

APPENDIX F

RISK ASSESSMENT



TABLE OF CONTENTS

1	INTRODUCTION AND RATIONAL	1
2	SEISMIC TSUNAMI (INUNDATION)	1
3	SEISMIC TSUNAMI (VELOCITY)	4
4	SEISMIC TSUNAMI (INUNDATION) & 1 M SLR	6
5	SEISMIC TSUNAMI (VELOCITY) & 1 M SLR	8
6	RISK ASSESSMENT – ASSET LIST	10



1 INTRODUCTION AND RATIONAL

The City of Prince Rupert requested Northwest Hydraulic Consultants (NHC) to investigate the hazard and risk to Prince Rupert, Port Edward or the First Nations community of Metlakatla of tsunamis. This appendix includes the Risk Assessment tables created for this project.

Note that the risk assessment was undertaken only for the seismic-generated tsunamis. The lack of information on the probability of the landslide generated tsunami coupled with the belief of the project team (Dr. John J. Clague, Dr Brian Menounos) as to the likely extremely low probability of such events occurring precluded their inclusion in the risk assessment. A key recommendation of the report is that a future study to examine the geotechnical stability of the steep slopes be undertaken. Should this geotechnical work find a potential likelihood of a large volume landslide occurring, then it would be appropriate at that time to consider a risk assessment that could balance the probability of occurrence with the hazard.

2 SEISMIC TSUNAMI (INUNDATION)

Sheet #	Description	Hazard Exposure	Dhusion Multipart Hilty	Copiel Vulkerskiliku
Scale 1:5,000	1:5,000	Max. Inundation	Physical Vulnerability	Social vulnerability
1	Digby Island - North YPR runway	Maximum inundation of 1.0 m confined to the intertidal area along the west shoreline of Digby Island.	No facilities located along the west shoreline. YPR Infrastructure unaffected as the runway is at a higher elevation and a minimum distance of 200 m from the shoreline.	None. No public access to shore
2	Digby Island - South YPR runway	Maximum inundation of 1.0 m confined to the intertidal area along the west shoreline of Digby Island.	No facilities located along the west shoreline. YPR Infrastructure unaffected as the runway is at a higher elevation and a minimum distance of 200 m from the shoreline.	None. No public access to shore.
3	Fairview Container Terminal	Maximum inundation of 1.0 m on Sheet 3 along the west shoreline of Kaien Island and around the perimeter of the Fairview Container Terminal. Overtopping the deck of the Fairview Container Terminal is not anticipated. Similar depths would occur along the CN Rail line on Sheet 3, which follows the west shoreline of Kaien Island.	 Fairview Container Terminal (24 ha) is a dedicated intermodal (ship to rail) container terminal, nearly all constructed on fill. No inundation of the Terminal deck is anticipated. CN Rail is riprapped along the shoreline south and north of the Terminal. No inundation of the CN Rail mainline is anticipated, which has an elevation is 6.2 m at the south end of the Terminal and 5.8 m at the north end. The elevation of the intermodal yard tracks to the west is 6.3-6.4 m. The intermodal yard and industrial facilities east of the CN Rail line are beyond any hazard exposure area. The impact of the wave depth and velocity on docked ships should be considered. Mooring lines should be secured and all loading operations shut down. 	There are no residential dwellings subject to any hazard exposure. The Fairview Container Terminal work force should be evacuated to muster stations as a precautionary measure.
4	Ferry Terminals	Maximum inundation of 2.0 m on Sheet 4 along the shoreline of the Fairview Harbour Fishing Boat Docks north of Fairview Container Terminal. Depths of up to 1.0 m at the Airport Ferry Terminal and Alaska Ferry Terminal. Depths of up to 2.0 m along the shoreline north of the BC Ferries Terminal.	Fairview Harbour is a public marina with tie-up floats and open moorage to accommodate about 250 vessels. Fairview Harbour Fishing Boat Terminal may see inundation of up to 2.0 m. The floating breakwater will provide limited protection for small docked vessels. Mooring lines should be secured, loading operations shut down and the marina evacuated. CN Rail runs parallel to the shoreline at an elevation of 5.7 m by the BC Ferries Terminal, more than 3.0 m above the maximum projected inundation. Highway 16, industrial development east of the CN Rail line and residential areas north of the Ferry Terminals are outside any hazard exposure and are not vulnerable.	There are no residential dwellings subject to any hazard exposure. Fairview Marina and cargo loading terminal should be evacuated to designated muster stations. The three Ferry Terminals should be evacuated to designated muster stations.
5	Westview Wood Pellet Terminal	Maximum inundation of 2.0 m along the shoreline of Sheet 5, whose main feature is the Westview Wood Pellet Terminal. CN Rail runs parallel to the shoreline along Sheet 5.	Westview Wood Pellet Terminal is a purpose-built wood pellet export facility owned by Pinnacle Wood Energy Corp. The facility has an annual capacity to ship 1.25 million tonnes of wood pellets to world markets. Inundation of most infrastructure is not anticipated as the CN Rail line elevation is approximately 6.0 m. However the car dumper extends 3-4 m below the 4 pellet storage facilities. The facility contains a sump and all electrical services are above the terminal deck.Mooring lines should be secured and all loading operations shut down.	There are no residential dwellings subject to any hazard exposure. Westview Wood Pellet Terminal loading operations should be shut down and employees evacuated to designated muster station.



Sheet #	Description	Hazard Exposure		
Scale 1:5,000	1:5,000	Max. Inundation	Physical Vulnerability	
6	Downtown/ Cow Bay	Maximum inundation of 2.0 m along the Sheet 6 shoreline, which includes Rotary Waterfront Park, Metlakatla dock and ferry terminal, Northland Cruise Terminal, Cow Bay Road, Atlin Terminal, and West Coast Marine Response Corp. Additional run up of up to 2.0 m in the low lying area across George Hills Way (adjacent to Cow Bay Road).	Northland Cruise Terminal can accommodate vessels of up to 300 meters (960 ft.) in length and 15 meters (50 ft.) in draft, and a 4,000 square-foot terminal building provides Customs and Immigration services. The shoreline along the Northland Cruise Terminal is subject to inundation of up to 2.0 m. Cow Bay Marina has a floating breakwater with steel floatation. The marina floatation has treated timber surfaces anchored with steel pilings. The Western Canada Marine Response Corp occupies one arm of the Cow Bay Marina with over 10 vessels. Inundation would be up to 2.0 m along the waterfront at Cow Bay Marina and along Cow Bay Road. Mooring lines at the Cow Bay Marina, Metlakatla dock and Northland Cruise Terminal should be secured. Existing buildings extending on piers supported by wood pilings past the shoreline include commercial rental units and the Atlin Terminal, which contains the Prince Rupert Port Authority administrative complex.	Cow Bay is the Existing buildin industrial uses Rotary Waterf Cruise Termin occupants of s evacuated to o
7	Rushbrook/ George Hills Way	Maximum inundation of 2.0 m along the Sheet 7 shoreline, which includes industrial sites along George Hill Way and the Rushbrook Harbour. Maximum depth of 0.3 m in creek next to Dock Road between George Hills Way and Sixth Avenue East and slightly beyond.	Rushbrook Harbour has floating breakwater and a capacity of 400 vessels. The pier has wood pilings and a wood deck. The marina is subject to a maximum inundation of up to 2.0 m. The floating breakwater will provide limited protection. Mooring lines should be secured, all loading operations shut down and the Rushbrook Harbour evacuated.	There are no r exposure. Rushbrook Ha designated mu Industrial deve evacuated to o
8	Seal Cove	Maximum inundation of 2.0 m along the Sheet 8 shoreline. This area includes non-residential developments along Seal Cove Road and Bellis Road. Inundation on land beyond the intertidal area is not indicated.	Seal Cove Developments on Sheet 8 include the Prince Rupert Coast Guard facilities, the Lax-Kw'a Laams Ferry Terminal, Seal Cove float plane base and helijet facility, Seal Cove Fish Plant and the Prince Rupert Curling Club. Inundation is not projected to extend to any buildings. Access roads to these facilities extend away from and above any area subject to inundation. Inundation may affect marine facilities.	There are no r exposure.Occu waterfront, th facilities exclu should be eva Float planes sh
9	Fern Passage North	Maximum inundation of 2.0 m along the shoreline of Sheet 9, which includes the Prince Rupert Marine Station and Wainright Marine Services. Inundation on land beyond the intertidal area is not indicated. This includes the shoreline of Wilnaskancaud IR3.	Developments on Sheet 9 include the Prince Rupert Marine Station and Wainright Marine Services. Numerous non-waterfront industrial developments are located nearby. Inundation is not projected to extend to any buildings. The main access road (Kaien Road) and secondary access from Duncan Road extend away from and above any area subject to inundation. Inundation may affect the two marine facilities. Mooring lines should be secured, all loading operations shut down and the facilities evacuated.	There are no r exposure. High water vel log booms pos shoreline. The evacuated to o
10	Fern Passage South	Maximum inundation of 2.0 m along the shoreline of Sheet 10, which includes the Tidal Cove Terminal and Butze Terminal. Inundation on land beyond the intertidal area is not indicated.	Developments on Sheet 10 are all heavy industrial including the Tidal Cove Terminal and Butze Terminal. Inundation is not projected to extend to any buildings. The main access (Kaien Road) to Highway 16 and the three secondary access roads all extend away from and above any area subject to inundation. Inundation may affect marine facilities. The debris risk in Fern Passage is increased due to the presence of log booms and storage of industrial materials along the industrial waterfront. Mooring lines should be secured and all loading operations shut down.	There are no r exposure. High water vel debris risk alo work force sho stations.



Social Vulnerability

e heart of the Prince Rupert tourist area. ngs include commercial, institutional and s.

front Park, Metlakatla dock, Northland nal, Atlin Terminal, Cow Bay Marina and shorefront commercial facilities should be designated muster stations.

residential dwellings subject to any hazard

- rbour occupants should be evacuated to uster stations.
- elopment along George Hill Way should be designated muster stations.
- residential dwellings subject to any hazard supants of Industrial buildings along the he Prince Rupert Curling Club and marine uding Prince Rupert Coast Guard facilities acuated to designated muster stations. should relocate to another location.

residential dwellings subject to any hazard

elocities and inundation up to 2.0 m near ose a debris risk along the industrial ne industrial work force should be designated muster stations.

residential dwellings subject to any hazard

locities and inundation up to 2.0 m pose a ng the industrial shoreline. The industrial ould be evacuated to designated muster

Sheet #	Description	Hazard Exposure		
Scale 1:5,000	1:5,000	Max. Inundation	Physical Vulnerability	
11	Highway 16 Bridge Crossing	Maximum inundation of 1.0 m along the shoreline of Sheet 11. Most of area is undeveloped. Main feature is Highway 16 and bridge crossing to Kaien Island.	There is minimal infrastructure except the Highway 16 and bridge crossing to Kaien Island, which are above the maximum inundation depth.	There are no r exposure. General evacu discouraged as refuge and the Galloway Rapi
12	Port Edward/ Watson Island	Maximum inundation of 1.0 m along the shoreline of Sheet 12.	Riprapped CN Rail line is located along the west shore, well above the maximum depth of inundation.	Area is predon maximum dep



Social Vulnerability

residential dwellings subject to any hazard

uation from Kaien Island should be as the vast majority of Kaien Island is a safe e Highway 16 bridge capacity over ids is limited at this potential bottleneck.

minately industrial and above the oth of inundation.

3 SEISMIC TSUNAMI (VELOCITY)

Sheet #	Description	Hazard Exposure*		
Scale 1:30,000	1:30,000	Max. Velocity	Physical Vulnerability	Social Vulnerability
1A	Venn Passage/ Tsimpsean Peninsula	The highest velocities are projected in Venn Passage which separates Digby Island from the mainland to the north. Velocities of over 2.0m/s are projected throughout Venn Passage and along the east coast of Digby Island into Prince Rupert Harbour. Similar high velocities are projected in the south reach of Prince Rupert Harbour south from the Fairview Container Terminal. Remaining velocities in Sheet 1A along the west coast of Digby Island and the Prince Rupert Harbour are generally less than 0.5m/s.	Lax Kw'a Laams IR1 straddles both sides of Venn Passage. The existing settlement is concentrated around Mission Point on the Tsimpsean mainland. Velocities are projected to exceed 2.0m/s west of Mission Point but between 0 and 1.5m/s to the north-east where the Metlakatla Ferry dock is located. High velocities pose a risk but the physical vulnerability of Metlakatla is limited as most waterfront houses are elevated above the shoreline. Mooring lines should be secured and the ferry dock should be evacuated. The wastewater treatment plant in Metlakatla is located on high ground and is not vulnerable as sewage is pumped up by forcemain to the treatment plant. High velocities are projected along the undeveloped north-east coast of Digby Island. Maximum depths of up to 1.0 m are projected on Russel Arm and Anian Island where minimal settlement has taken place.	Low lying residents of Metlakatla are at risk and should evacuate to high ground. Occupants of the waterfront dock should be evacuated to higher ground.
2A	Seal Cove/ East Harbour	High velocities of op to 2.5m/s are projected in Fern Passage around Seal Cove. Projected velocities in the northern reach of the Prince Rupert Harbour toward Tuck Inlet are 0 to 0.5m/s although there are some small exceptions around uninhabited Vincent Island and in Melville Arm.	Velocities over 2.0m/s are projected to occur in Fern Passage. This applies to Seal Cove infrastructure near the shoreline. These velocities would be particularly directed toward developments on land extending into Fern Passage (see Sheet 9). However, inundation beyond the intertidal area are is not indicated on Sheets 9 and 10. Velocities in other areas on Sheet 4A in the Prince Rupert Harbour are less than 0.5m/s although localized velocities of up to 2.0m/s are projected along the south shoreline. The City's water supply comes from Woodward and Shawatlan Lakes which are not vulnerable to a tsunami. The water is piped underground from below the lake surface along the floor of Fern Passage to Kaien Island. The subsurface risk to the water supply crossings under Fern Passage is low. Multiple crossings provide redundancy, are armoured or encased in concrete along the shoreline. A velocity of 0 to 0.5 m/s is projected along the south shore of Shoowahtlans IR4. The reserve also faces Shawatlan Lake and would not be impacted. The remaining areas on Sheet 2A are believed to be uninhabited and undeveloped. Ferry terminal at north end of Tuck Inlet not shown on Sheet 2 but should be evacuated as a precautionary measure.	There are no residential dwellings subject to any hazard exposure. Seal Cove represents an area of concern due to the high velocities projected in Fern Passage and concentration of facilities (all non- residential) although inundation on land is not indicated (see Sheet 8). The public should be evacuated from marine facilities. Float planes should take off to another location.
ЗА	Digby Island/Prince Rupert Harbour	High velocities over 2.0m/s are projected along most of the east coast of Digby Island and Prince Rupert Harbour from the Westview Container Terminal to the south. Projected velocities on Kaien Island by the three ferry terminals are 0.75m/s or less and are under 0.5m/s further north in Prince Rupert Harbour.	 High velocities of over 2.0m/s are projected around the Crippen Cove and Charles Point settlements on the east coast of Digby Island. Much lower velocities of under 0.5m/s are projected in Dodge Cove and 0.75m/s on the Dodge Cove shoreline. High velocities of over 2.0m/s are projected around the Prince Rupert ferry terminal on Digby Island. Maximum projected depths are 1.0m within the intertidal area of Dodge Cove, Crippen Cove and the Prince Rupert Ferry Terminal on Digby Island. Velocities of under 0.5m/s are projected on the west coast of Digby Island and would have no impact on any other YPR infrastructure. The residences on Digby Island are vulnerable, particularly those Crippen Cove and Charles Point. Dodge Cove is a refuge on the east coast of Digby Island where velocities would be under 0.5m/s. The Fairview Container Terminal faces projected velocities of up to 2.0m/s while the three ferry terminals and Fairview Harbour Fishing Boat Docks to the north would be subject to much lower velocities of under 0.5m/s. Vulnerability is considered low based on the elevation and configuration of the Fairview Container Terminal 	Rural residents on Digby Island are vulnerable as dwellings are located on the waterfront on the east coast of the island where projected velocities could exceed 2.0m/s. The residential communities on Digby Island should be evacuated. The access road rises away from the waterfront and connects with the airport. The size of the residential community is small and the YPR airport building is a potential place of refuge on Digby Island.



Sheet #	Description	Hazard Exposure*		
Scale 1:30,000	1:30,000	Max. Velocity	Physical Vulnerability	Social Vulnerability
		Projected velocities are 0 to 0.5m/s in the	and the low projected velocities in the more protected part of the Prince Rupert Harbour further north where the Fariview Marina and ferry terminals are located. Evacuation of these industrial and public service facilities should take place. The two main facilities subject to velocities up to 2.0m/s are the heavy industrial Tidal Cove Terminal and	There are no residential dwellings
4A	Morse Basin/Fern Passage/Prince Rupert Harbour	Morse Basin south of Butze Point and the northern reaches of Wainright Basin. Much higher velocities of up to 2.5m/s are projected along the industrial developments in the Morse Basin north of Butze Point. Projected velocities in the Prince Rupert Harbour are over 2.0m/s south of the Fairview Container Terminal but generally less than 0.5m/s north of the ferry terminals although velocities right at the shoreline may reach 2.0m/s.	Butze Terminal. Comments in Sheets 4-7 and 9-10 at the 1:5000 scale apply and are more detailed. Other areas not shown on the 1:500 scale sheets are uninhabited and undeveloped.	subject to any hazard exposure. High water velocities and inundation up to 2.0 m pose a debris risk along the industrial shoreline. The industrial work force in the Morse Basin should be evacuated up to Kaien Road. Comments in Sheets 4-7 for the Prince Rupert Harbour apply.
5A	Chatham Sound	Velocities are less than 0.5m/s in Chatham Sound and Hecate Strait but increase to between 0.5m/s and 2.0m/s off the south and south-east coast of Digby Island.	No physical structures or marine facilities are located within Sheet 5A. No physical vulnerability will occur.	None. No settlements are located within Sheet 5A. This includes the southern tip of Digby Island and East and West Kinahan Islands. Ferry routes to Haida Gwaii, Klemtu, Bella Bella, Port Hardy and Alaska are located along this ocean corridor. Such ocean going vessels are not anticipated to be affected.
6A	Ridley Island/Watson Island	Projected velocities are 0 to 0.5m/s off the west coast of Ridley and Lelu Islands but increase up to 2.0m/s at the shoreline. Velocities increase to a maximum of over 2.0m/s in parts of the southern reach of Prince Rupert Harbour. Projected velocities are under 1.0m/s in nearly all of Wainright Basin between Ridley and Watson Island but increase to a maximum of 2.0m/s at the shoreline. Maximum depths of 1.0m projected in the intertidal area adjacent to the Port Edward Townsite and the east side of the Wainwright Basin. High velocities of over 2.0m/s are projected throughout Galloway Rapids which flow under the Highway 16 bridge.	The CN Rail mainline elevation at the south end of Kaien Island is 6.2m. The CN rail line elevation next to the grain Terminal on Ridley Island is 7.0m and the adjacent Ridley Coal loop rail elevation to the south is 10.4m. Riprap and coastal protection measures protect the rail line and other structures behind the rail line on Ridley and Watson Islands, which is over 4.0m above the maximum projected inundation level. High velocities exceeding 2.0m/s will occur under the Highway 16 Bridge Crossing; however, water depths are not anticipated to inundate the bridge. The grain and coal offloading structures on Ridley Island are not protected by the CN Rail line but projected velocities west of Ridley Island are less than 0.5m/s. Projected velocities are also less than 0.5m/s at the Porpoise Bay Marine Complex in the Village of Port Edward.	There are no residential dwellings subject to any hazard exposure. Industrial offloading facilities and Marine facilities such as the Purpose Bay Marine Complex should be evacuated.

* Velocities are higher and the extent greater from an Alaska based tsunami than a Cascadia based tsunami. This applies to all sheets in the study area. As a result, only the Alaska results are documented. Accordingly these sheets at the 1:30,000 scale are referred to a Sheets 1A to 6A (with A referring to Alaska).



4 SEISMIC TSUNAMI (INUNDATION) & 1 M SLR

Sheet #	Description	Hazard Exposure	Dhusical Vulnavshility	
Scale 1:5,000	1:5,000	Max. Inundation + 1M SLR	Physical Vulnerability	
1	Digby Island - North YPR runway	Maximum inundation of 2.0 m confined to the intertidal area along the west shoreline of Digby Island.	No facilities located along the west shoreline. YPR Infrastructure unaffected as the runway is at a higher elevation and a minimum distance of 200 m from the shoreline.	
2	Digby Island - South YPR runway	Maximum inundation of 2.0 m confined to the intertidal area along the west shoreline of Digby Island.	No facilities located along the west shoreline. YPR Infrastructure unaffected as the runway is at a higher elevation and a minimum distance of 200 m from the shoreline.	
3	Fairview Terminal	Maximum inundation of 2.0 m along the west shoreline of Kaien Island and around the perimeter of the Fairview Container Terminal. Overtopping the deck of the Fairview Container Terminal is not anticipated. Similar depths would occur along the CN Rail line on Sheet 3, which follows the west shoreline of Kaien Island.	Fairview Container Terminal (24 ha) is a dedicated intermodal (ship to rail) container terminal, nearly all constructed on fill. No inundation of the Terminal deck is anticipated. CN Rail is riprapped along the shoreline both south and north of the Terminal. No inundation of the CN Rail mainline is anticipated, which has an elevation is 6.2 m at the south end of the Terminal and 5.8 m at the north end. The elevation of the intermodal yard tracks to the west is 6.3-6.4 m. The intermodal yard and industrial facilities east of the CN Rail line are beyond any hazard exposure area. The impact of the wave depth and velocity on docked ships should be considered. Mooring lines should be secured and all loading operations shut down.	
4	Ferry Terminals	Maximum inundation of >2.0 m on Sheet 4 along the shoreline of the Fairview Harbour Fishing Boat Docks north of Fairview Container Terminal. Depths of up to 2.0 m at the Airport Ferry Terminal, Alaska Ferry Terminal and the BC Ferries Terminal. Depths of > 2.0 m along the shoreline north of the BC Ferries Terminal. Significant inundation of over >2.0 m occurs at cargo loading terminal north of the BC Ferries Terminal.	Fairview Harbour is a public marina with tie-up floats and open moorage to accommodate about 250 vessels. Fairview Harbour Fishing Boat Terminal may see inundation of up to 2.0 m. The floating breakwater will provide limited protection for small docked vessels. Mooring lines should be secured, loading operations shut down and the marina evacuated. CN Rail runs parallel to the shoreline at an elevation of 5.7 m by the BC Ferries Terminal, more than 2.0 m above the maximum projected inundation. Highway 16, industrial development east of the CN Rail line and residential areas north of the Ferry Terminals are outside any hazard exposure and are not vulnerable.	
5	Westview Wood Pellet Terminal	Maximum inundation of >2.0 m along the shoreline of Sheet 5, whose main feature is the Westview Wood Pellet Terminal. CN Rail runs parallel to the shoreline along Sheet 5.	Westview Wood Pellet Terminal is a purpose-built wood pellet export facility owned by Pinnacle Wood Energy Corp. The facility has an annual capacity to ship 1.25 million tonnes of wood pellets to world markets. Inundation of most infrastructure is not anticipated as the CN Rail line elevation is approximately 6.0 m. However the car dumper extends 3-4 m below the 4 pellet storage facilities. The facility contains a sump and all electrical services are above the terminal deck. Mooring lines should be secured and all loading operations shut down.	
6	Downtown/ Cow Bay	Maximum inundation of >2.0 m along the Sheet 6 shoreline, which includes Rotary Waterfront Park, Metlakatla dock and ferry terminal, Northland Cruise Terminal, Cow Bay Road and West Coast Marine Response Corp. Additional run up of >2.0 m in the low lying area across George Hills Way (along Cow Bay Road).	Northland Cruise Terminal can accommodate vessels of up to 300 meters (960 ft.) in length and 15 meters (50 ft.) in draft. A 4,000 square-foot terminal building nearby in Cow Bay provides Customs and Immigration services. The shoreline along the Northland Cruise Terminal is subject to inundation of >2.0 m.Cow Bay Marina has a floating breakwater with steel floatation. The marina floatation has treated timber surfaces anchored with steel pilings. The Western Canada Marine Response Corp occupies one arm of the Cow Bay Marina with over 10 vessels. Inundation would be > 2.0 m along the waterfront at Cow Bay Marina and along Cow Bay Road. Mooring lines at the Cow Bay Marina, Metlakatla docks and Northland Cruise Terminal should be secured.Existing buildings extending on piers past	



Social Vulnerability
None. No public access to shore.
None. No public access to shore.
There are no residential dwellings subject to any hazard exposure. The Fairview Container Terminal work force should be evacuated to muster stations as a precautionary measure.
There are no residential dwellings subject to any hazard exposure. Fairview Marina and cargo loading terminal should be evacuated to designated muster stations. The three Ferry Terminals should be evacuated to designated muster stations.
There are no residential dwellings subject to any hazard exposure. Westview Wood Pellet Terminal loading operations should be shut down and employees evacuated to designated muster station.
Cow Bay is the heart of the Prince Rupert courist area. Existing buildings include commercial, institutional and industrial uses. Rotary Waterfront Park, Metlakatla dock, Northland Cruise Terminal, Atlin Terminal, Cow Bay Marina and occupants of shorefront commercial facilities should be evacuated to

Sheet #	Description	Hazard Exposure	
Scale 1:5,000	1:5,000	Max. Inundation + 1M SLR	Physical Vulnerability
			the shoreline include commercial rental units and the Atlin Terminal, which contains the Prince Rupert Port Authority administrative complex.
7	Rushbrook/ George Hills Way	Maximum inundation of >2.0 m along the Sheet 7 shoreline, which includes industrial sites along George Hill Way and the Rushbrook Harbour. Maximum depth of up to 2.0 m in creek next to Dock Road between George Hills Way and Sixth Avenue East and slightly beyond.	The Rushbrook Harbour has a capacity of 400 vessels. The Marina is subject to a maximum inundation of >2.0 m. The floating breakwater will provide limited protection. Mooring lines should be secured, all loading operations shut down and the Rushbrook Harbour evacuated.
8	Seal Cove	Maximum inundation of >2.0 m along the Sheet 8 shoreline. This area includes non-residential developments along Seal Cove Road and Bellis Road.	Seal Cove Developments on Sheet 8 include the Prince Rupert Coast Guard facilities, the Lax- Kw'a Laams Ferry Terminal, Seal Cove float plane base and helijet facility, Seal Cove Fish Plant and the Prince Rupert Curling Club. Access roads to these facilities extend away from and above any area subject to inundation. Inundation may affect marine facilities and may extend to buildings close to the natural boundary of the water. Mooring lines should be secured. Access roads to these facilities extend away from and above any area subject to inundation.
9	Fern Passage North	Maximum inundation of 2.0 m and discrete areas of >2.0 m along the shoreline of Sheet 9, which includes the Prince Rupert Marine Station and Wainright Marine Services. Inundation on land beyond the intertidal area is not indicated. This includes the shoreline of Wilnaskancaud IR3.	Developments on Sheet 9 include the Prince Rupert Marine Station and Wainright Marine Services. Numerous non-waterfront industrial developments are located nearby. Inundation along the shoreline is projected but should not extend to any buildings. The main access road (Kaien Road) and secondary access from Duncan Road extend away from and above any area subject to inundation. Inundation may affect the two marine facilities. Mooring lines should be secured, all loading operations shut down and the facilities evacuated.
10	Fern Passage South	Maximum inundation of 2.0 m along the shoreline of Sheet 10, which includes the Tidal Cove Terminal and Butze Terminal. Inundation on land beyond the intertidal area is not indicated.	Developments on Sheet 10 are all heavy industrial including the Tidal Cove Terminal and Butze Terminal. Inundation is not projected to extend to any buildings. The main access (Kaien Road) to Highway 16 and the three secondary access roads all extend away from and above any area subject to inundation. Inundation may affect marine facilities. The debris risk in Fern Passage is increased due to the presence of log booms and storage of industrial materials along the industrial waterfront. Mooring lines should be secured and all loading operations shut down.
11	Highway 16 Bridge Crossing	Maximum inundation of 2.0 m along the shoreline of Sheet 11. Most of area is undeveloped. Main feature is Highway 16 and bridge crossing to Kaien Island.	There is minimal infrastructure except the Highway 16 and bridge crossing to Kaien Island, which are above the maximum inundation depth.
12	Port Edward/ Watson Island	Maximum inundation of 1.0 m along the shoreline of Sheet 12.	Riprapped CN Rail line is located along the west shore, well above the maximum depth of inundation.



Social Vulnerability

- There are no residential dwellings subject to any hazard exposure.
- Rushbrook Harbour occupants should be evacuated to designated muster stations. Industrial development along George Hill Way should be evacuated to designated muster stations.
- There are no residential dwellings subject to any hazard exposure.
- Occupants of Industrial buildings along the waterfront, the Prince Rupert Curling Club and marine facilities excluding Prince Rupert Coast Guard facilities should be evacuated to designated muster stations. Float planes should relocate to another location.
- There are no residential dwellings subject to any hazard exposure.High water velocities and inundation >2.0 m near log booms pose a debris risk along the industrial shoreline. The industrial work force should be evacuated to designated muster stations.
- There are no residential dwellings subject to any hazard exposure.
- High water velocities and inundation up to 2.0 m pose a debris risk along the industrial shoreline. The industrial work force should be evacuated to designated muster stations.
- There are no residential dwellings subject to any hazard exposure.
- General evacuation from Kaien Island should be discouraged as the vast majority of Kaien Island is a safe refuge and the Highway 16 bridge capacity over Galloway Rapids is limited at this potential bottleneck.
- Area is predominately industrial and above the maximum depth of inundation.

5 SEISMIC TSUNAMI (VELOCITY) & 1 M SLR

Sheet #	Description	Hazard Exposure*		
Scale 1:30,000	1:30,000	Max. Velocity + 1M SL	Physical Vulnerability	Social Vulnerability
1A	Tsimpsean Peninsula	The Alaska Tsunami under conditions of 1 metre sea level rise show some changes in the pattern of velocity. The highest velocities are projected in Venn Passage which separates Digby Island from the mainland to the north. Velocities of over 2.0m/s are projected throughout Venn Passage and along the east coast of Digby Island into Prince Rupert Harbour. Similarly high velocities are projected in the south reach of Prince Rupert Harbour south from the Fairview Container Terminal. Remaining velocities in Sheet 1A along the west coast of Digby Island and the Prince Rupert Harbour are generally less than 0.5m/s. Depths are under 1.0m and are confined to the intertidal area.	Lax Kw'a Laams IR1 straddles both sides of Venn Passage. The existing settlement is concentrated around Mission Point on the Tsimpsean mainland. Velocities are projected to exceed 2.0m/s west of Mission Point but between 0 and 1.5m/s to the north-east where the Metlakatla Ferry dock is located. High velocities pose a risk but the physical vulnerability of Metlakatla is limited as most waterfront houses are elevated above the shoreline. Mooring lines should be secured and the ferry dock should be evacuated. The wastewater treatment plant in Metlakatla is located on high ground and is not vulnerable as sewage is pumped up by forcemain to the treatment plant. High velocities are projected along the undeveloped north-east coast of Digby Island. Maximum depths of up to 1.0 m are projected on Russel Arm and Anian Island where minimal settlement has taken place	Low lying residents of Metlakatla are at risk and should evacuate to high ground. Occupants of the waterfront dock should be evacuated to higher ground.
2A	Seal Cove/ East Harbour	High velocities of up to 2.5m/s are projected in Fern Passage around Seal Cove. Projected velocities in the northern reach of the Prince Rupert Harbour toward Tuck Inlet are 0 to 0.5m/s although there are some small exceptions around uninhabited Vincent Island and in Melville Arm.	Velocities over 2.0m/s are projected to occur in Fern Passage. This applies to Seal Cove infrastructure near the shoreline. These velocities would be particularly directed toward developments on land extending into Fern Passage (see Sheet 9). Some inundation beyond the intertidal area into industrial sites is indicated on Sheets 9 and 10. Velocities in other areas on Sheet 4A in the Prince Rupert Harbour are less than 0.5m/s although localized velocities of up to 2.0m/s are projected along the south shoreline. A velocity of 0 to 0.5 m/s is projected along the south shore of Shoowahtlans IR4. The reserve also faces Shawatlan Lake and would not be impacted. The City's water supply comes from Woodward and Shawatlan Lakes which are not vulnerable to a tsunami. The water is piped underground from below the lake surface along the floor of Fern Passage to Kaien Island. The subsurface risk to the water supply crossings under Fern Passage is low. Multiple crossings provide redundancy, are armoured or encased in concrete along the shoreline. The remaining areas on Sheet 2A are believed to be uninhabited and undeveloped. Ferry terminal at north end of Tuck Inlet not shown on Sheet 2 but should be evacuated as a precautionary measure.	There are no residential dwellings subject to any hazard exposure. Seal Cove represents an area of concern due to the high projected velocities in Fern Passage and concentration of facilities (all non-residential) although inundation on land is not indicated (see Sheet 8). The public should be evacuated from marine facilities. Float planes should take off to another location.
ЗА	Digby Island	High velocities over 2.0m/s are projected along most of the east coast of Digby Island and Prince Rupert Harbour from the Westview Container Terminal to the south. Projected velocities on Kaien Island by the three ferry terminals are 0.75m/s or less and are under 0.5m/s further north in Prince Rupert Harbour.	 High velocities of over 2.0m/s are projected around the Crippen Cove and Charles Point settlements on the east coast of Digby Island. Much lower velocities of under 0.5m/s are projected in Dodge Cove and 0.75m/s on the Dodge Cove shoreline. High velocities of over 2.0m/s are projected around the Prince Rupert ferry terminal on Digby Island. Maximum projected depths >2.0m within the intertidal area of Dodge Cove, Crippen Cove and the Prince Rupert Ferry Terminal on Digby Island. Velocities of under 0.5m/s are projected on the west coast of Digby Island and would have no impact on any other YPR infrastructure. Residences on Digby Island are vulnerable, particularly those in Crippen Cove and 	Rural residents on Digby Island are vulnerable as dwellings are located on the waterfront on the east coast of the island where projected velocities could exceed 2.0m/s. The residential communities on Digby Island should be evacuated. The access road rises away from the waterfront and connects with the airport. The size of the residential community is small and



Sheet #	Description	Hazard Exposure*		
Scale	1:30,000	Max. Velocity + 1M SL	Physical Vulnerability	Social Vulnerability
1.50,000			around Charles Point. Dodge Cove is a refuge on the east coast of Digby Island where velocities would be under 0.5m/s. The Fairview Container Terminal faces projected velocities of up to 2.0m/s while the three ferry terminals and Fairview Harbour Fishing Boat Docks to the north would be subject to much lower velocities of under 0.5m/s. Vulnerability is considered low based on the elevation and configuration of the Fairview Container Terminal and the low projected velocities in the more protected part of the Prince Rupert Harbour further north where the Fairview Marina and ferry terminals are located. Evacuation of these industrial and public service facilities should take place.	the YPR airport building is a potential place of refuge on Digby Island.
4A	Morse Basin/Fern Passage	Projected velocities are 0 to 0.5m/s in the Morse Basin south of Butze Point and the northern reaches of Wainright Basin. Much higher velocities of up to 2.5m/s are projected along the industrial developments in the Morse Basin north of Butze Point. Projected velocities in the Prince Rupert Harbour are over 2.0m/s south of the Fairview Container Terminal but generally less than 0.5m/s north of the ferry terminals although velocities right at the shoreline may reach 2.0m/s.	The two main facilities subject to velocities up to 2.0m/s are the heavy industrial Tidal Cove Terminal and Butze Terminal. Comments in Sheets 4-7 and 9-10 at the 1:5000 scale apply and are more detailed. Other areas not shown on the 1:500 scale sheets are uninhabited and undeveloped.	There are no residential dwellings subject to any hazard exposure. High water velocities and inundation up to 2.0 m pose a debris risk along the industrial shoreline. The industrial work force in the Morse Basin should be evacuated up to Kaien Road. Comments in Sheets 4-7 for the Prince Rupert Harbour apply.
5A	Chatham Sound	Velocities are less than 0.5m/s in Chatham Sound and Hecate Strait but increase to between 0.5m/s and 2.0m/s off the south and south- east coast of Digby Island.	No physical structures or marine facilities are located within Sheet 5A. No physical vulnerability will occur.	None. No settlements are located within Sheet 5A. This includes the southern tip of Digby Island and East and West Kinahan Islands. Ferry routes to Haida Gwaii, Klemtu, Bella Bella, Port Hardy and Alaska are located along this ocean corridor. Such ocean going vessels are not anticipated to be affected.
6A	Ridley Island/ Watson Island	Projected velocities are 0 to 0.5 m/s off the west coast of Ridley and Lelu Islands but increase up to 2.0m/s at the shoreline. Velocities increase to a maximum of over 2.0m/s in parts of the southern reach of Prince Rupert Harbour. Projected velocities are under 1.0m/s in nearly all of Wainright Basin between Ridley and Watson Island but increase to a maximum of 2.0m/s at the shoreline. High velocities of over 2.0m/s are projected throughout Galloway Rapids which flow under the Highway 16 bridge.	The CN Rail mainline elevation at the south end of Kaien Island is 6.2 m. The CN rail line elevation next to the grain Terminal on Ridley Island is 7.0 m and the adjacent Ridley Coal loop rail elevation to the south is 10.4 m. Riprap and coastal protection measures protect the rail line and other structures behind the rail line on Ridley and Watson Islands, which is over 4.0 m above the maximum projected inundation level. High velocities exceeding 2.0m/s will occur under the Highway 16 Bridge Crossing; however, water depths are not anticipated to inundate the bridge. The grain and coal offloading structures on Ridley Island are not protected by the CN Rail line but projected velocities west of Ridley Island are less than 0.5m/s. Projected velocities are also less than 0.5m/s at the Porpoise Bay Marine Complex in the Village of Port Edward.	There are no residential dwellings subject to any hazard exposure. Industrial offloading facilities and Marine facilities such as the Purpose Bay Marine Complex should be evacuated.

* Velocities are higher and the extent greater from an Alaska tsunami than a Cascadia tsunami. This applies to all sheets in the study area. As a result, only the Alaska results are documented. Accordingly these sheets at the 1:30,000 scale are referred to a Sheets 1A to 6A.



6 **RISK ASSESSMENT – ASSET LIST**

Asset Description	Location	Comments	Conclusions	Recommendation
Emergency Services and Operations				
Prince Rupert Emergency Operations Centre				
Prince Rupert City Council Chambers	424 Third Avenue West	Location is away from and above any potential direct impacts.	Asset not at risk	Location suitable for Emergency Operations Centre
Police				
RCMP	100 6 Ave W	Location is away from and above any potential direct impacts.	Asset not at risk	None
BC Sheriff Service	100 Market Place	Location is away from and above any potential direct impacts.	Asset not at risk	None
Fire				
Prince Rupert City Fire Rescue Department	200 1st Ave W	Location is away from and above any potential direct impacts.	Asset not at risk	None
Port Edward Fire Hall	567 Sunset Dr, Port Edward	Location is away from and above any potential direct impacts.	Asset not at risk	None
Ambulance				
BC Ambulance Station	1301 Summit Ave	Location is away from and above any potential direct impacts.	Asset not at risk	None
Hospital				
Prince Rupert Regional Hospital	1305 Summit Ave	Location is away from and above any potential direct impacts.	Asset not at risk	None
Coast Guard				
Prince Rupert Seal Cove Base (Canadian Coast Guard)	1 Coast Guard Road (CCG Seal Cove Base)	Inundation is not projected to extend to any buildings in Seal Cove. Access roads to these facilities extend away from and above any area subject to inundation. Inundation may affect marine facilities.	Buildings not at risk	Action to be determined by CCG
Local Government Offices & Facilities				
City Hall, City of Prince Rupert	424 Third Avenue West	Location is away from and above any potential direct impacts.	Asset not at risk	Evacuation not required
City of Prince Rupert Public Works Yard	221 Wantage Road	Location is away from and above any potential direct impacts.	Asset not at risk	Evacuation not required
Port Edward District Office	770 Pacific Ave, Port Edward	Location is away from and above any potential direct impacts.	Asset not at risk	Evacuation not required
Queen Charlotte Regional District Offices	342 3rd Avenue West	Location is away from and above any potential direct impacts.	Asset not at risk	Evacuation not required
Other Critical Infrastructure				
Transport Facilities				
Prince Rupert Airport	Digby Island	Location is away from and above any potential direct impacts.	Asset not at risk	Evacuation not recommended
Prince Rupert Airport Ferry - Kaien Island	250 Yellowhead Hwy	Inundation of up to 1.0 m confined to intertidal area. Low velocity of under 0.75m/s at the Airport Ferry Terminal.	Ferry Terminal at low risk	Evacuation recommended
Prince Rupert Airport Ferry - Digby Island	Northeast coast of Digby Island	Inundation of up to 1.0 m confined to intertidal area. High velocity of up to 3.1m/s through Venn Passage by Airport Ferry Terminal.	Ferry Terminal at risk	Evacuation recommended
BC Ferries Terminal	250 Yellowhead Highway	Inundation of up to 2.0 m confined to intertidal area around BC Ferries Terminal. Low velocity of under 0.75m/s in harbour.	Ferry Terminal at low risk	Evacuation recommended



Asset Description	Location	Comments	Conclusions	Recommendation
Alaska Marine Highway Ferry Terminal	2100 Park Ave (Yellowhead	Depth of up to 1.0 m confined to intertidal area around Alaska Ferry	Ferry Terminal	Evacuation recommended
Lax Kw'alaams Ferry Dock (Prince Rupert)	Seal Cove	High projected velocities through Fern Passage but inundation limited to intertidal area.	Asset at risk	Mooring lines should be secured & dock evacuated
Lax Kw'alaams Ferry Dock	Tuck Inlet	Maximum wave height of 1.5 m near north end of Tuck Inlet where ferry dock is located.	Asset at risk	Mooring lines should be secured & dock evacuated
Metlakatla Dock (Prince Rupert)	Manson Way west of Cow Bay	Maximum inundation of over 2.0 m along shoreline but low velocity within the harbour	Asset at low risk	Mooring lines should be secured & dock evacuated
Metlakatla Dock	Metlakatla Harbour	High projected velocity in Venn Passage but low velocity in harbour. Inundation depth limited to intertidal area.	Asset at low risk	Mooring lines should be secured & dock evacuated
Prince Rupert (Hydro) Heliport	900 Wilson Ave	Location is away from and above any potential direct impacts.	Asset not at risk	None
Prince Rupert (Hospital) Heliport	1305 Summit Ave	Location is away from and above any potential direct impacts.	Asset not at risk	None
Seal Cove Heliport	Adjacent to float plane base	Projected inundation limited to intertidal area but high velocities through Fern Passage.	Asset at risk	Evacuation recommended
Corridors				
CN Rail line	North, west and south shores of Kaien Island, west shore of Watson Island, north and west shores of Ridley Island, coastal mainland south of Watson Island	CN Mainline is >3.0 m above projected inundation elevations and has structural protection.	Asset not at risk	None
Arterial road (Yellowhead Highway 16)	Yellowhead Highway 16 (Provincial highway from Terrace) to BC Ferries Terminal	Location is away from and above any potential direct impacts.	Asset not at risk	None
Other major roads	8 are designated in Prince Rupert Quality of Life Official Community Plan	All major roads are located away from and above any potential direct impacts.	Assets not at risk	None
Major BC Hydro transmission lines	69 kV corridor along Highway 16 and east side of Kaien Island to Oldfield Substation 69 kV corridor from Highway 16 to Port Edward and along south side of Kaien Island to Ridley Island industrial substations	Corridors are away from and above any potential direct impacts.	Assets not at risk	None
BC Hydro Substations				
Oldfield Substation	99 11 Ave E (intersection with Yellowhead Highway)	Location is away from and above any potential direct impacts.	Asset not at risk	None
Ridley Terminal Substation	Ridley Island Coal Terminal	Location is away from and above any potential direct impacts.	Asset not at risk	None
Prince Rupert Grain Substation	Ridley Island Grain Terminal	Location is away from and above any potential direct impacts.	Asset not at risk	None
Skeena Cellulose Substation	Watson Island	Location is away from and above any potential direct impacts.	Asset not at risk	None
Municipal Water				



Asset Description	Location	Comments	Conclusions	Recommendation
Prince Rupert water supply (lake reservoirs)	Shawatlan and Woodworth Lakes	Water supply not located near any potential impacts. Water pipe crossings under Fern Passage are at low risk. Multiple crossings provide redundancy, are armoured or encased in concrete along shoreline.	Assets at low risk	Lake supply not impacted. Armouring of any future water supply crossing of Venn Passage should take place.
Marine Facilities				
Prince Rupert Port Authority Facilities		Atlin Torminal contains the Drings Dunget Dout Authority		
Atlin Terminal	215 Cow Bay Road	administrative complex. Existing buildings are vulnerable as they extend on piers past the shoreline, including commercial rental units. The shoreline along the Atlin Terminal is subject to inundation of up to 2.0m but low velocity of <0.5m/s in the harbour.	Area at risk	Facilities should be evacuated
Northland Cruise Terminal	100 Mason Way	The shoreline along the Northland Cruise Terminal is subject to inundation of up to 2.0 m but low velocity of <0.5m/s in the harbour. The impact of the wave depth and velocity on docked ships should be considered.	Area at low risk	Loading activities should be shut down, mooring lines secured and facilities evacuated
Westview Wood Pellet Terminal	Midway between Fairview Harbour and Rotary Waterfront Park	Velocity of <0.5m/s and inundation of up to 2.0 m/s confined to intertidal area and not projected above terminal deck. Loading facilities extend below the 4 pellet storage areas and may be vulnerable.	Area at low risk	Loading facilities should be shut down, mooring lines to any vessel secured and the facility evacuated
Fairview Container Terminal	3100 Scott Road	No inundation of Terminal deck is anticipated. Velocity under 0.5m/s and inundation confined to intertidal area. The impact of the wave depth and velocity on docked ships should be considered.	Area at low risk	Loading facilities should be shut down, mooring lines to any vessel secured and facilities evacuated
Prince Rupert Container Examination Facility	1220 Ridley Island Road	Prince Rupert Container Examination Facility examines the contents of targeted import containers under the guidance of the Canada Customs and Border Services Agency. Facility is protected by the Ridley Island Access Road and is setback from the shoreline. Projected velocity west of Ridley Island is <0.5m/s and inundation confined to intertidal area.	Area at low risk	Evacuation recommended
Prince Rupert Grain Terminal	1300 Ridley Island Road (Northwest corner of Ridley Island)	CN Rail line elevation is 7.0 m at Grain Terminal on Ridley Island. Grain Terminal is 5.0 m above inundation level and between access road and CN Rail line, away from and above any potential direct impacts. Grain offloading structure on Ridley Island extends beyond shoreline but projected velocity west of Ridley Island is <0.5m/s and inundation confined to intertidal area.	Area at low risk	Loading facility should be shut down and mooring lines to any vessel secured
Ridley Coal Terminal	Ridley Island	Coal terminal on Ridley Island is protected by CN rail line and is away from and above any potential direct impacts. Coal offloading structure on Ridley Island is not protected by the CN Rail line but projected velocity west of Ridley Island is <0.5m/s and inundation confined to intertidal area.	Area at low risk	Loading facility should be shut down and mooring lines to any vessel secured
Alta Gas Export Propane Export Facility	Ridley Island	Ridley Island Propane Export Terminal Project was designed to ship up to 1.2 million tonnes of propane by rail annually from B.C. and Alberta natural gas producers. Completed in the 2nd quarter of 2019, the facility will offload 50 to 60 rail cars per day and deliver approximately 20 to 30 cargos of propane per year by marine transport. Rail cargo not at risk but propane offloading structure is not	Area at low risk	Loading facility should be shut down and mooring lines to any vessel secured



Asset Description	Location	Comments	Conclusions	Recommendation
		protected by CN Rail line. Projected velocity west of Ridley Island is		
		<0.5m/s and inundation confined to intertidal area.		
CN intermodal yards and offloading facilities	Fairview Container Terminal, Pellet Plant, Ridley Island bulk facilities, etc.	All locations are at or above CN mainline elevation.	Assets not at risk	Loading facilities should be shut down and mooring lines secured
Port Edward Port Authority Facilities				
Fairview Harbour	Two harbours south of Highway 16 terminus	Fairview Harbour Fishing Boat Terminal may see inundation of up to 2.0 m along intertidal area but low velocity of <0.5m/s in harbour.	Area at risk	Loading facilities should be shut down, mooring lines secured and facilities evacuated
Cow Bay Harbour	North of Downtown Prince Rupert	Inundation up to 2.0 m in intertidal area but low velocity of <0.5m/s along the waterfront at Cow Bay Marina and along Cow Bay Road. The impact of the wave depth and velocity on docked ships should be considered.	Marine facilities at risk	Loading facilities should be shut down, mooring lines secured and facilities evacuated
Rushbrook Harbour	North end of George Hills Way	Intertidal inundation up to 2.0 m but low velocity of <0.75m/s in harbour.	Marine facilities at risk	Loading facilities should be shut down, mooring lines secured and facilities evacuated
Porpoise Harbour Marina Complex	Port Edward Harbour	Projected velocities less than 0.5m/s at the Porpoise Bay Marine Complex in the Village of Port Edward.	Marine facilities at low risk	Loading facilities should be shut down, mooring lines secured and facilities evacuated
Other Marine Facilities				
Seal Cove	Northernmost tip of Kaien Island	Inundation not projected to extend beyond intertidal areas. Inundation may affect marine facilities. Access road to Seal Cove extends away from & above any area subject to inundation.	Area at low risk	Mooring lines should be secured and facilities evacuated other than CCG
Tidal Coast Terminal	North-east of Kaien Island adjacent to Fern Passage	Inundation up to 2.0 m but not projected to extend beyond intertidal areas. High water velocities & log booms in area poses a debris risk along the industrial shoreline.	Area at risk	Mooring lines should be secured and facilities evacuated
Butze Terminal	North of Tidal Coast Terminal, at the north-east of Kaien Island adjacent to Fern Passage	Inundation up to 2.0 m but not projected to extend beyond intertidal areas. High water velocities & log booms in area poses a debris risk along the industrial shoreline.	Area at risk	Mooring lines should be secured and facilities evacuated
West Coast Marine Response Corp.	Cow Bay	WCMRC has extensive facilities located in the Cow Bay Marina to respond to a marine spill on the North Coast. These include 3 mini barges, 3 work skiffs, 2 boom skiffs, 2 landing craft and a skimming vessel. Inundation up to 2.0 m in intertidal area but low velocity of <0.5m/s along the waterfront at Cow Bay Marina.	Vessels at risk	Mooring lines should be secured and vessels evacuated or relocated
Community Areas				
Residential areas in Prince Rupert	Various Neighbourhoods	All neighbourhoods are away from and above any potential direct impacts.	Residential areas not at risk	Evacuation not recommended
Main commercial & institutional areas in Prince Rupert	Downtown Prince Rupert	Entire downtown is away from and above any potential direct impacts.	Residential areas not at risk	Evacuation not recommended
Community Facilities				



Asset Description	Location	Comments	Conclusions	Recommendation
Community Centres				
Prince Rupert Civic Centre (Jim Ciccone)	1000 McBride Street	Location is away from and above any potential direct impacts.	Asset not at risk	Civic Center is a suitable central location for the City's primary evacuation centre.
Seniors' Centre	21 Grenville Court	Location is away from and above any potential direct impacts.	Asset not at risk	Evacuation not required
Schools (K-12)				
Charles Hays Secondary School (School District No. 52)	201 Prince Rupert Blvd	Location is away from and above any potential direct impacts.	Asset not at risk	Secondary school is a suitable alternate evacuation centre.
Roosevelt Park Elementary (School District No. 52)	800 Summit Ave	Location is away from and above any potential direct impacts.	Asset not at risk	Evacuation not required
Westview Elementary (School District No. 52)	2000 2nd Ave W	Location is away from and above any potential direct impacts.	Asset not at risk	Evacuation not required
Pacific Coast School (Grades 9-12, School District No. 52)	309 2nd Ave W	Location is away from and above any potential direct impacts.	Asset not at risk	Evacuation not required
Conrad Elementary School (School District No. 52)	825 Conrad Street	Location is away from and above any potential direct impacts.	Asset not at risk	Evacuation not required
Pineridge Elementary School (School District No. 52)	1700 Sloan Ave	Location is away from and above any potential direct impacts.	Asset not at risk	Evacuation not required
Port Edward Elementary School (School District No. 52)	772 Pacific Ave, Port Edward	Location is away from and above any potential direct impacts.	Asset not at risk	Evacuation not required
Prince Rupert Middle School (Grades 6-8, School District No. 52)	417 9th Ave W	Location is away from and above any potential direct impacts.	Asset not at risk	Evacuation not required
Annunciation School (K-Grade 8, Catholic independent school)	627 5th Ave W	Location is away from and above any potential direct impacts.	Asset not at risk	Evacuation not required
Post-Secondary Institutions				
Coast Mountain College (North West Community College)	353 5th Street	Location is away from and above any potential direct impacts.	Facility not at risk	Evacuation not required
UNBC (programs provided at Coast Mountain College)	353 5th Street	Location is away from and above any potential direct impacts.	Facility not at risk	Evacuation not required
Day Care facilities				
K I D S Daycare	1200 Hays Cove Ave	Location is away from and above any potential direct impacts.	Facility not at risk	Evacuation not required
Discovery Child Care Centre	195 Prince Rupert Blvd	Location is away from and above any potential direct impacts.	Facility not at risk	Evacuation not required
Berry Patch Child Care Resources & Referral Centre	300 2nd Ave W	Location is away from and above any potential direct impacts.	Facility not at risk	Evacuation not required
Westview Child Care Centre	800 Summit Ave	Location is away from and above any potential direct impacts.	Facility not at risk	Evacuation not required
Growing Space Society	309 2nd Ave W	Location is away from and above any potential direct impacts.	Facility not at risk	Evacuation not required
Lax Kxeen StrongStart	601 William Booth Way	Location is away from and above any potential direct impacts.	Facility not at risk	Evacuation not required
Lighthouse Daycare/Preschool	806 Ritchie Street	Location is away from and above any potential direct impacts.	Facility not at risk	Evacuation not required



Asset Description	Location	Comments	Conclusions	Recommendation
Beyond The Bell Child Care Centre	1700 Sloan Ave	Location is away from and above any potential direct impacts.	Facility not at risk	Evacuation not required
Fellowship Baptist Pre-School	651 7th Ave E	Location is away from and above any potential direct impacts.	Facility not at risk	Evacuation not required
Graham Avenue Child Care	2324 Graham Ave	Location is away from and above any potential direct impacts.	Facility not at risk	Evacuation not required
Seniors' Facilities				
Kaien Senior Citizens Housing	550 5th Avenue E	Location is away from and above any potential direct impacts.	Facility not at risk	Evacuation not required
Acropolis Manor (nursing home)	1325 Summit Ave	Location is away from and above any potential direct impacts.	Facility not at risk	Evacuation not required
Caretaker Sunset Villa (independent living)	1013 3rd Ave W	Location is away from and above any potential direct impacts.	Facility not at risk	Evacuation not required

