Draft Environmental Effects Evaluation/Application for an Environmental Assessment Certificate

Part E

Section 10: Management Plans

Section 11: Monitoring and Follow-up Programs

November 2020

Draft Environmental Effects Evaluation/Application for an Environmental Assessment Certificate

Part E

Section 10: Management Plans

November 2020

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10 Management Plans

Management plans will be developed for the construction, operation, and decommissioning phases of the Project. **Section 10.1 Construction Environmental Management Plan** describes content of the Construction Environmental Management Plan (CEMP). The component management plans to address environmental, social, and heritage risks of the Project during construction are described in **Section 10.2 CEMP Component Management Plans.** The Operation Environmental Management Plan (OEMP) is described in **Section 10.3 Operation Environmental Management Plan**. **Section 10.4 Decommissioning Environmental Management Plan** describes content of the Decommissioning Environmental Management Plan (DEMP). **Section 10.6 Summary** summarizes identified Environmental Effects Evaluation/Application for an Environmental Assessment Certification (EEE/Application) sections and mitigation measures that correspond to the topic-specific subcomponent plans of the CEMP.

The purpose of the CEMP, OEMP, and DEMP are to guide Vopak and its contractors in complying with applicable environmental legislation by providing criteria, standard protocols, and mitigation measures to avoid, minimize, reduce, and/or offset potential environmental effects throughout all phases of the Project.

Each management plan will be developed and implemented prior to the start of each Project phase. For example, the CEMP and component management plans will be developed by Vopak and implemented before the start of Project construction activities. The OEMP will be developed during the construction phase and implemented immediately prior to the start of Project commissioning activities. The OEMP will include component management plans to address environmental, social and heritage risks for commissioning activities and for Project operation once commissioning is completed.

The CEMP, OEMP, DEMP and component management plans will draw from environmental guidance, best practice and industry standards, and factor in the requirements from current Canadian laws and regulations. These include, but are not limited to, the following:

- *BC Environmental Assessment Act* [SBC 2014].
- *BC Environmental Management Act* [SBC 2003].
- *BC Contaminated Sites Regulation* [B.C. Reg. 375/96 O.C. 1480/96 (includes amendments up to B.C. Reg. 13/2019)].
- *BC Greenhouse Gas Industrial Reporting and Control Act* [SBC 2014] (GGIRCA).
- *BC Ground Water Protection Regulation* [B.C. Reg. 39/2016 O.C. 113/2016 (includes amendments up to B.C. Reg. 152/2016)].
- *BC Hazardous Waste Regulation* [B.C. Reg. 63/88 O.C. 268/88 (includes amendments up to B.C. Reg. 243/2016)].
- *BC Heritage Conservation Act* [RSBC 1996].
- *BC Occupational Health and Safety Regulation* [B.C. Reg. 296/97 (last amended July 14, 2020 by B.C. Reg. 82/2020)].
- BC *Safety Standards Act* [SBC 2003] and Safety Standards General Regulation [B.C. Reg. 105/2004 (includes amendments up to B.C. Reg. 170/2018)].
- *BC Spill Reporting Regulation* [B.C. Reg. 187/2017 (includes amendments up to B.C. Reg. 221/2017)].BC Transportation Act [SBC 2004].
- *BC Water Sustainability Act* [SBC 2014].
- *BC Weed Control Act* [RSBC 1996].
- *BC Wildlife Act* [RSBC 1996].
- A Field Guide to Fuel Handling, Transportation, and Storage (BC MoE 2002).

- BC Air Quality Objectives and Standards (Province of BC 2019a).
- BC Amphibian and Reptile Salvage Best Management Practices (BMPs) (BC FLNRO 2016).
- BC Archaeological Impact Assessment Guidelines (Province of BC 1989).
- BC Archaeological Resource Handbook (Province of BC 1990).
- BC Fire Code (Province of BC 2018).
- BC Terms and Conditions for Water Sustainability Act Changes In and About a Stream (Skeena Region) (BC FLNR 2018).
- BC Standards and Best Practices for Instream Works (BC MWLAP 2004).
- BC Standards for Riparian Restoration Planning, Treatments, Treatment Effectiveness Evaluation, and Inspection and Maintenance (Province of BC 2006).
- BC Tree Replacement Criteria (BC Environment 1996).
- BC Water Quality Guidelines – Aquatic Life, Drinking Water, Recreation, Wildlife & Agriculture (Province of BC 2019b).
- Best Management Practices for Bats in British Columbia (BC MoE 2016).
- BMPs for Pile Driving and Related Operations (BC Marine and Pile Driving Contractors Association 2003).
- British Columbia Noise Control Best Practices Guideline (BC OGC 2009).
- Culturally Modified Trees of British Columbia (BC Ministry of Small Business, Tourism and Culture 2001).
- Procedures for Mitigating Impacts on Environmental Values (Environmental Mitigation Procedures) (BC MoE 2014).
- Health and Medical Services Plan Best Management Guide for Industrial Camps (Northern Health 2015).
- *Canada Shipping Act* [SC 2001 c. 26].
- *Canada Ballast Water Control and Management Regulations* [SOR 2011-237].
- *Canada Marine Act* [SC 1998 c. 10].
- *Marine Transportation Security Act* [SC 1994 c. 40] *and Regulations* [SOR 2004-144].
- *Pilotage Act.* [RSC 1985 c. P-14].
- *Canadian Environmental Assessment A*ct, 2012. [S.C. 2012, c. 19, s. 52].
- *Canadian Environmental Protection Act* [S.C. 1999, c. 33].
- Canadian Environmental Quality Guidelines (Canadian Council of Ministers of the Environment [CCME] 2014a).
    - *Fisheries Act*. [R.S.C., 1985, c. F-14 (last amended on 2019-08-28)]
    - *Migratory Birds Convention Act* and regulations. [S.C. 1994, c. 22].
    - Canadian Navigable Waters Act [RSC 1985 c. N-22].
    - *Species at Risk Act* [S.C. 2002, c. 29]..
    - *Transportation of Dangerous Goods Act* and regulations. [S.C. 1992, c. 34]
- Develop with Care 2014: Environmental Guidelines for Urban and Rural Land Development in British Columbia (Province of BC 2014).
- Canadian Sediment Quality Guidelines for the Protection of Aquatic Life (CCME 2017).
- Environment and Climate Change Canada (ECCC) General Nesting Periods for Migratory Birds (Government of Canada 2018).
- ECCC Guidelines to Reduce Risk to Migratory Birds (ECCC 2018).
- Canada-wide Standards for Particulate Matter and Ozone (CCME 2000).
- Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCME 2014b).
- Canadian Handbook on Health Impact Assessment (Health Canada 2004).
- Fisheries and Oceans Canada (DFO) Fish and Fish Habitat Protection Policy Statement (DFO 2019a).

- DFO Land Development Guidelines for the Protection of Aquatic Habitat (DFO and BC Ministry of Environment, Lands and Parks 1992).
- DFO Measures to Protect Fish and Fish Habitat (DFO 2019b).
- DFO Marine/Estuarine Timing Windows for the Protection of Fish and Fish Habitat – North Coast Area (DFO 2014).
- DFO Best Management Practices for Pile Driving and Related Operations (DFO Undated).
- Environmental Assessment (EA) Best Practice Guide for Wildlife at Risk in Canada (Lynch-Stewart 2004).
- Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products (PN 1326) (Government of Canada 2015).
- Facility operation procedures and reporting requirements relevant to Technical Safety BC, Transport Canada and the BC Oil and Gas Commission.
- National Fire Code (National Research Council Canada 2015).
- Workplace Hazardous Materials Information System (WHMIS 2019).
- Guidelines for Amphibian and Reptile Conservation During Urban and Rural Development in British Columbia (BC Ministry of Forests, Lands, and Natural Resource Operations 2014).
- Guidelines for Raptor Conservation during Urban and Rural Land Development in British Columbia. (BC Ministry of Forests, Lands and Natural Resource Operations 2013).
- Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters (Wright and Hopky 1998).
- Guidelines to protect fish and fish habitat from treated wood used in aquatic environments in the Pacific Region (Hutton and Samis 2000).
- Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish (ICF Jones and Stokes and Illingworth and Rodkin Inc. 2009).

10.1 Construction Environmental Management Plan

Before the start of the construction phase, Vopak will prepare a CEMP that will be subject to review by relevant government agencies, Indigenous Nations, and the technical Working Group, as appropriate. The CEMP will provide guidance on mitigation measures that will be implemented prior to and throughout the construction phase of the Project to either avoid or minimize the potential for adverse environmental effects. The component management plans that will be included as part of the CEMP are listed below:

- Air Quality and Dust Control Management.
- Archaeological Resources Management.
- Construction Blasting Management.
- Construction Traffic Management.
- Construction Waste Management (including Hazardous, Contaminated and Controlled Materials).
- Environmental Awareness and Education.
- Erosion and Sediment Control.
- Fish and Fish Habitat Management.
- Health and Safety Management.
- Marine Access and Vessel Communications.
- Marine Underwater Noise and Vibration Management.
- Petrochemical Storage and Handling.
- Site Restoration.
- Spill Prevention and Emergency Response Management.

- Surface Water and Storm Water Management.
- Soil Management (includes contaminated soil and shallow groundwater).
- Vegetation Management (includes Sensitive Habitat, Noxious and Invasive Plants).
- Wildlife Management.

The CEMP and its component management plans may be updated throughout the construction phase in the event of changes in environmental best practice or industry standards.

10.1.1 Contents of the CEMP

The main body of the CEMP document will include detailed information on the following topics:

- **Project Description:** Project overview, scope of construction works, construction disturbance footprint, laydown and storage areas, schedule of works, maps/site plans.
- **Project Roles and Responsibilities:** a description of the type of positions, their responsibilities, reporting structure, and organizational structure. A description of roles will include Vopak key personnel, the Primary Contractor, Environmental Manager, and key members of the Environmental team including the Environmental Monitor.
- **Project Contacts**: contact information for the personnel on the organizational structure, government authorizing agencies and emergency response organizations.
- **Environmental Awareness and Education**: a description of Vopak's Environmental Policy and overview of educational awareness training, with reference to the detailed subcomponent plan.
- **Health and Safety:** a description of Vopak's Health and Safety policy and overview of health and safety awareness training, with reference to the Construction Health and Safety Plan.
- **Environmental, Social and Heritage Risks and Controls:** summary of topic-specific environmental risks and protections, plus heritage and social risks and protections to be in place for the construction phase. Cross-reference to component management plans.
- **Component Management Plans:** detailed description of topic-specific component management plans to address environmental, social, and heritage risks identified within the main body of the CEMP. Refer to **Section 10.1.2** below for general contents of these plans.

10.1.2 Contents of Component Management Plans

The component management plans of the CEMP will generally include the following format:

- Management Plan Objective(s).
- Management Strategy(ies).
- Guiding Documents (e.g., relevant legislation, guidance, policies, best practice, standards).
- Environmental Protection Measures, Specifications and/or Controls.
- Schedule/Timing of Implementation.
- Delegation of Project Role and Responsibility.
- Performance Indicator(s).
- Monitoring Requirements.
- Reporting Requirements.
- Corrective Actions.
- Maps and Site Plans, as required.

The component management plans are intended to provide clear direction to Vopak and its contractors on managing the environmental, social, and heritage risks for the construction of the Project. A plan may specify the need for activities such as monitoring during the construction phase. Post-construction follow-up monitoring will be developed separately from the component management plans. **Section 11 Monitoring and Follow-up Programs** describes the monitoring and follow-up programs that Vopak will undertake. The template in **Table 10.1-1** may be used by Vopak as a starting point to develop the component management plans.

Table 10.1-1: Component Management Plan Template

Component Management Plan			
Plan Objective(s)			
Management Strategy(ies)			
		Responsible Person	**Schedule / Timing**
Environmental Protection Measures, Specifications, Control(s)			
Performance Indicator(s)			
Monitoring Requirement(s)			
Reporting Requirement(s)			
Corrective Action(s)			

10.2 CEMP Component Management Plans

Vopak will prepare 18 component management plans as part of the CEMP, described below.

10.2.1 Air Quality and Dust Control Management Plan

The Air Quality and Dust Control Management Plan (AQDCMP) will describe mitigation measures and best practices to be used to control dust during the construction phase, as well as any control measures that would be implemented to monitor dust from construction activities and air quality.

The AQDCMP will outline the methods to be used during construction to maintain air quality and control dust. The methods will include BMPs and mitigation measures relating to soil and rock stockpiles, access roads, vehicle and equipment operations, blasting, and other construction activities that may affect air quality.

The AQDCMP will address, but not be limited to:

- Use of water sprays to increase moisture levels in active areas (e.g., unpaved roads, temporary soil and overburden stockpiles) if dry conditions are present.
- Ensuring appropriate catalytic converters, mufflers and exhaust systems are in place on equipment and functioning as designed.
- Limiting vehicle and heavy equipment movement to designated access routes to minimize dust generation.
- Minimize idling when possible.

10.2.2 Archaeological Resources Management Plan

The Archaeological Resources Management Plan (ARMP) will provide guidelines for the appropriate procedures to be implemented should archaeological sites be encountered on-site during construction. The primary objective of this plan will be to minimize disruption in construction scheduling while promoting the preservation of archaeological resources.

The ARMP will specify the general procedures to identify, report, and manage archaeological and heritage resources during construction. The ARMP will also include general procedures and protocol for encountering archaeological values during ground disturbance, i.e., Chance Find Management Plan (CFMP). The CFMP will give on-site personnel information to identify archaeological materials if encountered in the construction area, resources to report the find, and actions to follow to protect the site from impacts.

10.2.3 Construction Blasting Management Plan

The Construction Blasting Management Plan (CBMP) will discuss strategies to:

- Minimize transmission of debris and vibration to adjacent properties on Ridley Island during construction-related blasting activities.
- Reduce and avoid impacts of noise, dust, geotechnical instability, and vibration during blasting activities.
- Protect against disturbance, displacement, injury, or mortality to wildlife.

The CBMP will:

- Delineate a blast zone and safe zone.
- Describe the blasting activities (including preparation and post-blasting) that are expected to generate noise, dust, geotechnical stability, and vibration that could adversely affect the surrounding environment and site staff.
- Provide information on the authorities that must be notified ahead of, during and post-blasting.
- Provide information on the workers, activities and operations that are anticipated to be present during blasting.
- Provide information on any sensitive time periods that are to be considered in construction scheduling.
- Describe protective measures (e.g., use of blasting mats) to mitigate adverse noise and vibration effects, impacts to air quality or geotechnical stability, of blasting activities to the receiving environment.
- Specify that blasting charges used will be sized to avoid potential percussion injuries to fish found in pond FSS-10.
- Incorporate best practices and guidance recommendations for blasting, such as ISEE (2011) and Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters (Wright and Hopky 1998).
- Specify monitoring and reporting requirements to be conducted by specialist staff (**Section 11 Monitoring and Follow-up Programs**) including a reporting structure consistent with the requirements of the Project's EA Certificate conditions.
- Cross-reference the management requirements of the Noise Management Plan (NMP), and AQDCMP.
- Cross-reference and implement conditions of relevant authorizations and permits for blasting activities.
- Describe a procedure to visually check that no wildlife is visible on the site before commencing blasting.
- Unless otherwise directed by DFO, blasting will include a minimum 500 m Exclusion Zone for all marine mammals following the guidance of Wright and Hopky (1998), with an additional 250 m marine mammal monitoring zone extending outwards from the 500 m perimeter.
- In-situ verification that all construction-related noise is below accepted thresholds through underwater acoustic monitoring; particularly during construction activities known to exceed the thresholds mentioned above, such as upland blasting and impact pile driving.

10.2.4 Construction Traffic Management Plan

The Construction Traffic Management Plan (CTMP) will outline procedures and measures for managing traffic volume and safety on Prince Rupert Port Authority (PRPA) lands through the following:

- Diverting traffic away from and safely through construction areas, and for restricting access to active construction sites.
- Vehicle parking, staging, and turn-around areas.
- Minimizing vehicle idling.
- Managing construction traffic to and from the site.
- Safety measures including driver awareness, wildlife presence, signage, flag persons, and monitoring.
- All personnel will adhere to the existing PRPA speed limits for vehicular traffic on Ridley Island.

10.2.5 Construction Waste Management Plan

The objective of the Construction Waste Management Plan (CWMP) will be to properly manage and reduce waste volume resulting from the construction of the Project. The plan will:

- Describe procedures and BMPs for general housekeeping and management of construction waste materials.
- Provide measures for the handling and disposal of upland soil and sediment, water from dewatering activities and contaminated soils. To avoid duplication, relevant management plans will be cross-referenced (e.g., Soil Management Plan [SMP]).
- Provide measures for the handling and disposal of petrochemicals, and other hazardous and controlled substances. To avoid duplication, relevant management plans will be cross-referenced (e.g., Petrochemical Storage and Handling Management Plan).
- Provide procedures for the storage, handling and disposal of invasive and noxious plants. To avoid duplication, the relevant management plan will be cross-referenced (e.g., Vegetation Management Plan [VMP]).
- Describe the protection measures to be implemented for managing waste and material that may attract wildlife. To avoid duplication, the relevant management plan will be cross-referenced (e.g., Wildlife Management Plan [WMP]).
- Specify reporting requirements, manifest documentation and record keeping including a reporting structure consistent with the requirements of the Project's EA Certificate conditions.
- Environmental monitoring and reporting requirements (**Section 11 Monitoring and Follow-up Programs**).

10.2.6 Environmental Awareness and Education Plan

Maintaining environmental awareness throughout construction of the Project is critical, and Vopak will provide appropriate training to all personnel whose work may have an impact on the environment. Vopak will implement an Environmental Awareness and Education Plan (EAEP) that will be included as part of the CEMP. The EAEP will include input from Indigenous traditional knowledge holders. The EAEP will provide detailed information and methodology for the following:

- Environment Orientation.
- Daily Meetings.
- Environmental Toolbox Talks.
- Information bulletins.
- Sub-contractor kick-off meeting.

- Contractor kick-off meeting.
- Vopak's EAEP will include the Be Whale Wise guidance for construction-related vessels (https://www.bewhalewise.org/federal-regulations/).

10.2.7 Erosion and Sediment Control Plan

The Erosion and Sediment Control Plan (ESCP) will provide Vopak and its contractors with guidelines concerning the proposed implementation of erosion and sediment control measures and best practices. Disturbed areas will be assessed, and management strategies will be planned and implemented prior to construction to minimize temporary exposure of bare soils.

Erosion control methods will be applied where there is potential for erosion due to rainfall, flowing water, wind, and steep slopes. Retention of soil and sediment on-site is an important component of construction practices and preventing erosion at the source reduces the need to implement downstream sediment control measures.

The ESCP will include, but not be limited to:

- A description of the nature and location of silt fences, berms, swales, ditches, check dams, settling ponds, and other ESC measures.
- Specification of the procedures to be used during clearing and other construction activities with the potential to result in erosion or sedimentation, and specific measures to be taken during heavy rain.
- Specifications for protection for steep slopes, stockpiles, and disturbed areas during storm events.
- Provisions for re-contouring the site to manage drainage and prevent erosion.
- Procedures for removal and disposal of construction ESC measures.
- A cross-reference to the SWSWMP (**Section 10.2.15 Surface Water and Storm Water Management**).

10.2.8 Fish and Fish Habitat Management Plan

The Fish and Fish Habitat Management Plan (FFHMP) will describe mitigation measures to avoid, reduce and/or mitigate the effects to fish and fish habitat. The plan will be developed in compliance with any condition specified by a *Fisheries Act* Authorization. The plan will:

- Provide information on fish species that are, or may be present in the marine environment.
- Include maps to show relevant attributes, such as fish habitat, no-go zones, limits of construction, etc.
- Describe protective measures to mitigate adverse effects to fish and fish habitat during the construction phase.
- Identify reduced-risk work windows for fish, including specific species such as Eulachon (BC FLNRORD 2018; DFO 2014).
- Specify construction activities for which fish monitoring would be necessary.
- Specify fish monitoring requirements, such as when, where and method of monitoring to be conducted by specialist staff, including Indigenous monitors.
- Reporting requirements, including a reporting structure consistent with the requirements of the Project's EA Certificate conditions.
- Cross-reference the management requirements of the Marine Underwater Noise Management Plan (MUNMP), and the CBMP.

10.2.9 Health and Safety Management Plan

The Health and Safety Management Plan (HSMP) will outline specific procedures and protocols for working around the active construction site. Required personal protective equipment, proper protocols for working in and around machinery, and location of existing structures, utilities, and potential hazards within the work site will be addressed.

A Health and Safety orientation course will be prepared and delivered to all workers prior to beginning work on-site. All works will comply with BC Occupational Health and Safety Regulation and WorkSafeBC Standards (WorkSafe BC 2019). The Health and Safety Plan will include a Health and Medical Services Plan (HMSP), which is a planning activity aimed at reducing and containing communicable disease outbreaks and other health issues, thereby minimizing pressure on the regional health care system during Project construction. The Health and Medical Services Plan will describe the on-site health and medical services that will be provided to Project workers. In particular, the plan will describe on-site health care and wellness programs, as well as services and policies to reduce effects on regional non-urgent care services. This will include measures, such as infection control policies, and a process for coordinating the management of urgent care and medical escalations with local service providers. The plan will be developed in consultation with Northern Health and in accordance with BC Guidelines for Industrial Camps Regulation (BC Reg 70/2012) and Communicable Disease Control Plan - Best Management Guide for Industrial Camps (Northern Health 2017). The objectives of this plan are to develop Project policies and manage Project infrastructure and services to reduce demand on local and regional health care infrastructure and services. Communicable diseases, such as COVID-19, will be covered in the Health and Medical Services Plan.

10.2.10 Marine Access and Vessel Communications Plan

The Marine Access and Vessel Communications Plan (MAVCP) will provide information on the following:

- A description of the jurisdiction of areas with restricted navigation.
- Marine-based construction staging areas.
- Travel corridors for marine vessels and equipment into and through construction areas including identifying exclusion and no-go zones, such as navigational hazards, and sensitive ecosystems, habitat, or infrastructure.
- Construction schedule for marine-based activities.
- Alternative options for vessel movement.
- Navigational aids, markers, and signs to be used to delineate construction area and safety zones.
- Detailed requirements to assist vessels (pilot vessels, tugs, barges, etc.).
- Measures to manage marine traffic and navigation during construction (e.g., signage, website, a Project telephone line).
- Outline regulatory requirements for vessel movement and berthing (e.g., Transport Canada).
- Provide a radio communication protocol for vessels accessing the site.
- Respecting public and traditional access to marine resource users
- Provide an emergency response plan for vessel accidents and malfunctions.
- Vessel and operations schedule for marine-based activities.

10.2.11 Marine Underwater Noise and Vibration Management Plan

The Marine Underwater Noise and Vibration Management Plan (MUNVMP) will include management of vibration and pile driving. The MUNVMP will discuss strategies to:

- Manage transmission of underwater noise and vibration during marine construction activities.
- Reduce, avoid and mitigate impacts of underwater noise and vibration during marine activities.

The plan will:

- Describe the marine activities that are expected to generate noise and vibration that could adversely affect marine fauna.
- Provide information on the marine fauna that may be present within and around the marine works area, including any sensitive time periods that are to be considered in construction scheduling.
- Describe measures to mitigate adverse noise and vibration effects on the marine environment.
- Incorporate best practices and guidance recommendations for construction in the marine environment.
- Describe visual monitoring of safety zones by qualified Marine Mammal Observers (MMOs) with distance from the sound source determined based on underwater acoustic monitoring and comparison of measured sound levels to the currently accepted threshold of 160 dB re 1 µPa rms sound pressure level (SPL) for marine mammals (unless otherwise directed by DFO).
- Regular on-site monitoring will be conducted during construction by a Qualified Environmental Professional (QEP), or Environmental Monitor (EM) under the supervision of a QEP, to confirm that mitigation measures are implemented and functioning as intended and that thresholds, where available (i.e., underwater noise), are not exceeded.
- Vopak's MUNVMP will include development and implementation of an Underwater Acoustic Monitoring Program that synergistically includes the Marine Fish and Invertebrates subcomponent. This Underwater Acoustic Monitoring Program will include details such as:
    - Designation and implementation of safety zones with visual monitoring by qualified MMOs. The safety zones will include exclusion zones with shut-down protocols for cetaceans and pinnipeds, and will be activity-specific. The cetacean exclusion zone limit will be the full extent of the safety zone as determined by underwater acoustic monitoring and comparison of in-situ measured sound levels to the currently accepted threshold of 160 dB re 1 µPa rms SPL – unless otherwise directed by DFO.
    - The pinniped exclusion zone (excluding during blasting) will be a smaller radius from the sound source at 150 m and where underwater peak sound levels do not exceed 218 dB re 1 µPa – unless otherwise directed by DFO. If underwater sound levels exceed 218 dB re 1 µPa at 150 m, then the radius will be increased to the distance from the sound source where levels are below this threshold.
    - In-situ verification that all construction-related noise is below accepted thresholds through underwater acoustic monitoring; particularly during construction activities known to exceed the thresholds mentioned above, such as upland blasting and impact pile driving.
    - Vopak's MUNVMP will include mitigation measures specific to marine mammals (e.g., marine mammal safety and monitoring zones), underwater acoustic monitoring, use of bubble curtains or other noise-attenuating devices, ramp ups and soft starts when possible, and development of activity-specific Stop Work Protocols.
    - Vopak's MUNVMP will prioritize lower sound emission construction techniques and equipment, as possible (i.e., use of a vibratory hammer instead of an impact hammer).
    - Vopak's MUNVMP will recommend avoidance of concurrent in-water noise-producing construction activities, as possible.

- Specify monitoring and reporting requirements to be conducted by specialist staff, including a reporting structure consistent with the requirements of the Project's EA Certificate conditions.
- Cross-reference and implement conditions of relevant authorizations and permits for marine construction activities.
- Cross-reference the management requirements of the FFHMP, NMP and CBMP and any constructability plan for works in the marine environment.

10.2.12 Petrochemical Storage and Handling Plan

The Petrochemical Storage and Handling Plan (PSHP) will describe protocols and procedures for handling and storing petrochemicals on-site during construction phase. Petrochemicals include fuels, oils, lubricants, or other petroleum-based products. The plan will include:

- Identifying responsible Project personnel and external contacts.
- Designating areas for storage, including site maps to be available on-site.
- Designating areas for refuelling and maintenance of vehicles, equipment, and machinery.
- Specifications for the proper storage of petrochemical products, e.g., minimum distances from sensitive locations or work sites, containment, and safety requirements.
- Specifications for the handling of petrochemical products and refuelling of vehicles, equipment, and machinery.
- Specifications for the proper disposal of petrochemical products.
- Recommendations from existing guidance such as:
  - Ministry of Environment: A Field Guide to Fuel Handling, Transportation, and Storage (BC MoE 2002).
  - CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum Products (Government of Canada 2015).
  - Petroleum and Allied Petroleum Products Storage Tank Regulations (Government of Canada 2015).
- Worker safety and training.
- Environmental monitoring and reporting requirements (**Section 11 Monitoring and Follow-up Programs**) that will include a reporting structure consistent with the requirements of the Project's EA Certificate conditions.
- Cross-references to the Spill Prevention and Emergency Response Management Plan (SPERMP) for protocol to handle petrochemical spills and emergency situations.

10.2.13 Site Restoration Plan

Vopak will undertake site restoration under a Site Restoration Plan (SRP) after construction of the facility is completed. Site restoration specifications and detailed design drawings will be developed by a qualified professional and incorporate:

- The location(s) of site-specific restoration.
- Timing requirements.
- Permit requirements, if any.
- Criteria for accepting soil overburden at the Ridley Island on-site disposal area.
- Environmental monitoring requirements.
- Soil salvage and management.

- Details of planting requirements, e.g., plant species list, number, size, and plant spacing, specifications for hydroseeding.
- Post-construction maintenance and care.
- Federal and provincial guidance from “Riparian Revegetation” (DFO and BC Ministry of Environment, Lands and Parks undated).

10.2.14 Spill Prevention and Emergency Response Management Plan

The SPERMP will describe measures to avoid and reduce the potential for a spill or release of hydrocarbons or other hazardous materials in upland and marine environments and provide guiding framework for emergency response during construction. The SPERMP will provide appropriate guidelines and procedures so that any spill or emergency is responded to in a safe, fast, and effective manner that minimizes adverse effects to personnel, the environment, and nearby communities. The SPERMP will conform with existing emergency preparedness and response plans developed for the Port of Prince Rupert.

The SPERMP will be developed in accordance with the requirements of the BC *Spill Reporting Regulation* under the BC *Environmental Management Act* (Province of BC 2018) and will include, but not be limited to:

- Identification of responsible Project personnel and external contacts.
- A description of the communication procedure and notification requirements in the event of a spill or emergency.
- Specification of the containment, recovery, and clean-up procedures (including those applicable to equipment refuelling and servicing, and spill preparedness, such as spill kits and booms).
- A description of procedures for the unexpected failure or malfunction of temporary containment systems (such as sediment bunds or cement traps).
- A list and a description or purpose of spill abatement materials and equipment to be stored and available on-site.
- Specification of the location of spill clean-up materials and equipment.
- A description of equipment refuelling and servicing procedures and limitations.
- A list of follow-up and reporting requirements.

10.2.15 Surface Water and Storm Water Management Plan

The Surface Water and Storm Water Management Plan (SWSWMP) will provide procedures to manage surface water and stormwater during the construction of the Project. The primary objective of the SWSWMP will be to manage surface water runoff and storm events, and avoid, reduce or mitigate the mobilization of sediment and pollutants to water bodies.

The SWSWMP will provide:

- Protective measures for maintaining current surface water quality.
- Surface water quality criteria (federal and provincial).
- Methods for surface water diversion or dewatering if it is necessary for site preparation, including ponds, drainage ditches, and culverts as necessary.
- Measures to manage and monitor storm water runoff during construction, including monitoring water quality in the two storm water lagoons prior to discharge into the existing PRPA drainage system.
- Relevant maps to illustrate surface water and storm water management system in place during construction.

- Cross-reference to Erosion and Sediment Control Management plan (**Section 10.2.7 Erosion and Sediment Control**) and the Project's CBMP.
- Environmental monitoring and reporting requirements (**Section 11 Environmental Monitoring, Compliance and Auditing**) including a reporting structure consistent with the requirements of the Project's EA Certificate conditions.

10.2.16 Soil Management Plan

The SMP will describe protocols and procedures for handling and storing of native soils on-site during construction phase. Protocol and procedures for the management of related materials such as shallow groundwater and contaminated soils will be described in the plan. The plan will include:

- Identification of responsible Project personnel and external contacts.
- Designation of areas for temporary stockpiling and dewatering of overburden, including site maps.
- Designation of areas for temporary stockpiling and storage of imported fill, including site maps.
- Specifications for transportation of soil, including spraying overburden and soil with water if it appears to be overly dry prior to moving it.
- The criteria for overburden acceptance at the PRPA storage area on Ridley Island.
- Specifications for the handling and disposal of overburden, and water disposal.
- Specifications for the handling and storage of imported fill.
- Protocols for soil and groundwater sampling for excavated materials suspected of contamination.
- Protocols for handling, remediation and disposal of contaminated soil or groundwater.
- Worker safety and training.
- Cross-reference to the ESCP procedures to implement control measures to prevent the erosion or sedimentation of any on-site stockpiling.
- Environmental inspections, monitoring and reporting requirements (**Section 11.1 Environmental Monitoring, Compliance and Auditing**) which will include a reporting structure consistent with the requirements of the Project's EA Certificate conditions.

10.2.17 Vegetation Management Plan

The VMP will provide strategies to:

- Minimize disturbance to the existing vegetation, including sensitive habitat such as riparian zones and wetlands from construction.
- Reduce and avoid impacts outside of the clearing zone during construction.
- Retain peripheral vegetation as much as possible to limit sight lines to the Project.
- Control the spread or introduction of invasive or noxious plants.

The plan will also include:

- Pre-construction survey protocol for vegetation management, as appropriate (e.g., pre-clearing plant survey, delineating areas of invasive or noxious vegetation, and no-go zones for clearing).
- Information on rare and sensitive habitat located within and surrounding the site.
- Information to identify noxious and invasive plants.
- Protocols and procedures for handling and storing of cleared vegetation on-site during construction phase.
- Designating areas for temporary stockpiling of vegetation, including site maps.
- Delineating areas to be protected from construction disturbance, including site maps.

- Specifications for the handling, storage, and disposal of vegetation, including noxious and invasive plants.
- Inspection, monitoring, and reporting requirements to be conducted by specialist staff.

10.2.18 Wildlife Management Plan

The WMP will be closely linked with the VMP. The plan will describe sensitive wildlife habitat, including the locations on construction drawings to show them relative to the construction footprint. Protective measures to minimize impacts to wildlife will be provided in the plan (e.g., collision avoidance, good housekeeping, activity timing windows, and waste management), and will include a cross-reference to any post-construction follow-up monitoring or program requirements, e.g., the Site Restoration Program (**Section 11.2 Follow-up Programs**).

The plan will also include:

- Pre-construction survey protocols for practical wildlife management (e.g., bird/nesting surveys, wildlife surveys, small wildlife salvage and relocation, shoreline marine mammal surveys, shoreline coastal seabird and waterfowl surveys, as required). Surveys are to be conducted by specialist staff.
- An amphibian salvage plan to be undertaken if vegetation clearing and/or draining of water bodies is proposed during the amphibian breeding season. The amphibian salvage plan will be developed in consultation with PRPA and ECCC to guide salvage activities.
- A description of timing windows for vegetation clearing outside of the bird nesting season (April 9-August 15) and clearing of moderate-rated forested habitat (for little brown myotis) outside of the bat active season (April 1-October 31).
- Provisions to avoid disturbing or removing active bird nests within the facility other than those not protected by law.
- Specifications for wildlife (including birds and marine mammals) monitoring requirements, such as when, where and method of monitoring to be conducted by specialist staff. Reporting structure will be consistent with the requirements of the Project's EA Certificate conditions.
- A prohibition on wildlife feeding.
- Requirements for maintenance of clean worksites and storage of all potential wildlife attractants (food, garbage, paint) in a manner that is inaccessible to wildlife.
- Installation of perimeter fencing to deter deer and other large wildlife from entering the facility.
- Reporting any notable wildlife roadkill to the EM and to PRPA, and, if appropriate, implementing site-specific mitigation (e.g., warning signs, worker notifications) for any concentrations of roadkill that may occur.
- A procedure for visually inspection of the flaring infrastructure to check for wildlife (e.g., perched birds) before conducting flaring.

10.3 Operation Environmental Management Plan

Vopak will develop and implement an OEMP, as a supplemental document to the Project's overall Operation Management Plan. The OEMP will also have component management plans, similar to the CEMP. The component management plans within the OEMP are expected to include:

- Erosion and Sediment Control.
- Energy Management.
- Health and Safety Management.
- Light Management.

- Marine Access and Vessel Communications.
- Marine Underwater Noise and Vibration Management.
- Noise Management.
- Petrochemical Storage and Handling.
- Preventative Maintenance.
- Spill Prevention and Emergency Response Management.
- Surface Water and Storm Water Management.
- Training Management.
- Vegetation Management (Sensitive Habitat, Invasive and Noxious Plants).
- Wildlife Management.

As part of the Operation Management planning, Vopak will be required to develop an Emergency Response Assistance Plan (ERAP), which will require approval by Transport Canada under the *Transportation of Dangerous Goods Act*. Environmental Emergency (E2) plans will also be developed for operation, pursuant to the E2 Regulations of the *Canadian Environmental Protection Act* (Government of Canada 2018).

10.3.1 Erosion and Sediment Control Plan

The ESCP will provide Vopak and its contractors with guidelines concerning the proposed implementation of erosion and sediment control measures and best practices.

The ESCP will reduce the potential for degradation of adjacent vegetated habitats from sedimentation, alteration of drainage, or erosion by maintaining the Project's drainage system including ditches and storm water lagoons. The ESCP will include, but not be limited to:

- Specification of the procedures to be used during clearing and other maintenance activities with the potential to result in erosion or sedimentation, and specific measures to be taken during heavy rain.
- Specifications for protection for steep slopes, stockpiles, and disturbed areas during storm events.
- Provisions for re-contouring the site to manage drainage and prevent erosion.

10.3.2 Energy Management Plan

Vopak will develop an Energy Management Plan to reduce operational GHG emissions. This plan will also contribute to annual inventory emissions tracking. Components of the Energy Management Plan may include:

- A Leak Detection and Repair program for terminal fuels storage and processing systems to reduce fugitive vapour emissions.
- Opportunities to reduce operational GHG emissions.
- An engine idling policy to reduce fuel consumption of operation equipment to reduce GHG production.
- The use efficient, lower-emission vehicles and equipment, where practical.

10.3.3 Health and Safety Management Plan

The HSMP will outline specific procedures and protocols for working around the active Project site. Key elements of the HSMP include: Administrative requirements (e.g., safety orientation), General Information (e.g., incident reporting, drugs and alcohol, security), Safety requirements (e.g., housekeeping, personal protective equipment) and Job requirements (safety audits, toolbox/safety meetings). The HSMP will also include the following topics:

- Permit to Work.
- Lockout and Tagout.
- Confined Space Entry.
- Excavation.
- Working at Heights.
- Motorized Vehicles.
- Transfer of Product.
- Management of Change.

10.3.4 Light Management Plan

The Light Management Plan (LMP) will describe mitigation measures to avoid, reduce and/or mitigate the impacts of lighting during operation to the surrounding community and environment. Lighting on the loading platform, jetty, and berths will include appropriate navigation lighting for visibility to other vessels operating in the vicinity, using appropriate technologies (such as radar reflectors) to make it detectable in low-visibility and nighttime conditions. Platform lighting will be sufficient to provide safe and secure conditions during both nighttime and daytime conditions. The LMP will describe procedures and BMPs to control light emissions from operation, and will include:

- Light mitigation management (i.e., equipment and machinery controls, illumination levels, and luminaire type).
- Specifications for emergency lighting.
- Procedure for community notification of any unusual nighttime activities (e.g., if needed for maintenance).
- Communication procedures for public inquiry or complaint.

10.3.5 Marine Access and Vessel Communications Plan

Vopak's MAVCP will provide Notices to Shipping and Notices to Mariners, in collaboration with Canadian Coast Guard (CCG), where navigation restrictions and routing advisories will be identified and communicated to the marine community, as required. The plan will identify measures to notify all marine traffic of Project operation activities. It will also detail the local marine communications and Project-related safety procedures, including and designated safety zones under the jurisdiction of the PRPA to specify "no-go" areas.

10.3.6 Marine Underwater Noise and Vibration Management Plan

The MUNMP will discuss strategies and measures to:

- Manage transmission of underwater noise and vibration during operation.
- Reduce and avoid impacts of underwater noise and vibration during operation.

The plan will:

- Describe the marine activities that are expected to generate noise and vibration that could adversely affect marine fauna.
- Describe measures to mitigate adverse noise and vibration effects on the marine environment.
- Incorporate best practices and guidance recommendations for operation in the marine environment.
- Specify monitoring and reporting to be conducted by specialist staff, if required, including a reporting structure consistent with any requirements of the Project's EA Certificate conditions.
- Cross-reference and implement conditions of relevant authorizations and permits for marine operations.

10.3.7 Noise Management Plan

The NMP will describe mitigation measures to avoid, reduce and/or mitigate the impacts of noise from operation to the surrounding community and environment through adherence to the Port Edward noise bylaw (District of Port Edward 2011), and to conduct operation activities in accordance with PRPA's adopted noise baseline (PRPA 2019) of 55 decibels.

The NMP will describe procedures and BMPs (e.g., BC OGC 2009) to control operation-related noise, including a list of equipment, machinery, and vehicle list with noise emission specifications. The NMP will also include:

- Noise mitigation management (i.e., equipment and machinery controls).
- Schedule of expected noisy activities.
- Procedure for community notification of noisy activities such as blasting or pile driving.
- Communication procedures for public inquiry or complaint.
- If specified by the EA Certificate conditions, environmental monitoring and reporting requirements including a reporting structure consistent with the requirements of the Project's EA Certificate conditions.

10.3.8 Petrochemical Storage and Handling Plan

The PSHP will describe protocols and procedures for handling and storing petrochemicals on-site during operation phase. Petrochemicals include fuels, oils, lubricants, or other petroleum-based products. The plan will include:

- Identifying responsible Project personnel and external contacts.
- Designating areas for storage, including site maps to be available on-site.
- Designating areas for refuelling and maintenance of vehicles, equipment, and machinery.
- Specifications for the proper storage of petrochemical products, e.g., minimum distances from sensitive locations or work sites, containment, and safety requirements.
- Specifications for the handling of petrochemical products and refuelling of vehicles, equipment, and machinery.
- Specifications for the proper disposal of petrochemical products.
- Recommendations from existing guidance such as:
  - Ministry of Environment: A Field Guide to Fuel Handling, Transportation, and Storage (BC MoE 2002).
  - CCME Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum Products (Government of Canada 2015).
  - Petroleum and Allied Petroleum Products Storage Tank Regulations (Government of Canada 2015).
- Worker safety and training.
- If specified by the EA Certificate conditions, environmental monitoring and reporting that will include a reporting structure consistent with the requirements of the Project's EA Certificate conditions.
- Cross-references to the SPERMP for protocol to handle petrochemical spills and emergency situations.

10.3.9 Preventative Maintenance Program and Periodic Inspection Plan

The main goal behind a preventative maintenance program is for the equipment to make it from one planned service to the next planned service without any accidents or malfunctions caused by fatigue, neglect, or normal wear (preventable items), which planned maintenance and periodic inspections will help to achieve by replacing worn components before they actually fail. In addition, workers can record equipment deterioration so worn parts are repaired or replaced before they cause system failure.

10.3.10 Spill Prevention and Emergency Response Management Plan

The SPERMP will describe measures to avoid and reduce the potential for a spill or release of hydrocarbons or other hazardous materials in upland and marine environments and provide guiding framework for emergency response during operation. The SPERMP will provide appropriate guidelines and procedures so that any spill or emergency is responded to in a safe, fast, and effective manner that minimizes adverse effects to personnel, the environment, and nearby communities. The SPERMP will conform with existing emergency preparedness and response plans developed for the Port of Prince Rupert.

The SPERMP will be developed in accordance with the requirements of the BC *Spill Reporting Regulation* under the BC *Environmental Management Act* (Province of BC 2018) and will include, but not be limited to:

- Identification of responsible Project personnel and external contacts.
- A description of the communication procedure and notification requirements in the event of a spill and/or emergency.
- Specification of the containment, recovery, and clean-up procedures (including those applicable to equipment refuelling and servicing, and spill preparedness, such as spill kits and booms).
- A description of procedures for the unexpected failure or malfunction of temporary containment systems (such as sediment bunds or cement traps).
- A list and a description or purpose of spill abatement materials and equipment to be stored and available on-site.
- Specification of the location of spill clean-up materials and equipment.
- A description of equipment refuelling and servicing procedures and limitations.
- A list of follow-up and reporting requirements (if reporting is specified by the EA Certificate conditions).

10.3.11 Surface Water and Storm Water Management Plan

The SWSWMP will provide procedures to manage surface water and storm water during the operation of the Project. The primary objective of the SWSWMP will be to manage surface water runoff and storm events, and avoid, reduce or mitigate the mobilization of sediment and pollutants to water bodies.

The SWSMP will provide:

- Protective measures for maintaining current surface water quality.
- Surface water quality criteria (federal and provincial).
- Measures to manage storm water runoff during operation, including water quality monitoring and discharge flow control such that discharge into the Ridley Island Road and Rail Utility Corridor drainage system does not exceed pre-development flows.

- Relevant maps to illustrate surface water and storm water management system in place during operation.
- If specified by the EA Certificate conditions, environmental monitoring and reporting requirements (**Section 11.1 Environmental Monitoring, Compliance and Auditing**) including a reporting structure consistent with the requirements of the Project's EA Certificate conditions.

10.3.12 Training Management Plan

Vopak will implement a training and employment program to fill operation jobs (AltaGas Undated). The program is intended to train local, including Indigenous, people for junior operation jobs. In addition, Vopak will undertake other initiatives as part of the employment and training opportunities, such as:

- Participation in existing career fairs.
- Engaging and working with local employment services.
- Providing cultural awareness training for employees with respect to Indigenous culture.

10.3.13 Vegetation (Sensitive Habitat, Invasive and Noxious Plants) Management Plan

The VMP will provide strategies to:

- Minimize disturbance to the existing vegetation, including sensitive habitat, such as riparian zones and wetlands from operation.
- Reduce and avoid impacts outside of the site footprint during operation.
- Control the spread or introduction of invasive or noxious plants.

10.3.14 Wildlife Management Plan

The operation WMP will be closely linked with the VMP. The plan will describe sensitive wildlife habitat, including drawings to show them relative to the Project footprint. Protective measures to minimize impacts to wildlife will be provided in the plan (e.g., collision avoidance, good housekeeping, activity timing windows, and waste management).

The plan will also include:

- Provisions to avoid disturbing or removing active bird nests within the facility other than those not protected by law.
- If specified by the EA Certificate conditions, specifications for wildlife (including birds and marine mammals) monitoring requirements, such as when, where and method of monitoring to be conducted by specialist staff, including Indigenous monitors. Reporting structure will be consistent with the requirements of the Project's EA Certificate conditions.
- A prohibition on wildlife feeding.
- Requirements for maintenance of clean worksites and storage of all potential wildlife attractants (food, garbage, paint) in a manner that is inaccessible to wildlife.
- Installation of perimeter fencing to deter deer and other large wildlife from entering the facility.
- Reporting any notable wildlife roadkill to the EM and to PRPA, and, if appropriate, implementing site-specific mitigation (e.g., warning signs, worker notifications) for any concentrations of roadkill that may occur.
- A procedure for visual inspection of the flaring infrastructure to avoid or reduce impacts to wildlife (e.g., perched birds) during flaring.

- A berth entanglement protocol. This will include scenarios for while vessels are actively berthing, not actively berthing, and are berthed, and will include, but is not limited to, contact numbers for the PRPA and DFO.

10.4 Decommissioning Environmental Management Plan

The DEMP will be developed and implemented in advance of the decommissioning phase. As the future use of the Project site post-decommissioning is undetermined, the objective of decommissioning will be to return the site to the condition specified by PRPA requirements. Decommissioning will be conducted using the best available guidance for mitigation on the surrounding environment, including all terrestrial and marine valued components.

The following component management plans are specific to the decommissioning phase.

10.4.1 Erosion and Sediment Control Plan

Vopak will include the development and implementation of an ESCP during decommissioning. This ESCP will include details such as:

- Specify the use of control devices (e.g., silt fences, berms, ditches) and erosion protection (e.g., mats, staking, re-sloping) to reduce the potential for transport of sediments to water bodies during decommissioning activities.

10.4.2 Surface Water and Storm Water Management Plan

Vopak will include the development and implementation of a SWSWMP during decommissioning. This SWSWMP will include details such as:

- Using ditches and storm water lagoons, as available, to manage storm water during decommissioning.
- Restoration of surface drainage conditions to a state that is congruent with the surrounding water management environment by re-creating the manmade ditches across the footprint to the depth of the surface water table.

10.4.3 Marine Underwater Noise Monitoring Plan

Vopak will include the development and implementation of a Marine Underwater Noise Monitoring Plan during decommissioning, if required. This Plan will include details such as:

- Implementation of safety zones with visual monitoring by qualified MMOs with distance from the sound source determined based on underwater acoustic monitoring and comparison of measured sound levels to the currently accepted threshold of 160 dB re 1 µPa rms SPL for marine mammals (unless otherwise directed by DFO).
- In-situ verification that all decommissioning-related noise is below accepted thresholds through underwater acoustic monitoring.
- Marine mammal safety and monitoring zones, underwater acoustic monitoring, use of noise reduction techniques or devices where possible, ramp ups and soft starts when possible, and development of activity-specific Stop Work Protocols.
- Avoidance of concurrent in-water noise-producing decommissioning activities, as possible.
- Provisions for informing decommissioning-related vessels of the locations of marine mammals observed in proximity to the Project area or transit routes to and from the Project area.

Decommissioning activities will be monitored by a QEP, or EM under the supervision of a QEP.

10.4.4 Marine Access and Vessel Management Plan

Vopak will include the development and implementation of a Marine Access and Vessel Management Plan during decommissioning.

10.5 Aboriginal Interest Management Plan

Vopak will engage with Indigenous Nations on a management plan specific to Aboriginal Interests. The Indigenous Nation Aboriginal Interest Management Plan will outline mitigation measures to avoid, minimize, reduce, and/or offset potential effects to the following Aboriginal Interests:

- Harvesting Rights.
- Sense of Place and Sense of Attachment.
- Access and Travel.
- Indigenous Governance Systems.
- Cultural Identity.
- Indigenous Health.
- Indigenous Socio-economic Conditions.

In addition, this plan will further describe cross-cultural awareness training, which will be developed in collaboration with engaged Indigenous Nations. This training is expected to build awareness and reduce potential adverse interactions with Indigenous peoples, including Indigenous employees. Vopak will provide cultural awareness education and training for Project development staff and on-the-ground personnel during construction. This was raised as a recommendation by Metlakatla First Nation (Metlakatla Stewardship Society 2019).

10.6 Summary

Table 10.6-1 illustrates the relevance of each plan identified in this section by cross-referencing the environmental mitigations, controls, and protective measures from the assessment presented in **Section 5** Environmental Effects Evaluation. Relevant VCs (where applicable) are also identified. The relevant authorities for all plans are the Environmental Assessment Office and PRPA. Identified mitigations within plans are summarized in **Section 12 Conclusions**.

Table 10.6-1: Summary of Environmental Management Plans

Management Plan	Mitigation Measures	Authority Responsible for Monitoring Compliance/Enforcement
Construction Phase		
Air Quality and Dust Control Management Plan (AQDCMP)	› Use efficient, lower-emission vehicles and equipment where practical. › Ensuring appropriate catalytic converters, mufflers and exhaust systems are in place on equipment and functioning as designed. › Minimizing idling where practical. › Spray overburden and soils with water prior to moving them if overly dry. › Use of water sprays to control dust on roads. › Cross-reference with the mitigations within the CTMP, SMP.	BC Ministry of Environment and Climate Change Policy (ENV) ECCC

Management Plan	Mitigation Measures	Authority Responsible for Monitoring Compliance/Enforcement
Archaeological Resources Management Plan (ARMP)	› General procedures to identify, report, and manage archaeological and heritage resources during construction. › Chance Finds Management Plan (CFMP) give on-site personnel information to identify archaeological materials if encountered in the construction area, resources to report the find, and actions to follow to protect the site from impacts. › Avoidance of CMT sites. › Collection of stem round samples from all CMTs that are removed. › Creation of a wind-firm buffer to protect indirectly affected CMTs from potential blowdown. › Monitoring of AOPs during construction to identify archaeological deposits, if present. › On-site personnel receiving CFMP training prior to conducting any ground-disturbing activities.	BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) – BC Archaeological Branch
Construction Blasting Management Plan (CBMP)	› Protective measures (e.g., use of blasting mats) to mitigate adverse noise and vibration effects, impacts to air quality or geotechnical stability, and impacts of blasting activities to the receiving environment. › Sensitive time periods to be considered during scheduling blasting. › Best practices and guidance recommendations for blasting, such as ISEE (2011) and Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters (Wright and Hopky 1998). › Procedure to visually check that no wildlife is visible on the site before commencing blasting. › Minimum 500 m Exclusion Zone for all marine mammals following the guidance of Wright and Hopky (1998), with an additional 250 m marine mammal monitoring zone extending outwards from the 500 m perimeter. › Cross-reference the mitigations within the NMP, AQDCMP, WMP.	Natural Resources Canada (NRC) DFO
Construction Traffic Management Plan (CTMP)	› Transport workers via bus. › Engine idling policy to minimize vehicle emissions. › Vehicle speeds consistent with PRPA speed limits. › Driver education regarding wildlife presence. › Safety measures including driver awareness, wildlife presence, signage, flag persons, and monitoring. › Cross-reference the mitigations within the AQDCMP, WMP.	ECCC BC Ministry of Transportation and Infrastructure (BC TRAN) Transport Canada (TC)

Management Plan	Mitigation Measures	Authority Responsible for Monitoring Compliance/Enforcement
Construction Waste Management Plan (CWMP)	› Procedures for collection, storage and disposal of upland soil and sediment, water from dewatering activities, food waste, hazardous waste (including contaminated soil and used spill kit materials), waste concrete, construction waste, invasive weeds, and recyclables in a manner consistent with regulation and inaccessible to wildlife. › Cross-reference the mitigations within the SMP, PHSP, WMP and VMP.	ECCC, ENV, DFO
Environmental Awareness and Education Plan	› Provides information for all personnel and contractors regarding environmental sensitivities and appropriate mitigations. › Cross-reference the mitigations within the WMP, CWMP, VMP, CTMP, AQDCMP, ESCP, PSHP.	ENV, DFO
Erosion and Sediment Control Plan (ESCP)	› Specification of the procedures to be used during clearing and other construction activities with the potential to result in erosion or sedimentation, and specific measures to be taken during heavy rain. › Protection for steep slopes, stockpiles, and disturbed areas during storm events. › Re-contouring the site to manage drainage and minimize potential for erosion. › Cross-reference with the mitigations within the PSHP, SPERMP and SWSWMP.	ECCC, ENV, DFO
Fish and Fish Habitat Management Plan (FFHMP)	› Maps identifying fish habitat, no-go zones, limits of construction. › Where possible, avoid placing vertical spuds or other anchors into valued and sensitive habitat areas. › Use of work windows to reduce seasonal risk during pile and anchor installations and work in and around water. These include Marine/Estuarine Timing Windows for the Protection of Fish and Fish Habitat (Area 4 – Lower Skeena). The timing windows are open November 30 to February 15. › Construction activity specific Stop Work Protocols that allow for the temporary cessation of Project-related activities and account for site-specific species and observation conditions. Stop Work Protocols include, but are not limited to, SPL exceedances, observations of distressed fish, or observations of aggregations of Pacific Herring, salmon, or Eulachon. › Specification of construction activities for which fish monitoring would be necessary and procedures for monitoring construction activities by a QEP, or EM under the supervision of a QEP. › Cross-reference with the mitigations within the MUNMP, PSHP, SPERMP, and SWSWMP.	DFO, FLNRORD

Management Plan	Mitigation Measures	Authority Responsible for Monitoring Compliance/Enforcement
Health and Safety Management Plan (HSMP)	› Personal protective equipment, proper protocols for working in and around machinery, and location of existing structures, utilities, and potential hazards within the work site in compliance with BC Occupational Health and Safety Regulation and WorkSafeBC Standards. › Health and Medical Services Plan (HMSP), which is a planning activity aimed at reducing and containing communicable disease outbreaks and other health issues, thereby minimizing pressure on the regional health care system during Project construction.	Health Canada (HC) WorkSafeBC
Marine Access and Vessel Communications Plan (MAVCP)	› Identification of marine-based construction staging areas, travel corridors for marine vessels and equipment into and through construction areas including identifying exclusion and no-go zones, such as navigational hazards, and sensitive ecosystems, habitat, or infrastructure. › Measures to manage marine traffic and navigation during construction (e.g., signage, website, a Project telephone line). › Marine safety zones under the jurisdiction of the PRPA will be used during construction. › Alternative options for vessel movement. › Navigational aids, markers, and signs to be used to delineate construction area and safety zones. › Detailed requirements to assist vessels (pilot vessels, tugs, barges, etc.). › Procedure for liaison with the Canadian Coast Guard (CCG) to provide Notices to Shipping and Notices to Mariners. › Specify transit speed in accordance with the PRPA and Collision Regulations. › Compliance with the *Navigable Waters Act* approval conditions. › Vessels required to establish and maintain radio communications with the Canadian Coast Guard's Marine Communications and Traffic Services, as required by CCG. › Radio communication protocol for vessels accessing the site. › Respecting public and traditional access to marine resource users. › Emergency response plan for vessel accidents and malfunctions.	CCG PRPA TC

Management Plan	Mitigation Measures	Authority Responsible for Monitoring Compliance/Enforcement
Marine Underwater Noise and Vibration Management Plan	› Reference to 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). › Information on the marine fauna that may be present within and around the marine works area, including any sensitive time periods that are to be considered in construction scheduling. › Implementation of exclusion zones with distance from the sound source determined based on underwater acoustic monitoring and comparison of measured sound levels to the currently accepted thresholds of 206 dB re 1 µPa for Peak SPL, and 187 dB re 1 µPa2s for Cumulative Sound Exposure Level (unless otherwise directed by DFO). › Activity-specific shut-down protocols for cetaceans and pinnipeds. › Cetacean exclusion zone limit will be the full extent of the safety zone as determined by underwater acoustic monitoring and comparison of in-situ measured sound levels to the currently accepted threshold of 160 dB re 1 µPa rms SPL – unless otherwise directed by DFO. › Pinniped exclusion zone (excluding during blasting) will be a smaller radius from the sound source at 150 m and where underwater peak sound levels do not exceed 218 dB re 1 µPa – unless otherwise directed by DFO. If underwater sound levels exceed 218 dB re 1 µPa at 150 m, then the radius will be increased to the distance from the sound source where levels are below this threshold. › Mitigation measures such as soft starts and ramp ups, as possible, bubble curtains or other noise-attenuating devices. › Visual monitoring by qualified MMOs. › Underwater acoustic monitoring and underwater acoustic thresholds. › Prioritization of lower sound emission equipment. › Avoid concurrent in-water noise-producing construction activities, as possible. › Development and implementation of an Underwater Acoustic Monitoring Program that synergistically includes the Marine Mammals subcomponent. › Cross-reference the mitigations within the FFHMP, CBMP.	DFO

Management Plan	Mitigation Measures	Authority Responsible for Monitoring Compliance/Enforcement
Petrochemical Storage and Handling Plan (PSHP)	› Designated areas for storage of petrochemicals, refuelling and maintenance of vehicles, equipment, and machinery. › Specifications for the proper storage of petrochemical products, e.g., minimum distances from sensitive locations or work sites, containment, and safety requirements. › Specifications for the proper disposal of petrochemical products. › Worker safety and training. › Environmental monitoring and reporting requirements. › Cross-reference with the mitigations within the SPERMP, SWSWMP, HSMP, and CWMP.	ECCC BC Oil and Gas Commission (OGC)
Site Restoration Plan	› Location(s) of site-specific restoration. › Timing requirements. › Permit requirements, if any. › Environmental monitoring requirements. › Soil salvage and management. › Details of planting requirements, e.g., plant species list, number, size, and plant spacing, specifications for hydroseeding. › Post-construction maintenance and care. › Cross-reference with the mitigations within the SMP, VMP.	BC Environmental Assessment Office (EAO) Impact Assessment Agency of Canada (IAAC) ECCC, FLNRORD, NRC
Spill Prevention and Emergency Response Management Plan (SPERMP)	› Responsible Project personnel and external contacts. › communication procedure and notification requirements in the event of a spill or emergency. › Specification of the containment, recovery, and clean-up procedures (including those applicable to equipment refuelling and servicing, and spill preparedness, such as spill kits and booms). › Procedures in case of unexpected failure or malfunction of temporary containment systems (such as sediment bunds or cement traps). › A list and a description or purpose of spill abatement materials and equipment to be stored and available on-site. › location of spill clean-up materials and equipment. › equipment refuelling and servicing procedures and limitations. › follow-up and reporting requirements. › Training requirements for personnel. › Cross-reference the mitigations within the PSHP, FFHMP.	ECCC, ENV, OGC, PRPA, TC

Management Plan	Mitigation Measures	Authority Responsible for Monitoring Compliance/Enforcement
Soil Management Plan (SMP)	› Designation of areas for temporary stockpiling and dewatering of overburden, including site maps. › Designation of areas for temporary stockpiling and storage of imported fill, including site maps. › Specifications for the handling and disposal of overburden, and water disposal. › Specifications for the handling and storage of imported fill. › Specifications for transportation of soil, including spraying overburden and soil with water if it appears to be overly dry prior to moving it. › Criteria for overburden acceptance at the PRPA storage area on Ridley Island. › Protocols for soil and groundwater sampling for excavated materials suspected of contamination. › Protocols for handling, remediation and disposal of contaminated soil or groundwater. › Worker safety and training. › Cross-reference with CWMP, SRP, ACDCMP, ESCP, CWMP.	ECCC, FLNRORD, PRPA
Surface Water and Storm Water Management Plan (SWSWMP)	› Protective measures for maintaining current surface water quality. › Surface water quality criteria (federal and provincial). › Methods for surface water diversion or dewatering if it is necessary for site preparation, including ponds, drainage ditches, and culverts as necessary. › Manage and monitor storm water runoff during construction, including monitoring water quality in the two storm water lagoons prior to discharge into the existing PRPA drainage system. › Environmental monitoring and reporting requirements › Cross-reference the mitigations within the ESCP, FFHMP.	ECCC, ENV, DFO
Vegetation Management Plan (VMP)	› Minimize disturbance to the existing vegetation, including sensitive habitat such as riparian zones and wetlands from construction. › Reduce and avoid impacts outside of the clearing zone during construction. › Retain peripheral vegetation as much as possible to limit sight lines to the Project. › Control the spread or introduction of invasive or noxious plants. › Designating areas for temporary stockpiling of vegetation. › Protocols and procedures for handling and storing of cleared vegetation on-site. › Specifications for the handling, storage, and disposal of vegetation, including noxious and invasive plants. › Inspection, monitoring, and reporting requirements. › Cross-reference the mitigations within the WMP, CWMP.	ECCC, FLNRORD

Management Plan	Mitigation Measures	Authority Responsible for Monitoring Compliance/Enforcement
Wildlife Management Plan (WMP)	› Timing windows for vegetation clearing outside of the bird nesting season (April 9-August 15) and clearing of moderate-rated forested habitat (for little brown myotis) outside of the bat active season (April 1-October 31). › If vegetation clearing is proposed during the bird nesting season, then pre-clearance bird nest surveys will be done to identify active bird nests and establish protective buffers around nests until the nest is no longer active. A pre-clearance nest survey plan will be developed, in consultation with PRPA and ECCC, to guide bird nest survey activities. › Wildlife feeding is prohibited. › Construction activity restricted to the flagged footprint area and previously-disturbed areas. › Amphibian salvage will be conducted 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). › Conduct pre-construction wildlife surveys. › Maintenance of clean worksites and storage of all potential wildlife attractants (food, garbage, paint) in a manner that is inaccessible to wildlife. › Install perimeter fencing to deter access by large wildlife. › Instruct drivers on wildlife awareness › Report wildlife observations and wildlife roadkills to the site manager › Cross-reference with the mitigations within the CTMP, CWMP, CBMP, VMP.	BC TRAN, ECCC
Operation Phase		
Erosion and Sediment Control Plan (ESCP)	› Procedures to be used during clearing and other maintenance activities with the potential to result in erosion or sedimentation, and specific measures to be taken during heavy rain. › Specifications for protection for steep slopes, stockpiles, and disturbed areas during storm events. › Provisions for re-contouring the site to manage drainage and prevent erosion. › Cross-reference with the mitigations within the PSHP, SPERMP and SWSWMP.	ECCC, ENV, DFO
Energy Management Plan (EMP)	› Leak Detection and Repair program for terminal fuels storage and processing systems to reduce fugitive vapour emissions. › Engine idling policy to reduce fuel consumption.	ECCC, OGC

Management Plan	Mitigation Measures	Authority Responsible for Monitoring Compliance/Enforcement
Health and Safety Management Plan (HSMP)	› Safety orientation, incident reporting, drugs and alcohol, security › Safety requirements (e.g., housekeeping, personal protective equipment) and Job requirements (safety audits, toolbox/safety meetings). › Permit to Work. › Lockout and Tagout. › Confined Space Entry. › Excavation. › Working at Heights. › Motorized Vehicles. › Transfer of Product. › Management of Change.	HC, WorkSafeBC
Light Management Plan (LMP)	› Avoid lighting shallow nearshore areas, where practical. › Avoid overwater down-casting lights, where practical. › Use an industrial low-profile light fixture that sidecasts light. › Use smart, low consumption light-emitting diode (LED) lighting. › Illuminate those parts of the marine terminal that need lighting, when they need lighting (i.e., restrict continuous lighting to human and navigational safety). › Schedule illumination through motion and occupancy sensors for both indoor and outdoor applications, thereby reducing the amount of light trespass.	BC TRAN, TC
Marine Access and Vessel Communications Plan (MAVCP)	› Procedure to provide Notices to Shipping and Notices to Mariners, in collaboration with CCG › Local marine communications and Project-related safety procedures, including and designated safety zones under the jurisdiction of the PRPA to specify “no-go” areas › Escort vessels to be used to confirm the route is clear and safe and that other vessels do not intrude on safety zones. › Tugboats to be used for the safe transit and berthing of vessels calling on the terminal. › Applicable limits set by the PRPA on environmental conditions under which operation can be conducted safely. › Compliance with the Navigable Waters Act approval conditions. › Vessels will be required to establish and maintain radio communications with the Canadian Coast Guard’s Marine Communications and Traffic Services, as required by CCG.	CCG, PRPA, TC

Management Plan	Mitigation Measures	Authority Responsible for Monitoring Compliance/Enforcement
Marine Underwater Noise and Vibration Management Plan (MUNVMP)	› Procedure (including vessel speeds) for vessels entering and leaving berths. › Cross-reference and implement conditions of relevant authorizations and permits for marine operations. › Specify monitoring and reporting to be conducted by specialist staff, if required	DFO
Noise Management Plan (NMP)	› List equipment, machinery, and vehicles with noise emission specifications › Limit maintenance and inspection activities to daytime hours, when possible; use of noise abatement measures including screens, if necessary. › Procedure for community notification of noisy activities. › Schedule of expected noisy activities. › Communication procedures for public inquiry or complaint › If specified by the EA Certificate conditions, environmental monitoring and reporting requirements.	EAO, ECCC, IACC, OGC
Petrochemical Storage and Handling Plan (PSHP)	› Designate areas for storage of petrochemicals. › Designate areas for refuelling and maintenance of vehicles, equipment, and machinery. › Specifications for the proper storage of petrochemical products, e.g., minimum distances from sensitive locations or work sites, containment, and safety requirements. › Specifications for the handling of petrochemical products and refuelling of vehicles, equipment, and machinery. › Specifications for the proper disposal of petrochemical products. › Specifications for training of workers that handle petrochemicals. › Cross-reference with the mitigations within the ESCP, SPERMP and SWSWMP	ECCC, OGC
Preventative Maintenance Program and Periodic Inspection Plan	› Schedule of planned maintenance and periodic inspections to confirm equipment condition and function and avoid preventable accidents and malfunctions caused by fatigue, neglect, or normal wear.	HC

Management Plan	Mitigation Measures	Authority Responsible for Monitoring Compliance/Enforcement
Spill Prevention and Emergency Response Management Plan (SPERMP)	› Communication procedure and notification requirements in the event of a spill and/or emergency. › Containment, recovery, and clean-up procedures (including those applicable to equipment refuelling and servicing, and spill preparedness, such as spill kits and booms). › Procedures for the unexpected failure or malfunction of temporary containment systems (such as sediment bunds or cement traps). › Spill abatement materials and equipment to be stored and available on-site. › Equipment refuelling and servicing procedures and limitations. › Training requirements for personnel. › Cross-reference with Port of Prince Rupert emergency preparedness and response plans, PSHP.	ECCC, ENV, OGC, PRPA, TC
Surface Water and Storm Water Management Plan (SWSWMP)	› Surface water quality criteria (federal and provincial). › Protective measures for maintaining current surface water quality. › Measures to manage storm water runoff during operation, including water quality monitoring and discharge flow control such that discharge into the Ridley Island Road and Rail Utility Corridor drainage system does not exceed pre-development flows. › Environmental monitoring and reporting requirements specified by the EA Certificate conditions.	ECCC, ENV, DFO
Training Management Plan (TMP)	› Measures to train local, including Indigenous, people for junior operation jobs.	N/A
Vegetation (Sensitive Habitat, Invasive and Noxious Plants) Management Plan	› Minimize disturbance to the existing vegetation, including sensitive habitat such as riparian zones and wetlands, during operation › Reduce and avoid impacts outside of the site footprint during operation. › Control the spread or introduction of invasive or noxious plants.	ECCC, FLNRORD

Management Plan	Mitigation Measures	Authority Responsible for Monitoring Compliance/Enforcement
Wildlife Management Plan	› Wildlife feeding is prohibited. › Avoid clearing vegetation during the sensitive timing window for bird nesting (April 4 to August 17) where practical. If not, conduct an active bird nest survey and protect active nests with no-disturbance buffers. › Do not disturb or remove active bird nests within the facility other than those not protected by law. › Maintain perimeter fencing to deter access by large wildlife. › Maintain clean worksites and storage of all potential wildlife attractants (food, garbage, paint) in a manner that is inaccessible to wildlife. › If specified by the EA Certificate conditions, specifications for wildlife (including birds and marine mammals) monitoring requirements. › MBM berth entanglement protocol. › Visual inspection of flaring infrastructure before testing. › Instruction to drivers on wildlife awareness. › Report notable wildlife roadkills to the site manager.	BC TRAN, ECCC
Decommissioning		
Decommissioning Environmental Management Plan (DEMP)	› Participation in the PRPA Marine Mammal Program (PRPA 2020) or other such programs. › Decommissioning vessels will adhere to the Be Whale Wise guidance. › Establish setbacks; conduct progressive reclamation and revegetation of shoreline and riparian areas. › Avoid removal of tanks and infrastructure under overly dry conditions.	ECCC, DFO
Erosion and Sediment Control Plan (ESCP)	› Employ erosion controls (e.g., silt fences, berms, ditches) and erosion protection (e.g., mats, staking, re-sloping) to reduce the potential for transport of sediments to water bodies. › Use of 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.	ECCC, ENV, DFO

Management Plan	Mitigation Measures	Authority Responsible for Monitoring Compliance/Enforcement
Surface Water and Storm Water Management Plan (SWSWMP)	› Design to avoid water bodies; develop and implement management plans, including AQDCMP, CBMP, ESCP, SMP, and SWSWMP. › Establish setbacks around water bodies; limit the extent of temporary disturbance. › Employ ditches and lagoons to drain and collect stormwater. › Sample stormwater to ensure it meets water quality guidelines before discharge. › Conduct progressive reclamation where possible and re-vegetate disturbed areas.	ECCC, ENV, DFO
Marine Underwater Noise Monitoring Plan	› Implementation of safety zones with visual monitoring by qualified MMOs with distance from the sound source determined based on underwater acoustic monitoring and comparison of measured sound levels to the currently accepted threshold of 160 dB re 1 µPa rms SPL for marine mammals (unless otherwise directed by DFO). › In-situ verification that all decommissioning-related noise is below accepted thresholds through underwater acoustic monitoring. › Marine mammal safety and monitoring zones, underwater acoustic monitoring, use of noise reduction techniques or devices where possible, ramp ups and soft starts when possible, and development of activity-specific Stop Work Protocols. › Avoidance of concurrent in-water noise-producing decommissioning activities, as possible. › Provisions for informing decommissioning-related vessels of the locations of marine mammals observed in proximity to the Project area or transit routes to and from the Project area.	DFO