

Environmental Assessment Certificate Application

LNG Canada Export Terminal

Section 12 – Summary of Proposed Environmental and Operational Management Plans

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12 SUMMARY OF PROPOSED ENVIRONMENTAL AND OPERATIONAL MANAGEMENT PLANS

12.1 Environmental Management Program

The following provides a summary of the environmental management program and associated plans that will be developed for works that will be undertaken by LNG Canada or its contractors during each phase of the Project. The program will consist of three parts to provide an environmental framework to manage each phase of the Project:

- Construction Environmental Management Program (CEMP)
- Operations Environmental Management Program (OEMP), and
- Decommissioning Environmental Management Program (DEMP).

The detailed CEMP will be developed upon receipt of an EAC. The OEMP will be developed prior to the start of the operation phase, and the DEMP will be developed approximately 2 years prior to the end of operation to address the decommissioning phase of the Project.

Each program will include a series of environmental management plans (EMPs) to protect the environment, personnel, and the public by preventing or managing potential adverse effects from Project activities. The plans will be developed based on current BMPs, industry standards, and regulatory requirements, including commitments in this Application and subsequent conditions of the Project approvals. The plans will detail the best available technically and economically achievable mitigation measures to manage potential adverse effects related to Project activities to the extent that is practicable.

Each plan will provide the following information:

- the purpose, scope, and objective of the plan
- roles and responsibilities
- site orientation and training requirements
- clear and concise written procedures
- key emergency and LNG Canada contact information, and
- monitoring and reporting requirements.

An environmental management team will be established to oversee the implementation of the programs and carry out monitoring and reporting requirements. The team is to consist of environmental specialists, including representatives from local Aboriginal Groups where possible, that will monitor site activities during construction and environmental performance during operation. The environmental management team will work with construction and operation managers to provide assurance of compliance with the

EMPs and the regulatory requirements or conditions of approvals, permits, and licences. In the unlikely event that works cannot be undertaken in a manner that provides appropriate environmental management through their application, the EMPs will be updated with appropriate information.

12.1.1 Construction and Operations Environmental Management Program

A list of management plans to be included in the CEMP and OEMP is provided in Table 12.1-1 (Mitigation 12.1-1). A summary description of each plan is also provided following the table.

Table 12.1-1: List of Management Plans included in the CEMP and OEMP

Management Plan	CEMP	OEMP
Air Quality Management Plan	✓	✓
Archaeological and Heritage Resources Management Plan	✓	
Emergency Response Plan	✓	✓
Erosion and Sediment Control Plan	✓	
Fish Habitat Offsetting Plan	✓	✓
Greenhouse Gas Management Plan		✓
Health and Safety Management Plan	✓	✓
Invasive Plant Management Plan	✓	✓
Marine Activities Plan	✓	✓
Noise Management Plan	✓	✓
Social Management Plan	✓	✓
Surface Water Management Plan	✓	✓
Traffic Management Plan	✓	✓
Waste Management Plan	✓	✓
Wastewater Management Plan	✓	✓
Wetland Compensation Plan	✓	
Wildlife Management Plan	✓	✓

12.1.1.1 Air Quality Management Plan

The Air Quality Management Plan will describe measures to mitigate potential adverse effects on air quality resulting from Project activities during construction and operation. The plan will identify potential combustion sources of air emissions and fugitive dust emissions and provide a description of measures that could be implemented to mitigate emissions. The plan will also outline any permit requirements for reporting and monitoring of air emissions as defined by the MOE and OGC.

12.1.1.2 Archaeological and Heritage Resources Management Plan

The Archaeological and Heritage Resources Management Plan will be based on advice from a qualified professional archaeologist and input from the BC Archaeology Branch. The plan will describe measures and BMPs to avoid or mitigate adverse Project effects on archaeological and heritage resources and will include monitoring for works planned in areas of known archaeological potential. The plan will be implemented before the start of construction and will include a Chance Find Protocol to be used in the unlikely event that a previously unidentified archaeological site, artifact or human remains are discovered during construction. Guidelines for recognizing archaeological sites, artifacts and human remains will be provided in the plan.

12.1.1.3 Emergency Response Plan

The Emergency Response Plan will describe the protection of the environment, personnel, and the public in the event of a hazardous material spill or emergency scenario during construction and operation. The plan will address the emergency scenarios as described in Section 10 (Accidents or Malfunctions), and emergencies resulting from natural events, such as tsunamis and seismic events. A detailed description of the emergency response plan framework for the Project is provided in Section 10.1.2 (Emergency Response Planning).

12.1.1.4 Erosion and Sediment Control Plan

The Erosion and Sediment Control Plan will describe measures to mitigate potential adverse effects on water quality and aquatic habitat, by implementing measures to mitigate the potential for erosion and subsequent sedimentation during construction activities. Roads, ditches and erosion and sediment control devices (e.g., settling ponds, slope drains) will be inspected and maintained according to this plan. Water quality thresholds and standard erosion and sediment control practices outlined in the *Land Development Guidelines for the Protection of Aquatic Habitat* (DFO 1993) will be used to develop this plan.

12.1.1.5 Fish Habitat Offsetting Plan

The Fish Habitat Offsetting Plan will be developed in consultation with DFO, Haisla Nation, and key stakeholders to offset unavoidable permanent alteration or destruction of fish habitat from Project activities and physical works according to requirements of the *Fisheries Act*. The plan will describe measures to offset serious harm to fish through creation, restoration or enhancement of fish habitat. Due to the nature of some of the habitat being offset, some of the restoration and compensation options will also provide habitat that can be used by marine birds and terrestrial wildlife. A draft conceptual fish habitat offsetting strategy is provided in *Conceptual Fish Habitat Offsetting Plan* (Stantec Consulting Ltd. and Triton Environmental Consultants Ltd. 2014).

12.1.1.6 Greenhouse Gas Management Plan

The Greenhouse Gas Management Plan will describe measures to manage greenhouse gas emissions from Project activities during operation. The plan will discuss international BMPs, policy updates, emission source categories, effectiveness of mitigation, and activity specifications (i.e., frequency of monitoring and reviewing), as well as data management.

12.1.1.7 Health and Safety Management Plan

The plan will describe measures to protect personnel and the public during construction and operation. All contractors working on the Project will meet or exceed the requirements of the Health and Safety Management Plan. The objective of the plan will be to promote safety awareness and mitigate risks to health and safety. The plan will include, but is not limited to, requirements for:

- use of personal protective equipment
- safe use of tools and equipment
- safe work practices for specific tasks
- safety training, and
- designation of evacuation and isolation areas.

12.1.1.8 Invasive Plant Management Plan

An Invasive Plant Management Plan will describe measures to prevent, monitor and control the establishment and spread of invasive plant species in the Project footprint during construction and operation. The plan will include mitigation measures and provide guidance on invasive species removal, if required. The plan might include BMPs, such as:

- loosening compacted soil
- re-vegetating exposed soils to limit establishment of invasive species, and
- using weed-free and native seed mixes for re-vegetation and incorporating traditional use plants wherever possible.

12.1.1.9 Marine Activities Plan

The Marine Activities Plan will describe measures to mitigate potential adverse effects of Project activities on marine biota and habitats during construction of the marine terminal and during construction and operation shipping activities. For marine terminal construction, the plan will describe the marine water quality thresholds, the environmental monitoring plan for works within the marine environment, and the specific areas to be monitored.

The plan will describe mitigation measures to address potential effects from dredge activities and pile installation, such as marine mammal exclusions zones, soft start procedures, and sound dampening methods, and will describe monitoring of total suspended solids levels in surrounding waters. The plan will be in accordance with applicable federal and provincial legislation and regulations. The marine mammal exclusion zones will be established for cetaceans (zone to be determined based on equipment) and will be monitored by trained marine mammal monitors so that marine mammals are not within the exclusion zones during pile installation.

In regards to shipping activities, the plan will:

- identify traditional navigational routes, fishing and harvesting areas, and timing windows
- recognize the importance of and minimize disruption to current marine use including fishing, recreational use, commercial and shipping activities, tourism, and marine-based transportation, and
- manage disturbance to known archaeological and heritage sites located along the shoreline.

The plan will also describe procedures for marine communications and specific requirements of marine vessels such as training and qualification of shipboard personnel, vessel speed limitations and routing, and light and sound restrictions. The plan will be based on consultation with the regulatory agencies, Aboriginal Groups, and stakeholders. Applicable regulatory requirements under the *Navigation Protection Act*, *Canada Shipping Act* and other related acts and regulations will be taken into account. Results of the wake study being conducted as a component of the environmental assessment process will assist in identifying mitigation measures for vessel speed limitations and routing. Any other specific mitigation measures developed as the outcome of consultation will also be included in the plan.

12.1.1.10 Noise Management Plan

The Noise Management Plan will describe measures to avoid or mitigate noise from Project activities during construction and operation. The plan will identify construction and operation activities that will produce noise levels above the acceptable sound levels identified in the *British Columbia Noise Control Best Practices Guideline* (OGC 2009) and identify wildlife that will potentially be affected by noise from construction and operation. Specific timing windows to reduce disruption to wildlife resources during critical life stages and additional mitigation measures to manage construction noise will be included in the plan.

12.1.1.11 Social Management Plan

A Social Management Plan (SMP) will identify actions and initiatives that LNG Canada will undertake independently or in cooperation with other stakeholders to manage potential adverse social effects. The SMP will include:

- social performance goals and objectives
- actions and/or initiatives required to meet established objectives, and
- a description of how progress against those goals and objectives will be measured.

The SMP will also outline a reporting framework for communicating results from plan implementation and engagement efforts undertaken with Aboriginal Groups, local communities, government agencies, and key stakeholders, as appropriate.

12.1.1.12 Surface Water Management Plan

The Surface Water Management Plan will describe measures to mitigate potential adverse effects of Project activities on water quality and aquatic habitat during construction and operation. The plan will describe how stormwater will be collected, treated, tested, and discharged as well as any monitoring requirements. The plan will include BMPs, such as diverting external surface water runoff around the facility to avoid potential contamination. Water use will be managed under an operational water management plan and licence issued by the respective provincial agency.

12.1.1.13 Traffic Management Plan

A Traffic Management Plan will describe measures to protect wildlife, personnel and the public from vehicle interactions due to increased traffic resulting from Project activities during construction and operation. The plan will include mitigation measures that may be implemented onsite during construction and operation. The plan will also identify measures to limit traffic between Kitimat and the Project site, and between Terrace and Kitimat, through group transportation opportunities, such as buses. Measures may include speed limits (private roads), shift-change management, driver training, fit-for-duty-rules, and coordinated transport for employees to get to and from the Project site (e.g., buses).

12.1.1.14 Waste Management Plan

The Waste Management Plan will describe measures to manage hazardous and non-hazardous wastes generated by Project activities during construction and operation. The plan will identify and classify waste streams (e.g., construction activities waste, construction labour force waste, process wastes) and will include protocols for handling, storing, transporting, and disposing of hazardous wastes in accordance with the *Environmental Management Act* and the *Transportation of Dangerous Goods Act*, including requirements for waste manifests and chain of custody controls. Measures to manage waste, such as re-

use and recycling, will also be included in the plan, where possible. Wastes will be temporarily stored on site in bear-proof containers prior to being shipped to an approved waste disposal or recycling facility.

12.1.1.15 Wastewater Management Plan

The Wastewater Management Plan will describe measures to mitigate potential adverse effects of Project activities associated with wastewater on water quality and aquatic habitat during construction and operation. The plan will describe how wastewater (including effluent such as cooling water) and sanitary sewage will be collected, treated, tested, and discharged as well as any monitoring requirements.

12.1.1.16 Wetland Compensation Plan

A Wetland Compensation Plan will be developed in consultation with EC, Haisla Nation, and key stakeholders prior to construction. The plan will characterize the wetland ecosystems potentially adversely affected by Project activities and physical works, assess their ecological functions, and specific mitigation measures designed to offset any Project-related losses of wetland functions

12.1.1.17 Wildlife Management Plan

A Wildlife Management Plan will describe measures to protect wildlife and personnel during construction and operation. The plan will include mitigation measures and BMPs to manage the potential for human-wildlife conflicts. The plan will also:

- describe measures to protect birds and their nests, such as requiring an environmental monitor during Project activities scheduled to take place near active nests
- include a plan for raptor management that will outline mitigation measures and specific recommendations for minimizing any adverse effects on raptors and their nests during the construction of the Project as developed through consultation with MFLNRO, and
- incorporate results of a marbled murrelet field study and identify any critical habitat requirements.

12.2 Decommissioning Environmental Management Program

A DEMP will be developed approximately two years prior to the end of operation. The plan will comply with the laws, regulations and standards in effect at that time and will be developed in consultation with appropriate government agencies.