

Environmental Assessment Certificate Application

LNG Canada Export Terminal

Section 20 – Summary of Mitigation Measures

October 2014



LNG CANADA
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Joint venture companies



20 SUMMARY OF MITIGATION MEASURES

Table 20.0-1: LNG Canada’s Mitigation Measures

| Number | Mitigation Measure | Timing |
|------------|--|-------------------------|
| 5.2 | Air Quality | |
| 5.2-1 | Manage vehicle and equipment emissions by conducting regular maintenance on all machinery and equipment. | Construction |
| 5.2-2 | Control construction-related fugitive road dust, through measures such as speed limits on Project-controlled gravel roads and road watering on an as-needed basis. | Construction |
| 5.2-3 | Optimize timber salvage and offer available timber to local communities. | Construction |
| 5.2-4 | Prohibit the open burning (or incineration) of accumulated waste materials from the workforce accommodation centre(s). | Construction |
| 5.2-5 | Manage, through Project engineering design and operational procedures, the continuous NOx emissions associated with the gas turbine exhaust to meet regulatory requirements. | Operation |
| 5.2-6 | Adhere to the Air Quality Management Plan. | Construction, Operation |
| 5.2-7 | Diesel fired equipment will be powered by low sulphur fuel. | Construction |
| 5.2-8 | Construction vessels, supporting tugs, and LNG carriers and assist tugs will use low-sulfur fuel in compliance with applicable marine emission standards (IMO 2008). | Construction, Operation |
| 5.3 | GHG Management | |
| 5.3-1 | Implement industry best practice for mobile construction equipment (i.e., regular maintenance, speed restrictions, correct sizing of equipment, modernizing of fleet, reduce idling, driver behavior, etc.). | Construction |
| 5.3-2 | Use existing roads as main access points to the LNG facility to limit area of new disturbance, where practicable. | Construction |
| 5.3-3 | Use buses, where feasible, instead of personal transportation at the facility and workforce accommodation centre(s) to reduce traffic emissions. | Construction |
| 5.3-4 | Footprint for LNG facility and temporary construction facilities will be sized to allow safe and efficient construction. Existing cleared areas will be utilized, where practicable, to limit area of new disturbance. | Construction |
| 5.3-5 | Avoid burning of biomass where practicable. | Construction |
| 5.3-6 | Use efficient aero-derivative gas turbine technology to drive the refrigeration compressors in the liquefaction process. | Operation |
| 5.3-7 | Use BC Hydro power for LNG facility auxiliary electricity supply. | Operation |
| 5.3-8 | Operate combustion sources at optimal efficiency settings to reduce fuel consumption. | Operation |
| 5.3-9 | Adhere to existing flaring and venting reduction guidelines. Minimize flaring or venting, except as required to maintain safe operations and LNG train start up. | Operation |
| 5.3-10 | Conduct preventative maintenance of facility and equipment as per schedule in the maintenance management system. | Operation |
| 5.3-11 | Reuse heat recovered from gas turbine exhausts to reduce fuel consumption in other processes. | Operation |
| 5.3-12 | Recover boil-off gas during storage and loading processes, and re-inject the recovered gas into the fuel/feed gas system. | Operation |
| 5.3-13 | Implement a fugitive emissions survey program with the aim to measure and manage fugitive emissions. | Operation |

| Number | Mitigation Measure | Timing |
|---------------|--|-------------------------|
| 5.3-14 | Develop and adhere to a GHG Management Plan that would consider Best Achievable Technology (BAT) in current project design and implement best industry practice to manage Project GHG emissions. | Operation |
| 5.4 | Acoustic Environment | |
| 5.4-1 | Most construction activities, including pile installation, will be planned to occur between the daytime hours of 7 a.m. and 10 p.m. Night shifts will be required to complete specific activities or meet schedules. | Construction |
| 5.4-2 | Vibro-hammer piling equipment will be considered for use where conditions permit for land-based piling operations. | Construction |
| 5.4-3 | Fit gas or diesel engine exhausts with noise mufflers, where available. | Construction |
| 5.4-4 | Rubber-wheeled equipment will be used instead of steel-tracked equipment, where practical. | Construction |
| 5.4-5 | Construction equipment will be turned off when not in use, where practical, to minimize idling. | Construction |
| 5.4-6 | Develop and implement a Traffic Management Plan. | Construction, Operation |
| 5.4-7 | Equipment enclosure doors will be kept closed unless safe operations require otherwise. | Construction, Operation |
| 5.4-8 | LNG Canada will develop a notification protocol with input from the local community and other stakeholders for advance notification of planned substantial noise-causing activities at the LNG facility. | Construction, Operation |
| 5.4-9 | A process will be implemented to address all noise complaints in a timely manner. | Construction, Operation |
| 5.4-10 | A Noise Management Plan will be developed and implemented. | Construction, Operation |
| 5.4-11 | Regularly maintain all machinery and equipment to ensure that air and noise emissions are within range set by manufacturer when available. | Operation |
| 5.4-12 | Ensure that project related noise generated during operation complies with the OGC Noise Control Best Practices Guidelines at sensitive receptor locations. | Operation |
| 5.5 | Vegetation Resources | |
| 5.5-1 | The approved clearing boundaries will be clearly delineated (flagged) prior to site preparation to keep clearing activities within the designated Project footprint. | Construction |
| 5.5-2 | For the identified occurrences of blue-listed rock sandwort and red-listed long-leaved aster located in the Project footprint, a pre-construction salvage and translocation program to outside the Project footprint will be implemented. | Pre-construction |
| 5.5-3 | Incorporate traditional use plants, where appropriate and technically feasible, in wetland compensation measures and reclamation of temporary construction areas. | Construction |
| 5.5-4 | Any temporary workspace will be reclaimed as soon as practicable as per measures stated in the EMPs. | Construction |
| 5.5-5 | An Erosion and Sediment Control Plan will be developed and implemented to manage surface water and avoid sedimentation in adjacent vegetation communities. | Construction |
| 5.5-6 | An Invasive Plant Management Plan will be incorporated into the Project's EMP that will describe the control of invasive species. Where invasive species have been discovered on site, action will be implemented as soon as possible to eradicate them. | Construction |
| 5.5-7 | Topsoil will be salvaged, stockpiled and/or reused on site where practicable. Remaining topsoil will be sent to other locations to be stockpiled or used for reclamation. | Construction |
| 5.5-8 | Design of the LNG loading line corridor will consider and incorporate, where practicable, ways to maintain tidal flow and wildlife passage. | Pre-construction |
| 5.5-9 | A Surface Water Management Plan will be developed to address stormwater collection, treatment, and disposal during construction and operation. | Construction, Operation |

| Number | Mitigation Measure | Timing |
|---------------|---|--|
| 5.5-10 | Develop and implement a Wetland Compensation Plan to address loss of wetland habitat function for breeding and foraging terrestrial mammals, amphibians, and birds. | Pre-construction, Construction |
| Ref: 5.2-6 | Adhere to the Air Quality Management Plan. | Construction, Operation |
| Ref: 5.2-5 | Manage, through Project engineering design and operational procedures, the continuous NOx emissions associated with the gas turbine exhaust to meet regulatory requirements. | Operation |
| Ref: 5.2-7 | Diesel fired equipment will be powered by low sulphur fuel. | Construction |
| Ref: 5.6-7 | If clearing of open water wetland habitats within the Project footprint occurs during the amphibian breeding period (March 1 to August 15) an amphibian salvage program will be implemented. Details on an amphibian salvage program and measures to protect amphibian species will be detailed in the Wildlife Management Plan. | Construction |
| Ref: 5.6-11 | If clearing of vegetation occurs during the bear denning period (October to March), pre-clearing bear den surveys will be required. Identified bear dens will be protected by a 200 m no-disturbance buffer during the denning period (Linnell et al. 2000). | Pre-construction |
| 5.6 | Wildlife Resources | |
| 5.6-1 | Clearly delineate (flag) vegetation clearing limits to avoid damage to important wildlife habitat features (e.g., large boulders, nurse logs, raptor nests, mammal dens, ungulate mineral licks) in the facility LSA but outside of the Project footprint or the areas of temporary construction disturbance. Major game trails will be cleared of equipment, brush piles, and felled trees to maintain their use as movement corridors for wildlife, where practicable. | Pre-construction, Construction |
| 5.6-2 | Develop and implement an approved raptor management plan. | Pre-construction |
| 5.6-3 | A Wildlife Management Plan will be developed and will include requirements for reporting wildlife sightings, including bat or bird collisions. Reporting will include information such as species, location, and weather conditions. | Construction, Operation |
| 5.6-4 | Develop and implement a Decommissioning Plan before decommissioning to allow habitat recovery and wildlife movement to proceed as soon as possible. | Decommissioning |
| 5.6-5 | Construction activities will account for applicable bird breeding periods: <ul style="list-style-type: none"> ▪ end of March to mid-August for migratory birds (Environment Canada 2014b) ▪ January 1 through September 5 for raptors (BC MOE 2012) Clearing activities that need to occur during bird breeding periods will incorporate measures to protect birds and their eggs as per federal and provincial regulations. These measures will be detailed in the Wildlife Management Plan. | Construction |
| 5.6-6 | Bear-proof fences will be installed around the workforce accommodation centre(s) and Project footprint to reduce potential for on-site interactions with wildlife. | Construction, Operation |
| 5.6-7 | If clearing of open water wetland habitats within the Project footprint occurs during the amphibian breeding period (March 1 to August 15) an amphibian salvage program will be implemented. Details on an amphibian salvage program and measures to protect amphibian species will be detailed in the Wildlife Management Plan. | Construction |
| 5.6-8 | Feeding and harassment of wildlife will be strictly prohibited. | Pre-construction, Construction, Operation, Decommissioning |
| 5.6-9 | Protocols will be developed and implemented as outlined in a Wildlife Management Plan, including measures such as bear awareness to avoid or mitigate human-wildlife conflicts and injury to humans or wildlife. | Pre-construction, Construction, Operation |

| Number | Mitigation Measure | Timing |
|---------------|---|--|
| 5.6-10 | Waste will be managed according to an established Waste Management Plan onsite and in the workforce accommodation centre(s) or maintenance areas to reduce the potential to attract wildlife to the facility. Garbage and other waste should be temporarily stored onsite in bear-proof containers and disposed of at an approved facility. | Pre-construction, Construction, Operation, Decommissioning |
| 5.6-11 | If clearing of vegetation occurs during the bear denning period (October to March), pre-clearing bear den surveys will be required. Identified bear dens will be protected by a 200 m no-disturbance buffer during the denning period (Linnell et al. 2000). | Pre-construction |
| 5.6-12 | Supervisory staff on berthed vessels will be alerted to the hazards and potentially high-risk periods for bird strikes caused by deck lighting, particularly on nights when visibility is poor. Staff will be informed of the applicable seasonal and daily migratory periods. Facility staff will report bird collisions to a member of the Project environmental team, including information on bird species and weather conditions. Vessel personnel will be provided with information on how to treat and release marine birds that become grounded on vessel decks (Black 2005). | Construction, Operation |
| 5.6-13 | During construction, operation, and decommissioning, drivers will maintain slow (specified) speeds on all roads in the Project footprint and be extra diligent during amphibian migration periods, especially when adjacent to wetlands, in order to reduce the potential for collisions with wildlife. | Construction, Operation, Decommissioning |
| 5.6-14 | Wildlife movement through the estuary will be maintained during construction and operation of the LNG loading line, where practicable. | Construction, Operation |
| Ref: 5.2-1 | Manage vehicle and equipment emissions by conducting regular maintenance on all machinery and equipment. | Construction |
| Ref: 5.3-1 | Implement industry best practice for mobile construction equipment (i.e., regular maintenance, speed restrictions, correct sizing of equipment, modernizing of fleet, reduce idling, driver behavior, etc.). | Construction |
| Ref: 5.4-6 | Develop and implement a Traffic Management Plan. | Construction, Operation |
| Ref: 5.5-8 | Design of the LNG loading line corridor will consider and incorporate, where practicable, ways to maintain tidal flow and wildlife passage. | Pre-construction |
| Ref: 5.5-10 | Develop and implement a Wetland Compensation Plan to address loss of wetland habitat function for breeding and foraging terrestrial mammals, amphibians, and birds. | Pre-construction, Construction |
| 5.7 | Freshwater and Estuarine Fish and Fish Habitat | |
| 5.7-1 | Design stream crossings to a 1:100 year flow event at a minimum. | Construction, Operation |
| 5.7-2 | To minimize potential sedimentation of watercourses, disturbed riparian areas will be reclaimed with appropriate vegetation cover, as soon as practicable after construction. | Construction, Decommissioning |
| 5.7-3 | If isolating freshwater habitats during instream works occurs, fish will be salvaged and relocated to unaffected habitats. | Construction |
| 5.7-4 | An onsite environmental monitor will be present during all instream (freshwater) works to confirm adherence with measures detailed in the Fish Habitat Offsetting Plan. | Construction |
| 5.7-5 | To minimize impact to fish and fish habitat, instream works will occur within the relevant reduced risk work windows, where practicable. Where Project activities need to occur outside the reduced risk work windows, measures to protect fish and fish habitat will be developed in consultation with appropriate regulatory bodies including DFO. These measures will be detailed in the Fish Habitat Offsetting Plan. | Construction |
| 5.7-6 | Measures to protect fish and fish habitat will be provided in various EMPs including a Fish Habitat Offsetting Plan, an Erosion and Sediment Control Plan, a Surface Water Management Plan, and a Wastewater Management Plan. | Construction |
| 5.7-7 | A Wastewater Management Plan will be developed to address wastewater collection, treatment, and disposal during construction and operation. | Construction, Operation |

| Number | Mitigation Measure | Timing |
|---------------|---|--|
| 5.7-8 | A Fish Habitat Offsetting Plan will be developed and implemented to offset unavoidable permanent alteration or destruction of fish habitat from Project activities and works. The Plan will be developed in consultation with DFO, Haisla Nation, and key stakeholders. | Construction |
| 5.7-9 | To protect fish from injury and mortality, freshwater habitats to be affected by construction activities will be isolated from adjacent fish-bearing aquatic habitats. | Construction |
| 5.7-10 | Water use will be managed under an operational water management plan and licence issued by the respective provincial agency. | Operation |
| 5.7-11 | Water intake design will minimize the risk of injury and mortality to fish, and will take into consideration the risk of entrainment of planktonic eulachon larvae during seaward migrations. | Operation |
| Ref: 5.3-4 | Footprint for LNG facility and temporary construction facilities will be sized to allow safe and efficient construction. Existing cleared areas will be utilized, where practicable, to limit area of new disturbance. | Construction |
| Ref: 5.5-8 | Design of the LNG loading line corridor will consider and incorporate, where practicable, ways to maintain tidal flow and wildlife passage. | Pre-construction |
| Ref: 5.5-9 | A Surface Water Management Plan will be developed to address stormwater collection, treatment, and disposal during construction and operation. | Construction, Operation |
| Ref: 5.6-4 | Develop and implement a Decommissioning Plan before decommissioning to allow habitat recovery and wildlife movement to proceed as soon as possible. | Decommissioning |
| Ref: 7.2-7 | Establish and implement a Spill Response Plan as part of a broader Emergency Response Plan with input from relevant agencies. | Construction, Operation, Decommissioning |
| 5.8 | Marine Resources | |
| 5.8-1 | If and where quay walls/slopes are required, use materials that promote post-construction colonization of marine algae and invertebrate communities. | Construction |
| 5.8-2 | Develop and implement a Marine Activities Plan (MAP) in accordance with applicable federal and provincial legislation and regulations. The MAP will include measures to address potential effects from dredge activities, pile installation (including marine mammal exclusion zone, soft start procedures and consideration of sound dampening technologies) and shipping. | Construction, Operation |
| 5.8-3 | Construction of the marine terminal does not currently plan for blasting in the marine environment. If blasting is determined to be required, it will comply with all regulatory requirements. | Construction |
| 5.8-4 | A Disposal at Sea Permit will be obtained prior to any sediment disposal in the marine environment. A disposal site will be selected in consultation with Environment Canada, DFO, affected Aboriginal Groups, and key stakeholders. | Pre-construction |
| 5.8-5 | Vessels arriving at the marine terminal will comply with legislation and regulations on the management of ballast water. LNG Canada may conduct random audits of vessel logs. No ballast will be discharged until compliance has been determined. Only clean ballast from segregated ballast tanks will be allowed to be discharged into the sea at the marine terminal. | Construction, Operation, Decommissioning |
| 5.8-6 | In-water marine construction, dredging, and sediment disposal activities will be conducted throughout the year. For the periods outside the timing windows of least risk, additional mitigation measures will be implemented to protect sensitive species and life stages as appropriate. Timing windows and mitigations will be developed in consultation with DFO at the permitting stage and will consider the location and timing of sensitive life stages specific to CRA fishery species. | Construction |
| 5.8-7 | Optimization of sediment containment will be considered when selecting dredging and sediment disposal methods/equipment. | Construction, Operation |

| Number | Mitigation Measure | Timing |
|---------------|---|--|
| 5.8-8 | Full assessment of effects of the selected sediment disposal methods and use of mitigation measures, with details to be provided in the Disposal at Sea Permit application. | Construction |
| 5.8-9 | Movement of barge anchors will be minimized to limit sediment disturbance. | Construction |
| 5.8-10 | For marine pile installation, LNG Canada will proactively manage pile installation with noise measurement and active monitoring of marine mammal exclusion zones (see MAP for more detail). Additional sound dampening methods and/or alternative pile installation methods will be investigated and applied if necessary, to prevent the exposure of marine mammals to underwater noise exceeding defined thresholds. These methods and the defined thresholds will be described in the MAP. | Construction |
| 5.8-11 | Prior to isolation of the salt marsh habitat immediately north of the dredge area, fish using the area will be captured with a beach seine net strung across tidal channels. Fish will be relocated to more suitable areas in the marine resources facility RSA that will not be affected by Project activities. | Construction |
| 5.8-12 | LNG carriers will travel at speeds up to 14 knots. Speeds will vary depending on navigational safety, weather conditions, location, and marine mammal presence, and will be determined based on the judgment of the ship's master who receives advice from the BC Coast Pilots on board. Subject to navigational safety needs, in areas of high whale density between the northern end of Campania Island and the southern end of Hawkesbury Island, LNG carriers will travel at speeds of 8 or 10 knots from July through October (recognizing predicted periods of high use by marine mammals). | Operation |
| Ref: 5.7-8 | A Fish Habitat Offsetting Plan will be developed and implemented to offset unavoidable permanent alteration or destruction of fish habitat from Project activities and works. The plan will be developed in consultation with DFO, Haisla Nation, and key stakeholders. | Construction |
| 5.9 | Surface Water Quality | |
| Ref: 5.2-5 | Manage, through Project engineering design and operational procedures, the continuous NOx emissions associated with the gas turbine exhaust to meet regulatory requirements. | Operation |
| Ref: 5.2-7 | Diesel fired equipment will be powered by low sulphur fuel. | Construction |
| 6 | Economic Conditions | |
| 6.2-1 | Local residents will be informed of job and procurement opportunities during the Project phases. LNG Canada will encourage a hire-local first approach for all phases. | Pre-construction, Construction, Operation |
| 6.2-2 | Develop work packages that will consider the capabilities of local and regional businesses to enhance local procurement opportunities. | Pre-construction, Construction |
| 6.2-3 | Potential shortages of workers with specific skill requirements will be identified and training and educational facilities will be engaged so that regional residents have the opportunity to upgrade their skills. | Pre-construction, Construction, Operation |
| 6.2-4 | Identify training and capacity building partnerships or other arrangements for potentially affected Aboriginal Groups and local communities that will increase opportunities for participation. | Pre-construction, Construction, Operation |
| 6.2-5 | Construct and operate workforce accommodation centre(s) for non-resident workforce during the pre-construction and construction phase to manage effects of temporary workforce on communities. | Pre-construction, Construction |
| 6.2-6 | LNG Canada and its contractors will offer fair labour wages, consistent with the Western Canadian labour market. | Construction |
| 6.2-7 | Regular communication on Project activities will occur with marine users, including recreationalists, commercial tourism operators, CRA fishers, Transport Canada, DFO, and relevant stakeholders. | Construction, Operation |

| Number | Mitigation Measure | Timing |
|----------------|---|--|
| 6.2-8 | LNG Canada will develop and implement a Social Management Plan to manage potential social effects of the Project and optimize potential benefits. | Construction, Operation, Decommissioning |
| Ref: 7.2-22 | LNG Canada will work to manage demands on local housing (e.g., apartments and single-family houses) due to the anticipated requirements of the construction management and operational workforce, and will also include, in periodic reassessments of the housing market, the consideration of the risk posed by oversupply of accommodations. | Construction, Operation |
| Ref: 7.2-25 | Participate in initiatives and recommended measures identified in the Northwest Communities Housing Action Plan to address the availability of affordable housing within northwest communities. | Operation |
| 7.2 | Infrastructure and Services | |
| 7.2-1 | Prohibit unauthorized public access to the worksite or construction workforce accommodation centre(s). | Construction, Decommissioning |
| 7.2-2 | Develop a Worker Code of Conduct to communicate expectations for the behaviour of all workers when they are in Kitimat, Terrace, or any other local community. LNG Canada will ensure that all workers are familiar with the Worker Code of Conduct and expected standards of behaviour. Workers will sign a copy of the Code of Conduct at orientation acknowledging their commitment to comply with the Code. | Construction, Operation, Decommissioning |
| 7.2-3 | Require all Project workers to undertake worker orientation, including cross-cultural awareness, to help build awareness and respect of local issues of importance, including local facilities, recreational opportunities, and other community considerations, with expectation of reducing adverse interactions with the community. | Construction, Decommissioning |
| 7.2-4 | Undertake ongoing and meaningful community engagement, and log, monitor, and work to address community complaints to reduce community concerns associated with perceived and actual changes resulting from the Project. | Construction, Operation, Decommissioning |
| 7.2-5 | Make the workforce accommodation centre(s) and LNG facility self-sufficient (to extent practicable) with respect to potable water and wastewater treatment services so that additional service demands will not be placed on municipal water and sewer services. | Construction, Operation |
| 7.2-6 | Provide local and regional governments with information on anticipated changes in resident populations attributable to the Project to facilitate their planning for incremental demands for solid waste management, potable water supply, sewage system needs, and recreation facilities. | Operation |
| 7.2-7 | Provide onsite first aid equipment, supplies, and trained first aid personnel to deal with minor injuries. In the case of major injuries, patients will be evacuated via land or air ambulance to medical facilities. | Operation |
| 7.2-8 | Establish and implement a Spill Response Plan as part of a broader Emergency Response Plan with input from relevant agencies. | Construction, Operation, Decommissioning |
| 7.2-9 | Work with emergency service providers to plan for anticipated changes in service requirements associated with the temporary and permanent workforce by providing information related to workforce projections, temporary workforce accommodation, and housing plans, and onsite emergency services. | Pre-construction, Construction, Operation, Decommissioning |
| 7.2-10 | Include recreational venues, and entertainment and communications amenities in the construction workforce accommodation centre(s) to reduce Project-related demands on community infrastructure and services. | Construction |
| 7.2-11 | Provide security services to monitor and enforce compliance of workforce accommodation and construction policies. | Construction, Decommissioning |
| 7.2-12 | As part of the Emergency Response Plan, make employees aware of fire suppression systems installed onsite, and train key employees in fire suppression, where appropriate. | Construction, Operation, Decommissioning |
| 7.2-13 | Work with local parks and recreation planning entities to provide input into the development and improvement of outdoor recreation areas (including parks and trails). | Construction, Operation, Decommissioning |

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| 7.2-14 | As part of the Emergency Response Plan, work with District of Kitimat fire department to forecast additional demands on fire and rescue services, and with RCMP to forecast additional demands on policing. | Construction |
| 7.2-15 | Provide relevant information on Project transportation planning to MOTI and District of Kitimat to facilitate their planning for road improvements and traffic movement. | Pre-construction, Construction, Operation |
| 7.2-16 | Monitor all travel-related incidents involving LNG Canada workers, and review these data regularly to identify how travel can be improved to reduce risks to safety and further incidents. | Construction |
| 7.2-17 | Worker rotations and charter flights, where practical, will be scheduled to alleviate peak pressures on the airport terminal facilities. | Pre-construction, Construction, Operation |
| 7.2-18 | Peak-hour traffic volumes, particularly across the Haisla Bridge, will be managed by scheduling worker rotations, and equipment, material, and goods deliveries to the off-peak hours whenever practicable. | Construction |
| 7.2-19 | Commuter support will be provided between Terrace and the Project site (e.g., scheduled crew transportation) to facilitate residents of the Greater Terrace area and nearby Aboriginal communities to participate in the Project while maintaining residence in home communities. | Construction, Operation |
| 7.2-20 | The “vehicle factor” of collisions will be managed by requiring winterization and snow tires (when appropriate) for Project vehicles, walk-around vehicle inspections, and regular vehicle maintenance. | Construction, Operation |
| 7.2-21 | The “driver factor” of collisions will be managed by implementing stringent policies such as fit-for-duty rules (e.g., drugs, alcohol, fatigue) and driver training for adverse weather. | Construction, Operation |
| 7.2-22 | LNG Canada will work to manage demands on local housing (e.g., apartments and single-family houses) due to the anticipated requirements of the construction management and operational workforce, and will also include, in periodic reassessments of the housing market, the consideration of the risk posed by oversupply of accommodations. | Construction, Operation |
| 7.2-23 | Develop a worker accommodation plan that addresses worker accommodations throughout the project lifecycle, including pre-construction, construction, operation, decommissioning, and turnarounds. | Construction, Operation, Decommissioning |
| 7.2-24 | Communicate with local and provincial housing authorities as early as possible regarding anticipated changes in the demand for worker accommodations between each project phase. | Pre-construction, Construction, Operation, Decommissioning |
| 7.2-25 | Participate in initiatives and recommended measures identified in the Northwest Communities Housing Action Plan to address the availability of affordable housing within northwest communities. | Construction, Operation |
| 7.2-26 | Work with communities in the local study area, including Aboriginal Groups, to help identify and address Project-related effects on housing. | Construction, Operation |
| Ref: 5.4-6 | Develop and implement a Traffic Management Plan. | Construction, Operation |
| Ref: 6.2-1 | Local residents will be informed of job and procurement opportunities during the Project phases. LNG Canada will encourage a hire-local first approach for all phases. | Pre-construction, Construction, Operation |
| Ref: 6.2-3 | Potential shortages of workers with specific skill requirements will be identified and training and educational facilities will be engaged so that regional residents have the opportunity to upgrade their skills. | Pre-construction, Construction, Operation |
| Ref: 6.2-5 | Construct and operate workforce accommodation centre(s) for non-resident workforce during the pre-construction and construction phase to manage effects of temporary workforce on communities. | Pre-construction, Construction |

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|---------------|---|--------------------------|
| Ref: 6.2-8 | LNG Canada will develop and implement a Social Management Plan to manage potential social effects of the Project and optimize potential benefits. | Construction, Operation, |
| Ref: 7.5-3 | Provide on site health services and medical emergency response for primary care including health promotion, injury/illness prevention, and injury/illness management, in order to manage impact on the local public health care system. | Construction |
| 7.3 | Visual Quality | |
| 7.3-1 | A minimum 30 metre (m) wide mature riparian vegetation buffer will be maintained between the Project site and the Kitimat River, where practicable. If required, disturbance would be limited and adhere to applicable regulatory process. | Construction, Operation |
| 7.3-2 | Tree and vegetation clearing for the Project components will be reduced to the extent possible outside of the Project footprint but some clearing may be required to enable construction. Where temporary tree and vegetation clearing occurs during construction, revegetation activity will occur as soon as possible (with the exception of areas cleared within the safety zone). | Construction, Operation |
| 7.3-3 | Project-related marine traffic including LNG carriers will use the Coast Guard Marine Communication and Traffic System (MCTS) to provide notice of planned arrival time at Triple Island, and encourage Aboriginal Groups and stakeholders to use the system to plan their routing and scheduling. | Construction, Operation |
| 7.3-4 | No planned anchoring for the LNG carriers along the marine access route (unless directed to do so by BC Coast Pilots due to weather or other unplanned conditions); LNG carriers will only be permitted to enter the marine access route if a berth at the terminal will be available. | Construction, Operation |
| Ref: 5.3-4 | Footprint for LNG facility and temporary construction facilities will be sized to allow safe and efficient construction. Existing cleared areas will be utilized, where practicable, to limit area of new disturbance. | Construction |
| Ref: 5.5-1 | The approved clearing boundaries will be clearly delineated (flagged) prior to site preparation to keep clearing activities within the designated Project footprint. | Construction |
| 7.4 | Marine Transportation & Use | |
| 7.4-1 | Conduct, at a minimum, two safe-shipping workshops aimed at promoting safe navigation around shipping traffic for mariners prior to operation. | Construction |
| 7.4-2 | Use of safety zones which specify "no go" areas around the marine terminal for the safety of public marine traffic, during construction and operation. | Construction, Operation |
| 7.4-3 | Support federal government in installation of any navigational aids determined to be necessary for safety on the new marine terminal where required. | Construction, Operation |
| 7.4-4 | Provide notification and information to the Canadian Hydrographic Service to accurately include the appropriate marine terminal information and berth locations on future navigational charts. | Construction, Operation |
| 7.4-5 | Provide input, with other industry and the municipal government, into the creation of a waterfront access space (that may include a public boat launch) for the community. | Construction, Operation |
| 7.4-6 | Use escorts tugs between Triple Island and Kitimat during all LNG carrier transits. | Construction, Operation |
| 7.4-7 | Strict adherence to the prescribed route and passing restrictions so that LNG Canada carriers may only pass other large commercial vessels in straight sections of the route. | Construction, Operation |
| 7.4-8 | LNG carriers will maintain safe operating distances from other marine craft. | Construction, Operation |
| 7.4-9 | LNG carrier's passage route to avoid interference with fishers, where possible, with safety being primary concern. | Construction, Operation |

| Number | Mitigation Measure | Timing |
|----------------|--|---|
| Ref: 5.8-2 | Develop and implement a Marine Activities Plan (MAP) in accordance with applicable federal and provincial legislation and regulations. The MAP will include measures to address potential effects from dredge activities, pile installation (including marine mammal exclusion zone, soft start procedures and consideration of sound dampening technologies) and shipping. | Construction, Operation |
| Ref: 5.8-12 | LNG carriers will travel at speeds up to 14 knots. Speeds will vary depending on navigational safety, weather conditions, location, and marine mammal presence, and will be determined based on the judgement of the ship's master who receives advice from the BC Coast Pilots on board. Subject to navigational safety needs, in areas of high whale density between the northern end of Campania Island and the southern end of Hawkesbury Island, LNG carriers will travel at speeds of 8 or 10 knots from July through October (recognizing predicted periods of high use by marine mammals). | Operation |
| Ref: 6.2-7 | Regular communication on Project activities will occur with marine users, including recreationalists, commercial tourism operators, CRA fishers, Transport Canada, DFO, and relevant stakeholders. | Construction, Operation |
| Ref: 6.2-8 | LNG Canada will develop and implement a Social Management Plan to manage potential social effects of the Project and optimize potential benefits. | Construction, Operation, Decommissioning |
| Ref: 7.3-3 | Project-related marine traffic including LNG carriers will use the Coast Guard Marine Communication and Traffic System (MCTS) to provide notice of planned arrival time at Triple Island, and encourage Aboriginal Groups and stakeholders to use the system to plan their routing and scheduling. | Construction, Operation |
| Ref: 7.3-4 | No planned anchoring for the LNG carriers along the marine access route (unless directed to do so by BC Coast Pilots due to weather or other unplanned conditions); LNG carriers will only be permitted to enter the marine access route if a berth at the terminal will be available. | Construction, Operation |
| 7.5 | Community Health and Wellbeing | |
| 7.5-1 | Primarily house the initial workforce in several well-managed open lodge facilities that are currently under construction in the LSA. Occupancy of the preferred lodges will be limited to the period prior to commissioning of the workforce accommodation centre(s) in the industrial areas of the LSA. | Pre-construction, Construction |
| 7.5-2 | Implement worker wellbeing and accommodation program to promote holistic worker health from a physical, mental, cultural and social perspective. | Construction |
| 7.5-3 | Provide on-site health services and medical emergency response for primary care including health promotion, injury/illness prevention, and injury/illness management, in order to manage impact on the local public health care system. | Construction |
| 7.5-4 | In the case of injury requiring evacuation of workers via ambulance, coordinate with local and provincial health providers for evacuation to appropriate medical facilities. | Construction, Operation |
| 7.5-5 | Implement an employee Alcohol and Drug Policy, which will focus on pre-placement testing, awareness, prevention, and control, and will contain a strictly enforced prohibition on driving under the influence. Additional testing (with cause) may occur if required and in accordance with labour legislation. | Construction, Operation, Decommissioning |
| 7.5-6 | Develop a community engagement plan to assist communities in planning for an influx of workers. The plan will include initiatives to address potential community concerns, will facilitate communication with LSA communities, and will provide a framework for ongoing communication with municipal and provincial service providers; this plan will be developed through consultation with Aboriginal Groups and local communities. | Pre-construction, Construction, Operation |
| 7.5-7 | Require contractors and subcontractors to adhere to health and safety programs that emphasize workplace health and welfare and adhere to traffic management policies. | Construction, Operation |
| 7.5-8 | Inform the local community and Aboriginal Groups of changes in access to the Project footprint and marine environment potentially affecting access to country foods. | Pre-construction |

| Number | Mitigation Measure | Timing |
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| 7.5-9 | Provide Project information to the local community and Aboriginal Groups and hold information sessions to facilitate ongoing discussion to resolve concerns. | Pre-construction |
| Ref: 6.2-5 | Construct and operate workforce accommodation centre(s) for non-resident workforce during the pre-construction and construction phase to manage effects of temporary workforce on communities. | Pre-construction, Construction |
| Ref: 6.2-8 | LNG Canada will develop and implement a Social Management Plan to manage potential social effects of the Project and optimize potential benefits. | Construction, Operation, Decommissioning |
| Ref: 5.4-6 | Develop and implement a Traffic Management Plan. | Construction, Operation |
| Ref: 7.2-4 | Undertake ongoing and meaningful community engagement, and log, monitor, and work to address community complaints to reduce community concerns associated with perceived and actual changes resulting from the Project. | Construction, Operation, Decommissioning |
| Ref: 7.2-22 | LNG Canada will work to manage demands on local housing (e.g., apartments and single-family houses) due to the anticipated requirements of the construction management and operational workforce, and will also include, in periodic reassessments of the housing market, the consideration of the risk posed by oversupply of accommodations. | Construction, Operation |
| Ref: 7.2-23 | Develop a worker accommodation plan that addresses worker accommodations throughout the project lifecycle, including pre-construction, construction, operation, decommissioning, and turnarounds. | Construction, operation. Decommissioning |
| Ref: 7.2-24 | Communicate with local and provincial housing authorities as early as possible regarding anticipated changes in the demand for worker accommodations between each project phase. | Pre-construction, Construction, Operation, Decommissioning |
| Ref: 7.2-25 | Participate in initiatives and recommended measures identified in the Northwest Communities Housing Action Plan to address the availability of affordable housing within northwest communities. | Construction, Operation |
| Ref: 7.2-26 | Work with communities in the local study area, including Aboriginal Groups, to help identify and address Project-related effects on housing. | Construction, Operation |
| 8.2 | Archaeological and Heritage Resources | |
| 8.2-1 | Wherever possible, if found, Culturally Modified Trees (CMTs) will be avoided. In situations where CMTs cannot be avoided, mitigation measures will focus on recording them completely and systematically. | Pre-construction, Construction |
| 8.2-2 | If CMT stem round samples are to be collected, monitoring of CMT removal by a crew comprised of a professional archaeologist and a Haisla Nation representative so that the stem-round samples are properly collected for CMT dating purposes. | Pre-construction, Construction |
| 8.2-3 | A Chance Find Protocol (CFP) will be provided to construction foremen in the unlikely event that CMTs and/or other unrecorded archaeological or heritage sites are encountered during construction, in the absence of an onsite archaeologist. | Pre-construction, Construction |
| 8.2-4 | Archaeological sites GaTe-4 and GaTe-5, which were recorded in the LSA, will be managed in consultation with the Archaeology Branch and Haisla Nation and in accordance with the Heritage Investigation Permit issued by the Archaeology Branch. | Pre-construction |
| 8.2-5 | Management of historic materials identified during AIA fieldwork will be done in consultation with the Kitimat Centennial Museum, the Kitimat Historical Society and other key stakeholders as required. | Pre-construction |
| 8.2-6 | A Project-specific Archaeological and Heritage Resources Management Plan, including a Chance Find Protocol, will be developed and implemented prior to construction. | Pre-construction, Construction |
| 8.2-7 | Any necessary archaeological monitoring of project activities will be carried out under the appropriate regulatory permit. | Pre-construction, Construction |

| Number | Mitigation Measure | Timing |
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| 10 | Accidents or Malfunctions | |
| Ref: 7.2-7 | Establish and implement a Spill Response Plan as part of a broader Emergency Response Plan with input from relevant agencies. | Construction, Operation, Decommissioning |
| Ref: 5.8-12 | LNG carriers will travel at speeds up to 14 knots. Speeds will vary depending on navigational safety, weather conditions, location, and marine mammal presence, and will be determined based on the judgement of the ship's master who receives advice from the BC Coast Pilots on board. Subject to navigational safety needs, in areas of high whale density between the northern end of Campania Island and the southern end of Hawkesbury Island, LNG carriers will travel at speeds of 8 or 10 knots from July through October (recognizing predicted periods of high use by marine mammals). | Operation |
| 12 | Summary of Proposed Construction and Operational Environmental Plans | |
| 12.1-1 | Develop and implement the following EMPs: <ul style="list-style-type: none"> ▪ 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 | Construction, Operation |