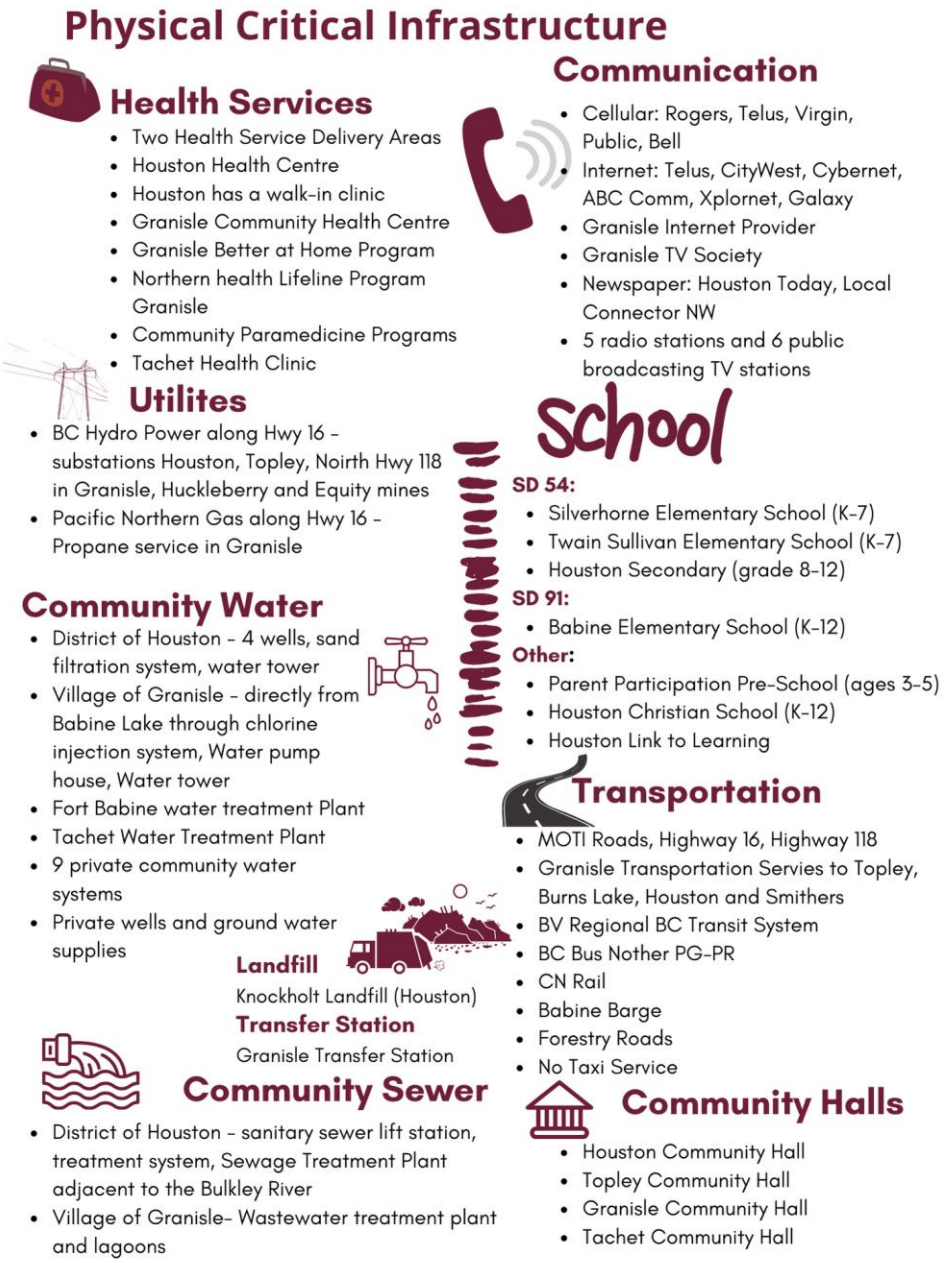
Environmental Vulnerabilities[3]

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.

[3] Parks BC: Nadina Mountain Park, Neneikekh/Nanika-Kidprice Park, Morice Lake Park, Atna River Park, Burnie-Shea Park, Morice River Ecological Reserve, Old Man Lake Park, Babine Mountain Park, Topley Landing Park, Torkelsen Lake Ecological Reserve, Babine Lake Marine Park, Rainbow Alley Park, Nilkitkwa Lake Park, Babine River Corridor Park.
Rec sites: Aspen, Chapman Lake, Doris Lake, Helen Lake, Lamprey Creek, Morice Mtn Ski Trail / Silverthorne Lake Rec. Site, Morin Lake, Old Fort, Owen Flats "A" & "B", Owen Hat, Owen Lake, Paul Lake, Summit Lake, Sunset Lake, Tanglechain Lake.

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.[4] [5] [6] [7]



[4] There are 9 community water systems in Electoral Area 'G' that service anywhere from 2 – 300 connections. Information on water facilities can be found on Northern Health Drinking Water reports and summaries under Granisle, Houston, Topley and Regional District Bulkley Nechako.

[5] 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.

[6] Internet: There are 7 internet service providers in the region (Corporation, 2019), and a seventh, Starlink scheduled for 2021.

[7] Radio: There are 14 stations broadcasting and several different cable and satellite providers in the region: CJFW-FM-7 105.5 FM; Granisle TV Society – 99.9 FM- 101.1 FM – 100.5 FM- 101.9 FM; CBC TV; CKEW-FM 104.7 FM; CTVBC; Global; Knowledge Network; Northern Native Broadcasting 95.1 FM – 98.1 FM; Vista CHBV-FM 106.5 FM ; DHLD 1480 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 'G'? What considerations need to be considered? And are these considerations localized to specific geographic areas?

Climate Change

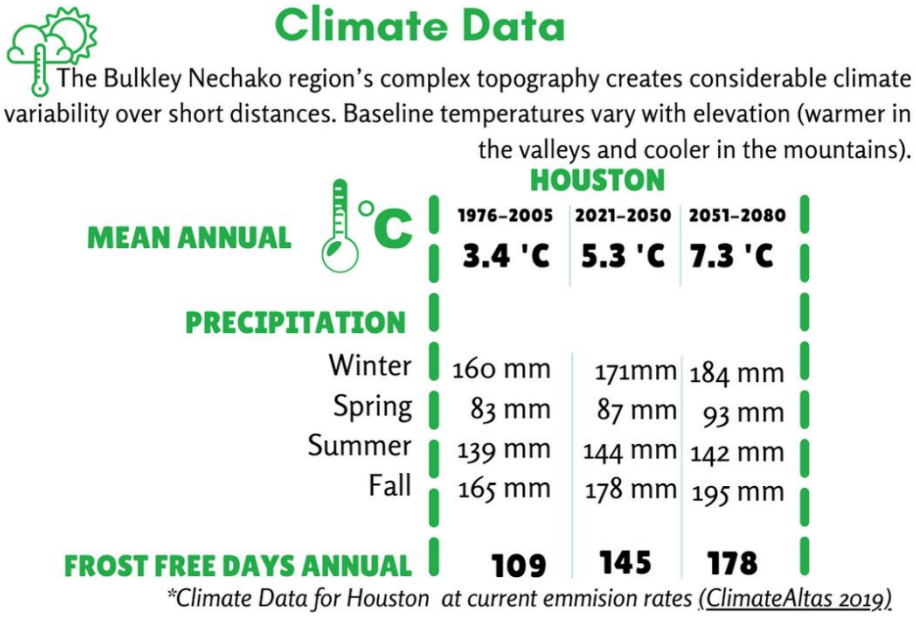
Climate change is not an abstract future concern, but rather a current, evolving reality experienced in Canada today. Canada's climate has been increasing in temperature and is predicted to continue to increase in the coming years. According to the recent Canada's Changing Climate Report, Canada's climate 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.

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 home for Canadians, Houston 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 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.

Hazard Scenarios

At the January 25th, 2022, Understanding Community Resiliency Workshop participants were broken out into three groups to complete the following 6 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

Scenario Description:

Heavy rains for 24 hours during spring melt caused Buck Creek to flood its banks, threatening homes, rail, and highway bridges west of Houston. Several families were evacuated. Buck Creek washed out the bank to within a few feet of the Houston skating rink and swept away the pump house. Debris threatened the CNR railway bridge and Highway 16 bridge which cause temporary highway closures. Sandbagging helped the shoulders of the highway from being washed out. If needed, please add more detail to the scenario as we go along. Clinic is susceptible to flooding in this scenario - people in palliative care stay in this facility, grocery store and mall

List Secondary or cascading hazards that may result:

- wells impacted
- people may be displaced out of community and away from their places of work
- people evacuated may not have vehicles due to when they are evacuated in the scenario
- services to the evacuated area would be cut off
- landslide risks increased
- Equity Mine Tailing Pond failure
- Debris Torrent - many existing log jams on Buck Creek
- Rockslide between town and the bridge to the Buck Flats area full of debris in the area could be flushed out
- No fuel or food supply to the east end of town
- potential injuries to people on bridges and beside the washout areas
- Possibly the Fire Department, RCMP office, and Municipal offices could be affected too
- Utilities could be impacted

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

- extreme heat in early melt season for a long duration
- insufficient berming on Buck Creek
- Equity Mine Tailing Pond
- Ice jamming

Impact Summary

- **What social, economic, environmental, and physical factors may increase the community's susceptibility to damage because of this hazard?**
  - One Public High School - teachers and kids may be isolated from parents if the bridge and infrastructure is gone
  - Building in floodplain areas
  - Healthcare and grocery store impacts
  - adequate control measures are expensive including maintenance
  - therefore we need the Resource Benefits Alliance
  - School bussing would be impacted
- **Are there specific neighbourhoods in Area 'G' that have vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?**

- Cottonwood Manor a Senior Home - Assisted Living Centre? with vulnerable population
- Industrial Area, railway, and Sewage treatment plant are downstream from this

➢ **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 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

Wildfire

Scenario Description:

In May a forest fire starts North of Topley from a lightening strike. Winds are high and the spring drought conditions create a dry forest fuel that results in the fire growing rapidly and uncontrolled. The winds are pushing the fire North threatening the community of Tachet and Granisle and making Highway 118 unpassable. Evacuation alerts have been issued to both rural residents in Tachet and Granisle in partnership with the Lake Babine Nation. 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:

- Highway 118 is unpassable causing residents to evacuate using FSR's that are not well marked or boating them out, however, that would cause them to potentially be without vehicles once they are out.
- Loss of communications
- Loss of power
- Air Quality
- displacement of people from their homes and community and their work locations potentially
- loss of access to groceries and fuel if in a Evacuation in Place

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

- Campers starting a fire due to dry conditions
- Industry sparking a fire with their equipment
- fuel load dense standing dead pine - pine beetle kill - could be extreme heat

Impact Summary

- **What social, economic, environmental, and physical factors may increase the community's susceptibility to damage because of this hazard?**
  - these communities are surrounded by forest
  - Industry (logging) will be at a standstill affecting both Burns Lake and Houston
  - loss of timber causing economic downturn in the future
  - potentially lose their social structure
  - First Nations food gathering could be impacted at a different time of year
- **Are there specific neighbourhoods in Area 'G' that have particular vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?**

- Granisle is a primarily a senior community and many may have mobility issues
- Governance of Tachet is in Burns Lake - Lake Babine Nation - good percentage of elderly people on the reserve
- 22% on reserve are under 14 requiring child services supports

➢ **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 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

Human-Caused Hazards

Rail Incident

Rail Incident

Scenario Description:

In the early morning today CN freight train derailed, causing a train car pileup directly south of Topley and adjacent to the Bulkley River. Parts of the center of the train lay on its side where the train crosses Wall St and Sunset Lake Rd blocking rural residents from crossing and the train is dangerously close to the Bulkley River west of Topley. 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 Topley blocking the Highway to all traffic as the entire community of Topley has been ordered to evacuate. 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:

Communication interruption. Environmental impact (water quality and fish) downstream residents, fire (structural and wildfire), explosion, chemical exposure (air quality). What are the air quality impacts due to the chemicals?

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

Track not being maintained, human error, speed or to many cars, public disturbance (vandalism to tracks). Uncontrolled crossings

Impact Summary

What social, economic, environmental, and physical factors may increase the community's susceptibility to damage this hazard?

- location of residential areas to train tracks
- location of the railway to the river
- Location of railway to main highway.
- Main industry is forestry that uses the railway
- supply chain impacted.

Are there specific neighbourhoods in Area 'G' that have particular vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?

- South side of the railroad of sunset lake rd. is isolated and communication to the other side is impeded by residents unable to get information. The evacuation route is cut off.
- Emergency services are prevented from accessing the area.

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

Dam Breach

Scenario Description:

Dam 1. at the Equity Silver Project experiences, a breach due to the degradation of the foundation because of extreme rains and erosion. The breach causes an extremely large volume of tailings to be dispersed into the downstream rural residential areas. Due to the sudden release of water from the dam the Buck Creek resident's evacuation routes would impact the roads and result in the possible loss of life. The tailings exposed may cause significant loss of habitat, and oxidation of tailings may cause acid generation and metal release into the watershed. The tailings facility not only causes flooding on downstream residents but releases the acids and metals into both Buck Creek and the Bulkley River. These waterways are accessed by residents of the rural area and Houston as drinking water supply and are important fish habitat. We are going to look at the services the community will expect in the first 12 hours, and how residents will be affected. And how this will impact residents in the long term. If needed, please add more detail to the scenario as we go along.

List Secondary or cascading hazards that may result:

Long-term Environmental, loss of drinking water, loss of access to residential areas, economic, residents' loss of housing. Loss of life. Critical infrastructure (roads, bridges, railway) Road closures.

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

Extreme rains and erosion, Earthquakes, Landslide, heavy snow load and quick spring melt. Maintenance and not proper monitoring. (Noncompliance, aging, infrastructure failure), Public Disorder. Economic hazard - loss of property value, loss of farm animals (ranches/farms (some are hobby farms))

Impact Summary

What social, economic, environmental, and physical factors may increase the community's susceptibility to damage due to this hazard?

- isolation of residents
- inability to access services and support
- rebuilding of infrastructure
- transportation

Are there specific neighbourhoods in Area 'G' that have particular vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?

- population age and mobility
- Buck creek rural community that follows the creek
- Foxy Creek?
- Any community downstream of the tailing pond could be impacted due to contamination

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 D – Likely to Occur C – Probable to Occur **3** B – Unlikely to Occur A – Very Rare to Occur	4 – Extreme Impact **3 both short and long-term** 3 – High Impact 2 – Moderate Impact 1 – Low Impact 0 – No Impact

Diseases, Pest Infestation & Epidemics

Animal Disease Crisis

Scenario Description:

It is summer and there are reports of farms in Area G 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 G. 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. If needed, please add more detail to the scenario as we go along. - Tuberculosis/ brucellosis could be more likely -(transfer from animal to animal with the risk of bugs being summer)*

List Secondary or cascading hazards that may result:

- Human Disease
- Public health crisis
    - Food Source interruptions

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

Brucellosis is on the radar of federal vets - if there is a case it goes through and comes to the attention of the vet, the herd is quarantined and goes to trace. do not want in the food chain. The issue to keep our food chain clean and clear of anything.

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 'G' that have particular vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?**
    - feed industry has created significant changes since the BSE breakouts 20 years ago, there are strict regulations on what goes into feed.

- lose of mortgages, employment, lifetime work
- Disease has major impacts on the marketplace
- Creates frightened populous - afraid of beef and sheep
- Round up of the herd - and major mass disposal challenges - what do you do with the product
- Rural neighbourhoods impacted
- no vaccine - risk assessment and risk management approach to disease
- Premise ID - any cattle that comes in contact with a disease - neighbouring herds are tested- quarantine, has economic impact - mental health repercussions for the rancher- potential to come from wildlife elk or moose – big concern for ranchers.
- one vet in Burns Lake, 2-3 vets in Smithers, but one large animal vet in Smithers. Rumour that there is a vet coming to Houston. The challenge of retention and recruitment of vets in the rural areas and particularly for large animal vets.
- SPCA has challenges implementing farm inspections on farms where animals are mal nourished or not cared for- unannounced visitations to farms need vet but there is only one vet, and the capacity is not there.
- Federal vets would be part of a response to a scare or a problem with BSE or Tuberculosis.
- food security - industry can not have contaminated meats going to the market. food safety food security disease issue, abettor issues marketplace issues.
- food safety is a risk - whether we talk about salmonella around broccoli or lettuce; any kind of food with risk of parasite, virus, contamination can create a public risk.

Likelihood Rating *(Please Circle)*	**Consequence Severity** *(Please Circle)*
E – Almost Certain to Occur D – Likely to Occur C – Probable to Occur? - tuberculosis or bursulous from wildlife stock. B – Unlikely to Occur A – Very Rare to Occur - BSE	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 Morice TSA over the next 15 years. We are going to look at the impacts of this infestation on the forest sector and community in the Houston and Granisle Rural Area. If needed, please add more detail to the scenario as we go along.

List Secondary or cascading hazards that may result:

- Dead trees - a risk or increased wildfire risk
- more potential to flooding events - watershed can't retain the water.
- potential effect to water quality and water systems
- Transportation hazards and challenges if the increase in logging traffic.
- loss of habitat and species.

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

Climate change and warming trends

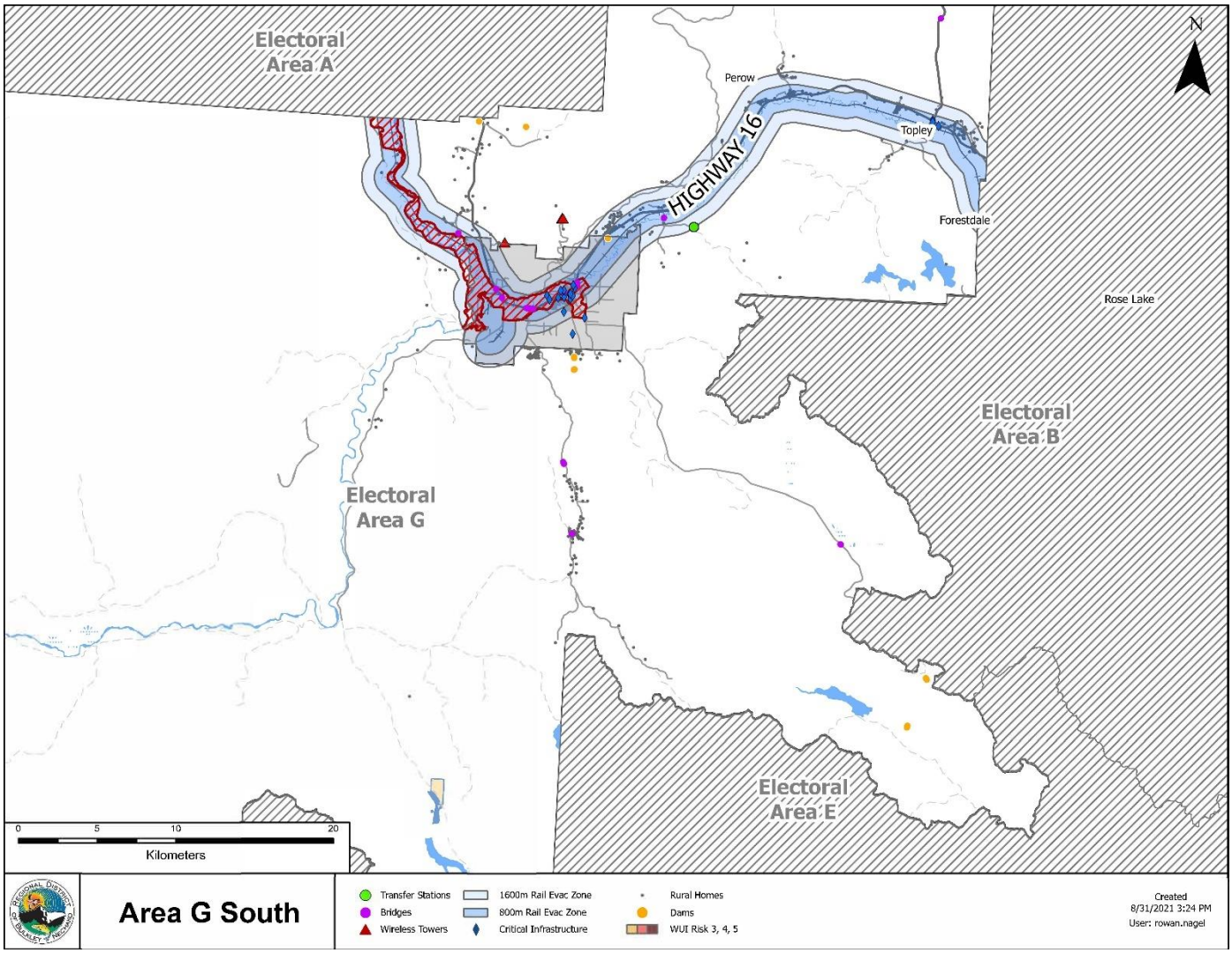
Impact Summary

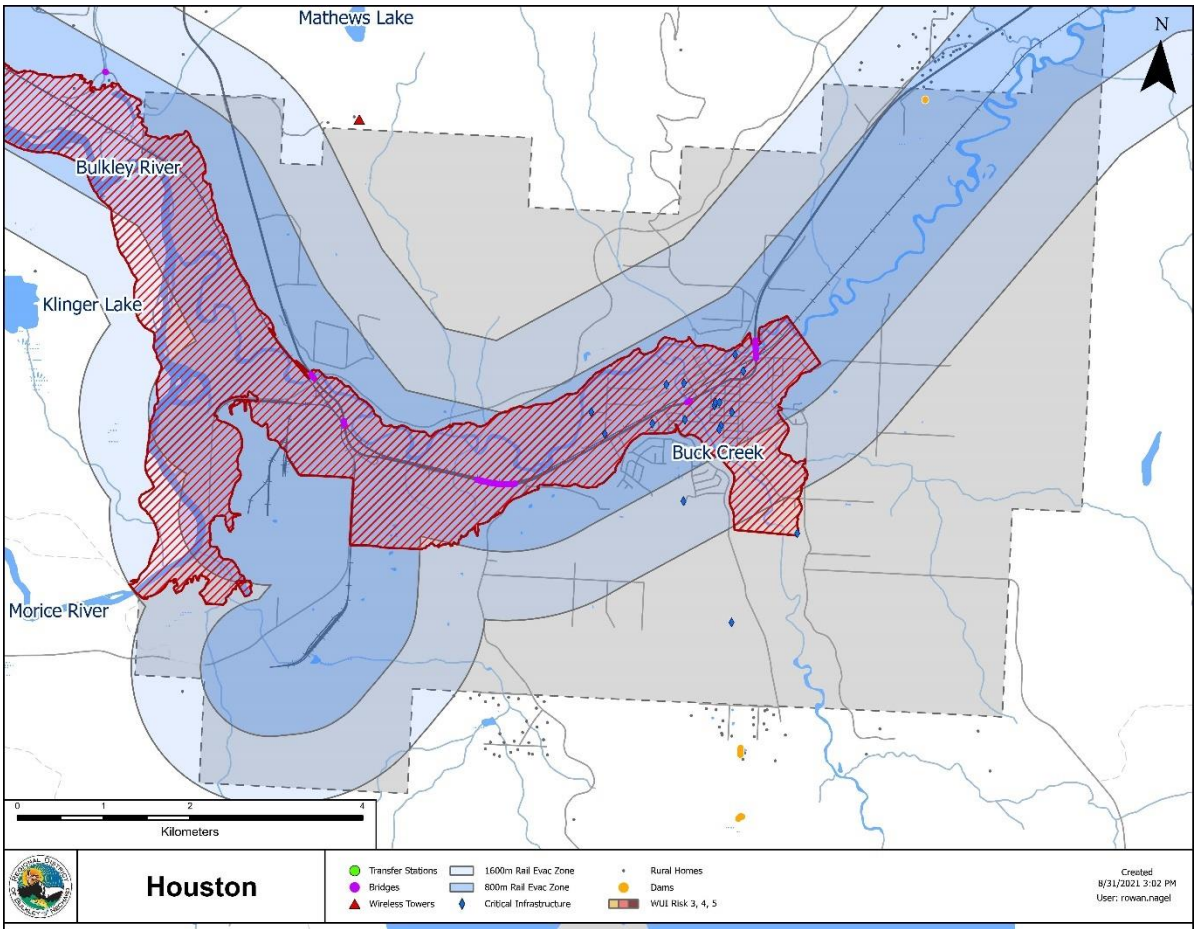
- **What social, economic, environmental, and physical factors may increase the community’s susceptibility to damage this hazard?**
- **Are there specific neighbourhoods in Area ‘G’ that have particular vulnerabilities? What conditions exist that have the potential to contribute to vulnerability within this neighbourhood?**

- continued wildfire mitigation needs to broaden this initiative
- we are very forestry dependant, and we are not diversified in this area and in our economy.
- economic cost - value of trees going down- what does it cost to try to control the pest infestation - loos of good wood supply - cascading downhill affect - contractors are making less, an infestation of our forest industry is a large impact provincial and locally.
- effects our tourism - visual appeal and tourism draw.
- loss of transportation ….
- resources potentially cut off when you think of the cascading events.
- boom and bust with this type of scenario: initial employment increase and boom in the sector and then a decrease in employment as the sector decreases. as resources get used up. loose of employment. loss of industrial taxpayers and the effects on that would have on our municipalities and the maintenance of infrastructure and services they are able to provide to their residents.
- increase in industrial traffic on the highways and roads for residents and tourists
- If fire becomes a hazard - power and hydro lines throughout the rural area Granisle, Topley major power lines.
- loss of habitat and forests resulting in cascading hazards. people rely on moose hunting; pests will affect different wildlife - lack of forest influence results in warmer water temperature. Large spin off affects. Example of steelhead number declines.
- we see the leaf minor infestation and that affecting - with climate change and global warming increase in pests and susceptibility of plants to fall ill to disease.
- other pests affect farmlands and agriculture - maybe not beetle.

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

Appendix 1 – ELECTORAL AREA ‘G’ KNOWN HAZARDS MAP

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Bulkley River
Klinger Lake
Buck Creek
Morice River
0 1 2 4
Kilometers
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Transfer Stations
Bridges
Wireless Towers
1600m Rail Evac Zone
800m Rail Evac Zone
Critical Infrastructure
Rural Homes
Dams
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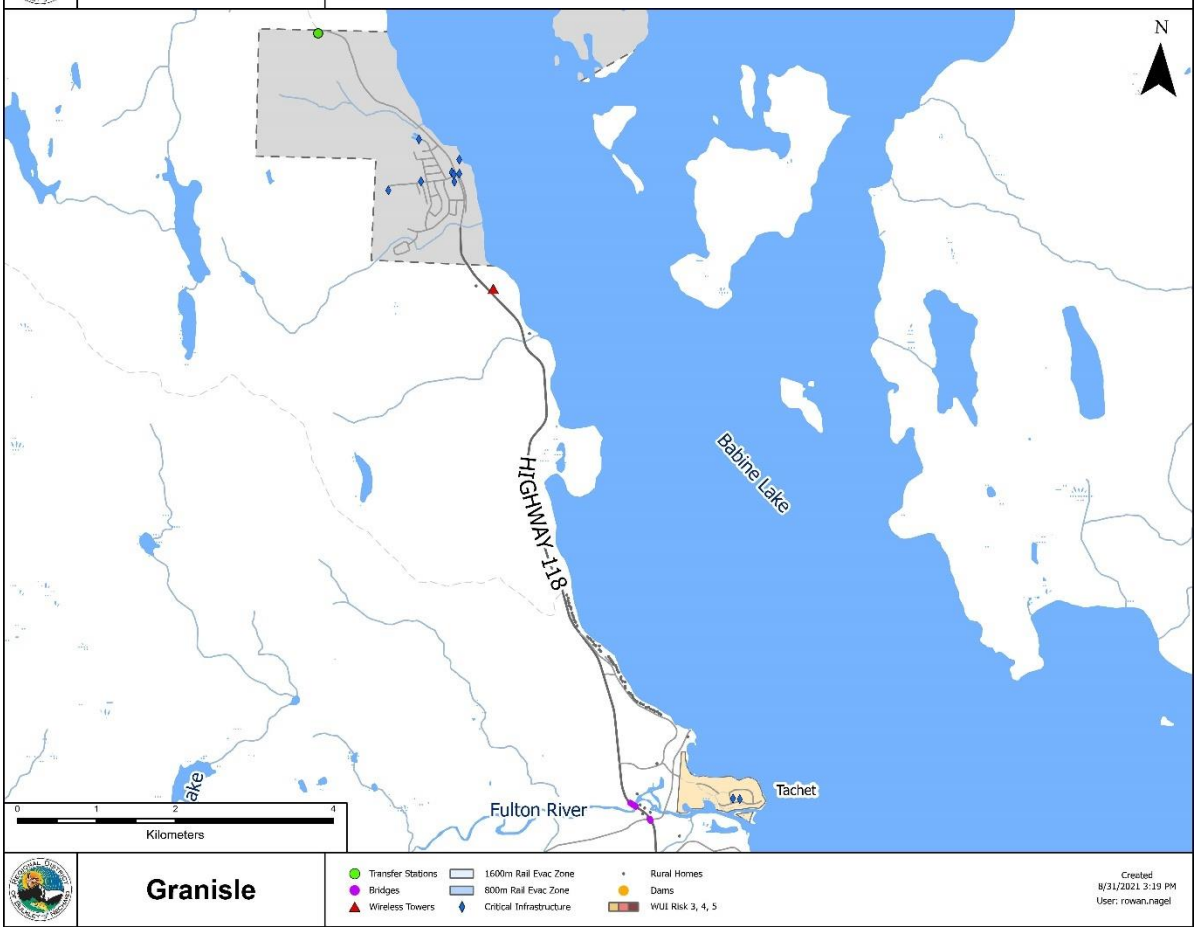
User: rowan.nagel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Bridges
Wireless Towers
1600m Rail Evac Zone
800m Rail Evac Zone
Critical Infrastructure
Rural Homes
Dams
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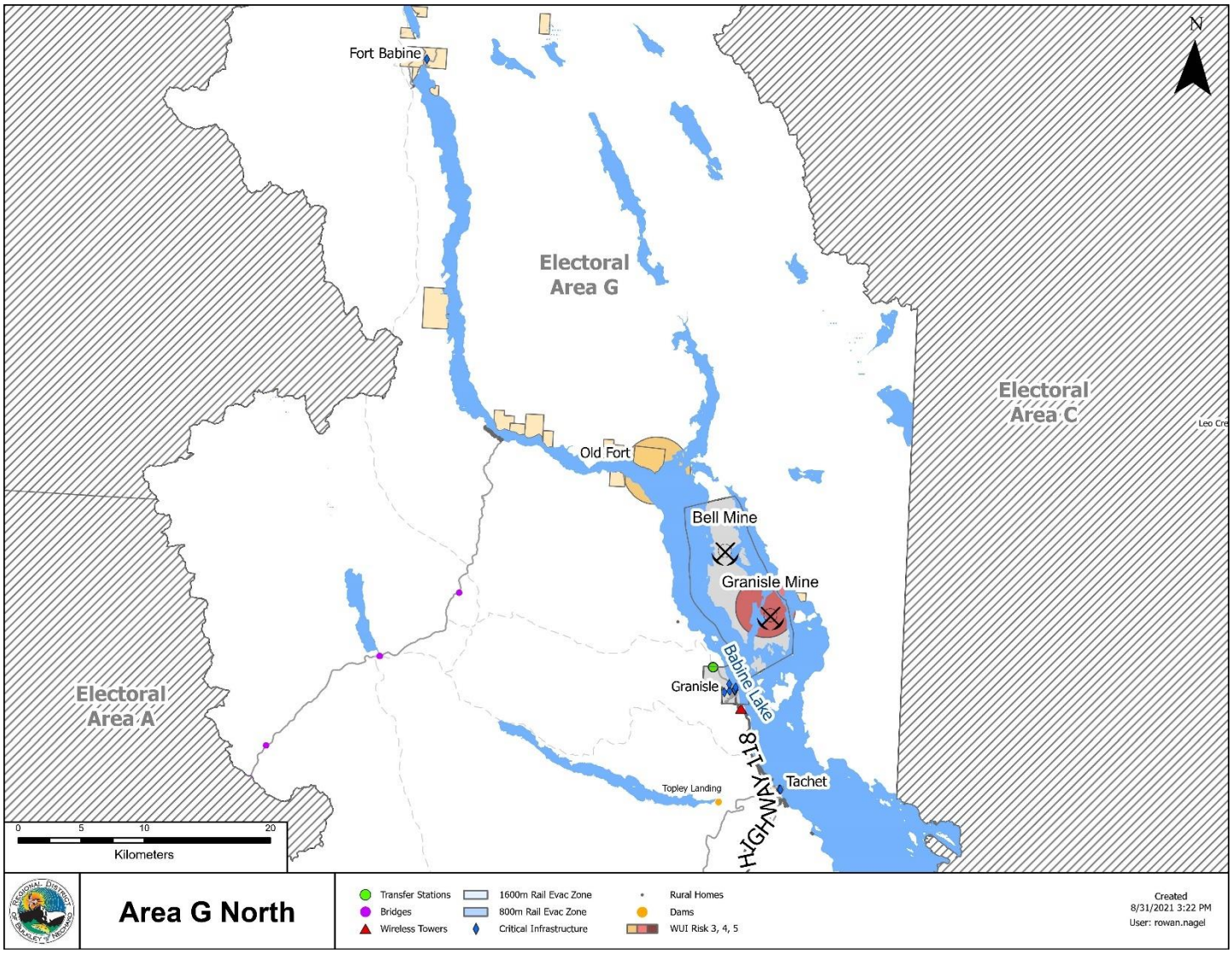
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Fort Babine
Electoral Area G
Electoral Area C
Old Fort
Bell Mine
Granisle Mine
Babine Lake
Granisle
HWY 118
Topley Landing
Tachet
Electoral Area A
0 5 10 20
Kilometers
Area G North
Transfer Stations
Bridges
Wireless Towers
1600m Rail Evac Zone
800m Rail Evac Zone
Critical Infrastructure
Rural Homes
Dams
WUI Risk 3, 4, 5
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User: rowan.nagel

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