Table 12.2-1: Summary of Mitigation Measures

Reference Number	Potential Effect	Phase	Proposed Mitigation
Air Quality			
AQ-C-1	Change in air quality from Project-related dust due to clearing, grading, and traffic	C	› Develop and implement management plans, including an Air Quality and Dust Control Management Plan (AQDCMP) and Construction Traffic Management Plan (CTMP). The contents of these plans are in Table 10.6-1. › Transport workers via bus. › Spray overburden and soils with water prior to moving them if overly dry. › Use of water sprays to control dust on roads. › Implement a monitoring program for dust at the Project site during construction.
AQ-C-2	Change in air quality from construction-related emissions of CACs	C	› Develop and implement management plans, including an Air Quality and Dust Control Management Plan (AQDCMP) and Construction Traffic Management Plan (CTMP). The contents of these plans are in Table 10.6-1. › Develop and implement engine idling policy. › Use efficient, lower-emission vehicles and equipment where practical. › Specify vehicle speeds.
AQ-O-1	Change in air quality specific to operation-related emissions of CACs and release of fugitive CACs	O	› Develop an Operation Environmental Management Plan (OEMP). The content of this plan is in Table 10.6-1. › Develop and implement engine idling policy. › Use efficient, lower-emission vehicles and equipment where practical. › Limit vehicle speeds. › Use of vapour-tight connections during the unloading of rail cars and loading of the storage tanks. › Implement an air quality monitoring program at the terminal. › The PRPA is in the process of installing a new air quality monitoring station in Port Edward. › The navigational safety zone to be determined by the PRPA, in consultation with Vopak, will consider the locations of predicted air quality exceedances.

AQ-D-1	Change in air quality due to dust generation from the removal of buildings, tanks, and utilities	D	› Develop and implement management plans, including a Decommissioning Environmental Management Plan (DEMP) and Air Quality and Dust Control Management Plan (AQDCMP). › Avoid removal of tanks and infrastructure under overly dry conditions. › Use of water sprays to control dust. › Develop and implement engine idling policy. › Use efficient, lower-emission vehicles and equipment where practical.
AQ-D-2	Change in air quality specific to Project decommissioning-related emissions of CACs	D	› Develop and implement engine idling policy. › Use efficient, lower-emission vehicles and equipment where practical. › Limit vehicle speeds.
Greenhouse Gas Emissions			
GH-C-1	Change in GHG emissions from all construction activities	C	› Develop and implement Air Quality and Dust Control Management Plan (AQDCMP) and Construction Traffic Management Plan (CTMP). The contents of these plans are in Table 10.6-1. › Develop and implement engine idling policy. › Use efficient, lower-emission vehicles and equipment where practical. › Limit vehicle speeds.
GH-O-1	Change in GHG emissions from all operation activities	O	› Develop and implement Operation Environmental Management Plan (OEMP). The content of this plan can be found in Table 10.6-1. › Develop and implement engine idling policy. › Use efficient, lower-emission vehicles and equipment where practical. › Limit vehicle speeds. › Implement a leak detection and repair program for terminal fuels storage and processing. › Develop Energy Management Plan (EMP).
GH-D-1	Change in GHG emissions from the removal of tanks and infrastructure and jetty topside and from the removal of buildings and utilities	D	› Develop and implement Decommissioning Environmental Management Plan (DEMP). › Develop and implement engine idling policy. › Use efficient, lower-emission vehicles and equipment where practical. › Limit vehicle speeds.

Noise			
NO-C-1	Change in ambient noise levels	C	› Use mufflers on Project gas engines and generators. › Schedule expected noisy construction activities (i.e., pile installation, blasting) during daytime hours. › Establish a procedure for community notification of noisy activities, such as blasting or pile installation. › Establish two-way communication channels with the public (via the website, email, phone, or in person). › Investigate and follow up on complaints. › Develop and implement a Marine Underwater Noise and Vibration Management Plan (MUNVP) and Vegetation Management Plan (VMP), including an acoustic modelling and an Underwater Acoustic Monitoring Program which takes into account pile installation and upland blasting. The contents of these plans are in Table 10.6-1. › Adhere to DFO's Best Management Practices. › Avoid the use of excessive vehicles or machinery at site. Only use vehicles that are required to design, build, operate and maintain the terminal.
NO-O-1	Change in ambient noise levels	O	› Develop and implement management plans, including an Operation Environmental Management Plan (OEMP) and Noise Management Plan (NMP). The contents of these plans are in Table 10.6-1. › Use mufflers on Project gas engines and generators. › Limit maintenance and inspection activities to daytime hours, when possible. › Use of noise abatement measures including screens, if necessary. › Establish two-way communication channels with the public (via the website, email, phone, or in person). › Investigate and follow up on complaints. › Participate in the PRPA initiatives to reduce ocean noise. › Explore options to reduce operation noise. › Adhere to DFO's Best Management Practices. › Avoid the use of excessive vehicles or machinery at site. Only use vehicles that are required to design, build, operate and maintain the terminal.

Visual Quality			
VQ-C-1	Change in visual quality due to alteration of the view scape, construction of new buildings on land, or from construction of new marine features	C	› Design to minimize footprint. › Develop and implement a Construction Environmental Management Plan (CEMP). The content of this plan can be found in Table 10.6-1. › Limit site clearing, laydown, and staging areas. › Use natural colours as possible. › Revegetate temporary cleared areas following construction.
VQ-O-1	Change in visual quality at the facility due to railway operations, product storage tanks, vessel berthing, or from marine shipping	O	› Construction mitigation is anticipated to continue to reduce the effect of alteration of the visual landscape during operation.
VQ-D-1	Change in visual quality due to removal of facility and marine infrastructure	D	› Develop and implement Decommissioning Environmental Management Plan (DEMP) to restore and revegetate as necessary. The content of this plan can be found in Table 10.6-1. › Remove most land-based structures and the jetty topside.
Ambient Light			
Al-C-1	Changes to ambient light due to construction	C	› Avoid the use of excessive vehicles or machinery at site. Only use vehicles that are required to design, build, operate and maintain the terminal.
Al-O-1	Changes to ambient light due to operation	O	› Develop Light Management Plan (LMP). The content of this plan can be found in Table 10.6-1. › Minimize light use. › Use smart low consumption LED lighting. › Provide specifications for emergency lighting. › Minimize light trespass and sky glow in the LSA by using shades and directional lighting systems that point light downwards. › Design a fully enclosed flare. › Employ light controls on equipment. › Avoid the use of excessive vehicles or machinery at site. Only use vehicles that are required to design, build, operate and maintain the terminal.

Marine Sediment Quality			
MS-C-1	Change in marine sediment quality associated with the potential release of deleterious substances (contaminants), and increased turbidity and total suspended solids (TSS)	C	› Re-design to eliminate need for dredging. › Develop and implement management plans, including Spill Prevention and Emergency Response Management Plan (SPERMP), an Erosion and Sediment Control Plan (ESCP), a Petrochemical Storage and Handling Plan (PSHP), Surface Water and Storm Water Management Plan (SWSWMP), Marine Water Quality and Sediment Quality Management Plan (MWQSQMP). The contents of these plans are in Table 10.6-1. › Schedule in-water work.to occur during the DFO-approved least-risk work window (November 30 to February 15). › Monitor construction activities by a Qualified Environmental Professional (QEP) or Environmental Monitor (EM) under the supervision of a QEP. › Follow additional mitigations in DFO Request for Review and Letter of Advice (20-HPAC-00996). › Implement monitoring plans that will include a comprehensive list of contaminants of potential concern and a comparison to relevant and applicable guidelines.
MS-O-1	Change in marine sediment quality resulting in increased TSS or result in the resuspension of contaminants in the marine environment	O	› Develop and implement management plans, Spill Prevention and Emergency Response Management Plan (SPERMP), an Erosion and Sediment Control Plan (ESCP), a Petrochemical Storage and Handling Plan (PSHP), and Surface Water and Storm Water Management Plan (SWSWMP). The contents of these plans are in Table 10.6-1. › Prevent vessels from operating in shallow water or grounding upon the seabed. › Use of subsurface buoy in the multi-buoy mooring system. › PRPA conducts periodic sediment quality monitoring through the Port Environmental Stewardship programs.
Marine Water Quality			
MW-C-1	Change in marine water quality associated with the potential release of deleterious or contaminated substances from resuspended sediment, and an increase in turbidity, both	C	› Develop and implement management plans, including Spill Prevention and Emergency Response Management Plan (SPERMP), an Erosion and Sediment Control Plan (ESCP), a Petrochemical Storage and Handling Plan (PSHP), Surface Water and Storm Water Management Plan (SWSWMP), and Marine Water Quality and Sediment Quality Management Plan (MWQSQMP). The contents of these plans are in Table 10.6-1. › Construct collection sump pits and storm water lagoons for water storage.

	from marine works (e.g., pile and mooring anchor works) and upland terrestrial works (i.e., run-off)		› Monitor all project discharges, including monitoring water quality in the lagoons prior to discharge into the RRUC drainage system, and implementing adaptive management as needed. › Control flow into the RRUC to not exceed pre-development flows. › Prior to construction, develop a metal leaching and acid rock drainage (ML/ARD) sampling plan for geotechnical investigations, that includes criteria for which materials would be appropriate for use and testing of fill materials brought in from off-site; engage with relevant authorities, including ECCC, on the requirements for an ML/ARD Management Plan, if required. › Schedule in-water work.to occur during the DFO-approved least-risk work window (November 30 to February 15). › Follow additional mitigations in DFO Request for Review and Letter of Advice (20-HPAC-00996). › Monitor construction activities by a Qualified Environmental Professional (QEP) or Environmental Monitor (EM) under the supervision of a QEP.
MW-O-1	Change in marine water quality from the movement of anchor chains associated with the mooring buoys, storm water inputs that drain the Project upland area during general terminal operations, potential release of deleterious substances from storm water discharge or spills during cargo loading	O	› Develop and implement management plans, including Spill Prevention and Emergency Response Management Plan (SPERMP), and Storm Water Management Plan (SWSWMP). The contents of these plans are in Table 10.6-1. › Prevent vessels from operating in shallow water or grounding upon the seabed. › Use of subsurface buoy in the multi-buoy mooring system. › PRPA conducts periodic sediment quality monitoring through the Port Environmental Stewardship programs. › Conduct one sediment survey after one year of operation. The results of this survey will determine whether additional monitoring is required. › Conduct visual monitoring of marine water quality in the area of the mooring chains.
Marine Habitats			
MH-C-1	Alteration or loss of marine habitats from effects associated with changes in marine sediment quality and marine water quality or due to construction-related Project activities that result in the	C	› Develop and implement the Construction Environmental Management Plan (CEMP), Erosion and Sediment Control Plan (ESCP), Construction Blasting Management Plan (CBMP), Marine Underwater Noise and Vibration Management Plan (MUNVMP) prior to commencement of Project activities. The contents of these plans are in Table 10.6-1. › Schedule in-water work.to occur during the DFO-approved least-risk work window (November 30 to February 15).

	direct physical alteration or loss of existing habitats		› Review mitigation measures with contractors. › Follow mitigations in DFO Request for Review and Letter of Advice (20-HPAC-00996). › Conduct acoustic modelling prior to the development of the Marine Underwater Noise and Vibration Management plan (MUNVMP). › Where possible, avoid placing vertical spuds or other anchors into valued and sensitive habitat areas. › Flag or identify site-specific valued and sensitive habitat areas. › Monitor construction activities by a Qualified Environmental Professional (QEP) or Environmental Monitor (EM) under the supervision of a QEP. › Restore temporarily cleared marine riparian vegetation areas, as appropriate. › Retain a minimum shoreline buffer in LSA as much as practical. › Minimize disturbance from machinery operation.
MH-O-1	Alteration or loss of marine habitats attributed to general terminal operations (i.e., presence of infrastructure over marine habitats) and vessel berthing (i.e., presence of vessels over marine habitats)	O	› Implementation of mitigation for minimizing the effects from storm water-related effects in the Surface Water and Storm Water Management Plan **(Section 10)** during general operations will avoid alteration of nearshore marine habitats. › Construct collection sump pits and storm water lagoons for water storage. › Monitor water quality in the lagoons prior to discharge into the RRUC drainage system. › Control flow into the RRUC to not exceed pre-development flows.
Marine Fish			
MF-C-1	Injury, direct mortality or displacement of marine fish and invertebrates attributed to changes in marine habitats Injury, direct mortality or displacement of marine fish and invertebrates from indirect effects on other fish	C	› Develop and implement a site-specific Construction Environmental Management Plan (CEMP) including component Surface Water and Storm Water Management Plan (SWSWMP), and Erosion and Sediment Control Plan (ESCP), and Spill Prevention and Emergency Response Management Plan (SPERMP), Marine Underwater Noise and Vibration Management Plan (MUNVMP) prior to commencement of Project activities. The contents of these plans are in Table 10.6-1. › Monitor construction activities by a Qualified Environmental Professional (QEP) or Environmental Monitor (EM) under the supervision of a QEP.

	and invertebrate species in the food web		› Schedule in-water work.to occur during the DFO-approved least-risk work window (November 30 to February 15). › Follow appropriate BMPs, including the BMPs for Pile Driving and Related Operations (BC Marine and Pile Driving Contractors Association 2003), DFO BMP for Pile Driving and Related Operations (DFO undated) and Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters (Wright and Hopky 1998). › Implement exclusion zones based on underwater acoustic monitoring and the currently accepted thresholds. › Avoid concurrent in-water noise-producing construction activities, as possible. › Use soft-starts and ramp-ups, as possible. › Develop construction-activity specific Stop Work Protocols. › Conduct additional abalone surveys, if appropriate. › Retain a minimum shoreline buffer in LSA as much as practical.
MF-O-1	Injury, direct mortality or displacement of marine fish and invertebrates from benthic scouring	O	› Use of subsurface buoy in the multi-buoy mooring system. › Set guardian anchor blocks to minimize the range of chain motion.
MF-O-2	Displacement of marine fish and invertebrates from overwater lighting	O	› Develop and implement an integrated lighting design and a Light Management Plan (LMP) for the Project. Safety and operational needs will be prioritized in the development of the LMP. › Where practical, avoid lighting shallow nearshore areas, avoid overwater down-casting lights, and use an industrial low-profile light fixture that sidecasts light. › Use smart, low consumptive light-emitting diode. › Restrict continuous lighting to human and navigational safety. › Use of motion and occupancy sensors. › Use emergency lighting only during accidents and malfunctions or in case of unauthorized vessel trespass.
MF-O-3	Displacement of marine fish from underwater noise	O	› Develop speed reduction protocols for the arrival at and departure from the vessel berths.
Marine Mammals			

MM-C-1	Alteration or loss of marine mammal habitat due to site preparation or construction of the marine jetty and berths	C	› Mitigations for marine mammals will be synergistic with mitigations for marine fish and invertebrates. › Develop and implement management plans, including a Construction Environmental Management Plan (CEMP), Construction Waste Management Plan (CWMP), Erosion and Sediment Control Plan (ESCP), Surface Water and Storm Water Management Plan (SWSWMP), Fish and Fish Habitat Management Plan (FFHMP), and Marine Access and Vessel Communications Plan (MAVCP), and Marine Underwater Noise and Vibration Management Plan (MUNVMP) . The contents of these plans are in Table 10.6-1. › Follow mitigations in DFO Request for Review and Letter of Advice (20-HPAC-00996). › Conduct acoustic modelling prior to the development of the Marine Underwater Noise and Vibration Management plan (MUNVMP). › Monitor construction activities by a Qualified Environmental Professional (QEP) or Environmental Monitor (EM) under the supervision of a QEP. › Avoid discharge of any deleterious substance into the marine environment, and minimize the re-suspension of marine sediment containing potential contaminants, including bioaccumulative substances. › Engage DFO in the development of pre-and post-construction monitoring program focussed on harbour porpoise.
MM-C-2	Disturbance or displacement of marine mammals due to site preparation or construction of the marine jetty and berths	C	› Mitigations for marine mammals will be synergistic with mitigations for marine fish and invertebrates. › Develop and implement management plans, including Construction Environmental Management Plan (CEMP), Construction Blasting Management Plan (CBMP), Fish and Fish Habitat Management Plan (FFHMP), Marine Access and Vessel Communications Plan (MAVCP), Environmental Awareness and Education Plan (EAEP), and Marine Underwater Noise and Vibration Management Plan (MUNVMP). Component management plans will include marine mammal-specific details, such as safety zones and visual monitoring by qualified MMOs, underwater acoustic thresholds, underwater acoustic monitoring, construction related vessel operations and other content described in Table 10.6-1. › Follow mitigations in DFO Request for Review and Letter of Advice (20-HPAC-00996). › Conduct acoustic modelling prior to the development of the Marine Underwater Noise and Vibration Management plan (MUNVMP).

			› Follow best management practices (BC Marine and Pile Driving Contractors Association 2003), (DFO undated) and (Wright and Hopky 1998). › Monitor construction activities by a Qualified Environmental Professional (QEP) or Environmental Monitor (EM) under the supervision of a QEP. › Use of bubble curtains or other noise-attenuating devices, as appropriate. › Development of activity-specific Stop Work Protocols. › Prioritize lower sound emission equipment. › Avoid concurrent in-water noise-producing construction activities, as possible.
MM-C-3	Injury or mortality to marine mammals due to site preparation or construction of the marine jetty and berths	C	› Mitigative actions to avoid the potential effect of injury or mortality of marine mammals during the in-water construction from underwater noise and vessel strike risk are the same as those for the effects mentioned for MM-C-2. › Participate in the PRPA Marine Mammal Program (PRPA 2020).
MM-O-1	Alteration or loss of marine mammal habitat due to vessel berthing or associated off-site shipping activities	O	› Mitigations for marine mammals will be synergistic with mitigations for the marine fish and invertebrates subcomponent. › Develop and implement management plans including an Operation Environmental Management Plan (OEMP). The content of this plan can be found in Table 10.6-1. › Adhere to the Port Information Guide. › Minimize carrier time in the berths. › Avoid discharge of any deleterious substance into the marine environment, and minimize the re-suspension of marine sediment containing potential contaminants, including bioaccumulative substances. › Adhere to Be Whale Wise guidance. › Participation in the PRPA Marine Mammal Program (PRPA 2020).
MM-O-2	Disturbance or displacement of marine mammals due to vessel berthing or associated off-site shipping activities	O	
MM-O-3	Injury or mortality to marine mammals due to vessel berthing or associated off-site shipping activities	O	› Same as for MM-O-1 and MM-O-2 with the addition of the following. › Develop and implement MBM berth entanglement protocol.
MM-D-1	Disturbance or displacement of marine mammals due to removal of jetty topside	D	› Participate in the PRPA Marine Mammal Program (PRPA 2020) or other such programs.

MM-D-2	Injury or mortality to marine mammals due to removal of topside jetty	D	› Decommissioning plans will include marine mammal specific details such as safety zones and visual monitoring by qualified MMOs, underwater acoustic thresholds, underwater acoustic monitoring, and vessel operations. › Adhere to the Be Whale Wise guidance.
Marine Birds			
MB-C-1	Alteration or loss of marine bird habitat from clearing and grading of shoreline and general construction of the jetty and associated infrastructure; accidental releases of deleterious substances	C	› Develop and implement management plans, including a Construction Environmental Management Plan (CEMP), Surface Water and Storm Water Management Plan (SWSWMP), Wildlife Management Plan (WMP), and Spill Protection Emergency Response Management Plan (SPERMP). The contents of these plans are in Table 10.6-1. › Wildlife Management Plan will be based on guidance provided in federal avoidance guidelines (Government of Canada 2020) and will involve engagement with ECCC and other applicable experts. › Establish setbacks. › Conduct progressive reclamation and re-vegetation of shoreline and riparian areas, as appropriate.
MB-C-2	Clearing and grading of shoreline and general construction of the jetty and associated infrastructure may result in disturbance and displacement of marine birds in areas within and directly adjacent to these activities	C	› Develop and implement management plans, including a Construction Environmental Management Plan (CEMP) and Wildlife Management Plan (WMP). The contents of these plans are in Table 10.6-1. › Establish setbacks. › Avoid clearing during bird nesting season (April 4 to August 17), where possible. › Develop bird nest survey guide in collaboration with the PRPA and ECCC, if required. › Conduct pre-clearance bird nest surveys during bird nesting season. Surveys will be conducted by a qualified professional. › Establish protective buffers around active nests, as determined by a qualified professional in accordance with ECCC's Avoidance Guidelines. › Communicate to personnel not to feed wildlife and utilize signage that such activity is prohibited. Maintain clean worksites. › Manage wastes (including food scraps) appropriately.

MB-O-1	Alteration or loss of marine bird habitat as a result of overwater lighting	O	› Apply mitigations associated with marine water quality (**Section 5.4.2.8 Mitigation Measures**) and marine fish and invertebrates (**Section 5.4.4.8 Mitigation Measures**).
MB-O-2	Potential collision-related mortality as a result of nighttime lighting, change in mortality risk to marine birds	O	› Develop and implement Light Management Plan (LMP). The content of this plan can be found in Table 10.6-1. See MF-O-2. › Communicate to personnel not to feed wildlife and utilize signage that such activity is prohibited. Maintain clean worksites. › Manage wastes (including food scraps) appropriately.
MB-O-3	Artificial lighting, noise, and physical disturbance from vessel traffic may have an effect on disturbance and displacement of marine birds	O	› Develop and implement a Noise Management Plan (NMP) and Wildlife Management Plan (WMP). The contents of these plans can be found in Table 10.6-1. › Do not disturb or remove active bird nests within the facility other than those not protected by law. › WMP will be based on guidance provided in federal avoidance guidelines (Government of Canada 2020) and will involve engagement with ECCC and other applicable experts. › Implement noise mitigation management measures on equipment and machinery controls, as practical. › Schedule expected noisy activities during daytime hours. › Communicate to personnel not to feed wildlife and utilize signage that such activity is prohibited. › Manage wastes (including food scraps) appropriately. › Maintain clean worksites.
MB-D-1	Alteration or loss of marine bird habitat: Removal of anthropogenic features that marine birds may have adapted to use for roosting, foraging and possibly nesting	D	› Develop and implement a Wildlife Management Plan (WMP). The content of this plan can be found in Table 10.6-1. › Avoid clearing during bird nesting season (April 4 to August 17), where possible. › Develop bird nest survey guide in collaboration with the PRPA and ECCC, if required. › Conduct pre-clearance bird nest surveys during bird nesting season. Surveys will be conducted by a qualified professional. › Establish protective buffers around active nests, as determined by a qualified professional in accordance with ECCC's Avoidance Guidelines. › Communicate to personnel not to feed wildlife and utilize signage that such activity is prohibited. › Maintain clean worksites.

			› Manage wastes (including food scraps) appropriately.
MB-D-2	Change in mortality risk to marine birds: potential for destruction of occupied marine bird nests that may be present in or on facility infrastructure during decommissioning	D	› Develop and implement a Wildlife Management Plan (WMP). The content of this plan can be found in Table 10.6-1. › Avoid clearing during bird nesting season (April 4 to August 17), where possible. › Develop bird nest survey guide in collaboration with the PRPA and ECCC, if required. › Conduct pre-clearance bird nest surveys during bird nesting season. Surveys will be conducted by a qualified professional. › Establish protective buffers around active nests, as determined by a qualified professional in accordance with ECCC's Avoidance Guidelines. › Communicate to personnel not to feed wildlife and utilize signage that such activity is prohibited. › Manage wastes (including food scraps) appropriately. › Maintain clean worksites.
MB-D-3	Disturbance and displacement of marine birds: noise, artificial lighting, and visual disturbance from people and equipment Presence of artificial food supplies (e.g. from unsecured garbage or Project workers deliberately feeding wildlife) could cause marine birds to congregate in the vicinity of the Project, altering their natural movement patterns	D	› Develop and implement a Wildlife Management Plan (WMP). The contents of these plans can be found in Table 10.6-1. › Avoid clearing during bird nesting season (April 4 to August 17), where possible. › Develop bird nest survey guide in collaboration with the PRPA and ECCC, if required. › Conduct pre-clearance bird nest surveys during bird nesting season. Surveys will be conducted by a qualified professional. › Establish protective buffers around active nests, as determined by a qualified professional in accordance with ECCC's Avoidance Guidelines. › Communicate to personnel not to feed wildlife and utilize signage that such activity is prohibited. Maintain clean worksites. › Manage wastes (including food scraps) appropriately.
Soil Quality			
SQ-C-1	Change in soil function, including reduced permeability as a result of soil removal, from site clearing,	C	› Design to minimize footprint. › Develop and implement management plans, including a Construction Environmental Management Plan (CEMP), Soil Management Plan (SMP), Air Quality and Dust Control Management Plan (AQDCMP), Surface Water and Storm Water Management Plan (SWSWMP),

	soil storage, site grading, blasting, and fill		Erosion and Sediment Control Plan (ESCP) and Construction Blasting Management Plan (CBMP). The contents of these plans can be found in Table 10.6-1. › Prior to construction, develop a metal leaching and acid rock drainage (ML/ARD) sampling plan for geotechnical investigations, that includes criteria for which materials would be appropriate for use and testing of fill materials brought in from off-site; engage with relevant authorities, including ECCC, on the requirements for an ML/ARD Management Plan, if required. › Import contaminant-free engineered fill. › Use blasting mats. › Develop protocols to prevent additional soil loss to surrounding areas. › Restore disturbed areas, as described in the Site Restoration Plan (SRP).
SQ-C-2	Indirect change in soil quality due to loss of soil function in the RSA from construction activities in the LSA causing surface erosion and hydrological changes	C	› Design to minimize footprint. › Develop and implement management plans, including a Construction Blasting Management Plan (CBMP), Air Quality and Dust Control Management Plan (AQDCMP), Construction Environmental Management Plan (CEMP), Erosion and Sediment Control Plan (ESCP), Soil Management Plan (SMP), Site Restoration Plan (SRP), Surface Water and Storm Water Management Plan (SWSWMP), and Vegetation Management Plan (VMP). The contents of these plans can be found in Table 10.6-1. › Use blasting mats. › Develop protocols to prevent soil loss to surrounding areas. › Use of soil erosion controls for winds and water. › Limit temporary infrastructure. › Limit vehicle and heavy equipment access routes. › Restore disturbed areas, as described in the Site Restoration Plan (SRP).
Terrain			
TE-C-1	Potential localized effect of reduced terrain stability at excavation sites	C	› Design to minimize footprint; develop and implement management plans, including a Construction Blasting Management Plan (CBMP), Construction Environmental Management Plan (CEMP), Soil Management Plan (SMP), and Surface Water and Storm Water Management Plan (SWSWMP). The contents of these plans can be found in Table 10.6-1. › Inspect and evaluate rock cuts and excavations.

			› Use blasting mats. › Use ditches and berms to mitigate water movement.
Wildlife and Wildlife Habitat			
WW-C-1	Alteration or Loss of Wildlife Habitat	C	› Create and implement a Vegetation Management Plan (VMP), Soil Management Plan (SMP), Construction Waste Management Plan (CWMP), Air Quality and Dust Control Management Plan (AQDCMP), Surface Water and Storm Water Management Plan (SWSWMP), and Erosion and Sediment Control Plan (ESCP). The contents of these plans can be found in Table 10.6-1. › Reduce the size of Project footprints during design and use existing infrastructure where feasible. › Restrict construction activity to the flagged footprint area and previously disturbed areas › Confirm cleanliness of arriving construction vehicles. › Import fill that is free of contaminants and weed seeds. › Maintain clean worksites. › Manage wastes (including food scraps) appropriately. › Regrade and revegetate disturbed areas. › Use of appropriate catalytic converters, mufflers and exhaust systems in construction equipment and vehicles. › Control dust on access roads as needed. › Develop a Wetland Function Compensation Plan (WFCP) in accordance with the Federal Policy on Wetland Conservation Implementation Guide for Federal Land Managers with reference to the Operational Framework for Use of Conservation Allowances. › Install artificial bat roost boxes. (DRAFT – due to ongoing SARA permitting process).
WW-C-2	Change in Mortality Risk to Wildlife	C	› Develop and implement a Construction Blasting Management Plan (CBMP), Construction Traffic Management Plan (CTMP), Construction Waste Management Plan (CWMP), and Wildlife Management Plan (WMP). The contents of these plans can be found in Table 10.6-1. › Avoid clearing during bird nesting season (April 4 to August 17), where possible. › Develop bird nest survey guide in collaboration with the PRPA and ECCC. › Conduct pre-clearance bird nest surveys during bird nesting season. Surveys will be conducted by a qualified professional.

			› Establish protective buffers around active nests, as determined by a Qualified Professional in accordance with ECCC's avoidance guidelines. › Avoid clearing vegetation within little brown myotis roosting habitat during the sensitive timing window for little brown myotis roosting (early April to early November). (DRAFT – due to ongoing SARA permitting process) › Conduct amphibian salvage prior to vegetation removal, draining, clearing and grading of wetlands, following methods outlined in Best Management Practices for Amphibian and Reptile Salvage (BC MFLNRO 2016). Salvage will be conducted by a qualified professional. › Communicate to personnel not to feed wildlife and utilize signage that such activity is prohibited. › Conduct pre-construction wildlife surveys. Surveys will be conducted by a qualified professional. › Employ blasting mats to contain fly rock, and visually check for the presence of wildlife before blasting. › Adhere to existing PRPA speed limits and instruct drivers on wildlife awareness. › Prohibit hunting or otherwise harvesting wildlife by Project workers. › Design power lines to minimize risk of bird collisions.
WW-C-3	Disturbance and Displacement of Wildlife	C	› Develop and implement a Construction Blasting Management Plan (CBMP) and Wildlife Management Plan (WMP). The contents of these plans can be found in Table 10.6-1. › Avoid clearing during bird nesting season (April 4 to August 17), where possible. › Develop bird nest survey guide in collaboration with the PRPA and ECCC, if required. › Conduct pre-clearance bird nest surveys during bird nesting season. Surveys will be conducted by a qualified professional. › Establish protective buffers around active nests, as determined by a qualified professional in accordance with ECCC's Avoidance Guidelines. › Avoid clearing vegetation within little brown myotis roosting habitat during the sensitive timing window for little brown myotis roosting (early April to early November). (DRAFT – due to ongoing SARA permitting process) › Employ blasting mats to contain flyrock and reduce vibration, and visually check for the presence of wildlife before blasting.
WW-O-1	Alteration or Loss of Wildlife Habitat	O	› Create and implement Vegetation Management Plan (VMP) and Erosion and Sediment Control Plan (ESCP) for the operation phase. The contents of these plans can be found in Table 10.6-1.

			› Clean Project vehicles of dirt and mud prior to initial arrival at the site. › Treat any infestations of invasive plants that are identified per the *Pest Control Product Act*. Other applicable legislation will be identified in the Vegetation Management Plan (VMP). › Maintain cleanliness of the Project area and ensure that all solid waste is collected, stored, and removed off-site.
WW-O-2	Change in Mortality Risk to Wildlife	O	› Develop and implement Wildlife Management Plan (WMP) and Light Management Plan (LMP). The contents of these plans can be found in Table 10.6-1. See MF-O-2. › Check for wildlife occurrence (e.g., bird nests) before conducting routine maintenance of the fully-enclosed, ground level emergency flare. › Maintain a clean Project site, free of potential wildlife attractants, and communicate to personnel not to feed wildlife and utilize signage that such activity is prohibited. › Maintain PRPA speed limits and report wildlife roadkills to the site manager. › Do not disturb or remove active bird nests within the facility. › Install perimeter fencing to deter access by large wildlife. › Prohibit hunting or otherwise harvesting wildlife by Project workers.
WW-O-3	Disturbance and Displacement of Wildlife	O	› Develop and implement Light Management Plan (LMP) for the operation phase to meet regulatory commitments and achieve industry accepted practices.
WW-D-1	Alteration or Loss of Wildlife Habitat	D	› Develop a Decommissioning Environmental Management Plan (DEMP) that includes measures for habitat recovery and restoration, reduces risk to wildlife mortality, and reduces wildlife disturbance or displacement, to the greatest extent practicable within future management plans of PRPA.
WW-D-2	Change in Mortality Risk to Wildlife	D	› Develop a Decommissioning Environmental Management Plan (DEMP) that includes measures for habitat recovery and restoration, reduces risk to wildlife mortality, and reduces wildlife disturbance or displacement, to the greatest extent practicable within future management plans of PRPA.
WW-D-3	Disturbance and Displacement of Wildlife	D	› Develop a Decommissioning Environmental Management Plan (DEMP) that includes measures for habitat recovery and restoration, reduces risk to wildlife mortality, and reduces wildlife disturbance or displacement, to the greatest extent practicable within future management plans of PRPA.

Vegetation			
VE-C-1	Alteration or Loss of Vegetation	C	› Develop and implement a Vegetation Management Plan (VMP), Soil Management Plan (SMP), Construction Waste Management Plan (CWMP), Surface Water and Storm Water Management Plan (SWSWMP), and Erosion and Sediment Control Plan (ESCP). The contents of these plans can be found in Table 10.6-1. › Restrict vehicles, workers, laydown areas and fill to the footprint, existing roads, and previously-disturbed areas. › Confirm that all construction machinery and vehicles arrive on the site in a clean condition. › Monitor the construction area for any occurrences of invasive weed species and treat any occurrences. › Import fill is free of contaminants, including weed seeds. › Maintain clean worksites and collect and appropriately dispose of all construction waste. › Conduct periodic inspection of all vehicles and equipment for leaks. › Store all fuels and petrochemicals in approved containers in secondary containment. › Use designated fueling areas for construction equipment. › Use erosion prevention materials and structures such as drainage ditches, dams, silt fences and settling ponds as required. › Restore temporarily disturbed areas, as appropriate, as soon as practicable. › Develop a Wetland Function Compensation Plan (WFCP) in accordance with the Federal Policy on Wetland Conservation Implementation Guide for Federal Land Managers with reference to the Operational Framework for Use of Conservation Allowances. › The PRPA has a vegetation management plan for the RRUC which includes the clearing of shrubs.
VE-O-1	Alteration or Loss of Vegetation	O	› Develop and implement Vegetation Management Plan (VMP), Surface Water and Storm Water Management Plan (SWSWMP), and Erosion and Sediment Control Plan (ESCP). The contents of these plans can be found in Table 10.6-1. › Maintain cleanliness of vehicles and the Project area and confirm that all solid waste is collected, stored, and removed offsite. › Employ water and wind erosion prevention measures such as ditches and vegetation.

			› Monitor for any occurrences of invasive weed species and treat any occurrences.
VE-D-1	Alteration or Loss of Vegetation	D	› Develop a Decommissioning Environmental Management Plan (DEMP) that includes measures for habitat/ vegetation recovery and restoration.
Vegetation (Wetlands and Wetland Function)			
WF-C-1	Alteration or Loss of Wetlands and Wetland Function	C	› Develop and implement Vegetation Management Plan (VMP), Surface Water and Storm Water Management Plan (SWSWMP), and Erosion and Sediment Control Plan (ESCP). The contents of these plans can be found in Table 10.6-1. › Reduce the size of Project footprint during design and use existing infrastructure where feasible. › Restrict vehicles, workers, laydown areas and fill to the footprint, existing roads, and previously disturbed areas. › Confirm that all construction machinery and vehicles arrive on the site in a clean condition. › Monitor the construction area for any occurrences of invasive weed species and treat any occurrences. › Import fill is free of contaminants, including weed seeds. › Maintain clean worksites and collect and appropriately dispose of all construction waste. › Use erosion prevention materials and structures such as drainage ditches, dams, silt fences and settling ponds as required. › Restore temporarily disturbed areas as soon as practicable. › Develop a Wetland Function Compensation Plan (WFCP) in accordance with the Federal Policy on Wetland Conservation Implementation Guide for Federal Land Managers with reference to the Operational Framework for Use of Conservation Allowances.
WF-O-1	Alteration or Loss of Wetlands and Wetland Function	O	› Develop and implement Vegetation Management Plan (VMP), Surface Water and Storm Water Management Plan (SWSWMP), and Erosion and Sediment Control Plan (ESCP). The contents of these plans can be found in Table 10.6-1. › Monitor success of re-vegetation and promptly treat any infestations of invasive plants that are identified. › Maintain clean worksites and collect and appropriately dispose of all construction waste.

WF-D-1	Alteration or Loss of Wetlands and Wetland Function	D	› Develop a Decommissioning Environmental Management Plan (DEMP) that includes measures for ecosystem and wetland recovery and restoration, where practicable within the context of future land use management plans.
Groundwater and Surface Water Quality			
GS-C-1	Change to groundwater and surface water quality and increased risk of erosion and sedimentation from site clearing, site grading, blasting, fill and construction of Project facilities	C	› Design to avoid water bodies; place soils offsite; develop and implement management plans, including Air Quality and Dust Control Management Plan (AQDCMP), Construction Blasting Management Plan (CBMP), Erosion and Sediment Control Plan (ESCP), Soil Management Plan (SMP), and Surface Water and Storm Water Management Plan (SWSWMP). The contents of these plans can be found in Table 10.6-1. › Establish setbacks around water bodies. › Limit the extent of temporary disturbance. › Implement dust control measures. › Employ erosion controls. › Use PRPA's existing organics storage area for overburden storage. › Employ storm water management system. › Conduct progressive reclamation where possible and re-vegetation of disturbed areas. › Prior to construction, develop a metal leaching and acid rock drainage (ML/ARD) sampling plan for geotechnical investigations, that includes criteria for which materials would be appropriate for use and testing of fill materials brought in from off-site; engage with relevant authorities, including ECCC, on the requirements for an ML/ARD Management Plan, if required. › As necessary, conduct water quality monitoring upstream and downstream to address potential changes to surface waters, and implement adaptive management as needed. › Prohibit fuel, hydrocarbons or hazardous materials to be stored or refueled within 30 m of a freshwater body.
GS-O-1	Change in groundwater and surface water quality from general terminal operations	O	› Design and construct chemical storage, transport, and containment facilities to minimize leakage and contamination. › Construct storage facilities and pipelines to meet appropriate standards and regulations. › Develop and implement management plans, including Surface Water and Storm Water Management Plan (SWSWMP). The content of this plan can be found in Table 10.6-1. › Construct collection sump pits and storm water lagoons for water storage. › Monitor water quality in the lagoons prior to discharge into the RRUC drainage system.

			› Control flow into the RRUC to not exceed pre-development flows.
GS-D-1	Change to groundwater and surface water quality from removal of infrastructure	D	› Develop and implement an Erosion and Sediment Control Plan (ESCP) and Surface Water and Storm Water Management Plan (SWSWMP) for decommissioning. The contents of these plans can be found in Table 10.6-1. › Employ erosion controls to reduce the potential for transport of sediments to water bodies during decommissioning activities. › Use ditches and storm water lagoons, as available, to manage storm water during decommissioning. › Restore surface drainage conditions to a state congruent with the surrounding environment.
Freshwater Fish and Fish Habitat			
FF-C-1	Harmful alteration, disruption or destruction of freshwater fish and fish habitat	C	› Design to avoid water bodies; dispose soils off site; develop and implement management plans, including an Air Quality and Dust Control Management Plan (AQDCMP), Construction Blasting Management Plan (CBMP), Erosion and Sediment Control Plan (ESCP),Soil Management Plan (SMP), Spill and Emergency Response Management Plan (SPERMP), and Surface Water and Storm Water Management Plan (SWSWMP). The contents of these plans can be found in Table 10.6-1. › Establish setbacks around water bodies. › As necessary, conduct water quality monitoring upstream and downstream to address potential changes to surface waters, and implement adaptive management as needed. › Employ dust control measures. › Limit the extent of temporary disturbance. › Prohibit fuel, hydrocarbons or hazardous materials to be stored or refueled within 30 m of a freshwater body. › Conduct progressive reclamation and re-vegetation of disturbed areas, where possible. › Implement measures to prevent contamination of soil and designate areas for soil stockpiling. › Use blasting mats to minimize the generation of dust during blasting. › Size blasting charges to avoid potential percussion injuries to sticklebacks found in pond FSS-10. › Implement mitigation and management for wetland draining that includes monitoring for relevant water quality parameters, including contaminants.

			› Identify surface water quality criteria/thresholds for discharge to the RRUC. › Describe adaptive management procedures in the case that thresholds are exceeded. › Limit the extent of temporary roadways, workspace, and laydown areas to reduce erosion potential.
FF-O-1	Change in freshwater fish and fish habitat quality from general terminal operations	O	› Design and construct chemical storage, transport, and containment facilities to minimize leakage and contamination. › Construct storage facilities and pipelines to meet appropriate standards and regulations › Develop and implement management plans, including a Surface Water and Storm Water Management Plan (SWSWMP). The contents of these plans can be found in Table 10.6-1. › Construct collection sump pits and storm water lagoons for water storage. › Monitor water quality in the lagoons prior to discharge into the RRUC drainage system. › Control flow into the RRUC to not exceed pre-development flows.
FF-D-1	Changes to fish habitat quality from the removal of infrastructure	D	› Develop and implement an Erosion and Sediment Control Plan (ESCP) and Surface Water and Storm Water Management Plan (SWSWMP) for decommissioning. The contents of these plans can be found in Table 10.6-1. › Restore surface drainage conditions to a state congruent with the surrounding environment.

Economic Conditions			
EC-C-1	Effects on employers' financial well-being as a result of potential labour competition	C	› Engage with chambers of commerce. › Have a local content strategy to increase the potential of local Indigenous and local community businesses on the project. › Work with local Indigenous employment entities to notify them on where to find employment and training opportunities related to the project. › Set local employment targets prior to each phase of the Project. › The Community Services and Infrastructure Committee will have the opportunity to discuss social effects related to the VPC Project and will be engaged in identifying metrics to be monitored, such as employment targets.
EC-C-2	Construction effects on consumer access to goods and services	C	› Engage with chambers of commerce.
EC-O-1	Project operation may contribute to labour competition which could adversely affect businesses	O	› Engage with chambers of commerce to address labour competition; participate in local employment, training, and labour market planning committees. › Participate in existing career fairs. › Engage and work with local employment services. › Provide cultural awareness training for employees with respect to Indigenous culture.
EC-O-2	Effect of operation on consumer access to goods and services	O	› Participate in the Prince Rupert and District Chamber of Commerce and engage with the Chamber to gather feedback and insight on how the Project is affecting local commerce. › Attend most of the Chamber luncheons where there will be further opportunities to engage with local businesses. › Establish two-way communications (e.g., email, phone, the Project website or in-person) for local residents and business owners to engage directly with the Project. › The Community Services and Infrastructure Committee will have the opportunity to discuss social effects related to the VPC Project and will be engaged in identifying metrics to be monitored, such as employment targets.

EC-D-1	Project decommissioning will lead to an eventual loss of employment after many years of operation-related employment	D	› Work with Working Group members, including Indigenous nations and municipalities to communicate timing of decommissioning and seek input to minimize negative effects, maximize transition and contract opportunities of decommissioning.
EC-D-2	Project decommissioning will lead to an eventual loss of business activity after many years of operation-related activity	D	› Work with Working Group members, including Indigenous nations and municipalities to communicate timing of decommissioning and seek input to minimize negative effects, maximize transition and contract opportunities of decommissioning.
EC-D-3	Project decommissioning will lead to an eventual loss of economic activity after many years of operation-related activity	D	› Work with Working Group members, including Indigenous nations and municipalities to communicate timing of decommissioning and seek input to minimize negative effects, maximize transition and contract opportunities of decommissioning.
EC-D-4	Project decommissioning may lead to contraction in the region's business community, with associated effects on consumers and their access to goods and services, but possibly also redirection of local businesses to consumers	D	› Engage with chambers of commerce.
Marine Use and Navigation			
MU-C-1	Change in marine use	C	› Develop and implement a Marine Access and Vessel Communications Plan (MAVCP) to include establishing safety zones. The content of this plan can be found in Table 10.6-1. › Obtain appropriate authorizations required for any construction, works, demolition or development by PRPA. › Establish marine safety zones during construction under the jurisdiction of the PRPA.

MU-C-2	Change in navigation	C	› Develop and implement a Marine Access and Vessel Communications Plan (MAVCP). The content of this plan can be found in Table 10.6-1. › Obtain appropriate authorizations required for any construction, works, demolition or development by PRPA. › Establish marine safety zones during construction under the jurisdiction of the PRPA. › Liaise with CCG to provide Navigational Warning (NAVWARN) and Notices to Mariners.
MU-O-1	Change in marine use	O	› Develop and implement a Marine Access and Vessel Communications Plan (MAVCP) and a Light Management Plan (LMP). The contents of these plans can be found in Table 10.6-1. › Design clearance under trestle spans sufficient to allow continued navigation of some vessels (e.g., kayaks), if the safety zones do not apply when vessels are not at berth. › Liaise with CCG to provide Navigational Warning (NAVWARN) and Notices to Mariners. › Adhere to applicable PRPA and PPA procedures (including mandatory piloting of carriers calling on the terminal and safety zones for other vessels). › Comply with transit speed in accordance with the PRPA and Collision Regulations. › Implement mitigation included in Ambient Light **Section 5.3.2.8 Mitigation Measures**. › Install navigational aids on jetty structures, where required, to enhance navigation safety. › Submit information about the trestle and berth locations to the CHS to updated navigational charts to minimize the potential for vessel collisions or impacts with the jetty structure. › Use escort vessels to confirm the route is clear and safe and that other vessels do not intrude on safety zones. › Use tugboats for the safe transit and berthing of vessels calling on the terminal. › Adhere to applicable limits set by the PRPA on environmental conditions under which operation can be conducted safely. › Comply with the *Navigable Waters Act* approval conditions. › Liaise with communities of scheduled vessels coming into the terminal including date, type of vessel and origin of vessel.
MU-O-2	Change in navigation	O	› Same as listed above (MU-O-1). › Establish and maintain radio communications between vessels and the Canadian Coast Guard's Marine Communications and Traffic Services, as required by CCG. › Vet vessels (completed by Vopak).

MU-D-1	Change in marine use	D	› Liaise with CCG to provide Navigational Warning (NAVWARN) and Notices to Mariners. › Maintain navigational aids on jetty structures, where required, to enhance navigation safety. › Establish clearance around trestle spans sufficient for navigation of some vessels (e.g., kayaks) following decommissioning.
MU-D-2	Change in navigation		› Liaise with CCG to provide Navigational Warning (NAVWARN) and Notices to Mariners. › Maintain navigational aids on jetty structures, where required, to enhance navigation safety. › Establish clearance around trestle spans sufficient for navigation of some vessels (e.g., kayaks) following decommissioning.
Community Services and Infrastructure			
CI-C-1	Effect of Project Construction on Rental Housing	C	› Use of work camp. › Implement a 14/7 work schedule. › Engage with government and housing stakeholders. › Provide financial support for social housing. › Engage government and housing stakeholders including regional First Nations, BC Housing, City of Prince Rupert, North Coast Transition Society, M'akola housing Society on solutions. › Review the City of Prince Rupert and Port Edward housing surveys and housing stock assessments.
CI-C-2	Effect of Project Construction on Quality of Health Care	C	› Meet or exceed WorkSafeBC requirements. › Implement the Vopak Fundamentals of Safety and the Vopak Code of Conduct to avoid workplace accidents and associated pressure on the region's health care system. › Require work camp operators' adherence to health-related laws and policy. › Support the work camp operator's standard health and safety practices. › Implement a 14/7 work schedule. › Provide health care on the work site (i.e., hire a nurse practitioner) and encourage use of home community care. › Plan for Project demand on services and infrastructure. › Prohibit the use of alcohol and other drugs.

			› Require prime contractors to put in place policies that require workers to utilize work camp housing, goods and services consistent with Vopak's Code of Conduct and the Health and Medical Services Plan. › Reduce personal and industrial traffic volumes to reduce potential traffic accidents. › Develop plans to discuss opioid overdose. › Implement additional traffic safety measures, as appropriate. › Develop Health and Safety Management Plan (HSMP) and Health and Medical Services Plan (HMSP) with the assistance of qualified individuals and incorporating Northern Health Emergency Response Roles. The content of this plan can be found in Table 10.6-1.
CI-C-3	Effect of Project Construction on Traffic Volume and Safety	C	› Develop and implement a Construction Traffic Management Plan (CTMP). The content of this plan can be found in Table 10.6-1. › Conduct employee and contractor training and adherence to the Vopak Fundamentals of Safety and the Vopak Code of Conduct. › Require prime contractors to put in place policies that require workers to utilize work camp housing, goods and services consistent with Vopak's Code of Conduct and the Health and Medical Services Plan. › Use shuttle buses to and from the work camp. › Use barges and rail to transport materials and equipment used during construction. › Support the work camp operator's use of work camp policies relevant to reducing Project-related traffic volume and maximizing safety. › Implement additional traffic safety measures, as appropriate. › Prohibit the use of alcohol and other drugs. › Develop additional health care measures, as needed.
CI-O-1	Effect of Project Operation on Traffic Volume and Safety	O	› Conduct employee and contractor training and adherence to the Vopak Fundamentals of Safety and the Vopak Code of Conduct. › Develop additional traffic safety measures, as appropriate.
CI-D-1	Effect of Project Decommissioning on Quality of Health Care	D	› Meet or exceed WorkSafe BC requirements.

			› Require prime contractors to put in place policies that require workers to utilize work camp housing, goods and services consistent with Vopak's Code of Conduct and the Health and Medical Services Plan. (if work camp is being used for decommissioning). › Implement the Vopak Fundamentals of Safety and the Vopak Code of Conduct to avoid workplace accidents and associated pressure on the region's health care system. › Require work camp operator's adherence to health-related laws and policy (if work camp used for decommissioning). › Support the work camp operator's standard health and safety practices (if work camp used for decommissioning). › Provide health care on the work site (i.e., hire a nurse practitioner) and encourage use of home community care. › Plan for Project demand on services and infrastructure. › Prohibit the use of alcohol and other drugs. › Reduce personal and industrial traffic volumes to reduce potential traffic accidents. › Develop plans to discuss opioid overdose. › Develop Health and Safety Management Plan (HSMP) and Health and Medical Services Plan (HMSP) with the assistance of qualified individuals and incorporating Northern Health Emergency Response Roles. The contents of these plans can be found in Table 10.6-1.
CI-D-2	Effect of Project Decommissioning on Traffic Volume and Safety	D	› Conduct employee and contractor training and adherence to the Vopak Fundamentals of Safety and the Vopak Code of Conduct. › Use shuttle buses to and from the work camp. › Require prime contractors to put in place policies that require workers to utilize work camp housing, goods and services consistent with Vopak's Code of Conduct and the Health and Medical Services Plan. › Use barges and rail to transport materials and equipment used during decommissioning. › Support the work camp operator's use of work camp policies (if work camp being used during decommissioning) relevant to reducing Project-related traffic volume and maximizing safety. › Prohibit the use of alcohol and other drugs.
Community Well-Being			

CW-C-1	Effect on well-being outcomes	C	› Implement the Vopak Fundamentals of Safety and the Vopak Code of Conduct. › Establish an Indigenous Liaison position. › Use of work camp. › Implement a 14/7 work schedule. › Engage with governments and housing stakeholders. › Provide financial support for social housing. › Meet or exceed WorkSafeBC requirements. › Require work camp operators' adherence to health-related laws and policy. › Support the work camp operator's standard health and safety practices. › Provide health care on the work site (i.e., hire a nurse practitioner) and encourage use of home community care. › Plan for Project demand on services and infrastructure. › Prohibit the use of alcohol and other drugs. › Require prime contractors to put in place policies that require workers to utilize work camp housing, goods and services consistent with Vopak's Code of Conduct and the Health and Medical Services Plan. › Develop plans to discuss opioid overdose. › Develop and implement a Construction Traffic Management Plan (CTMP). The content of this plan can be found in Table 10.6-1. › Use shuttle buses to and from the work camp. › Use barges and rail to transport materials and equipment used during construction. › Avoid the use of excessive vehicles or machinery at site. Only use vehicles that are required to design, build, operate and maintain the terminal. › Support the work camp operator's use of work camp policies relevant to reducing Project-related traffic volume and maximizing safety. › Implement additional traffic safety measures, as appropriate. › Implement additional health care measures, as appropriate. › Establish and facilitate a Community Services and Infrastructure Committee to include (at a minimum): First Nations, municipalities, health authorities, emergency services, employment and training managers, proponents, and government agencies. Possible working group themes include health, safety, employment and training, housing, and culture.

			› Provide Project workers, with cross-cultural awareness training, which will be developed in collaboration with engaged Indigenous Nations. › Develop Health and Safety Management Plan (HSMP) and Health and Medical Services Plan (HMSP) with the assistance of qualified individuals and incorporating Northern Health Emergency Response Roles. The contents of these plans can be found in Table 10.6-1. › Establish two-way communication channels with the public. Community members are able to engage with the Project to provide their feedback or voice their concerns via the website, email, phone, or in person. › Establish a phone line where complaints can be received. › Investigate and follow up on complaints.
CW-O-1	Effect on well-being outcomes	O	› Conduct employee and contractor training and adherence to the Vopak Fundamentals of Safety and the Vopak Code of Conduct. › Establish an Indigenous liaison position. › Implement additional traffic safety measures, as appropriate. › Avoid the use of excessive vehicles or machinery at site. Only use vehicles that are required to design, build, operate and maintain the terminal. › Develop Health and Safety Management Plan (HSMP) and Health and Medical Services Plan (HMSP) with the assistance of qualified individuals and incorporating Northern Health Emergency Response Roles. The contents of these plans can be found in Table 10.6-1. › Establish two-way communication channels with the public. Community members are able to engage with the Project to provide their feedback or voice their concerns via the website, email, phone or in person. › Establish a phone line where complaints can be received. › Investigate and follow up on complaints.
CW-D-1	Effect on well-being outcomes	D	› Mitigation to avoid effects has not been proposed.
Heritage and Archaeology			
HA-C-1	Loss of or damage to CMTs from site clearing, including soil storage	C	› Avoid CMT sites, where possible. › Collect stem round samples from all CMTs that are removed. › Create a wind-firm buffer to protect indirectly affected CMTs from potential blowdown.

			› Develop and implement an Archaeological Resources Management Plan (ARMP) in collaboration with Indigenous nations. The content of this plan can be found in Table 10.6-1. › Train on-site personnel on the Chance Find Protocol prior to conducting any ground-disturbing activities.
HA-C-2	Loss of or damage to heritage and archaeological resources from site grading, including blasting, and deposition of fill	C	› Avoid AOPs, where possible. › Monitor AOPs during construction to identify archaeological deposits, if present. › Develop and implement an Archaeological Resources Management Plan (ARMP) in collaboration with Indigenous nations. The content of this plan can be found in Table 10.6-1. › Train on-site personnel on the Chance Find Protocol prior to conducting any ground-disturbing activities.
HA-C-3	Loss of or damage to heritage and archaeological resources from construction of marine jetty and berths	C	› Avoid AOPs, where possible. › Develop and implement an Archaeological Resources Management Plan (ARMP) in collaboration with Indigenous nations. The content of this plan can be found in Table 10.6-1. › Train on-site personnel on the Chance Find Protocol prior to conducting any ground-disturbing activities.
Human Health			
N/A.	Change in human health through discharge of Project Water	C	› Refer to proposed mitigations identified under Freshwater Fish and Fish Habitat and Marine Water Quality.
N/A.	Change in human health through increased Project emissions (Criteria Air Contaminants or CACs) resulting in decreased air quality	C	› Refer to proposed mitigations identified under Air Quality.
N/A.	Change in ambient light from the construction of Project facilities on land, the marine jetty and berths	C	› Mitigation, including avoidance or reduction measures, is not considered feasible during construction as the construction lighting must be in place for safe work, security, and marine navigation.

N/A.	Decreased country food quality through increased Project emissions	C	› Refer to proposed mitigations identified under Freshwater Fish and Fish Habitat and Marine Water Quality, Wildlife and Wildlife Habitat, Vegetation and Wetlands and Wetland Function.
N/A.	Change in human health from increased ambient sound levels	C	› Refer to proposed mitigations identified under Noise.
N/A.	Change in human health from increased CACs from operation activities	O	› Refer to proposed mitigations identified under Air Quality.
N/A.	Change in human health through Project emissions resulting in decreased food quality	O	› Refer to proposed mitigations identified under Freshwater Fish and Fish Habitat and Marine Water Quality, Wildlife and Wildlife Habitat, Vegetation and Wetlands and Wetland Function.
N/A.	Change in visual quality, including ambient light, affecting human health as a result of Project operations	O	› An Operation Environmental Management Plan (OEMP) will be developed and implemented and will include a Light Management Plan (LMP) to address effects from ambient light.
N/A.	Change in ambient noise levels affecting human health because of Project operations	O	› Refer to proposed mitigations identified under Noise.
N/A.	Change in human health through increased CACs resulting in decreased air quality	D	› Refer to proposed mitigations identified under Air Quality.
N/A.	Change in ambient noise levels affecting human health as a result of decommissioning activities	D	› Refer to proposed mitigations identified under Noise.

Accidents and Malfunctions			
N/A	Mitigations built into design		› Commission to ensure all equipment is properly installed and there are no leaks. › Use appropriate seals, flanges, isolation, etc. in all equipment such as piping, pumps, valves, etc. › Use gas detection system and overfill protection systems. › Use of nitrogen prior to product transfers. › Use of only ATEX-approved electrical equipment in critical areas. › Ground all equipment to prevent static electricity. › Implement fall prevention at rail unloading and anywhere else where applicable. › Mitigations specific to each Project component are provided in Section 6.3.3.1.
N/A	Mitigations built into construction execution	C	› Undertake Project construction and operation with an experienced, environmentally responsible infrastructure developer in accordance with all applicable regulatory requirements, PRPA policies, procedures and guidelines, and detailed Construction Environmental Management Plan (CEMP) and Operation Environmental Management Plan (OEMP). › Adhere to the *Canada Marine Act* and associated federal rules and regulations, including the PRPA Port Information Guide (PRPA 2020). Follow PRPA and BC Coast Pilot safety procedures, as required. › Develop and implement an Emergency Response Assistance Plan (ERAP) for the Project construction (includes commissioning) and operation phases.
N/A	Accidental Spills of Contaminants and Hazardous Materials	C	› Design fuel and hazardous waste storage tanks as per legislation, codes, and regulations, such as the EMA; BC Fire Code; National Fire Code. › Use secondary containment for hazardous waste. › Install a drip pan, secondary containment, or other preventative measure to prevent loss to the water body for hydraulic or petroleum-fueled equipment adjacent to water. › Develop and implement the Construction Environmental Management Plan (CEMP) which will incorporate requirements for the safe handling and storage of hazardous materials and spill contingency measures, and will be properly enforced (Petrochemical Storage and Handling Plan, Spill Prevention and Emergency Response Management Plan, Surface Water and Storm Water Management Plan, Soil Management Plan). Such procedures will be in compliance with the Workplace Hazardous Materials Information System.

			› Develop and implement other CEMP component plans that support reducing or eliminating risk of spill (on land and marine environment) include: Erosion and Sediment Control (ESC), Fish and Fish Habitat Management, Marine Access and Vessel Communication Management. › Train and equip employees, contractors, and subcontractors to provide initial response for spills of fuel or other hazardous materials. › Train employees, contractors, and subcontractors in the appropriate communication and notification protocols for a spill of fuel or other hazardous materials. › Prohibit fuel, hydrocarbons or hazardous materials to be stored or refueled within 30 m of a freshwater body. › Confine maintenance work to a designated location (whether on-site or off-site). › Design fuel tanks in safe locations with impervious ground cover to prevent spillage from entering the ground or drainage system and within adequate secondary containment. › Place spill containment kits and PPE at strategic locations throughout the construction area and will be regularly maintained. › Provide details on appropriate actions and best management practices in the Construction Environmental Management Plan (CEMP). The measures taken will be scaled to the nature and magnitude of the spill.
N/A	Accidental sediment release into water bodies	C	› Limit the extent of temporary roadways, workspace, and laydown areas, grading slopes to minimize erosion, and monitoring of erosion controls. › Use water sprays to control dust. › Monitor water quality in the event of an accidental sediment release to address potential changes to surface waters (freshwater and marine). › Develop and implement an Erosion and Sediment Control Plan (ESCP).
N/A	Fly rock from blasting activities	C	› Establish a blast zone and safety zone for worker safety from injury or fatality. › Obtain all necessary permits and comply with the appropriate laws, rules and regulations of BC and federal agencies in connection with the use, transportation, storage, and safe handling of all explosives, including those regulations contained in the Industrial Health and Safety Regulations of WorkSafe BC, the federal Explosives Act and the Explosives Regulations, 2013. › Post warning signs and have recognizable audible warning signals for blast activities.

			› Schedule blasting during the day shift only. › Use blast mats, soil, or other similar material to cover blast area to prevent fly rock. › Inspect blast areas before construction crews enter to continue work. › Develop and implement Construction Blasting Management Plan (CBMP). › Implement protection measures for wildlife to reduce incidence of disturbance, displacement, injury, or mortality.
N/A	Fire or explosion	C	› Develop and implement the Construction Environmental Management Plan (CEMP) which will include plans for Health and Safety Management, Petrochemical Storage and Handling, and Spill Prevention and Emergency Response Management. › Install fire monitoring, detection, and suppression equipment, such as monitors, hydrants, sprinkler systems, fire extinguishers and other sources of water for emergency response. › Further details are available in Section 6.3.3.6.4.
N/A	Worker Safety Incidents	C	› Develop and implement the Construction Environmental Management Plan (CEMP) which will include a Health and Safety Management Plan and training program (Section 10.2.9 Health and Safety Management Plan). › Comply with BC OHS and WorkSafeBC Standards. › Develop and implement a Construction Traffic Management Plan (CTMP). › Comply with the *Transportation of Dangerous Goods Act*. › Maintain all machinery and heavy equipment according to manufacturer and mechanic recommendations.
N/A	Material spill or leaks during operation	O	› Mitigations defined above under Accidental spills of contaminants and hazardous materials and accidental sediment release into water bodies. › Design, build, operate, and audit as per Vopak standards. Vopak standards apply applicable international standards; any deviation from the standards will require a formal approval process. › Evaluate the consequence of VCE and identify additional safeguards as applicable. › Provide a fire detection and fire suppression (including a deluge system) system for the facility. › Install Emergency Control Systems.

			› Provide training to workers who may be involved with the use of gas detection equipment, isolation valves, ESD valves. › Install leak detection system. › Provide employees with appropriate PPE and personal gas monitors while on-site. › Establish limited access or permitted area(s). › Conduct Preventative Maintenance Program and Periodic Inspection Plan, which includes regular maintenance, inspections, and audits. › Use an emergency ground flare. Details are provided in Section 6.3.3.7.1. › Use certified pressure equipment and certified pressure piping.
N/A	Rail unloading operations	O	› Comply with applicable legislation, including TP 14877 during unloading of rail cars. The standard sets out the requirements for the handling, offering for transport, and transporting of dangerous goods by rail in Canada. › Require rail cars to travel at low speeds on approach to the facility and there will be a set speed limit within the facility boundaries. › Establish safety protocols in accordance with the Railway Safety Management System Regulations of the *Railway Safety Act.* › Train employees, train operators and support staff involved in LPG, CPP and methanol unloading to avoid or reduce human errors (further details available in Section 6.3.3.7.2). › Design with a level gradient for flat grades on tracks used for unloading product cars, to avoid uncoupled cars or trains potentially rolling away from workers and derailing. › Conduct pre-movement track inspections, tanker inspection and yard area survey (carried out by Rail Operator).
N/A	Marine loading operations	O	› Comply with Port Information Guide (PRPA 2020), which includes PRPA Practices and Procedures. › Use qualified marine pilots (local knowledge-base). › Use of tethered tugs to accompany all vessels in transit and berthing within PRPA marine jurisdiction. › Adhere to established Environmental Operating Limits.

			› Require customers to use double-hulled vessels, as required by Canadian law (*Oil Pollution Act,* 1990). › Conduct berthing simulations. Project design will incorporate pre-simulation of collisions and mooring, and mooring analysis. › Maintain navigation safety zone, where safety zone applies for LPG loading: o No small craft or other vessels, unless associated with the Vopak terminal, will be allowed within 140 m of the loading manifold. o No safety zones have been considered for methanol or CPP (diesel and gasoline). › Establish safety protocols related to the transfer of cargo from storage to the vessels. › Develop and implement an Emergency Response Assistance Plan (ERAP). › Equip loading hoses with break-away couplings to prevent spills and subsequently a major incident. › Establish ESD procedures. › Install and use valve interlocks for safeguarding procedures. › Prohibit hot work on vessels while loading is in progress on any vessel. › Prohibit fuel bunkering or supply delivery to vessels while product transfer is in progress. › Prohibit vessel tank cleaning while product transfer is in progress. › Implement a security procedure to address outside vessels entering the loading zone, (e.g., recreational vessels). › Implement a series of lights and alarms while loading is in progress, (e.g., yellow light when no product transfer is occurring, red light when product transfer occurring).
N/A	Marine transit	O	› Adhere to existing mitigations within the PRPA, include the Vessel Traffic Management System and Mandatory Vessel Pilotage and Aids to Navigation. › Comply with the Port Information Guide (PRPA 2020); use of qualified marine pilots (local knowledge-base); establish safety protocols; develop and implement Emergency Response Assistance Plan (ERAP); tethered tugs will accompany all vessels within PRPA jurisdiction; use of established navigation routes; establish Environmental Operating Limits; and incorporate berthing simulations into project design. Vopak Specific Mitigations:

			Arrivals and Departures › Embark/debark pilots at Triple Island, which will adhere to all Pacific Pilotage Authority/British Columbia Coast Pilots safety procedures and requirements. › Adhere to the *Canada Marine Act* and associated Federal and Provincial Rules & Regulations including PRPA Information Guidelines. › Maintain the safety zone established by PRPA. › Require vessels to adhere to speed limits, follow tug assist requirements, and berthing requirements/procedures within the boundaries of the PRPA and within the MBM. › Adhere to, and be compliant with all applicable PRPA, Government and Pacific Pilotage Authority/British Columbia Coast Pilots navigational safety rules and regulations. Tethered tugs will remain with the vessel to the port limits and beyond if advised by the pilot.
Effects of the Environment on the Project			
N/A	Precipitation	C/O	› Design Project to account for precipitation events, including associated wind load and pressure, as described in Section 7.3.1.3.1. › Direct excessive runoff to the PRPA storm water ponds (depending on capacity) to avoid runoff entering the marine and freshwater environments during extreme precipitation events. › Stop activities temporarily during all phases of the Project in the event of an extreme snowstorm (which is rare in the area) or extreme rainfall, if required. › Account for the weather forecast when planning critical construction activities.
N/A	Wind and Storm Events	O	› Design Project infrastructure to account for wave heights as indicated in Section 7.3.1.3.2. › Maintain slow speeds for tug activities during berthing and unberthing to allow for adequate control during wind events. › Design marine infrastructure for the Project to accommodate for increased wave heights associated with high wind conditions. › Include procedures for ceasing or postponing vessel docking and loading if weather conditions make those operations unsafe in the Operation Environmental Management Plan (OEMP).
N/A	Fog	C/O/D	› Require marine vessels to be equipped with fog horns and GPS systems. Marine crews should be aware of fog alarms and light restrictions during fog events.

			› Stop off-shore construction and decommissioning activities if visibility is less than 0.8 km or 0.5 nautical miles to reduce the possibility of an accident occurring.
N/A	Seismic Event	O	› Evaluate intensity, duration, and frequency of region-specific earthquakes in Project design and details about the codes and standards used are provided in Section 7.3.2.3. › Monitor the Canadian National Seismograph Network. › Include stringent safety measures for immediate evacuation of the facility in the event of a seismic emergency in the Construction Environmental Management Plan and Operation Environmental Management Plan. › Develop and implement an Emergency Response Assistance Plan.
N/A	Forest Fire	C/O/D	› Comply with the BC Fire Code 2018, National Fire Code 2015, *BC Wildfire Act* and regulations, *BC Forest and Range Practices Act* and FireSmart principles. › Require contractors to have a fire prevention plan in place during construction consistent with the Vopak Health and Safety Management Plan of the Construction Environment Management Plan. › Require contractors to have adequate fire suppression equipment, smoke detectors, and fire extinguishers on site and secured throughout the Project site. › Develop and implement an Emergency Response Assistance Plan. › Monitor the local forest fire hazard and the state of any nearby fires during construction and operation. › Monitor electrical utilities daily during operation. If defects are noted they will be addressed immediately. › Install fixed gas detectors and a fire fighting system on the jetty.
	Climate Change	O	› Incorporate appropriate national building codes, infrastructure standards, and land use planning for long-term resilience into the Project design. › Incorporate appropriate design guidelines and factors of safety into the design of the suction anchor system. › Design the suction anchor system to incorporate the appropriate horizontal and uplift forces. › Mitigation measures outlined in the previous sections address heavy precipitation, wind and storm events, seismic events, and fire.

Part C			
Harvesting Rights	Change in Quantity of Resource Change in Quality of Resource		› Develop Indigenous Interests Management Plan in collaboration with Indigenous nations. › Work with the Indigenous nations to develop a shared understanding of how the Project may affect Indigenous interests. › Engage with Indigenous nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns. › Maintain positive long-term relationships with Indigenous nations. › Incorporate the opportunity for Indigenous nations to harvest plants, where appropriate and technically feasible, into the Wetland Function Compensation Plan. › Comply with applicable government requirements associated with Indigenous rights and title claims within areas potentially affected by the Project. This will continue to occur during all phases of the Project. › Provide Project workers, with cross-cultural awareness training, which will be developed in collaboration with engaged Indigenous nations. › Engage with Indigenous nations on the development monitoring and follow-up plans. › Avoid traditional use sites to the extent feasible. › Avoid critical timing windows to the extent feasible. › Refer to proposed mitigations under Part B VCs above.
Sense of Place and Sense of Attachment	Change in Spiritual and Cultural Sites Change in Quality of Experience		› Develop Indigenous Interests Management Plan in collaboration with Indigenous nations. › Work with the Indigenous nations to develop a shared understanding of how the Project may affect Indigenous Interests. › Engage with Indigenous nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns. › Maintain positive long-term relationships with Indigenous nations. › Engage with Indigenous nations on the development of its monitoring and follow-up plans. › Avoid traditional use sites to the extent feasible. › Refer to proposed mitigations under Part B VCs above.

Access and Travel	Changes in Access to and Use of Harvesting Locations Changes in Access to and Use of Spiritual and Cultural Locations		› Develop Indigenous Interests Management Plan in collaboration with Indigenous nations. › Work with the Indigenous nations to develop a shared understanding of how the Project may affect Indigenous Interests. › Engage with Indigenous nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns. › Maintain positive long-term relationships with Indigenous nations. › Inform communities of scheduled vessels coming into the terminal including date, type of vessel and origin of vessel. › Refer to proposed mitigations under Part B VCs.
Indigenous Governance Systems	Changes to Management Objectives Changes to Harvested Foods Changes to Ability to Teach and Share Traditions		› Provide Project workers, with cross-cultural awareness training, which will be developed in collaboration with engaged Indigenous nations. › Refer to proposed mitigations under Part B VCs. › Avoid traditional use sites to the extent feasible. › Develop Indigenous Interests Management Plan in collaboration with Indigenous nations.
Cultural Identity	Changes to Harvesting Activities Changes to Culturally Important Species Changes to Feasting and Ceremonial Activities Changes in Opportunities to Transmit Cultural Practices		› Develop Indigenous Interests Management Plan in collaboration with Indigenous nations. › Work with the Indigenous nations to develop a shared understanding of how the Project may affect Indigenous Interests. › Engage with Indigenous nations to discuss the Project and its effects, understand concerns that may arise, and respond to those concerns. › Maintain positive long-term relationships with Indigenous nations. › Provide Project workers, with cross-cultural awareness training, which will be developed in collaboration with engaged Indigenous nations. › Avoid traditional use sites to the extent feasible. › Refer to proposed mitigations under Part B VCs.
Indigenous Health	Changes to Noise Levels		› Refer to proposed mitigations under Part B VCs.

	Changes to Light Levels Changes to Food Quantity and Quality Changes to Air Quality Changes to Social Determinants of Health and Community Well-being Changes to Human Health Changes to Access to Healthcare		› Develop Indigenous Interests Management Plan in collaboration with Indigenous nations.
Indigenous Socio-economic Conditions	Changes to Community Services and Infrastructure Community Equity and Equality Changes to Access to Healthcare Changes to Core Housing Need Changes to Commercial Harvesting		› Engage with Indigenous nations regarding economic opportunities related to the Project. › Promote a hire-local first with all contractors and subcontractors and develop a contracting and procurement strategy that recognizes and acknowledges local Indigenous businesses. › Refer to proposed mitigations under Part B VCs. › Develop Indigenous Interests Management Plan in collaboration with Indigenous nations.

	Changes to Personal Safety		

C – Construction
O – Operation
D – Decommissioning