Community Risk Assessment

Hazards, Vulnerabilities and Risks of Major Emergencies

Town of Sidney

2022

Prepared by the
Town of Sidney Emergency Management Program

in partnership with
Smart Risk Control, Inc.
Victoria, BC

December 16, 2022

The Town of Sidney is located within the traditional territory of the W̱SÁNEĆ people, represented today by W̱JOŁEŁP (Tsartlip), S*T*ÁUTW̱ (Tsawout), W̱SIḴEM (Tseycum), BOḰEĆEN (Pauquachin), and MÁLEXEŁ (Malahat) First Nations. The W̱SÁNEĆ people have been here since time immemorial, and this is their home.

Limitation of Liability – This report presents information available at the time of production and may contain errors or omissions. Users of this information are cautioned of the limitations of this study and assume full responsibility for its application.

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Table of Contents

EXECUTIVE SUMMARY

Purpose – The Community Risk Assessment describes the emergencies and disasters of primary concern within the Town of Sidney and highlights actions that may be taken to reduce risks. This relative assessment of risk guides the development of policies and procedures for hazard mitigation, emergency response, municipal service continuity, and disaster recovery.

Vulnerable Elements – The risk assessment identifies key points of vulnerability, elements that will likely suffer impacts of greater magnitude or severity from various hazards. These include the following:

- Among the 12,318 current residents, the Town is home to 3,100 residents over the age of 75. These individuals tend to be at greater risk of physical harm during severe weather events and other types of disaster.
- The community includes 3,285 individuals with a 2020 income under $30,000, about 27 percent of all residents. This includes 495 seniors of age 65 years or older below the poverty line. Economic disparity affects the ability of residents to prepare for and recover from disaster.
- Of the 5,985 private dwellings in Sidney, about 39 percent include residents who live alone, amounting to 2,310 one-person households. This includes about one-third of all Sidney seniors. These individuals may require assistance in preparing for emergencies and during response, especially in evacuations.
- The entire community relies on the continuous delivery of utility services by the Town, through the Capital Regional District, and by various commercial service providers. Prolonged failure of electrical power and water delivery services would lead to widespread serious impacts.

Hazards – Sidney has experienced few major emergencies in past decades. The risk assessment identified 13 hazard types that warrant action due to the combination of probability of occurrence and expected consequences. The relative risks are:

Highest Risk	Atmospheric Hazards, Human Disease
Moderate Risk	Earthquake, Major Urban Fire, Road Transportation, Utility Failure, Water Encroachment
Lowest Risk	Air Transportation, Hazardous Materials, Marine Transportation, Structure Collapse, Terrorism, Tsunami

Conclusions – Town residents and businesses face the greatest risk from atmospheric hazards, such as extreme heat, cold spells, rainstorms, and drought incidents that are currently increasing in frequency and severity due to climate change. The current COVID-19 pandemic continues to threaten Town residents and presents the potential for future variants, and other diseases are increasingly likely.

The Community Risk Assessment identifies 56 actions for consideration in four categories: 1) Hazard Mitigation, 2) Emergency Preparedness, 3) Municipal Business Continuity, and 4) Disaster Recovery.

COMMUNITY RISK ASSESSMENT

Hazards, Vulnerabilities, and Risks
of Major Emergencies in the Town of Sidney

2022

1.0 INTRODUCTION

Like every human settlement, the Town of Sidney is subject to major emergencies that can result in damage and injury, although they are rare. Examples of incidents that could impact residents, businesses, and institutions include severe rainfall, extreme heat events, diseases, and earthquakes.

To better manage these emergencies, Town leaders and staff seek to understand the types of harmful events that can occur, how likely they are, and their potential consequences. Understanding these risks is essential in identifying actions in hazard mitigation, emergency preparedness, and disaster recovery.

In addition, risk information helps residents, business owners, and other community members protect themselves from harm. In October 2018, BC became the first Canadian province to adopt the United Nations “Sendai Framework,” a collective process that helps build resilience at individual and community levels. The Sendai Framework highlights the need for "disaster risk management" at the municipal level by advancing risk knowledge among those who may be affected and can take action.

The Town of Sidney Emergency Program Management Committee prepared this report to better understand the hazards and vulnerabilities that the community’s risk.

The Fire Chief / Emergency Management Coordinator ensures the community risk assessment is updated about every five years.

The 2022 Community Risk Assessment reflects input from many sources and knowledgeable persons. Municipal staff in the Fire Department, Development Services, Engineering Services, and Public Works supplied essential information on the hazards and vulnerabilities in the community. Several external organizations, including the RCMP, BC Hydro, and the Capital Regional District supplied relevant support information.

A complete list of references may be found at the back of this report.

Legal Requirement to Assess Risks

Under the British Columbia *Local Authority Emergency Management Regulation*, the Council for the Town of Sidney is required to reflect in plans…

> The potential emergencies and disasters that could affect all or any part of the jurisdictional area for which the local authority has responsibility, and
>
> The local authority's assessment of the relative risk of occurrence and the potential impact on people and property of the emergencies or disasters.

1.1 Municipal Government

The Town's form of government consists of a Mayor and six Councillors, each elected to a 4-year term. Sidney currently relies on 93 full-time-equivalent employees serving in the following departments:

- Chief Administrative Officer
- Protective Services
- Corporate Services
- Corporate Administration
- Development Services
- Engineering, Public Works & Parks

Under the *BC Emergency Program Act*, Town Council is at all times responsible for the direction and control of the local authority's emergency response. However, Council can delegate its responsibilities to the local emergency management organization, which may include all Town personnel and resources.

1.2 The Community

The Town of Sidney exists on the Saanich Peninsula about 26 kilometres north of Victoria. As shown in Figure 1, the Town is bounded by the District of North Saanich on the north, west, and south, and by Haro Strait and the Salish Sea on the east. Federal land within Town boundaries includes part of the Victoria International Airport.

History

The W̱SÁNEĆ peoples occupied and used the Saanich Peninsula for thousands of years before colonization, including winter villages. Over the last 100 years, the community evolved from a remote logging, fishing and farming hub to a residential centre and regional destination. The Town was incorporated on September 30, 1952.

Setting

Sidney's role on Vancouver Island strongly reflects its access to transportation. Sidney lies along the major vehicle route connecting the Capital Region with the BC Lower Mainland and Gulf Islands, through the BC Ferries terminal at Swartz Bay. The Town also serves as the terminus for the Washington State Ferries route between Vancouver Island and Anacortes.

With four large yacht marinas, as well as several smaller ones, Sidney is both home to and a destination for numerous pleasure boaters and travelers.

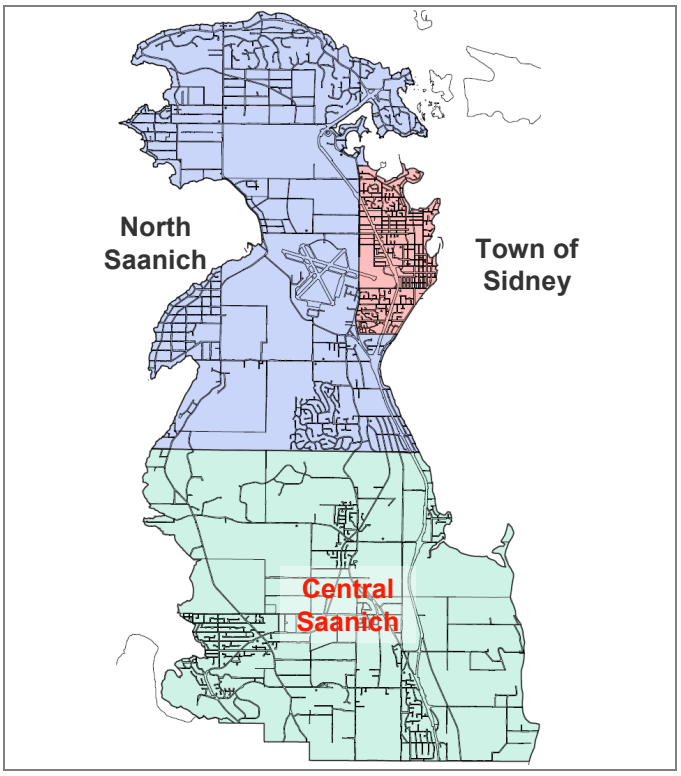


Figure 1. *Location of Sidney on the Saanich Peninsula*

The Town lies immediately adjacent to the Victoria International Airport, which supports several aviation and light industrial businesses.

Sidney's light industrial operations include marine-based services for local and regional boaters. The Town's central business district serves as the core commercial and industrial centre for residents and businesses throughout the Saanich Peninsula.

Implications of History and Setting

The Town has experienced very few major emergencies since incorporation, signalling the relative safety of the landscape and community.

Hazards from industrial areas include the potential for structural fire and the release of toxic smoke and hazardous materials.

Sidney serves as the "downtown" for the northern Saanich Peninsula, emphasizing the importance of sub-regional coordination in hazard mitigation, emergency response, and disaster recovery.

Geography

The Town of Sidney includes 5.04 square kilometres of generally flat terrain. The eastern seashore provides access to the beaches on Haro Strait, with views of the Southern Gulf Islands, San Juan Islands, and Washington State. The Town includes about 3.6 km of waterfront as a linear park.

The Town of Sidney, like the rest of the Capital Region, resides in one of the most active seismic zones in North America. Earthquake threats include the Cascadia Subduction Zone off the west coast of Vancouver Island, and shallower earthquakes near Georgia Strait and Puget Sound.

The Ministry of Environment notes low risks from slope failure for Armstrong Point and Thumb Point at Tsehum Harbour.

Some areas are subject to localized flooding during heavy rainfall events, such as the low elevations in the Orchard neighbourhood. The coast is subject to high tides that, when combined with storm conditions, can lead to shoreline flooding.

The Town has named five environmentally sensitive areas for develop permits:

- Beaufort Road Area, rare and fragile vegetation and wildlife habitat
- ĆELSET (Reay) Creek Watershed, with salmon, cutthroat trout, other wildlife
- Lochside Waterfront, with shorebirds and recreational uses
- Mermaid Creek, an important salt marsh and estuarine habitat
- Roberts Bay, with the Shoal Harbour Migratory Bird Sanctuary, marine life, and wildlife

ĆELSET (Reay) Creek Watershed

Lochside Waterfront

Implications of Geography

Earthquakes of moderate to large magnitude rank among the hazards of greatest concern for the community. The extensive foreshore and the relative low elevation expose built areas to damage from storm surge and tsunami.

1.3 Climate

Historically, the severe climate conditions evident elsewhere in Canada have rarely affected Sidney, including extremes in temperature, precipitation, or wind speeds. However, Sidney has experienced hurricane-force winds, sudden and heavy snowfalls, both high rainfalls and drought conditions, and extreme temperatures. When such infrequent events occur, they reveal a level of unpreparedness within the community.

Weather

Town residents can experience a wide range in weather conditions. Extreme temperatures recorded at nearby Victoria International Airport include a low of -15°C on January 28, 1950, and a high of 39.4°C on June 28, 2021. Sidney sees relatively wet winters and dry summers.

Figure 2 highlights the range in average precipitation over the course of the year. Heavy rainfall events are more likely in November, December, and January than at other times.

Pacific storms common in winter months typically bring moist air from the subtropical regions. Weather on southern Vancouver Island also reflects the *El Nino* phenomenon that occurs every 2 to 7 years. Warm ocean currents generate rising air that bring warmer and drier winters in BC. *La Nina*, the opposite phase, results in colder and wetter winters.

Extreme snowfalls of more than 50 cm in a single day are rare events, but have occurred on five occasions since 1880, including one December day in 1996 when weather stations recorded 64.5 cm of snow in the Greater Victoria area. The largest recorded snowfall in the region occurred in 1887 at 91 cm.

The winds flow predominantly from the west, often channelling through the Juan de Fuca Strait. Summer outflow winds, when air flows from the mountains via fjords and valleys toward the water, can be hot, dry and strong, enhancing the risk of wildfire on Vancouver Island and the lower mainland of BC.

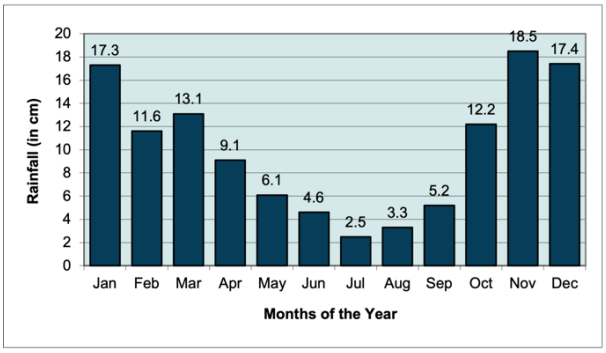


Figure 2. *Avg. Annual Rainfall by Month, Saanich Peninsula*

Climate Action and Emergency Management

This *Community Risk Assessment* acknowledges the importance of the Sidney *Climate Action Plan*. Both documents guide Town action in reducing reduce risk to residents and businesses. The Town of Sidney has long been committed to climate action and environmental sustainability. Some milestones include:

- In 2010, the Town developed the first Climate Action Plan to aid the Town of Sidney in reducing emissions from both corporate (Town) operations and the community.
- In 2019, Sidney Council declared a climate emergency and resolved to continue work towards achieving carbon neutrality both in the community and at the municipal government level.
- In May, 2021, the Town established a staff position of Climate Action Coordinator to develop and implement plans to reduce municipal greenhouse gas (GHG) emissions.
- In July, 2022, Council approved an updated Climate Action Plan to ensure consistency with current best practices and the latest science.

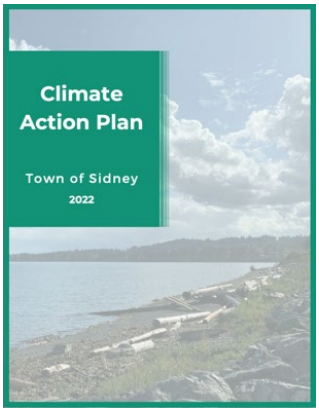
For more information, refer to the Town's webpage on "Climate Action and Sustainability."

The changing climate increases the likelihood of several types of emergencies, largely represented in the second part of this *Community Risk Assessment* under the headings of "Atmospheric Hazards" and "Water Encroachment."

While Sidney's *Climate Action Plan* focuses on the long-term conditions and effects of ongoing greenhouse gas emissions, the Town's Emergency Management Program addresses the more immediate consequences of climate-induced loss events. The Sidney community has already experienced the impacts of climate change, such as in the extreme heat event in June of 2021, and heavy rain later that year.

In addition, climate change may lead to secondary impacts that may include supply chain disruption; price increases for food, fuel, home insurance, building materials, and appliances; an increase in long term health impacts on vulnerable individuals; disruption of long-term hydro power capability; and care for domestic and international climate refugees.

As with other emergencies, like earthquakes and structure fires, many climate impacts can be reduced through targeted action beforehand. These actions include the hazard mitigation and adaptation options outlined in both the *Climate Action Plan* and this *Community Risk Assessment.*



Implications of Climate Change

The expected climate future may mean increases in the frequency and severity of several hazards for the Town of Sidney, including events that could require the activation of the Sidney Emergency Operations Centre, such as the following examples:

- **Intense rainfall events** (e.g., atmospheric river), leading to localized flooding and evacuation, as well as damage to roads and other infrastructure, parks, and surface water contamination.
- **Drought periods**, with water shortages, potential business closures, food insecurity, tree mortality, decline in natural aquifer levels.
- **Extreme heat events** (e.g., heat dome), including the potential for illness, such as heat exhaustion, and death.
- **Extreme cold events** (e.g., polar vortex), causing heavy snow and blizzard conditions, road closures, power outages, and frozen water pipes.
- **Severe winds** (e.g., typhoon), leading to downed trees, structure damage, prolonged power outage, storm surge, and damage to marinas, boats, piers and wharves.
- **Wildfire smoke** due to increased frequency of wildfires in other communities, resulting in health impacts on vulnerable persons.
- **Human diseases,** pests, and parasites in increased frequency as the local climate changes.
- **Sea level rise**, leading to increased shoreline erosion, foreshore landslides, saltwater intrusion, and increased flooding of foreshore areas due to storm surge and tsunami.

2.0 COMMUNITY PROFILE

2.1 Demographics

Population

In 2021, Sidney's population numbered 12,318 residents, according to the federal census, an increase of 5.5 percent over 2016. This is less than the increase noted within the province for the same period at 7.6 percent.

Figure 3. Town of Sidney Vulnerable Populations

Demographic Category	Amount
Total Population	12,318
Seniors age 75+	3,100
Households with children	2,095
Individual Income < $30k	3,285
Age 65+ below poverty line	495
One-person households	2,310

Figure 3 focuses on community residents who may be vulnerable to major emergencies due to age, income level, or household composition. These persons may need assistance in preparing for emergencies and require special attention when threats materialize.

Age Groups – The age distribution of Sidney residents, shown in Figure 4, draws attention to a highly vulnerable group within the community.

The 2021 federal census notes 5,545 Sidney residents of age 65 or older, accounting for 45 percent of the population, as compared with the provincial portion of about 20 percent. This group includes more than 3,000 seniors aged 75 or older.

The median age in Sidney is 62.0 years, nearly 20 years older than the provincial median age of 42.8 years.

This represents a significant challenge for the Town in that older residents tend to be more vulnerable to severe heat, earthquakes, and other disasters, and are more often challenged in mitigating and preparing for emergencies.

Income Levels – Low income and single-parent households typically need assistance in preparing for and responding to emergencies. Statistic Canada counted 3,285 individuals with a 2020 income under $30,000, accounting for about 27 percent of all Sidney residents.

There were 495 seniors of age 65 years or older below the poverty line (low income measure, after tax) at the time of the Stats Can survey.

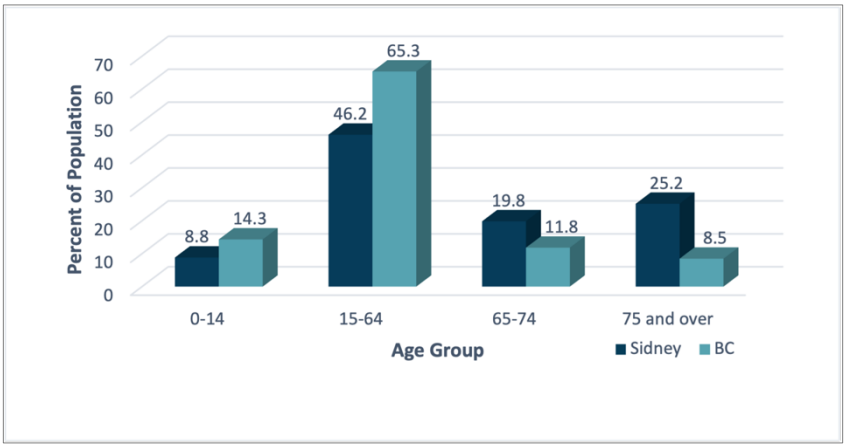


Figure 4. Age Distribution in Sidney, 2021

Household Composition – Living in isolation also contributes to risk in major emergencies. Among the 5,985 private dwellings in Sidney, about 39 percent include residents who live alone. This amounts to more than 2,300 one-person households in the community. Many are elderly; about 32 percent of all Sidney seniors live alone. Single-parent families, accounting for 425 households in the Town, are also vulnerable during emergencies.

Language – English continues to be the most common home language for Sidney residents. Nearly all residents report at least a working knowledge of English. Only about 35 individuals reported no knowledge of English. In addition to the residents, others may be present in Sidney on a transient basis during an emergency, such as temporary workers, visiting international tourists, boaters, ferry passengers, and motorists on arterial roadways.

Implications of Demographics

Thousands of Sidney residents are particularly vulnerable to major emergencies, either due to age, economic status, household makeup, or other inherent characteristic. Each private household in the community must be capable of sustaining themselves for up to seven days without government aid. These vulnerabilities suggest high value in enhancing the Town's current public education and neighbour-helping-neighbour initiatives, such as *Meet Your Street*.

Land Use / Neighbourhoods

Buildings constructed in Sidney before 1946 may be more likely to suffer structural damage in an earthquake. Historical sites that are subject to earthquake damage include the Old Post Office, an old part of Bodine Hall in Mary Winspear Centre, and the Cemetery.

Local dwellings include about 2,000 apartments, mostly in buildings that have fewer than five storeys. Sidney includes more than 200 apartments in buildings with five or more storeys.

Even a moderate earthquake would likely impact all residential areas within the Town to some degree. In a disaster that affects the entire region, emergency response and recovery by local and provincial organizations may require many weeks or months.

New Five Storey Multi-Family Housing

Implications of Land Use / Neighbourhoods

Some neighbourhoods have limited options in the routes they can use for evacuation by vehicle. Emergency preparedness can take advantage of existing neighbourhood groups. The Neighbourhood Emergency Preparedness Program offers free education sessions on hazard awareness and personal preparedness.

Sidney's *Meet Your Street* program promotes neighbour collaboration for emergency preparedness and other social needs.

Special Occupancies

Within the Town, special occupancies deserve attention as facilities of vulnerability to emergencies and disasters. Institutions in Sidney include several nursing homes and residences for the elderly, as listed in Figure 5.

Figure 5. Homes for the Elderly in Sidney	
Name	Max # Occupants
Amica Beechwood Village	120
Sidney All Care	88
SHOAL Centre	83
The Peninsula	75
Broadmead Care	73
Rest Haven Lodge	73
Sidney Care Home	54
Norgarden Retirement Homes	48

Special occupancies include buildings where there may be a high density of population at the time of an emergency. High-density occupancies in Sidney include facilities that attract many people to one location, such as those listed in Figure 6.

Figure 6. High-Density Occupancies in Sidney	
Name	Max # Occupants
Mary Winspear Centre	1,200
Sidney Elementary School	350
Sidney Pier Hotel and Condos	300
Victoria Airport/Sidney Travelodge	300
Star Cinema Theatre	300
Cedarwood Inn and Suites	180
Sidney Waterfront Inn, Suites	68
Best Western Emerald Isle Inn	64

Special occupancies include locations where people may be insufficiently sheltered from a threatening incident, such as a severe windstorm or tsunami. Unsheltered locations in Sidney are represented by the following locations:

- Resthaven Linear Park
- Beacon Wharf
- Bevan Fishing Pier
- Glass Beach and Waterfront along Lochside Drive

The consequences of emergencies at special occupancies tend to be more extreme than at other locations in the municipality. In an emergency that affects the entire building, such as an earthquake or structure collapse, they may become sites of mass casualty.

Glass Beach

The sudden release of a toxic chemical within or near a high-density occupancy would require immediate measures to safeguard the occupants. High density occupancies may allow ready transmission of respiratory diseases, such as influenza and COVID, without precautions.

Implications of Special Occupancies

The primary at-risk neighbourhoods and groups consist of the elderly and retired citizens, some of whom live alone. Owners of special occupancies are responsible for preparing emergency plans that protect occupants, including provisions for alerting them to such threats as structural fire and chemical release, and securing them from danger.

Special Events

The Town promotes and supports dozens of special events each year to enliven the community and encourage economic activity. In 2018, the Town approved more than 100 events; about half were open to the public and held on municipal property. More than a dozen events called for full or partial closure of a public road.

As shown in Figure 7, most special events take place in the summer months, with some large winter events, including the Remembrance Day Parade and the Christmas Day Parade.

Although COVID-19 interrupted the event schedule in recent years, the Town expects to return normal operations in the future.

Special Event in Sidney

Figure 7. High Attendance Special Events in Sidney

Month	Event	Typical Attendance	Month	Event	Typical Attendance
May	BC Boat Show	5,000	Aug	Sea Lantern Festival	1,000
May	Street Market	5,000/day	Aug	Bed Races	800
Jul	Sidewalk Sale	1,000	Oct	World Coastal Rowing	1,400
Jul	Sidney Days Parade	5,000	Oct	Treat Street	1,500
Aug	Ryder Hesjedal	300	Nov	Remembrance Day Parade	3,000
Aug	Torque Masters	3,500	Dec	Christmas Parade	5,000

Several disasters in other North America cities highlight the potential for a major emergency at a Sidney special event. Any gathering of hundreds or thousands of visitors can lead to concerns for injury. Hazards unique to special events include fire in a tent, vehicle impact on pedestrians or cyclists, explosion of propane-fired equipment, crushing due to overcrowding or panic, parade float accident, and firearms, or bomb threat.

In addition to these hazards, the presence of large event crowds would complicate Town response to a major emergency, such as a major structure fire, a sudden wind or hailstorm, or an earthquake.

Implications of Special Events

Special events that draw thousands of people to outdoor, unsheltered areas present unique challenges in emergency management. Although loss incidents are highly unlikely, it is prudent to expect the types of impacts that have occurred elsewhere, and to take reasonable steps in risk mitigation and preparedness. The Town expects to consult on a new program to advance special event safety in 2023, with implementation in 2024.

2.2 Infrastructure

Electrical Power Systems

Like the rest of the Saanich Peninsula, Sidney relies on electrical power provided by the BC Hydro and Power Authority. Commercial businesses and industries count on a consistent level of service, as do schools, health care facilities, and other institutions. Many residents rely on BC Hydro for essential needs, such as ventilation, heating, cooling, refrigeration, cooking, and home medical equipment.

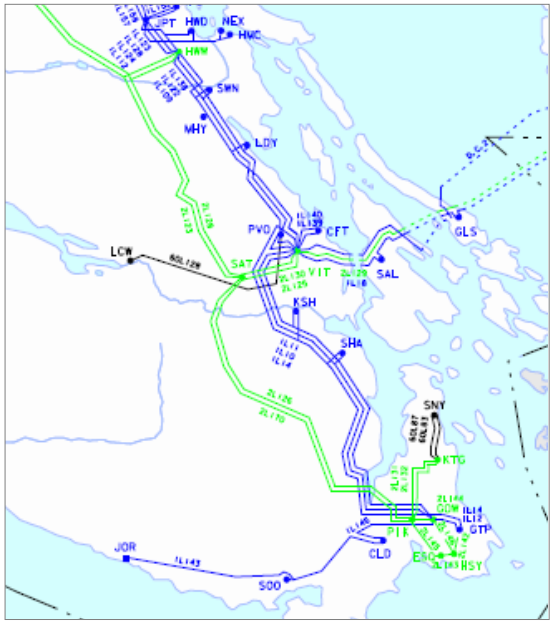


Figure 8. *BC Hydro Routes to Saanich Peninsula*

BC Hydro supplies electricity to Vancouver Island from the Peace River hydroelectric system and the Columbia River system, as well as through six generating systems on Vancouver Island.

Sidney receives electrical power via three routes, sketched in Figure 8. Two 138-kV AC circuits and two high-voltage direct current circuits deliver electrical power to the community using submarine cables from Tsawwassen to Galiano Island and Salt Spring Island, then to the large substation near Duncan. BC Hydro then transmits power overland to Sidney.

A northern route connects two 500-kV alternating current circuits south of Powell River to a terminus found north of Qualicum Beach on Vancouver Island. If the southern route were disrupted, Sidney customers of BC Hydro could receive power via this northern route. BC Hydro's Sidney Substation serves the Town of Sidney.

Power may also arrive via the Jordan River generation system, which supports the Vancouver Island grid during peak-use times or when there are outages. Using a single turbine powerhouse built in 1971, the Jordan River facility is capable of 170 Megawatts, if needed. The Jordan River Dam faces significant risk of failure in a large subduction earthquake.

Implications of Electrical Power Systems

A prolonged loss of power could threaten the lives of residents, particularly during extreme ambient heat and cold. Some people rely on electrically powered medical equipment, such as for oxygen therapy. While weather events pose the primary threat to sustained electrical power delivery, interruption events are likely to last a matter of days at most.

Although long-term power disruption is possible, it would require multiple simultaneous failures in BC Hydro facilities serving Vancouver Island. A major earthquake, severe weather event, or regional wildfire could trigger such failures.

Water Systems

Sidney residents, businesses, and institutions rely on a steady supply of potable water from the Capital Regional District (CRD). This service extracts water from the Sooke Lake Reservoir as the primary source. This reservoir can supply about 93 million cubic metres of water, with more available from the adjacent Goldstream Water Supply Area.

Water from the Sooke Reservoir flows via the Kapoor Tunnel to the Goldstream Water Treatment Plant, where the water is disinfected

to inactivate pathogens such as bacteria, viruses and parasites. All CRD critical water facilities are supported with backup generators in case of power outage. CRD staff monitor water quality to ensure it complies with BC provincial regulations and federal guidelines. Most of the CRD large water transmission mains are made of either steel pipes with welded joints, or ductile iron or polyvinyl chloride, the most seismically resilient materials available. About 10 percent of the transmission system is comprised of the more vulnerable concrete cylinder pipe. The transmission system includes six major pumping stations.

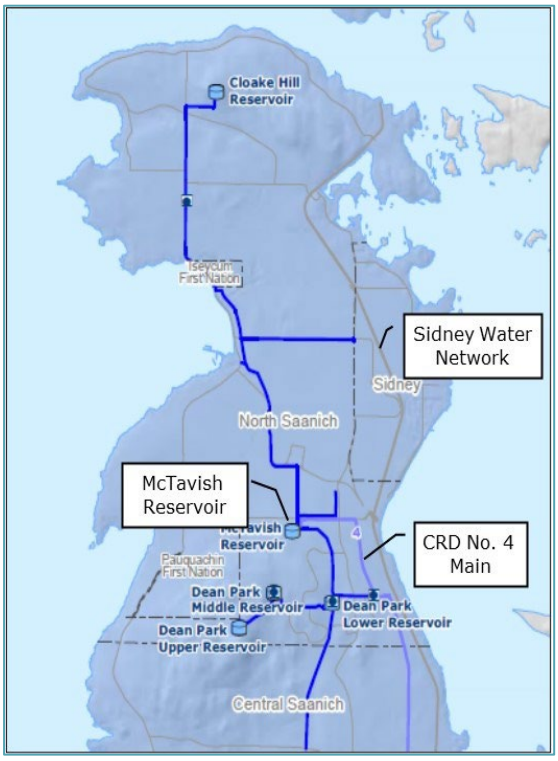


Figure 9. *CRD Water Supply to Sidney*

Water flows from the Goldstream Water Treatment Plant to the Saanich Peninsula via the CRD No. 4 Main, a high-pressure transmission main primarily composed of welded steel pipe. Refer to Figure 9. A 1,950-m section of No. 4 Main consists of more-vulnerable reinforced concrete pipe from Mt. Newton to Highway 17; the CRD has applied for a federal grant to replace this pipe to enhance seismic security.

The CRD No. 4 Main directs water to the McTavish Reservoir, one of several concrete storage reservoirs in the region. Although this reservoir lacks a seismic valve – a device that automatically closes when an earthquake occurs to preserve the stored water – a secondary main extends redundancy to McTavish Reservoir from the nearby Upper and Middle Dean Park Reservoirs. Each of these reservoirs has a seismic valve.

The CRD is assembling critical parts and repair equipment, such as couplings and valves, to return the large transmission mains to service in the event of damage.

Water from the McTavish Reservoir flows to the Town of Sidney network through two pressure-reducing stations located at Mills Road and Willingdon Road. The Town delivers bulk water to about 11,500 customers through a networked system that relies on 56 kms of water mains. The network means that a break at one location can be isolated using two or more of hundreds of valves in the system, allowing water service to continue for other users. All valves are operated manually.

Water flow within the Town relies on gravity from the McTavish Reservoir, not on electrical pumps. An electrical power outage would not affect water delivery within the Town system. Of the 56 kms of water mains, about 30 percent of Town water mains consist of materials that are more susceptible to failure in an earthquake, such as asbestos cement and perma-strand. The Town is currently replacing selected water mains to improve water flows for fire suppression and to reduce susceptibility to damage in an earthquake. The Town will develop an Asset Management Plan in the coming year that will include guidance on watermain replacement.

Groundwater wells are not used for drinking water on Sidney properties, although some private wells may access groundwater for irrigation. The Town has licensed water use of Well #5 to feed Reay Creek throughout the year, but flows are insufficient to provide emergency water for the community. Sidney Engineering will undertake a project in 2023 to consider wells and other emergency water supply options.

Implications of Water Systems

Because the community depends on potable water delivered via both the CRD and Town systems, any interruption in the supply of safe drinking water would have widespread impacts on public health, community services, and the local economy.

Water interruption is possible through several hazards. In addition to potential human error and terrorist action, a wildfire within the Sooke Lake watershed could introduce high volumes of ash, sediment, and contaminants that could challenge water treatment systems. A severe earthquake may damage CRD and/or municipal distribution systems, shutting down access to delivered water.

In a water emergency, the CRD, as the water service provider, must have contingency plans to continue to supply water to their clients during emergencies. The Town must also have plans to receive, stage, and distribute resources and materials to meet water needs of the local population.

Wastewater, Stormwater Systems

Constructed in 2000, the Saanich Peninsula Wastewater Treatment Plant at Bazan Bay in North Saanich serves Sidney, North Saanich, and Central Saanich. This plant produces Class A biosolids suitable for use as fertilizers and generates waste heat for the Panorama Recreation Centre in North Saanich.

The CRD currently conveys all sewage from the Town of Sidney to the Saanich Peninsula Wastewater Treatment Plant through regional trunk mains. The Town's portion of the wastewater system consists of 51.3 km of mains, including 3.8 kms of pressurized mains and 11 pump stations. The main regional trunk connecting Sidney with the Treatment Plant runs along Lochside Drive in an area subject to storm surge and tsunami. A major pump station is located on Fifth Avenue near Tulista Park.

The CRD pump station has a fixed power generator, while the Town stations are designed to receive mobile generators when needed. Public Works has four mobile generator sets, tested monthly. A single outfall to the marine environment allows for overflow discharge if needed.

Stormwater drainage within the Town relies on about 58 km of pipe, including culverts and outfalls. One pump station at Ocean Avenue and Fourth Avenue supports stormwater management. The system includes 5 km of open ditches in Sidney's West Side, with one major detention pond on lands owned by the Victoria International Airport.

CRD Wastewater Pump Station

Sidney uses 41 outfalls to deliver stormwater to the ocean, and all are found along the eastern waterfront. These outfalls could be damaged in a tsunami, severe storm surge, or by sea level rise associated with climate change.

The Town allocates funds for the community stormwater system, including drains, using both the annual maintenance budget and long-term capital funding.

Implications of Wastewater and Stormwater Systems

The Sidney community relies on these underground utilities for daily operation. Failure of the wastewater system, such as following a severe earthquake, could lead to environmental impacts, as well as high economic losses. Multiple points of failure are possible in sewer collection system, pumps, and treatment plant. Failure of the stormwater system could lead to localized flooding.

Road Transportation

Sidney's road network provides vital access to all areas to support economic and community well-being. The municipality operates and maintains about 54 kilometres of streets, including the design and construction of roads, sidewalks, and traffic control measures. The road system includes 2 km of gravel or paved laneways.

Figure 10. *Main Sidney Roadways*

Key destinations in the area include the BC Ferry Terminal at Swartz Bay, the Town's main retail area on Beacon Avenue, the West Side industrial area, and the Victoria International Airport. In addition to vehicles, Town streets and sidewalks also enable pedestrians, cyclists, mobility-enhancement equipment, buses, and other modes of transportation.

The vehicle transport system that serves the Town of Sidney, shown in Figure 10, includes local streets, collector roads, and provincial Highway 17, also known as the Patricia Bay Highway. With construction completed in 1978, the Pat Bay Highway bisects the Town, obstructing ready connections between the West Side and the core of Sidney in ways that limit evacuation routes.

North-south roads within the community include Resthaven Drive north of Beacon Avenue, and Fifth Street to Lochside Drive in the south. Major east-west connectors include Beacon Avenue, James White Boulevard / Sidney Avenue, and Bevan Avenue to the south.

Sidney provides snow clearing and salting/sanding of icy roads when needed, based on a priority for arterial and secondary roads before residential roads. Municipal snow removal equipment is limited.

Most major roads can experience traffic congestion, especially in the summer, and with some impact from ferry offloading. Traffic difficulties may arise in area evacuations, such as for a hazardous materials incident. Figure 11 lists the relative summer peak hour traffic volumes for some of the more significant local roads.

Figure 11. Hourly Peak Traffic Volumes

Route	Vehicles per Hour (peak)
Patricia Bay Highway	3,845
Beacon Avenue	2,300
Resthaven Drive	1,644
Fifth Street	478
McDonald Park Road	369

Sidney residents depend on their vehicles for transportation to work more than other residents in the CRD. According to the 2021 Census, nearly

77 percent of Sidney occupants rely on vehicles to access places of work, about the same proportion as for the province.

BC Transit bus service includes 6 routes and about 55 bus stops connecting Sidney with Victoria, Swartz Bay Ferry Terminal, Victoria International Airport, and other Peninsula communities. Two pedestrian overpasses link the West Side and the rest of the Town and allow walking and cycling to the downtown core or ocean beaches. These overpasses could collapse in an earthquake.

Implications of Road Transportation

A major disaster, such as typhoon or earthquake, could damage the local road system and lead to a direct impact on the mobility of Sidney residents. Roadway clearing and emergency road repairs will be essential in aiding response to other critical infrastructure and in enabling community recovery.

Marine Transportation

Washington State Ferry Dock

Passenger and Vehicle Ferries – The Washington State ferry terminal at Ocean Avenue in Sidney offers seasonal ferry service to Anacortes. The ferry services are currently halted due to crewing and vessel constraints during the COVID-19 pandemic. This marine route normally uses the *M/V Chelan*, a 328 foot vehicle and passenger ferry that can carry up to 124 vehicles and 1,076 passengers.

Sidney also offers direct access to the BC Ferries terminal at Swartz Bay, with regular service to the BC Lower Mainland and the Gulf Islands. The vessel fleet currently using Swartz Bay includes the *Spirit of British Columbia* and the *Spirit of Vancouver Island*, each capable of 358 vehicles and 2,100 passengers.

Docks and Marinas – Sidney hosts four large marinas that include pleasure boats, listed in Figure 12.

Figure 12. Marinas in Sidney

Name	Address	Max. Vessels
Van Isle Marina	2320 Harbour Road	534
Port Sidney Marina	9835 Seaport Place	315
Tsehum Harbour	10441 Resthaven Drive	150
Marina Park Marina	2060 White Birch	60

The commercial fishing fleet resides in Tsehum (Shoal) Harbour in Sidney. The 180-vessel capacity marina serves both commercial and recreational boaters.

Implications of Marine Transportation

The Town serves as a gateway for ferry transportation to the BC Lower Mainland, to the Gulf Islands, and to Anacortes in Washington State. A major marine accident, involving a large ferry, could demand support actions by the Town of Sidney, and may result in short-term effects on local businesses. All terminals and marinas are vulnerable to structure fire, severe weather, storm surge, and tsunami, and will ultimately be affected by sea level rise.

Air Transportation

The Town shares part of its western border with the Victoria International Airport, managed by the Victoria Airport Authority since 1997 on land leased from Transport Canada. Flights often arrive and take-off directly over the municipality. Direct flights serve locations throughout North America, Asia and Europe, with connections anywhere in the world. All runways are paved, and the longest measures 2,133 m.

Aircraft at YYJ

The COVID-19 pandemic exacted a toll on airport operations. The 2021 totals saw just under 674,000 passengers, an increase over 2020 but only 35 percent over pre-pandemic totals. Passenger traffic is increasing in 2022.

Although the safety record of air travel has been excellent in recent decades, there is always the possibility of a crash of a large aircraft in the community.

Figure 13. Number of Takeoffs and Landings by Aircraft Weight, 2021

Gross Take-Off Weight (kg)	Victoria (YYJ)		Vancouver (YVR)	
	Number	%	Number	%
4,000 and under	37,229	64.6	29,063	17.5
4,001 – 9,000	7,553	13.1	33,563	20.2
9,001 – 18,000	1,853	3.2	7,805	4.7
18,001 – 35,000	7,956	13.8	28,925	17.4
35,001 – 90,000	3,040	5.3	44,074	26.5
90,001 and higher	14	0.0	23,083	13.9
Total	**57,645**	**100.0**	**166,513**	**100.0**

Figure 13 shows that more than half of the itinerant flights from Victoria Airport involve small aircraft, under 4,000 kg gross take-off weight. By comparison, most aircraft at the Vancouver International Airport fall within the 18,000-90,000 kg weight categories.

The Boeing 737 max 8, with a maximum capacity of 175 passengers, is the largest scheduled aircraft currently using the Victoria International Airport. However, the future expansion of Runway 09-27 could allow the Boeing 766-300ER (350 passengers) and the Airbus A330 (400 passengers).

In other related flight operations, light seaplane aircraft may overfly Sidney on routes to and from Victoria Harbour.

Implications of Air Transportation

If the likelihood of air accident reflects the number of flights, Sidney would more likely experience a crash of a relatively light plane. However, a crash of a large aircraft carrying 175 passengers is possible and is reflected in current response plans.

Other Infrastructure

The Town of Sidney relies on other community facilities and services that could be considered "critical infrastructure."

Telecommunication Systems – Telus, Shaw, Rogers and other communication operators provide commercial telephone, cellular telephone, and high-speed Internet services in Sidney. In 2021, Telus installed a gigabit-enabled fibre optic network to increase wireless and Internet speeds in the region.

These systems are vital in meeting the communication needs of residents, businesses, and institutions. A major telecommunications tower sits immediately adjacent to the downtown core.

Natural Gas – FortisBC provides natural gas services to customers in Sidney by managing a gas trunk system, distribution services, gas service lines, and regular facilities. In a natural

Telecommunications Tower in Sidney

gas emergency, such as a major gas leak or explosion, FortisBC's responsibilities include providing information on the location of gas facilities, allocating detection equipment to determine the presence or absence of natural gas, and mobilizing response teams on a 24/7 basis to manage gas emergencies.

Solid Waste – Residents and businesses of the Town of Sidney are served by the Hartland Landfill, under the operation of Environmental Resource Management (ERM). The CRD handles solid waste disposal under British Columbia legislation and established the solid waste disposal service in 1973. In 2021, the ERM disposed of 166,150 tonnes of waste at Hartland Landfill, 8.1 percent more than the 2020 amount. Tonnage and per capita waste generation continues to rise in 2022. The landfill is expected to reach its current design capacity in 2049.

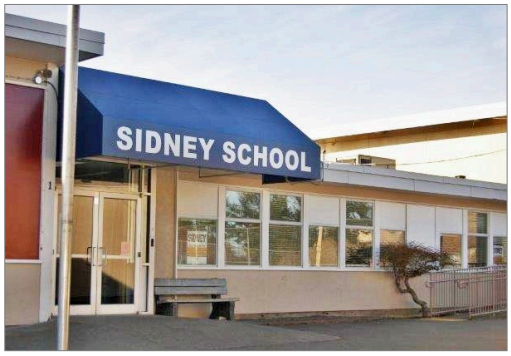
Emterra Vehicle

The CRD currently has no plan for coordinating the disposal of mixed-material debris generated by a major disaster in the Capital Region, such as a typhoon or an earthquake. The Town could help with debris management by developing a local plan that would identify sites for possible use as temporary waste handling facilities, estimating the volume of anticipated debris, and identifying priority routes for debris clearing.

2.3 Community Services

Schools

The Town of Sidney falls within the catchment area for School District No. 63 (Saanich). One public school is situated within Town boundaries. The Sidney Elementary School, on Henry Avenue, serves Kindergarten through Grade 5 students. The school enrolled 393 students for the 2022/2023 school year.



Sidney Elementary School

Although the gymnasium at the school was seismically upgraded about 20 years ago, the rest of the school is at high risk. In a December 2022 report, Sidney Elementary School was listed among 250 future priorities for seismic upgrading by the Province.

Responsibility for emergency preparedness at school rests with the School District 63 Board, and with the operators of independent daycares.

Other special occupancies include several independent daycare operations in Town, serving infants, toddlers, and preschool-age children.

Implications of Schools

Schools and daycares rank among the most vulnerable properties in Sidney due to the age of the students. Schools have multi-hazard emergency response plans that address staff and student safety.

Health Care Facilities

Health care facilities in Sidney include several health centres and medical clinics, as listed in Figure 14.

Figure 14. Health Care Facilities in Sidney	
Facility	**Address**
Associated Physicians	2425 Bevan Ave.
Shoreline Medical Centre, Clinic	2379 Bevan Ave.
Island Health Medical Laboratory	2357 James White Blvd.
LifeLabs Medical Laboratory	2475 Bevan Ave.
Ocean Pier Medical Clinic	2537 Beacon Ave.
Three Cedars MD	2425 Bevan Ave.

In addition, the Saanich Peninsula Hospital in nearby Saanichton provides in-patient surgical services through a 65-bed acute care unit.

The hospital includes a 143-bed long-term residential care unit where the average age is 86 years. The site includes medical imaging, medical laboratory, and Telehealth care.

Implications of Health Care Facilities

Health care professionals and facilities must be functional during major disasters to provide emergency care and ongoing public health services. All health care centres require business continuity plans.

First Responders

Professional first-responder organizations provide Sidney occupants and visitors with direct services.

Fire Department – The Sidney Volunteer Fire Department provides fire suppression, rescue, first responder emergency medical care, and specialized marina firefighting services.

Sidney Fire Tower Ladder Truck

The department currently includes 35 volunteers and 7 career personnel on staff, including the Fire Chief, Assistant Chief / Training Officer, the Fire Prevention Officer, and an Administrative Assistant / Emergency Management Coordinator. Fire apparatus now includes a new tower ladder truck to aid with evacuation from tall buildings.

The Town's Community Safety Building on Oakville Avenue holds the main fire hall and all fire apparatus. The building also accommodates the Town's Emergency Operations Centre (EOC), the Peninsula Emergency Measures Organization (PEMO), and BC Ambulance Service.

The Fire Department responds to emergency incidents, such as structure fires, motor vehicle accidents, and assists the BC Ambulance Service and the RCMP on request. In 2021, Sidney Fire responded to 886 calls for service, including structure fires, medical emergencies, motor vehicle accidents, and public assistance. The total calls in 2022 are expected to exceed 1,150.

The Town has arranged for mutual aid with Central Saanich and North Saanich for structure fire incidents, and with the Victoria International Airport for other fire emergencies.

Implications of First Responders

First responder organizations work together to reduce the risk of major emergency through coordinated response and recovery planning. Response capability could be impaired by the loss of personnel through such hazards as human disease and earthquake.

Public Works – The Sidney Public Works Department maintains the Town's infrastructure, including local government buildings, public utilities, and roadways.

The Public Works Department includes 28 regular staff and 4 auxiliary staff and operates from designated facilities at the Municipal Yard located on Ocean Avenue at Eighth Street.

Public Works plays a critical role in emergency response and disaster recovery by providing personnel and equipment for site incident command teams, and personnel for the Town's

Sidney Public Works Yard

Emergency Operations Centre. Public Works managers can call on mutual aid from other municipalities in the Capital Region when needed.

RCMP – The Sidney/North Saanich Detachment of the RCMP, located at 9895 Fourth Street, provides policing services for the community. This detachment also serves the District of North Saanich, four First Nations communities, Willis Point (within the CRD), and a Provincial area consisting of 55 islands and a 55 km section of international border with the USA.

Sidney/North Saanich RCMP Building

The Sidney/North Saanich Detachment includes 32 police officers and 9 civilian support staff. The Detachment includes 16 dedicated volunteers who contribute to home security checks, personal safety seminars, scooter safety training, and programs for local elementary school students.

Uniform officers are divided into four watches supplying a 24-hour, 7-days-a-week response to calls for service and emergencies. The RCMP offers services in municipal traffic control, school liaison/community policing, and crime investigation. The Detachment also leads the criminal investigation into terrorist attacks for national security law enforcement in Canada. The detachment responds to about 7,000 calls for service each year.

Ambulance Services – BC Emergency Health Services manages the Ambulance Service, providing emergency pre-hospital treatment and transportation by ambulance to the public and visitors in Sidney.

BC Ambulance Service in Sidney

The Ambulance Service is stationed within the Community Safety Building. BC Ambulance Service paramedics coordinate with Sidney Fire and may activate regional support in large multi-casualty incidents.

Peninsula Emergency Measures Organization (PEMO) – PEMO volunteers primarily support emergency response for the District of North Saanich, the District of Central Saanich, and the Town of Sidney. The organization also sustains response needs within the Capital Regional District. PEMO groups include the following:

- *Emergency Support Services (ESS)* meet the Town's legislated duties to provide lodging, food, clothing, and incidentals for those who have been evacuated from their homes and need support. ESS services can accommodate pets, when necessary. PEMO ESS currently has 13 active members.
- *Search and Rescue (SAR)* volunteers operate throughout the Capital Region, as needed, and may provide radio communications. Several members are trained in Rapid Building Damage Assessment and Light Urban Search and Rescue.
- *Neighbourhood Emergency Preparedness Program (NEPP)* relies on volunteers to supply information and guidance to individuals, families, small businesses, and neighbours in preparing for a disaster. This helps ensure individuals and their neighbours are prepared to aid each other in an emergency.
- *Communications* includes licensed amateur radio operators who train regularly and contribute to the Provincial Emergency Radio Communications Service (PERCS) under Emergency Management BC. They are available to help with emergency communications at the site level and within the EOC organization.

Sidney Emergency Management Program – In 2008, the Sidney Council empowered an Emergency Program Management Committee to set priorities for projects needed to advance public safety. The Town's emergency program also takes part in the Saanich Peninsula Alert system, designed to deliver critical and potentially life-saving information to residents and other registered community members.

The Town partners with the District of North Saanich and the District of Central Saanich under the umbrella of the Peninsula Emergency Measures Organization and participates with the Victoria International Airport and other municipalities in area emergency management within the Capital Region.

2.4 Economy

The Town of Sidney enjoys a diversified and well balanced economy. From the most recent census information, sales and service occupations represent a significant portion of Sidney employment, accounting for 28.6 percent of jobs in 2021. This was followed in the statistics by business, finance, and administration jobs at 18.8 percent, and trades, transport and equipment operators at 17.9 percent.

Small businesses dominate the Town's economic scene. About 74 percent of all business operations employ 10 people or fewer. Sidney also has nearly a dozen larger businesses with 150 employees or more. These include industrial, retail, and hotel corporations that represent a significant portion of the property taxes that help support Town public services.

Business Centres

Beacon Avenue holds the largest density of businesses in Town, with mostly retail, coffee shop, restaurant, and service-oriented operations. About 40 percent of the commercial space in the downtown core, approximately 104,800 sq m, fronts directly onto Beacon Avenue.

Beacon Avenue

Sidney's vibrant central business district and active industrial areas attract employees who live elsewhere on the Saanich Peninsula and throughout the Greater Victoria region.

Two formal industrial areas have developed in Sidney. The Harbour Road area focuses on offering marine services to local boaters.

The industrial area of the West Side, off the Patricia Bay Highway and next to the airport, includes manufacturing and warehouse services. Amazon, Inc., has recently opened a distribution centre with a total floor area of 50,730 sq m at Beacon Avenue West and Galaran Road.

In addition, a three-storey, 129-room hotel has been approved for a federal lot fronting Beacon Avenue West and Stirling Way.

Recent amendments to the Official Community Plan allow multi-storey rental housing north of Beacon Avenue in Sidney West.

Amazon Distribution Building

Emergencies that interrupt the tourism trade, such as a pandemic or earthquake, will directly affect a significant portion of Sidney businesses and their employees.

Interruption of transportation modes may affect supplies or deliveries for local manufacturers and retail outlets, as well.

COVID Effects on Economy

While the long-term effects of the COVID-19 pandemic on the Sidney economy are still unfolding, significant shifts are clear in at least three areas.

First, changes in shopping behavior will likely permanently alter retail operations, particularly the preference for online retail and e-commerce. Increased business reliance on electrical power and telecommunications introduces a new degree of vulnerability.

Second, the pandemic exposed the vulnerability of national and international product supply chains. Reducing these risks for essential items, such as foods and priority consumables, may provide opportunities for local or regional business development.

Third, the COVID-19 pandemic pushed growth in the gig economy, referring to the number of Canadians who participate in short-term contracts or freelance work. This movement emphasizes the importance of the electrical power supply and Internet services to Sidney's home businesses and local economy.

Implications of Economy

Small businesses are less resilient than larger ones. The increased adoption of technologies across Sidney businesses means greater dependence on electrical power and telecommunications. This represents a significant and growing vulnerability when such services may be disrupted. Even relatively minor emergencies could cause business interruption and closures over the long term.

A major disaster could disrupt the operations of the dozen or so large corporations active in the Town and threaten long-term economic well-being and the local tax base. Town response and recovery plans are in place to help businesses in the event of disaster.

3.0 HAZARDS

The Emergency Program Management Committee has identified 13 hazard types that could affect Sidney to an extent that might require significant support through the Emergency Operations Centre. These hazards are listed below.

Highest Risk	1. Atmospheric Hazards 2. Human Disease
Moderate Risk	3. Earthquake 4. Major Urban Fire 5. Road Transportation 6. Utility Failure 7. Water Encroachment
Lowest Risk	8. Air Transportation 9. Hazardous Materials 10. Marine Transportation 11. Structure Collapse 12. Terrorism 13. Tsunami
Not Likely to Require Significant Site Support	• Bomb Threat • Food Contamination • Landslide / Debris Flow • Lost Persons • Marine Oil Spill • Social Disturbance, School Violence • Volcanic Eruption • Wildland–Urban Interface Fire

In selecting these events for consideration, the Committee acknowledges the potential, however small, that other types of emergencies may demand EOC activation, depending on the circumstances at the time of the incident.

The following sections examine each of the hazards that may require site support by risk level to assess the relative risks to the community and to highlight opportunities for mitigation, emergency response, Town business continuity, and community recovery.

1. Atmospheric Hazards

Risk: High

A. Description

The general term "atmospheric hazard" includes the following conditions:

- Drought
- Fog
- Hail
- Heavy Snowfall and Blizzard
- Heavy Rain
- High Winds, Typhoon
- Ice Storm
- Lightning
- Temperature Extremes
- Wildfire Smoke

The Town of Sidney experiences a wide variety of weather-related situations that could directly impact humans and physical infrastructure. Examples include extreme heat or cold, heavy rainfall, deep snow and blizzards, ice storms, and windstorms. Residents have become familiar with the terms that signify potentially dangerous conditions, such as "heat dome," "atmospheric river," and "polar vortex."

While the Pacific Ocean moderates most weather extremes, it also brings *El Niño / La Niña* conditions that result in events that can impact the community. For example, a meandering polar north jet stream may trigger Arctic outbreak conditions that mean snow or extreme cold in the Capital Region.

Likelihood – Moisture-laden air from the tropics regularly arrives with westerly or south-westerly weather patterns. Occasional winds from the east can bring dry and hot air from the BC interior and Alberta, as well as smoke from distant wildfires. As the Town's 2022 Climate Action Plan highlights, the future includes increased chance of extreme heat, heavy rainfall, and drought for Sidney residents.

Consequences – Excess heat or cold can directly affect public health, as can pollutants from wildfire smoke. Severe winds, heavy snowfalls, and ice storms may cause temporary electrical power outages. Extreme weather events often impact roads and other infrastructure, leading to economic impacts.

B. Past Events

Oct 1962 – Typhoon Freda
Remnants of *Typhoon Freda* struck southern BC, causing 7 deaths and damages of more than $10 million. In Greater Victoria, winds reached sustained speeds of 90 km/h, with gusts to 145 km/h.

Dec 1982 – Windstorm
Winds of 93 km/h with gusts up to 118 km/h hit parts of Greater Victoria, snapping power poles and trees, and blocking roads. A powerful gust tipped four boathouses on end at a Sidney marina.

Dec 1996 – Heavy Snowfall
The "Pacific Storm of 1996" struck Sidney from December 22, 1996 to January 3, 1997, including a dump of 64.5 cm of snow in a single day. The entire southern region of BC was affected. Economic losses totaled about $200 million.

Sep 2020 – Wildfire Smoke
Wildfires in Interior BC and Washington State generated enough smoke to trigger air quality alerts for Greater Victoria residents. Readings on the Air Quality Health Index reached the highest risk level for several consecutive days.

Jun 2021 – Heat Dome
A record high of 39.4°C hit the Capital Region during this 5-day heat wave. The BC Coroner reported 619 heat-related deaths in BC between June 25 and July 1, including 24 in Greater Victoria. Most of the deceased were older adults with compromised health who lived alone.

Nov 2021 – Atmospheric River
Severe rainstorms flooded local roads and closed the Malahat Drive. The same storm system drowned BC's Lower Mainland, flooding much of the Fraser Valley, damaging highways and rail lines and interrupting the provincial supply chain.

Sidney

1. Atmospheric Hazards

C. Hazard Areas

Long-term climate characteristics are similar throughout the Saanich Peninsula. Adverse weather events affect all parts of Sidney and all population segments to some degree. Heavy rainfall can lead to localized impacts.

Road closures and utility outages due to severe weather could isolate specific neighbourhoods throughout the municipality. Severe weather significantly impacts the unhoused population.

The Beacon Avenue business district and Sidney West include several buildings with flat roofs that may be threatened by heavy snowfall.

Wakefield Manor

D. Vulnerabilities

An increase in the number of days with extreme heat will affect Sidney's aging population. Extreme heat can have a greater impact on seniors in multi-family buildings that are less likely to have air conditioning. The Town has developed cooling centres and systems to assist those suffering from heat effects. Respiratory illnesses may be aggravated by an increase in smoke from distant wildland fires.

Arterial roadways and Highway 17 could be temporarily closed due to severe weather, such as heavy snowfall, ice accumulation, or fallen trees and other debris. Vulnerable roads include Beacon Avenue, Resthaven, Fifth Street, and Lochside Drive.

Electrical power transmission lines that serve Sidney are vulnerable to high winds, ice storms, and heavy snow. Trees downed or damaged near electrical cables are frequent causes of power interruption. Roadway snow and debris can isolate some residential areas and businesses for several days.

E. Implications for Action

Hazard Mitigation

- Assess risks of extreme heat on residents of multi-family housing and advise building owners.
- Encourage building design and features that support resident health during extreme weather events, particularly extreme heat.
- Increase public awareness of climate change, its expected impacts, and how to prepare.

Emergency Response

- Promote neighbours-helping-neighbours through NEPP and the *Meet Your Street* Program.

Municipal Business Continuity

- Identify location of backup snow removal equipment.

Community Recovery

- Sidney BIA could organize downtown businesses to share sidewalk snow-clearing efforts.
- Engage community non-profit organizations and volunteers in disaster recovery planning.

2. Human Disease

Risk: High

A. Description

Emergencies caused by human diseases include a large array of parasitic, bacterial, and viral agents. Most notable among these threats are the respiratory viruses that transmit easily from person to person, such as high-mortality influenza, the Severe Acute Respiratory Syndrome (SARS) coronavirus, and the related virus that caused the COVID-19 pandemic. Medical experts warn that the COVID virus may continue to mutate into a more dangerous disease in the coming years.

Water-borne diseases regularly affect urban areas throughout North America, such as the parasite *Giardia lamblia*. The risk for disease outbreaks is greater following natural disasters where drinking water can be contaminated. Food-borne disease outbreaks, such as those caused by *Salmonella enterica* or *Escherichia coli* bacteria, while dangerous to individuals, rarely result in full emergencies.

Likelihood – Canada experiences human disease outbreaks very rarely. When they occur, such events usually result from a failure in an urban potable water or wastewater system or procedure. The current worldwide COVID-19 pandemic presents an immediate and ongoing threat in Sidney. Climate change will likely increase the chance of infectious epidemics through world-wide travel connections.

Consequences – Direct health threats and economic obstacles tend to generate fear and social distancing that can adversely affect the mental health of individuals in ways that are difficult to observe and quantify. Health care services may be overwhelmed and unable to serve large numbers of expected patients. In addition health measures to prevent disease spread, such as closures of public spaces, may impose secondary impacts on the local economy.

B. Past Events

Oct 1918 – Influenza Pandemic
The "Spanish Flu" rapidly spread across the country along the railway lines, arriving in Vancouver in October, 1918. A second wave arrived in 1919. This pandemic resulted in 50,000 fatalities in Canada, and more than 2,000,000 Canadians became ill.

May 2000 – Walkerton, Ontario
An outbreak of *E. coli* in the public water supply hit Walkerton, Ontario, following failures in the water treatment process. Seven persons died from this disease, and more than 2,300 people suffered health problems.

Apr 2003 – SARS Outbreak
An outbreak of the SARS virus spread by air travelers from China to Canada, first affecting residents in Toronto, where 43 people died. Only 4 probable and 46 suspect cases were reported in BC, and all cases recovered.

Jun 2009 – H1N1 Pandemic Influenza
Public Health Agency of Canada received reports of a total of 40,185 laboratory-confirmed cases of H1N1, of which 8,678 people were hospitalized and 1,473 of these were admitted to intensive care. Overall, 428 Canadians died due to H1N1 illnesses.

2015-2017 – Zika Pandemic
An epidemic of Zika fever spread from Brazil to other parts of South and Central America, eventually appearing in the USA. In Canada to date, 558 zika cases have been reported, mostly due to travel to affected countries. Risks are low currently.

Mar 2020 – COVID-19 Pandemic
Canada reported its first COVID-19 fatality at a senior care home in North Vancouver on March 8. By March 20, the Prime Minister of Canada had advised all Canadians abroad to return home. To date, officials report more than 390,000 cases and 4,680 deaths in BC with COVID-19 as a contributing factor.

Sidney

2. Human Disease

C. Hazard Areas

For respiratory diseases, high-hazard areas include those with dense concentrations of people. In Sidney, these include a few facilities for public gatherings, such as the Mary Winspear Centre. The Victoria International Airport may become a point of respiratory disease, such as COVID variants, transmission from other countries.

Most residents draw daily potable water from a common source and, therefore, would be affected by contamination of the CRD water system. Few facilities serve food to large gatherings of people.

Mary Winspear Centre

D. Vulnerabilities

Populations of special concern for the transmission of human diseases in Sidney include the frail elderly in the community. More than 3,100 residents in Sidney have reached the age of 75. Vulnerable residents include those in local homes for the elderly.

Children may also suffer more from illness than adults because of under-developed immune systems. Sidney residents include 1,090 children under the age of 15. Schools can be particularly vulnerable during outbreaks of communicable diseases.

Municipal staff members who deliver essential services are also vulnerable to disease. For example, the Town of Sidney Fire Department includes 35 volunteer firefighters and 7 career personnel. If a substantial percentage became ill, fire services in the community could be affected. The same holds true for Public Works, Parks, and other municipal personnel, as well as the RCMP and BC Ambulance Service.

E. Implications for Action

Hazard Mitigation

- Promote annual vaccinations among municipal staff, residents and businesses.

Emergency Response

- Update the Town's Pandemic Plan to include learnings and recommendations from COVID-19.
- Hold table-top exercises with the Saanich Peninsula Hospital, homes for the elderly, and the elementary school to coordinate response plans.
- Develop roles and responsibilities among faith-based organizations and others to support health and emergency care within the community during a disease outbreak.
- Deliver NEPP and Meet Your Street presentations to promote support among neighbours.

Community Recovery

- Advance plans for disaster recovery with Town partners.

3. Earthquake

Risk: Moderate

A. Description

Sidney may experience three types of seismic activity. A *crustal* earthquake typically occurs at a depth less than 30 km and lasts less than a minute. A *sub-crustal* earthquake can occur as deep as 80 km below the surface, causing less than a minute of shaking with few aftershocks.

The third type is the *subduction* earthquake (called "The Big One") caused when the margin of the North America Plate becomes unstuck and slides over the Juan de Fuca Plate, as in Figure 15.

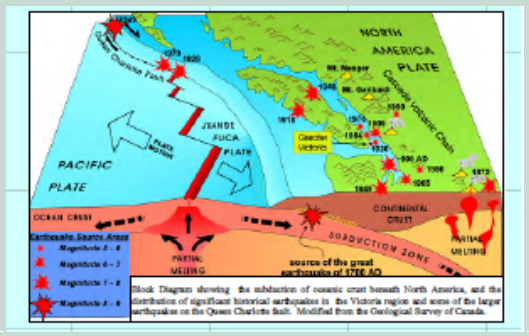


Figure 15. Location of Juan de Fuca Plate
Source: BC Geological Survey Branch

Likelihood – A large subduction earthquake occurs roughly every 430 years near Victoria, but this can extend plus or minus 160 years. Such an earthquake off the shore of Vancouver Island last occurred in the year 1700. Scientists estimate that the combined likelihood of all three seismic types suggests a 30 percent chance of an earthquake strong enough to cause structural damage within the next 50 years.

Consequences – Most severe impacts from an earthquake are caused by prolonged shaking, such as in a subduction earthquake. Ground shaking that persists for several minutes and aftershocks can directly damage structures over a large area, including residential buildings, commercial shops, schools, roadways, water lines, electrical power transmission, and other utilities. Structural fires and the release of hazardous materials are common secondary events following a severe earthquake.

B. Past Events

Jan 1700 – Cascadia Earthquake
On January 26, Vancouver Island was hit by a major subduction zone earthquake measuring between 8.7 and 9.2 on the Richter Scale. The length of the fault rupture was about 1,000 km, and it triggered a massive tsunami.

Jun 1946 – Courtenay Earthquake
A major magnitude 7.3 earthquake struck Vancouver Island on June 23. This earthquake caused extensive damage along the east coast of Vancouver Island, including impacts to rail lines, buildings, and schools.

Feb 2001 – Nisqually Earthquake
On February 28, a major earthquake with a magnitude of 6.8 struck 20 km northeast of Olympia, Washington. Extensive damage occurred in the State of Washington. No injuries were reported in BC.

Feb 2011 – Christchurch Earthquake
On February 22, a magnitude 6.3 earthquake killed 185 people and injured several thousand in Christchurch, New Zealand. The central business district remained closed for more than two years.

Mar 2011 – Tohoku Earthquake and Tsunami
In Japan's powerful earthquake and tsunami, nearly 20,000 people died and 400,000 buildings either collapsed completely or suffered severe damage. The combined earthquake and tsunami generated an estimated 25 million tonnes of debris in Japan alone.

Oct 2012 – Haida Gwaii Earthquake
A major 7.7 Mw earthquake in the Haida Gwaii region on October 27 was felt across much of north-central BC, including Haida Gwaii, Prince Rupert, Quesnel, and Houston. There were no reports of damage.

Sidney

3. Earthquake

C. Hazard Areas

The soils throughout the Town's jurisdiction have not been characterized in terms of likelihood of amplification, liquefaction or subsidence.

Structural fires and the release of hazardous materials are common secondary events following an earthquake, especially where natural gas lines and industrial operations provide ready fuels. Susceptible areas in Sidney include the McDonald Park Road industrial area.

Old Post Office

D. Vulnerabilities

Community elements that are most vulnerable in seismic events include high-density buildings, especially older structures that have not been retrofitted for earthquake protection.

Critical utilities are also vulnerable to earthquake damage, with consequent impacts to the community. These include:

- Electrical power and telephone
- Water services, including reservoirs
- Sewer services
- Natural gas pipelines
- Roads, ferry terminal, pedestrian bridges

Even with seismic improvements in the CRD water transmission system, the Town still may be required to distribute water after a disaster. Repairs to an earthquake-damaged infrastructure could take weeks or months.

E. Implications for Action

Hazard Mitigation

- Advise residents of seismic mitigation, such as securing interior furnishings.
- Secure furnishings in municipal buildings against seismic shaking.
- Assess seismic risks to the Town's potable water system.

Emergency Response

- Identify and train personnel and volunteers in Rapid Damage Assessment.

Municipal Business Continuity

- Set priorities for road network debris clearing and reconstruction following a major disaster.
- Practice key elements of the Sidney Business Continuity Plan in table-top exercises.
- Ensure all Sidney staff members have home emergency kits and plans.

Community Recovery

- Work with BIA to encourage business continuity planning and mutual assistance, including among operators of critical infrastructure.
- Prepare a Debris Management Plan for the Town, working with regional partners.

4. Major Urban Fire

Risk: Moderate

A. Description

The threat of structure fire in Sidney buildings ranks among the most dangerous types of emergencies. Although severe fires are rare with today's fire prevention and suppression measures, fire in a residential, commercial, institutional, or industrial building could result in catastrophic impacts, especially among high-density occupancies, such as schools, hotels, condos, and apartment buildings.

Fire ignition is commonly caused by faulty electrical wiring, improper use of smoking materials, and industrial activity, such as welding. Fire may spread rapidly due to the types of materials used in construction, building design, and access to oxygen sources. Smoke often presents an immediate threat to occupants and radiant heat may block exits and cause direct injury.

Likelihood – In 2021, the Sidney Volunteer Fire Department responded to 886 calls for service, including structure fires. Due to fire prevention efforts, the number of structure fires in Canada have decreased in past decades.

Consequences – Smoke from any fire is toxic and poses a danger to occupants. Persons at risk may be advised to evacuate or shelter-in-place, depending on the circumstances. A fire at an industrial building with dangerous goods would release highly toxic smoke and gases and may require the evacuation of the surrounding neighbourhood and temporary closure of some roadways. Fire damage to some residential units can require immediate care and shelter of residents through the Sidney Emergency Program.

B. Past Events

Jan 1996 – Fire in Care Home
About 120 bed-ridden residents were rescued from a burning extended care home in Duncan on Vancouver Island.

Nov 2001 – School Evacuation
On November 6, a fire burning in a nearby industrial area forced an evacuation of Fairview Junior High School and Roi Daniels Elementary in Calgary. Advanced planning allowed more than 800 students and staff to move to safety within 30 minutes.

Jul 2011 – Fire at Local Pub and Restaurant
Fire engulfed the Blue Peter Pub & Restaurant in the 2200 block of Harbour Road in Sidney after an early morning fire. The structure was destroyed, affecting two local businesses.

Nov 2017 – Fire at Nursing Home
Fire at an assisted living home in Pennsylvania killed 4 residents, injured at least 20 others, and forced more than 140 residents and staff to evacuate.

Jun 2020 – Major Fire at Amazon Warehouse
A three-alarm blaze hit an Amazon Distribution Center in Redlands, California, while about 40 employees worked inside. No one was hurt in the fire, but observers reported large flames and towers of black smoke.

Feb 2021 – Fire at Sidney Residence
A persistent structure fire at a Sidney residence produced heavy smoke and flames. Responders called for support from North Saanich and Central Saanich Fire. No injuries were reported.

Siddall Rd Fire

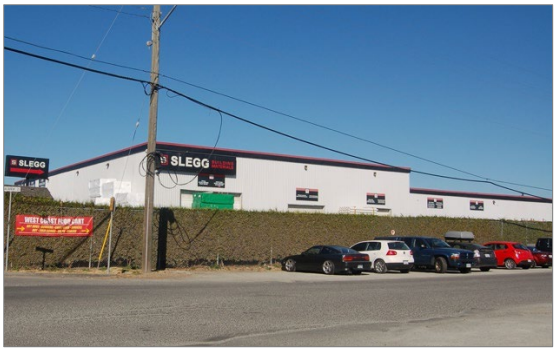
Sidney

4. Major Urban Fire

C. Hazard Areas

Major fires are more likely to occur in the built-up neighbourhoods of Sidney, including the Beacon Avenue business district.

A fire in the West Side industrial area near McDonald Park Road would likely generate the release of highly toxic smoke and gases and may require the evacuation of the surrounding neighbourhood.



Slegg Lumber in Sidney West

The recent addition of more 3-to-5 storey buildings in the Town challenge fire suppression teams. Structure fire is a concern for illegal and non-conforming suites in West Sidney, including the MacDonald Park Road area. Large commercial operations in the West Side, such as the new Amazon centre and hotel, present new risks for major urban fire.

D. Vulnerabilities

Some elements of the Sidney community are more vulnerable to fire than others. Structural fires in high density buildings in the community, such as the SHOAL Centre or condominium housing the elderly, would present immediate life-safety.

SHOAL Centre Home for the Elderly

A major fire at a boat marina may damage live-aboard vessels, requiring temporary accommodation.

Buildings with functioning smoke alarms and complete sprinkler protection typically result in low rates of fire casualties, require less fire department intervention to control fires, and can be contained to the room of origin.

E. Implications for Action

Emergency Response

- Make provisions for an additional night-time firefighter.

5. Road Transportation

Risk: Moderate

A. Description

Motor vehicle crashes can require coordinated emergency response when accidents involve large numbers of casualties in a single incident. Initial responders are typically overwhelmed, requiring support from multiple agencies, including Fire, RCMP, Public Works, and BC Ambulance, with EOC support. Such incidents tend to unfold suddenly and without warning.

Likelihood – The chance of mass casualty transportation incident in Sidney is low. Road incidents are more likely during severe weather, such as heavy snowfall and icy road conditions.

Consequences – Most occurrences result in property damages that require site clean up. Some crashes lead to major injuries or fatalities that require specialized health services. Bus accidents can result in dozens of injuries, simultaneously requiring on-site emergency care and overloading nearby medical facilities. Consequences can be severe if fire is involved. Motor vehicle crashes typically require localized response to fuel spills and may result in traffic congestion and detours. Following a mass casualty bus incident, it is common to see families and friends seeking access to the incident site to remember and honour lost loved ones.

B. Past Events

Nov 1991 – Bus Crash
A passenger vehicle struck a Greyhound bus on the Princeton Highway, killing 3 people.

Mar 1992 – Bus Accident
On March 12, a bus traveling south on Highway 99 toward Richmond crashed into a parked tractor-trailer that had broken down in the bus lane. Two people were killed and many were injured.

Mar 2003 – School Bus Topples in Snow
On March 9, 2003, a bus carrying Pacific Christian School's senior boy's basketball team crashed on the Trans-Canada Highway in Langley. In poor, snowing winter conditions, the bus went into a ditch and rolled onto its right side. There were no serious injuries.

Aug 2014 – Tour Bus Crash
On August 27, 43 people were injured, several critically, in a tour bus crash on the Coquihalla Highway, 30 kilometres south of Merritt, BC. The bus was on a tour with passengers from Hong Kong, China, Taiwan, and other locations. The highway was closed while air ambulances landed on the roadway.

Apr 2018 – Humboldt Broncos Crash
Sixteen people were killed and 13 injured when a bus carrying a sports team was struck by a semi-trailer truck on a remote highway in Saskatchewan.

Sep 2019 – Bus Crash *en route* to Bamfield
Two were killed and 17 injured when a bus carrying UVic students to the Marine Sciences Centre rolled over after running off the road. Risk factors included the meeting of 2 vehicles at a narrow point in the roadway.

Bamfield Bus Source: CBC News

Sidney

5. Road Transportation

C. Hazard Areas

Sidney is served by 54 kms of local roads. Some of the more significant local roads include:

- Beacon Avenue
- Resthaven Drive
- Fifth Street
- Lochside Drive
- Pat Bay Highway

Known bus routes in the community include Highway 17, which accommodates transit buses, school buses, and tourist buses for the region.

BC Transit Bus in Sidney

In addition, significant bus traffic is noted on the roads into Sidney, including Beacon Avenue.

D. Vulnerabilities

School-age children using bus transportation are among the most vulnerable groups affected by road accidents. Tourist buses can carry dozens of visitors who lack English as their first language, which could challenge first-responders and site support efforts to inform family members.

School Bus on Pat Bay Highway

Closure of Highway 17 for a substantial time due to a mass-casualty vehicle accident would challenge residents and business owners in the community.

E. Implications for Action

Hazard Mitigation

- Assess the safety hazards and potential for risk mitigation along bus routes in Sidney.

Emergency Response

- Conduct a practice exercise using a mass casualty bus accident scenario to include Fire, RCMP, Ambulance, and Public Works.

6. Utility Failure

Risk: Moderate

A. Description

Utilities include a variety of infrastructure-based services that support community standards of living. Possible utility failures include:

Power Failure – Public safety is threatened when the community experiences prolonged outages or when power is lost when ambient temperatures are extremely high or low.

Communications Failure – Windstorms, ice storms, earthquakes, and system failures can lead to loss of the communications infrastructure, a necessity in today's world.

Fuel Shortage – Fuels include natural gas and fuel oil, which are subject to shortages for various reasons. Fuels are essential for heating, cooking, and other appliances.

Water System Failure – Interruption of potable water can occur due to many factors, including contamination of source waters, turbidity, broken water main, pump failure, or power failure. Water outages can affect the health of Sidney residents and lead to economic impacts.

Sewer System Failure – As with potable water, most of Sidney depends on sewer systems. Prolonged outages could lead to health impacts and business interruption.

Solid Waste System Failure – Solid waste disposal services managed through the Capital Regional District are subject to failure due to strike, earthquake, fire, and other causes.

Likelihood – Power outages are the most likely type of utility failure. They can be caused by heavy winds, ice storms, snowstorms, fallen trees or other debris, and vehicle impacts. All other utilities may infrequently fail at times due to maintenance issues or accident.

Consequences – Depending on the type and duration of infrastructure affected, utility failure could result in threats to human life, immediate economic impacts, and environmental damage. Power failure is especially dangerous in sub-zero conditions or extreme heat where lives depend on temperature controls.

B. Past Events

Feb 2011 – Sewer System Damage
The Christchurch earthquake crippled the wastewater treatment plant serving the community. At one point, about 40 million litres a day of raw sewage leaked from broken pipes.

Nov 2014 – Windstorm Cuts Power
Violent winds knocked trees onto power lines on the Saanich Peninsula and elsewhere on southern Vancouver Island, cutting power to thousands of homes and businesses, including the airport.

Feb 2021 – Texas Cold Freezes Power Grid
More than 4.5 million homes and businesses in Texas State caused by severe winter storms. Nearly 150 residents died from hypothermia and frostbite, mostly people aged 60 years or older. Carbon monoxide poisoning caused another 19 deaths.

Sep 2022 – Wildfire Cuts Power Supply
A wildfire 15 kms away knocked out the main power grid serving Jasper, Alberta. The town reverted to backup generators to service critical infrastructure such as the wastewater treatment plant and hospital.

Sidney

6. Utility Failure

C. Hazard Areas

Water supply systems represent a combination of CRD collection and treatment, and municipal delivery. The water system in the CRD is particularly exposed to risk from earthquakes in the region. The CRD is currently engaged in a Post Disaster Emergency Water Supply and Supply System Vulnerability Assessment Project.

Similarly, sewer sanitation systems are underground and may be affected by shaking, subsidence, and liquefaction caused by earthquake.

Sidney receives transmitted power via several lines managed by BC Hydro. Power outages can be caused by heavy winds, ice storms, snowstorms, falling trees or other debris, vehicle impacts, and earthquakes.

Nearly the entire Sidney community receives natural gas via FortisBC Gas, Ltd., the only pipeline gas system available in the community. Interruptions of piped natural gas are most often caused by digging during building or road construction.

D. Vulnerabilities

The health care facilities, medical clinics, and elderly care facilities rely on water, sewer, power, and communications for operation. A prolonged power outage at a time of extreme heat would threaten the vulnerable. A prolonged outage during extreme cold spells could result in frozen and broken interior water pipes.

Institutions are among the community features most likely to be affected by utility failure. Schools will likely to be closed without access to electricity or water. Power and water interruptions can cause businesses to close temporarily, and result in economic hardships for business owners and employees.

Water Line Repair

Prolonged communication failures are likely to impact sales for Sidney businesses, including home-based business sector. As a result, economic impacts may be immediate and widely spread.

E. Implications for Action

Hazard Mitigation

- Continue to replace water mains by priority to improve fire suppression flows, seismic resilience.

Emergency Response

- Ensure critical infrastructure operators have emergency response and business continuity plans.
- Assemble parts and equipment that would speed Town water system repair following damage.
- Develop a Town Disaster Water Supply Plan, in consultation with CRD and neighbours.

Municipal Business Continuity

- Evaluate the resiliency of infrastructure to disaster, such as seismic and extreme weather.
- Investigate the use of wells and other emergency water supply options.
- Prepare a Public Works plan for emergency allocation of generators to sewer pump stations.

7. Water Encroachment

Risk: Moderate

A. Description

While no areas of Sidney have been formally designated as floodplains, some locations are subject to water encroachment due to heavy rainfall, rapid snow melt, or storm surge. Collapse of the small dam at Reay Creek could also lead to water encroachment for a few properties.

Likelihood – In Sidney, most localized flooding is caused by excessive rainfall, which occurs every few years during atmospheric river weather systems. Storm drains, drainage ditches, or natural drainage channels can become blocked by sediment, debris, or snow to aggravate water damage. Sidney is also subject to storm surge, an abnormal rise in water levels attributed to air pressure differences during intense storms. Sea levels around the world are expected to rise over the next 100 years, leading to an increase in the number of water encroachment emergencies in coastal cities, including Sidney.

Consequences – The degree of water encroachment depends on the size of the catchment area, as well as the intensity of individual meteorological events. Storm surges often result in high waves and flooding if concurrent with a high tide. All coastal areas are likely to be impacted by Sea Level Rise.

B. Past Events

Nov 1990 – Flooding from Rainstorm
On November 23, local flooding in the Greater Victoria area due to heavy rainfall was aggravated by melting snow. Losses were estimated at $4.6 million.

Jan 1997 – Flooding Due to Snow Melt
In January, 1997, Sidney experienced flooding problems due the snow melt following the 1996 snowstorm.

Oct 2003 – Pineapple Express
On October 16, another Pineapple Express brought record rainfall to the Victoria area. The Region received 169 mm of rain in a 24-hour period, the rainiest day on record to that date.

Nov 2006 – Southern Island Rainstorm
On November 3, a one-day storm brought intense rain to southern Vancouver Island. The amounts of precipitation varied widely. On November 6, downtown Victoria recorded 39 mm of rain, with 70 mm at UVic, 88 mm at Hartland Landfill, and 107 mm in Esquimalt.

Mar 2012 – Storm Surge
High tides and storm conditions led to flooding at First Street and Second Street in Sidney.

2012 Storm Surge in Sidney

Jan 2013 – Heavy Rain and High Tide
Heavy rain combined with high tides drenched parts of Sidney and flooded ocean-front streets near Tulista Park.

Oct 2017 – Sea Level Rise Hits Miami
Downtown Miami was inundated by a storm surge on October 17 in an example of Sea Level Rise impacts. Ocean water flooded onto streets, lawns, and parking lots.

Sidney

7. Water Encroachment

C. Hazard Areas

Coastal areas are prone to water encroachment from a combination of heavy rainfall, high water table or high tide, and storm surge. Past water intrusion events have been noted in the Ocean Avenue area, where high tides and heavy rain have caused flooding.

With the forecasted Sea Level Rise, ocean levels near Sidney are expected to rise 0.8 m in the next 50 years. The hazard areas for water encroachment are similar to the tsunami hazard zones. These include shoreline frontage with structures located below 4 m elevation.

Bridge at Resthaven Island

D. Vulnerabilities

Shoreline dwellings are most susceptible to damage from water encroachment. Points of vulnerability from water encroachment and Sea Level Rise include South Sidney, All Bay, Tsehum Harbour, Sidney sewage pump station, and the Sidney to Anacortes Ferry Terminal. Flooding may require residents to move to temporary housing.

Continuing effects of Sea Level Rise are likely to trigger more frequent and more intense storm activity in coming years.

Shoreline at All Bay

E. Implications for Action

Hazard Mitigation

- Educate shoreline residents and business owners on options available to them for property protection from tsunami, storm surge, and Sea Level Rise.

Emergency Response

- Help shoreline occupants plan to respond to storm surges and tsunami.
- Promote neighbours-helping-neighbours in extreme water-encroachment events.

Municipal Business Continuity

- Develop a response plan to protect municipal infrastructure threatened by storm surge.

8. Air Transportation

Risk: Low

A. Description

An aircraft crash creates the potential for multiple explosions, intense fire, injuries, fatalities, and the destruction of property at and next to the impact point. The location of the crash has a significant influence on the number of injured among people on the ground.

Likelihood – Air travel has become one of the safest modes of transportation in Canada and the world. In 2020, the Canadian Transportation Safety Board recorded a total of 170 air transportation accidents, 25 percent fewer than in 2019 and 32 percent below the average for the prior 10 years.

Consequences – Crashes of commercial planes often result in injury or death. An aircraft crash may trigger a major structural fire, causing damage to property and resources, and possible evacuation of residents. In addition to the risk of aircraft damage and injury to passengers, an aircraft crash may have other effects on Sidney residents. Due to the emotional trauma associated with such a sudden catastrophe, the need for mental health support may include survivors, family members, friends, nearby residents, and emergency responders.

B. Past Events

Oct 1995 – Aircraft Overshoots Runway
On October 19, a Canadian Airlines DC-10 skidded off the end of the runway at the Vancouver International Airport when the pilot aborted take-off for Taiwan with 242 passengers on board. Passengers were evacuated using inflatable chutes. The runway remained closed for 2 days.

Sep 1998 – Crash of Swiss Air 111
On September 2, this commercial aircraft crashed into the Atlantic Ocean southwest of Halifax International Airport, Nova Scotia. The crash site was 8 km from shore between the fishing and tourist communities of Peggy's Cove and Bayswater. All 229 on board were killed.

Dec 2005 – Chicago Crash into Roadway
On December 8, Southwest Airlines Flight 1248, a 737-700, slid off the runway during a heavy snowstorm while landing with minimum runway visibility at Chicago's Midway Airport. The aircraft left the airport boundaries and slid into a nearby intersection, hitting 2 cars, killing 1 passenger, and injuring 11 others.

Chicago Aircraft Crash

Mar 2015 – Air Canada Crash in Halifax
The crash landing of Air Canada Flight AC624 at Stanfield International Airport injured 25 persons after the aircraft skidded off the runway. The Airbus A320 completed a flight from Toronto with 132 passengers and 5 crew members.

Dec 2017, West Wind Crash in Saskatchewan
A flight by West Wind Aviation carrying 22 passengers and 3 crew crashed shortly after takeoff from Fond-du-Lac, Saskatchewan. All occupants survived, although several passengers and one crew member sustained serious injuries.

Sidney

8. Air Transportation

C. Hazard Areas

Due to the proximity of the Victoria International Airport, the Town of Sidney is more exposed to the risk of crash involving large aircraft than most communities on the Saanich Peninsula.

Commercial Passenger Aircraft Overfly Sidney

Sidney neighbourhoods more at risk from air crash include the neighbourhoods next to and in the path of the runways at Victoria International Airport.

The main runway, 09-27, directs flights over the Orchard neighbourhood between Oakville Avenue and Ocean Avenue. The flight path for Runway 03-21 includes the industrial area on McDonald Park Road in Sidney West.

D. Vulnerabilities

Aircraft accidents typically result in injury and death among many people. In addition to residents, workers, and visitors in or near the impact area, a crash of a large plane could damage critical infrastructure, such as vital roadways.

Motorists on Highway 17 could also be affected by aircraft crash, either directly or by traffic congestion for extended periods.

These effects may overwhelm the local healthcare system, such as paramedic and ambulance services, emergency and acute care services in hospitals, and coroner services and morgues.

Aircraft at YYJ

E. Implications for Action

Emergency Response

- Response plans should include emergency procedures for future large-capacity (e.g., 400-passenger) aircraft.

Community Recovery

- Anticipate in response plans the arrival of family and friends of air crash victims. Plan to accommodate their needs.

9. Hazardous Materials

Risk: Low

A. Description

A hazardous material is any substance that may be explosive, flammable, poisonous, corrosive, reactive, or radioactive. A hazardous materials incident involves the uncontrolled release of a dangerous substance during transportation, storage, or use. Effects from hazardous materials range from road obstructions to widespread evacuation, injury, and death.

Five major transportation modes present risk of hazardous material spills in Sidney: 1) Road transport, 2) Pipeline transport, 3) Fixed facilities, 4) Marine transport, and 5) Air transport.

Likelihood – Although uncommon, there is a chance of hazardous material release in the community. Rapid emergency response plays a vital role in minimizing the likelihood of injury or damage. Solid materials are relatively easy to control unless fire is involved. Liquid hazardous materials seek the lowest level, such as storm drains, and can spread to other locations.

The most dangerous types of hazardous materials include toxic gases, such as ammonia and chlorine, that are heavier than air, can travel with the wind, and can cause harm at very low concentrations. Flammable gases, such as propane and natural gas, can cause "fireball" situations if ignited in large volumes.

Consequences – Consequences from hazardous material release range from roadway disruption to widespread evacuation, injury, and death. Spilled petroleum products or marine oil spill, such as heating fuel oil, can result in widespread damage to the environment, including wetlands, soils, surfaces waters, and aquifers.

B. Past Events

Jan 1989 – Toxic Leak from Tanker Truck
In January, families in Quesnel were forced from their homes when sodium hydrosulphide leaked from a tanker-truck.

May 1994 – Toxic Gas Release
An explosion at a Port Moody resin-making factory released 10,000 kg of a potentially toxic chemical into the air. Fortunately, wind conditions dispersed the gas and smoke quickly into the atmosphere.

Aug 1996 – Toxic Gas at Factory
On August 4, a toxic gas hazard and risk of explosion was created at a Vancouver Plating Factory after caustic soda was added to a tank of trichloroethylene. Sixteen workers were hospitalized and 16 city blocks were on standby for evacuation.

Jun 2004 – Break in Natural Gas Line
A ruptured natural gas line caused the evacuation of about a hundred people from a commercial area in Fernie. Gas began pouring from the line when it was ruptured by a contractor mid-afternoon.

Jan 2014 – Natural Gas Line Explosion
On January 25, a pipeline explosion near Otterburne, Manitoba, left thousands without heat as temperatures dropped below -20°C. The natural gas outage affected 4,000 people in nearby communities.

Jun 2022 – Chemical Spill in Sidney West Side
At a temporary storage facility, a forklift accidently damaged a drum containing a hydrogen peroxide mixture, exposing one worker to toxic fumes. Response included Sidney Fire, the CRD Haz Mat Team, BC Ambulance, and an environmental control contractor. The worker was treated and released.

Sidney

9. Hazardous Materials

C. Hazard Areas

Road – A wide variety of hazardous substances are transported on Highway 17 from the SeaSpan barge terminal at Swartz Bay via truck. Sidney neighbourhoods within 1.0 km of the highway are at risk, although the chance of a dangerous incident is low.

Pipeline – FortisBC operates numerous natural gas transmission and delivery pipelines throughout the community. The greatest threat to pipeline safety involves excavation and construction activities at or near a pipeline right-of-way.

Fixed Facilities – Several commercial and industrial facilities in Sidney store and use hazardous materials, including industrial and commercial sites in McDonald Park Road area.

Marine – Sidney has marinas that serve hundreds of pleasure watercraft and fishing vessels, all of which carry petroleum fuel. Large tankers carry crude oil through the Strait of Georgia.

Air – Dangerous goods, including small quantities of radioactive substances, are sometimes carried by aircraft to and from the Victoria International Airport.

D. Vulnerabilities

High density occupancies are more vulnerable to toxic and flammable hazardous materials due to the potential number of people exposed. In Sidney, these include the McDonald Park Road area, businesses, and residential areas, homes for the elderly, and schools.

SeaStar Chemicals in Sidney

The shorelines and marine areas of Sidney are sensitive and highly valued by local and regional residents. Marine environments sensitive to spills of fuel, oil, and other chemicals include the entire Sidney shoreline along Haro Strait.

E. Implications for Action

Emergency Response

- Ensure high density occupancies near hazardous materials routes have planes for evacuation and shelter in place.
- Train RCMP personnel in Sidney's evacuation policies and procedures.
- Advise neighbourhoods with limited egress routes on individual preparedness.
- Consult EMBC on Town procedures to support response to marine oil spill.

Community Recovery

- Identify support agencies for consultation during environmental rehabilitation.

10. Marine Transportation

Risk: Low

A. Description

Marine accidents present a potential hazard in the waters adjacent to the community. Collision and grounding are the most frequent types of marine accident. Factors that may contribute to the risk of marine accidents include congestion and conflicts between multiple users in limited water ways, operator inexperience and/or intoxication, mechanical failure, and hazardous weather. Adverse conditions of high winds, rough waters, and poor visibility can threaten vessels operating near Sidney.

Likelihood – Fishing vessels, cargo ships, and barges represent the most frequent types of vessels involved in Canadian accidents in 2020. Passenger ferries accounted for 15 of the 254 accidents (6%) in Canada in that year.

Consequences – Collision, grounding, and mechanical failure involving watercraft can put passengers and crew members at risk, including physical injury and death. In some scenarios involving ferries, the Town could be expected to coordinate emergency care for thousands of passengers.

B. Past Events

Apr 1911 – The Sinking of the SS Iroquois
On April 10, the *Iroquois* foundered shortly after leaving Sidney in a southeast gale. In one violent gust, the Iroquois heeled over, the cargo shifted, the top separated from the bottom, and the ship sank before it could make Robert's Bay. Twenty-one people died, including 14 passengers.

Jul 1958 – Sidney Rescues Ferry Travellers
When striking workers halted all ferry runs between Vancouver Island and the Mainland, thousands of vehicles crowded Sidney, swamping the tiny village for five days with an estimated 7,000 travellers. Local residents and businesses spontaneously provided blankets, entertainment, fuel for vehicles, and even trips to nearby beaches.

Jun 2005 – Ferry Strikes Marina
On June 30, the Queen of Oak Bay lost power four minutes before she was to dock at the Horseshoe Bay terminal. The 139-metre ship slowly ran into the nearby Sewell's Marina, where she destroyed or damaged 22 pleasure craft. No casualties or injuries were reported.

Queen of Oak Bay Crash into Marina

Mar 2006 – Ferry Runs Aground, Sinks
The *Queen of the North* sank on March 22 after running aground on Gil Island in Wright Sound, 135 kilometres south of Prince Rupert. Two passengers are presumed to have drowned in the incident.

Oct 2021 – Cargo Ship Fire, Lost Containers
The *MV Zim Kingston* cargo ship lost 109 containers and suffered a fire following a severe storm off Vancouver Island. At least 2 containers carried hazardous materials; only 4 containers have been found to date.

Sidney

10. Marine Transportation

C. Hazard Areas

Washington State Ferries normally provides regular ferry service between Sidney and the San Juan Islands / Anacortes in Washington State, although the service is currently halted due to the COVID-19 pandemic. The *M/V Chelan*, with a capacity of 1,076 passengers and 144 vehicles, usually sails from Sidney twice daily in summer months.

M/V Chelan

Response to all marine incidents would be coordinated through the Joint Rescue Coordination Centre (JRCC) located in Victoria.

D. Vulnerabilities

Vulnerabilities to marine transportation accidents in Sidney include passengers of the *M/V Chelan*. In case of collision or grounding in Saanich Inlet, more than 1,000 passengers may need immediate shelter, food, and care.

Several Sidney businesses rely on regular BC Ferry services. Prolonged interruption of service at Swartz Bay may result in economic impacts.

Pleasure boaters make use of four large marinas, as well as several smaller facilities, located on the Sidney shoreline.

Van Isle Marina at Sidney

E. Implications for Action

Emergency Response

- Emergency plans should be in place to support Washington State Ferries in case of grounding or collision of the ferry. Response plans should include transporting ferry vessel passengers to temporary shelter.
- Review emergency response plans with Washington State Ferries.

Community Recovery

- Anticipate the arrival of family and friends of marine accident victims.

11. Structure Collapse

Risk: Low

A. Description

Structure collapse refers to any failure in the integrity of a designed building, walkway, or community infrastructure. Structure collapse may be caused by engineering or construction problems, metal fatigue, severe weather events, or changes to the load bearing capacity of the structure.

Likelihood – Although uncommon events, the collapse of structures may occur at any time. Factors that may contribute to structure collapse include building age, design, time of year, use levels, weather conditions, and seismic forces.

Consequences – When buildings collapse, there may be a significant number of injuries or fatalities, and fire may result. Such events may also cause damage to support infrastructure, such as gas lines, electricity, water, sewer, and telephone lines. The collapse or partial instability of taller buildings tend to threaten neighbouring structures, forcing evacuations.

B. Past Events

Apr 1988 – Food Store Collapse
The Metrotown Save-on-Foods roof collapsed during opening ceremonies, only minutes after Mayor Bill Copeland, who was presiding over the grand opening, directed the evacuation of about 1,000 people. There were no fatalities. Fifteen people were briefly hospitalized.

Nov 1992 – School Collapse
On November 12, a school roof at Cedar Drive elementary school in Port Coquitlam collapsed and destroyed one classroom and damaged another. Fortunately, the collapse occurred on a Sunday when no students were in the classroom.

Jan 1997 – Arena Collapse
On January 8, the 3,000 sq m Memorial Arena in Dawson Creek housed a hockey rink, permanent bleacher seating, and dressing areas. The entire roof structure collapsed within minutes on an unusually windy night, with less than the design snow load on the structure.

Dec 1996 – Snow Causes Collapse
As a result of heavy snowfall in December of 1996, some roofs and sundecks collapsed, and structural damage occurred to a few large buildings in the Greater Victoria area. Roofs caved in at James Bay Thrifty Foods, Panorama Leisure Centre, and Glen Meadows curling club. At the Capital City Yacht Club in North Saanich, the snow damaged boathouses, docks and watercraft; 31 boats sank, more than 30 were damaged and 62 berths were lost. The weight of the snow threatened to collapse the (now) Save-on building in Sidney, and damaged roofs in the Summergate neighbourhood.

Mar 2018 – Pedestrian Bridge Collapse
A pedestrian bridge in Miami killed 6 persons and disabled one when it collapsed due to structural failure. Investigations into the cause suggested deficient structural design.

Miami Pedestrian Bride Collapse

Sidney

11. Structure Collapse

C. Hazard Areas

Buildings of concern in Sidney include older structures that may have been poorly designed or maintained. Buildings in Sidney constructed before 1946 are more susceptible to structural damage in an earthquake. Historical sites that are subject to earthquake damage include the Old Post Office, an old part of Bodine Hall in Mary Winspear Centre, and the Cemetery.

Industrial buildings with tilt-up construction performed poorly in the 1989 Loma Prieta earthquake. Engineering guidelines call for firm connections between walls and roof sections.

Buildings with large roof spans, such as theatres and warehouses, are more susceptible to weather effects, such as heavy snow falls and high winds.

Sidney West Industry

D. Vulnerabilities

Buildings that are more vulnerable to collapse include structures where large numbers of people may be present at any given time. These include schools, entertainment facilities, and recreation complexes. Commercial and industrial buildings that collapse, such as in extreme snowfall, could injure and trap occupants.

The pedestrian overpasses of Highway 17 at Weiler and McDonald Park were constructed in 1972 and 1990, respectively, and could collapse during an earthquake, injuring pedestrians and blocking highway traffic.

Beacon Wharf and Bevan Fishing Pier can draw hundreds of pedestrians and spectators, such as during the Canada Day fireworks display. The Town has a plan for maintaining the fishing pier.

Pedestrian Bridge at McDonald Park Rd

E. Implications for Action

Hazard Mitigation

- Assess the condition of Beacon Wharf structural elements and plan next steps.
- Continue planned maintenance of Bevan Pier.

Emergency Response

- Provide instruction to first responders throughout the region in dealing with crush injuries.
- Response plans should identify available dog-search teams and heavy equipment.

12. Terrorism

Risk: Low

A. Description

Past incidents in BC highlight the fact that terrorism can occur anywhere. The number of both international and domestic terrorism events worldwide has increased in recent years. The Criminal Code of Canada defines terrorism as an act committed "*in whole or in part for a political, religious or ideological purpose, objective or cause*" with the intention of intimidating the public. Terrorism uses violence or the threat of harm to put the public, or any section of a community, in fear.

Terrorists intend to express hatred or to draw widespread attention to a specific cause and seek to gain the greatest publicity and awareness of their cause. Typical targets of terrorism include political, religious, or economic symbols.

Likelihood – Although the chance of terror attack in Canada is low compared to other countries, there remains a potential for domestic violence, especially related to causes such as animal rights, environmentalism, racism, and anti-government sentiments. Some small groups and individuals in Canada have encouraged, threatened, and supported acts of violence to advance their causes.

Consequences – Terrorists can disrupt society in several ways, such as using chemicals, biological agents, radioactive and nuclear materials, explosive devices, and modes of transportation. Each method results in characteristic impacts on individuals, locations, and structures within a community.

B. Past Events

1960 to 1963 – Sons of Freedom
The Sons of Freedom carried out dozens of arson and bomb attacks in BC in the 1960's. Targets included railways and power lines belonging to Kootenay Power, and the homes of orthodox Doukhobors.

Dec 1999 – Bomb Ferried from Victoria
On December 14, Ahmed Ressam drove a rental car onto the ferry from Victoria to Port Angeles, Washington. Ressam planned to detonate a bomb on or around January 1, 2000, at the Los Angeles International Airport. Customs Inspectors examining Ressam's rental car found explosives concealed in the spare tire well.

Jul 2013 – Pressure Cookers in Victoria
The RCMP arrested John Nuttall and Amanda Korody for planning to use pressure cookers to bomb the BC Legislature building during Canada Day festivities. The couple adopted a radical Islamist ideology.

Jan 2017 – Mosque Shooting, Quebec City
During evening prayer at the Islamic Cultural Centre mosque in Quebec City, one gunman killed 6 Muslim worshipers and injured 19, five critically.

Jun 2021 – Vehicle Ramming, Ontario
On June 6, a man used a pickup truck to run down a family of five in London, Ontario, killing four and injuring the fifth. The family is alleged to have been targeted because they were visibly Muslim.

Feb 2022 – Freedom Convoy Protest
Ottawa residents felt their community was under siege when hundreds of trucks and other heavy equipment blocked roads near the Parliament Buildings for weeks. The protest eventually spread to other Canadian cities, including Greater Victoria.

Freedom Convoy 2022 (credit: Naomi McKinney)

Sidney

12. Terrorism

C. Hazard Areas

It is difficult to predict which specific elements of the Sidney community may attract terrorist activity. Overall, past attacks have targeted critical infrastructure, religious symbols, faith-based buildings, and cyber systems.

Examples of critical infrastructure include:

- Energy and utilities (e.g. electrical power transmission and natural gas systems)
- Communications and information technology (e.g. telephone, broadcasting systems, internet-linked systems)
- Finance (e.g. banking institutions)
- Health care (e.g. health care facilities)
- Food (e.g. distribution and food industry)
- Water (e.g. drinking water management)
- Transportation (e.g. air, marine, road)
- Government (e.g. facilities and key sites)
- Manufacturing (e.g. chemical industry)

D. Vulnerabilities

Virtually all members of the Sidney community could be affected by terrorist action against critical infrastructure. Disruption of transportation and other infrastructure could directly affect commercial and industrial operations in the Sidney area

Terrorist actions could have a direct impact on the tourism in the community, as following the attacks in the USA on September 11, 2001.

Damage to critical infrastructure could lead to community-wide impacts.

Disruption of transportation, energy and communication systems could directly affect retail, institutional, and industrial operations. As with atmospheric hazard or human disease, the most vulnerable populations include the young and the elderly.

E. Implications for Action

Hazard Mitigation

- Assess the critical infrastructure serving Sidney for proper security measures.
- Develop pre-event plans that include protective measures for special events.

Emergency Response

- Work with RCMP on coordinated response to terrorism events and prepare plans.

13. Tsunami

Risk: Low

A. Description

A tsunami is caused by the sudden vertical displacement of large masses of water by an earthquake, volcanic eruption, or landslide. The impulse energy transforms into several water waves that could affect Sidney's east coast. A series of tsunami waves may arrive over several hours.

A subduction zone earthquake of magnitude 8 or 9 would likely generate a tsunami that could affect the Greater Victoria area. Ocean scientists predict it would take about 110 minutes for such a tsunami to reach Sidney, with a maximum water level of about 2.0 m above normal high water. Government officials may not be able to warn residents because electrical power and communication systems may be damaged by the earthquake. Town properties are protected by Vancouver Island and the Olympic Peninsula from other types of tsunamis produced elsewhere in the Pacific Ocean.

Likelihood – The main tsunami threat to Sidney and the rest of the Capital Region comes from a Cascadia Subduction Zone earthquake off Vancouver Island. Such major earthquakes occur roughly 430 years apart (plus or minus 160 years), with the last one occurring in the year 1700. Closer earthquakes may also generate tsunami, although unlikely.

Consequences – Within the foreshore area exposed to the series of tsunami waves, unprotected individuals could be swept away and drowned or injured by impact. All fixed facilities can expect to be inundated and damaged. Floating objects, such as boats and wharves, can be moved by strong water currents. Tsunamis typically generate massive amounts of debris.

B. Past Events

Mar 1964 – Port Alberni Tsunami
On March 27, a major earthquake in Alaska generated tsunami waves that hit Vancouver Island. The shape of Alberni Inlet amplified the 3 waves that struck the town between 12:20 am and 3:30 am on March 28. The event damaged 260 homes and resulted in economic losses of about $10 million.

Port Alberni Tsunami 1964

Dec 2004 – Indian Ocean Tsunami
On December 26, a major subsurface earthquake off Sumatra, Indonesia, generated a massive tsunami that killed more than 300,000 people in 14 countries. Wave energy affected all of the world's oceans.

Mar 2011 – Tsunami Hits Japan
The Tohoku earthquake that hit Japan on March 11 triggered powerful tsunami waves that caused 15,889 deaths, 6,152 injuries, and 2,601 people missing, as well as damage to more than 1 million buildings.

Jan 2018 – Tsunami Alert
A 7.9 magnitude earthquake in Alaska triggered a tsunami warning for British Columbia. The Town warned the public to avoid beaches and marine infrastructure. No damage was reported.

Jan 2022 – Tonga Volcano Tsunami
When the Hunga Tonga Hunga Ha'apai volcano erupted on January 15, tsunami waves flooded Tonga, about 70 km away. Tsunami impacts were felt as far as New Zealand and the USA.

Sidney

13. Tsunami

C. Hazard Areas

Natural Resources Canada recommends that Sidney residents living within 4 metres elevation above the normal highest tide plan for evacuation and other tsunami controls. This elevation allows for the potential run-up of tsunami waves on the shore, and accounts for other unknown factors.,

Local areas likely to be most affected by a tsunami include:

- Resthaven Island
- Harbour Road, including marinas
- Ocean Avenue
- Orchard Avenue
- Fifth Street

Two of the four hotels in downtown Sidney are in an area potential affected by tsunami.

D. Vulnerabilities

Tsunami risks are enhanced by regional use of beaches in the summer months, with some limited use in winter. Several parks in the area provide beach access.

- Beacon Park and Wharf
- Bevan Fishing Pier
- Eastview Park
- Lochside Waterfront Park
- Mermaid Park
- Oceanspray Park
- Resthaven Linear Park
- Resthaven Park
- Seaport Park
- Tulista Park
- Waterfront Walk

Beacon Wharf is occupied by a fish market, small bistro, and the terminal for the Sidney Island Ferry. Bevan Pier is a popular destination for walking and fishing.

E. Implications for Action

Hazard Mitigation

- Assess existing municipal infrastructure, such as sewer pumping stations, for tsunami protection.

Emergency Response

- Provide residents and business owners occupying parcels within the 4-m elevation tsunami planning zone with specific information on how to protect themselves.

Municipal Business Continuity

- Advance mitigation measures to protect sewer pumping stations from tsunami damage.

4.0 PRIORITY CONCERNS

One purpose of assessing community risks is to identify priorities for action. The Sidney Emergency Program Management Committee considers all risk information to focus on events most likely to result in large losses for the community.

Risk is considered the potential for loss and is made up of two components: Probability and consequence. The greater the probability of an adverse event, the greater the risk. Also, the larger the magnitude of potential consequences of an incident, the larger the risk.

Considering both components of risk becomes important when allocating time and effort for emergency management, which addresses hazard mitigation, emergency response, continuity of Town services, and disaster recovery. The highest priority is given to events that are both probable and can lead to severe consequences. Low priority events represent low probability occurrences of little consequence.

Charting Priority Hazards

With these considerations in mind, a review of the primary hazards presented above yields the hazards and priorities shown in Figure 16.

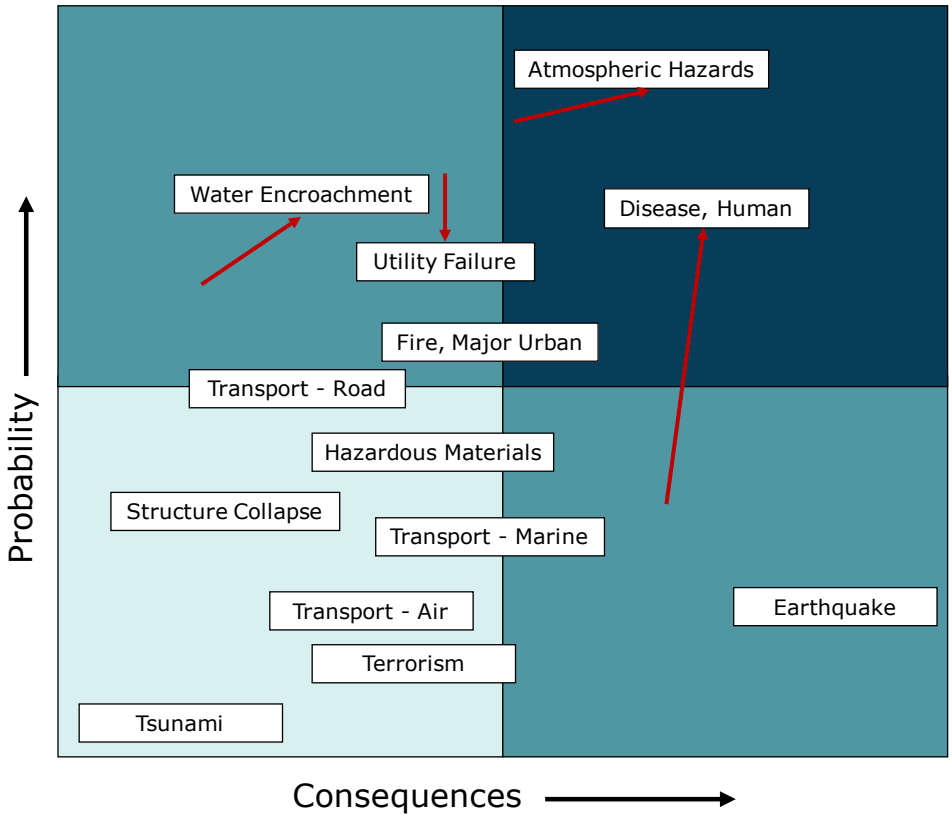


***Figure 16**. Priority Hazards for the Town of Sidney, 2022*

The red arrows in Figure 16 indicate how recent information has revised the risk estimation of certain hazards as compared with the last Sidney *Community Risk Assessment,* completed in 2018.

Other Hazards

Several hazards could threaten community elements in Sidney without requiring the activation of an EOC to provide site support. To complete the list of concerns, the following descriptions summarize other hazards that may require specific emergency response procedures.

Bomb Threat – While specific buildings or infrastructure in Sidney may fall victim to the threat of bombing, it is unlikely that such an event would require the activation of an Emergency Operation Centre. Sidney RCMP have procedures in place for responding to bomb threats.

Food Contamination – Although food service to large numbers of people occurs in Sidney, such as at the Sidney Street Market, it is unlikely that municipal emergency program will be called on for response. Island Health deals with threats of and responses to food contamination on the Peninsula.

Landslide / Debris Flow – There are only a few areas in Sidney where the slope exceeds 30 percent. No potential landslide or mudslide areas threaten residents in the community.

Lost Persons – The Victoria Region attracts many visitors, motorists, bus tourists, bicyclists, mariners, and outdoor enthusiasts each year. Occasionally, visitors are reported as overdue or missing. The consequences of lost persons are heightened when children are involved. Persons may become lost in the region while undertaking outdoor activities such as hiking, off-road cycling, boating, and swimming from remote beaches. Summer visitors who are not familiar with the region are most at risk. PEMO SAR volunteers are trained to respond to incidents of lost persons.

Marine Oil Spill – A major spill of petroleum products off the Sidney coastline would trigger response by a combination of federal, provincial and industrial organizations, including the Western Canada Marine Response Corporation. The Town may participate in keeping residents informed, but it is unlikely to activate the Sidney EOC.

Social Disturbance, School Violence – Events of social disturbance are considered rare in Sidney, although not impossible. Violent incidents in schools, such as shootings, are not expected to require site support from the Sidney Emergency Operations Centre. The RCMP have proper response procedures in place.

Volcanic Eruption – Volcanoes pose serious hazards to human populations in many parts of the world. In addition to destruction caused by ash fall and mudslides in the immediate vicinity of an erupting volcano, ash plumes injected into the atmosphere pose dangers to aircraft flying through them. There have been recent reports of volcanic activity on Mt. Baker, just south of the BC-Washington border. A major eruption might generate volcanic ash that could affect the region, but the likelihood is very low.

Wildland-Urban Interface Fire – The Town of Sidney contains no forested areas that could be classified as wildland-urban interface fire risks. However, both North Saanich and Central Saanich are subject to wildfires and may call on Sidney for fire support and care of evacuated residents and animals.

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