

ATTACHMENT:
Federal Authority Advice Record
Response due by September 7, 2021

Please submit the form to: *KsiLisimsLNG@iaac-aeic.gc.ca*
Ksi Lisims LNG - Natural Gas Liquefaction and Marine Terminal Project – Nisga'a Nation,
Rockies LNG Limited Partnership and Western LNG LLC
Agency File: 005806

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1. Is it probable that your department or agency may be required to exercise a power or perform a duty or function related to the Project to enable it to proceed?

If yes, specify the Act of Parliament and that power, duty or function.

Based on the Initial Project Description (IPD), ECCC expects that it may be required to exercise a power, or perform a duty or function related to the Project to enable it to proceed. Once the scope of the Project and of the assessment are established by the Agency, this may change as additional activities or project components could come into scope.

Disposal at Sea permits, as per Part 7, Division 3 of the *Canadian Environmental Protection Act, 1999* (CEPA 1999)

“Disposal” is defined in Part 7, Division 3 of the *Canadian Environmental Protection Act, 1999* (CEPA 1999) to include any disposal activity that takes place from a ship, aircraft, platform, or other structure into the marine or estuarine environment, including the storage of material on or below the seabed. More broadly, it includes the disposal of dredged material from any source. Disposal at sea is prohibited without a permit issued by ECCC under CEPA 1999, which is valid for a maximum of a one-year period. Permits can only be issued for substances listed in Schedule 5 of CEPA 1999. Material proposed for disposal at sea must undergo a detailed waste assessment and characterization process in accordance with Schedule 6 of CEPA 1999. This includes the requirement for an alternatives assessment to examine alternative waste management options in accordance with environmental, human health, and economic considerations. Disposal at Sea permits will only be considered for material that both meets characterization criteria and where disposal at sea is demonstrated to be the most suitable waste management option.

ECCC’s Marine Programs administers the Disposal at Sea permitting process and should be contacted directly to help in determining whether project-related activities would trigger the requirement for a permit. If not already provided in the Initial Project Description, the proponent should identify any anticipated need for a Disposal at Sea

permit in their Detailed Project Description. This should include estimates of disposal volumes, source(s) of the material, and proposed disposal location(s) that cover all phases of the project.

If Disposal at Sea permits are likely to be sought, the proponent is strongly encouraged to discuss this with ECCC as soon as possible. Plans for a detailed sediment characterization program should be reviewed by ECCC prior to implementation. The proponent is strongly encouraged to apply for the Disposal at Sea permit during the impact assessment process, providing they have all the necessary information for a complete permit application.

Upon receipt of a complete Disposal at Sea permit application, ECCC will circulate the permit application and associated information to other relevant government departments for review. ECCC will also contact potentially affected Indigenous communities who have established or asserted rights that overlap with the permit request and provide an opportunity for review. The public are notified of a Disposal at Sea permit application through a Notice of Intent that must be published by the applicant in a locally circulated newspaper. The Notice provides contact information through which the public can seek additional information or provide comment. The permit is also posted publicly on the CEPA Registry for a 7-day period prior to coming into effect (<https://pollution-waste.canada.ca/environmental-protection-registry/permits>). Consultation on Disposal at Sea permits will be coordinated with consultation during the assessment where possible.

Further information about the Disposal at Sea permit system can be found here:

- Disposal at Sea website (<https://www.canada.ca/en/environment-climate-change/services/disposal-at-sea.html>)
- The Disposal at Sea permit application guide (<https://www.canada.ca/en/environment-climate-change/services/disposal-at-sea/permit-applicant-guide.html>)

Further information regarding disposal at sea permits will be provided in the Permitting Plan.

2. Is your department or agency in possession of specialist or expert information or knowledge that may be relevant to the conduct of an impact assessment of the Project?

Specify as appropriate.

ECCC has specialist or expert information that may be relevant to the impact assessment in the areas listed below. In each of these subject areas, ECCC has expertise related to establishing an adequate baseline, assessing potential effects to biophysical valued components, effectiveness of mitigation measures, methods for monitoring and follow-up, as well as information regarding federal policies, standards, and regulations that may be relevant to the assessment. Once the scope of the Project and the assessment are established by the Agency, this list may change if additional Project activities or components should come into scope.

Air Quality: ambient air quality; sources of emissions; emissions estimation and measurement; dispersion modelling; and follow-up monitoring.

Greenhouse gas emissions and climate change: estimations of greenhouse gas (GHG) emissions (net and upstream); carbon sinks; GHG mitigation measures and determination of Best Available Technologies/Best Environmental practices (BAT/BEP); credible plans to achieve net-zero GHG emissions by 2050; climate change science to inform evaluation of potential changes to the environment and project resilience to effects of climate change; climate change policies; and national GHG projections.

Water quality and quantity: surface water quality; contamination sources for surface water; wastewater, seepage and runoff effects; management of contaminated soils or sediments; marine dredging; hydrology (streamflow rates data and modelling, flooding and extreme events management, drainage control, water levels, water balances); follow-up and monitoring.

Wildlife, species at risk, and habitat: priority species and places as outlined in the Pan-Canadian Approach to transforming species at risk conservation in Canada; migratory birds, their nests, eggs, and habitat; COSEWIC assessed species, species at risk, individuals, their residences, habitat and critical habitat including recovery strategies, action plans and management plans; ecological function of wetlands; and ecotoxicology.

Environmental emergencies: emergency management planning and guidance where releases of hazardous substances could affect fish, aquatic species, species at risk, or migratory birds, and their habitat; atmospheric transport and dispersion modelling of contaminants in air; fate and behaviour, hydrologic trajectory modelling of contaminants in water.

Climate and Meteorology: long-term climate patterns and norms; marine winds, waves, and weather.

3. Has your department or agency considered the Project; exercised a power or performed a duty or function under any Act of Parliament in relation to the Project; or taken any course of action that would allow the Project to proceed in whole or in part?

Specify as appropriate.

No.

4. Has your department or agency had previous contact or involvement with the proponent or other party in relation to the Project? (for example, enquiry about methodology, guidance, or data; introduction to the project)

Provide an overview of the information or advice exchanged.

Based on information readily available, ECCC has not had any involvement with the Proponent or other parties that would be relevant to the assessment of this Project.

5. Does your department or agency have additional information or knowledge not specified, above?

Specify as appropriate.

Not at this time.

6. From the perspective of the mandate and area(s) of expertise of your department or agency, what are the issues that should be addressed in the impact assessment of the Project, should the Agency determine that an impact assessment is required?

For each issue discussed, provide a concise, plain-language summary that is appropriate for inclusion in the Summary of Issues and Engagement.

Air Quality

The construction, operation, and decommissioning of LNG facilities, the marine terminal and associated infrastructure has potential to impact air quality. Activities such as the construction and operation of LNG facilities, and activities associated with combustion (such as truck, rail, marine shipping and compression stations) can result in the emission of air contaminants such as sulfur oxides (SO_x), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and particulate matter (PM_{2.5}, PM₁₀). The bulk of emissions typically occur during operations are from sources such as stationary combustion, intentional and non-intentional releases from equipment, electricity generation, flaring, venting and fugitive sources. In addition to these emissions during normal operations, non-routine situations can result in additional emissions, such as emergency venting from pressurized lines and vessels, or emissions from leaks or spills.

Activities that cause a physical disturbance to land, such as earth moving, land clearing, blasting, crushing, and transportation, can introduce particulate matter (e.g. dust and soot) to the surrounding region. Air contaminants could include particulate matter (PM_{2.5}, PM₁₀), sulfur oxides (SO_x), nitrogen oxides (NO_x), volatile organic compounds (VOCs), hydrogen sulphide (H₂S), polycyclic aromatic hydrocarbons (PAHs), carbon monoxide (CO), and other air contaminants. These emissions can result in local or regional degradation of ambient air quality, with potential impacts on human health as well as sensitive ecosystem receptors. Furthermore, emissions of air contaminants as a result of this Project may add cumulatively to the emissions from other activities, potentially contributing to degradation of air quality in the region.

The Project may also require a transboundary air notification as per the Canada-US Air Quality Agreement requiring notification to the U.S. of pollution sources within 100 km of the Canada/US border. The objective of the notification is to allow the U.S. to participate in the Project review if they wish to do so. The notification should be made as early as possible, and in advance of the Project decision.

Further information is available at: <https://www.canada.ca/en/environment-climate-change/services/air-pollution/issues/transboundary/canada-united-states-air-quality-agreement.html>

Greenhouse Gas Emissions and Climate Change

The construction, operation, and decommissioning of the Project may result in greenhouse gas (GHG) emissions, and may hinder or contribute to the Government of Canada's ability to meet its commitments in respect of climate change. Furthermore, the Project has the potential to be affected by future climate change, possibly resulting in impacts to the environment. Climate change may alter the likelihood or magnitude of sudden weather events such as extreme precipitation that can contribute to flooding, as well as contribute to longer-term changes such as sea level rise, permafrost thaw and changes to migration patterns. Changes related to warming are already evident in many parts of Canada, and are projected to continue in the future with further warming. If not properly considered, such changes may cause issues such as equipment failures that can threaten the environment, human health and safety, interrupt essential services, disrupt economic activity, and incur high costs for recovery and replacement.

The Strategic Assessment of Climate Change (SACC) (published in October 2020) provides guidance related to climate change throughout the impact assessment process. The SAAC outlines information that proponents should provide during the impact assessment process on GHG emissions, impact of the project on carbon sinks, impact of the project on federal emissions reduction efforts and on global GHG emissions, GHG mitigation measures, climate change resilience, the circumstances in which an upstream GHG assessment would be required, and the circumstances in which a credible plan for achieving net-zero GHG emissions by 2050 will be required.

More details are provided in the draft Technical Guide Related to the Strategic Assessment of Climate Change: Guidance on quantification of net GHG emissions, impact on carbon sinks, mitigation measures, net-zero plan and upstream GHG assessment, published in August 2021.

Net GHG Emissions

In sections 2.7.1 and 2.7.2 of the IPD, the Proponent identified several sources of emissions from activities during Project construction and operations. In section 2.7.2 of the IPD, the Proponent provided estimates of the Project's GHG emissions during the operations phase, however it is unclear to ECCC what activities have been included in these estimates. The Proponent prepared two scenarios to reflect (1) if the Project sources its energy from the BC Hydro transmission system, and (2) if the Project self-generates 100% of its power from gas-fired facilities on-site, as follows:

"If the full amount of power required by the Project is available, the Project is expected to produce less than approximately 600,000 CO₂e tonnes per annum (TPA) (or 0.05 CO₂e t/t LNG). If the Project is required to self-generate 100% of its power, the Project is expected to produce approximately 1,870,000 CO₂e TPA (or 0.156 CO₂e t/t LNG)" (IPD p. 20).

Further, construction and decommissioning emissions have not been estimated. The Proponent notes that emissions during decommissioning are expected to be similar to those associated with construction. ECCC recommends the Proponent provide an estimate of the maximum annual net GHG emissions for each phase of the Project, including a breakdown of each term of Equation 1 of the SACC and provide the methodology, data, emission factors and assumptions used for the quantification (as stated in section 4.1.1 of the SACC).

If the Proponent is required to prepare an Impact Statement, further information on GHG emissions would be required through the Tailored Impact Statement Guidelines (TISG) or equivalent document, as per section 5.1.1 of the SACC.

Upstream GHG Emissions

The Proponent stated in sections 1 and 2.2.2 that: "[a]t full build-out, the Project will receive from 1.7 to 2 Bcf/d (i.e., 56.6 million m³ per day) of pipeline grade natural gas" using "natural gas from the Western Canadian Sedimentary Basin (WCSB) of northeastern BC and northwest/Central Alberta" which "will be transported to the Site via a natural gas transmission pipeline". ECCC notes the Proponent will likely be required to complete an upstream GHG emissions assessment. If the Proponent is required to prepare an Impact Statement, this requirement will be confirmed through the TISG (or equivalent document).

Carbon sinks

The Project as described could have adverse effects on carbon sinks (i.e., forests, oceans or other natural environments that absorb carbon dioxide from the atmosphere). In section 2.3 of the IPD, the Proponent indicates the Project will have an onshore area of up to 15 ha and an unknown marine area.

ECCC recommends the Proponent include in the Detailed Project Description the following information related to impacts of the Project on carbon sinks, as outlined in section 4.1.2 of the SAAC:

- a description of the activities that would result in an impact on carbon sinks; and
- land areas expected to be impacted by the Project, by ecosystem type (forests, cropland, grassland, wetlands, and built-up land) over the course of the Project lifetime, including any areas of restored or reclaimed ecosystems.

If the Proponent is required to prepare an Impact Statement, further information on impacts to carbon sinks would be required through the TISG (or equivalent document) as per section 5.1.2 of the SACC.

Alternative means of carrying out the Project, mitigation measures, and net-zero emissions by 2050

In the Detailed Project Description, as outlined in section 4.1.3 of the SAAC, the Proponent:

- should discuss the potential impacts of the alternative means of carrying out the Project on GHG emissions and how GHG emissions were considered as a criterion in the alternatives selection;
- are encouraged to provide information on the mitigation measures being considered to reduce the Project's GHG emissions on an ongoing basis, including technologies and practices (including best available technologies and best environmental practices); and
- are encouraged to provide an overview of the measures being considered to ensure projects are net-zero emissions by 2050 where projects have a lifetime beyond 2050.

In the TISG (or equivalent document), the Proponent will be required to provide details regarding alternative assessments, mitigation measures including their BAT/BEP determination, and a credible plan that describes how the Project will achieve net-zero emissions by 2050 for projects with a lifetime beyond 2050.

The Proponent included a brief description in the IPD on mitigation measures proposed for GHG emissions from the Project, and indicated the Project will target net-zero emissions "*within 3 years of start-up operations around 2027, through a combination of electrification, carbon offsets and potentially sequestration*" (IPD, section 2.7). The Proponent further stated "*carbon capture and sequestration is not a project component*" (IPD, section 2.2.3).

Further information can be found in the SACC and in the draft Technical Guide on quantification of net GHG emissions, impact on carbon sinks, mitigation measures, net-zero plan and upstream GHG assessment, available at: <https://www.strategicassessmentclimatechange.ca>.

Climate Change Resilience

As climate over the lifetime of the Project is projected to be different from past and current climate in the area, and the lifetime of the proposed Project extends into the 2050s (including post-closure), climate change considerations are relevant to the impact assessment. There is potential for climate change to effect the Project which, in turn, may have impacts on the surrounding environment (e.g. through accidents or malfunctions). Climate changes in the Project area, such as possible changes in mean and extreme precipitation and temperature and related environmental conditions, may alter baseline conditions, with implications for climate sensitive aspects of the Project's design and associated effects on the environment.

For example, the Project components and activities for which climate change resilience could be important include those that are vulnerable to changes in sea level. The Proponent will be required to provide information in the Impact Statement on how the Project is resilient to and at risk from both the current and future impacts of a changing climate.

Water Quality and Quantity

Activities linked to the construction, closure and decommissioning of LNG facilities, the marine terminal and associated infrastructure, has the potential to impact water quality. Potential impacts on water quality could result from in-stream activities during construction such as: disturbances associated with construction of the initial temporary pioneer dock, the natural gas receiving facility and power substation, two or three floating liquefaction modules, one or more LNG carrier berths, temporary construction workforce accommodation, and supporting infrastructure, including dredging, excavation, tree removal, vegetation clearing, soil removal/salvage and general site preparation potentially including blasting. Additionally, upland activities that have the potential for water quality impacts include the discharge of storm water, settling pond runoff water, sanitary wastewater, construction-affected water, and potential spills from temporary fuel storage areas, concrete wash water and other hazardous substances (e.g., fuel, lubricants, solvents, hydraulic fluid).

Long-term potential impacts on water quality associated with Project operation could result from deposition of airborne particulate matter generated by the plant operation and power generation, from discharges related to natural gas pre-treatment (e.g., management of pre-treatment impurities, management of refrigerants and effluent associated with cooling process, and condensate management), maintenance dredging, storm water management, and domestic and sanitary waste discharges. In addition, there is a potential for impacts from

accidents or malfunctions, particularly those associated with spills during natural gas transport and storage and/or condensate loading activities.

Wildlife, species at risk, and habitat

The activities linked to the construction, operation, and decommissioning of LNG facilities, the marine terminal and associated infrastructure has the potential to impact wildlife, including migratory birds under the *Migratory Birds Convention Act* (MBCA). There is also potential for impacts to species at risk (e.g. amphibians, arthropods, birds, lichens, terrestrial mammals, mosses, reptiles, and vascular plants) listed on Schedule 1 of the *Species at Risk Act* (SARA), their habitat (e.g., wetlands) and critical habitat.

The nature of potential effects to wildlife and habitat (including residences and critical habitat defined under the SARA) can vary based on a number of factors, including the project's location, duration, scale and configuration, the project activities (e.g., land clearing, dredging, flaring/venting, marine shipping, collision with vehicles and infrastructure), existing cumulative effects, the type of habitat that may be disturbed, and the sensitivity of species found in the project area.

The pathway through which potential effects are conveyed will depend on the land, air, and water constituents associated with the site along with the behavioral adaptability, presence and interaction with the species limiting factor (e.g., habitat supporting staging, nesting, roosting or foraging) and population resilience.

Migratory birds, species at risk and their habitat

There is the potential for individual mortality and the destruction of residences, nests and eggs of species at risk, migratory birds, and wildlife to occur during all phases of the Project. The activities during exploration and construction of marine terminals (e.g., land clearing, dredging, pile driving, and labor camps) can affect habitat quality and quantity. For example, effects could include habitat loss, alteration or fragmentation, habitat avoidance, indirect mortality (through increased predation) and changes in predator/prey availability/dynamics, changes to migration or movement patterns, destruction or disturbance to residences or nests and eggs, and sensory disturbance (e.g., noise, lighting). Where a marine terminal project requires new road or rail infrastructure or an increase in capacity to existing linear transportation corridor networks, the increase in road traffic volumes are likely to result in an increase in wildlife injury, mortality, and the introduction of invasive species, and hunters.

There is a higher risk that these effects would be more severe for migratory birds that are also species at risk and species where habitat is sensitive to disturbance (e.g., wetlands) or where there is already a high degree of cumulative effects to habitat or individuals. Although adverse direct effects to migratory birds and their nests are typically managed through appropriate scheduling of activities outside of the breeding season, collisions with vehicles and associated infrastructure can result in direct mortality of wildlife. Effects will be most acute during the operation phase as this is when the most pronounced and sustained increase in vehicle volume will occur. New or increased marine shipping can result in shoreline erosion and degradation and loss of riparian wetlands, in addition to avian collisions with infrastructure and ships.

During construction, operation, and decommissioning of marine terminals, there is the potential for harmful substances to enter or be spilled into the receiving environment that could negatively affect wildlife, aquatic birds, waterfowl, and shorebirds. Depending on the nature of the release and changes to water quality and/or quantity (e.g., toxicity, volume release, exposure pathways), effects to wildlife could be acute, chronic or both. Further, contamination of the environment through unintentional spills or releases of hazardous substances at marine terminals can affect migratory birds and species at risk through destruction or disturbance of nests and eggs, feather contamination (waterfowl), and exposure to contaminants through soil, water and vegetation.

Noise, vibration, artificial lighting, and disturbances caused by shipping activity during construction and operation activities may result in injury, mortality, sensory disturbance, and change in habitat. Attraction to lights at night or in poor visibility conditions may cause birds to collide with lit structures or their vertical support structures, resulting in injury or death. In other instances, birds can be attracted and disoriented while circling an artificial light source and may deplete their energy reserves and either die of exhaustion or drop to the ground where they are at risk of predation. Flaring is also known to attract birds, which may result in incineration.

Wetlands

Marine terminals may affect estuarine and other wetland habitat types (e.g., marsh, mud flats, sand flats) which provide critical functions to a range of wildlife species, such as staging habitat for migrant shorebirds and as foraging habitat for dabbling and diving ducks and geese. Intertidal and shallow subtidal estuarine habitats are dynamic environments where the introduction of engineered structures and activities have the potential to cause immediate and long term, adverse effects. For example, the placement of hard surfaces (e.g. terminal, supporting infrastructure) will result in the loss of habitat, and may cause changes in local geomorphological processes which in turn may initiate erosional processes and a further loss of habitat. Wetlands also provide forage habitat for

insectivorous birds and bats, and suitable habitat for amphibians year-round and throughout all life stages. Clearing of wetlands for Project components and activities results in habitat loss for wildlife.

Environmental Emergencies

The proposed Project includes LNG storage tanks, condensates storage tanks, liquefaction trains, natural gas pipelines, a marine terminal and the use of hazardous materials such as propane, ethane, diesel near water and the potential for release of explosive gases to the atmosphere. There is the potential for adverse environmental and human-health effects from accidents and malfunctions. Adverse effects to air quality, water quality, wildlife and wildlife habitat could result from the accidental release of toxic or flammable substances from pressurized containers and from the release of contaminants to surrounding waters. Marine incidents will also need to be considered due to the presence of LNG carriers. Optimized prevention, preparedness and response measures and systems will be important given the risk of spills of hazardous substances to water and uncontrolled releases of explosive gases. In the Impact Statement, ECCC will review the risk assessments of accidents and malfunctions to understand the potential geographical extent and consequences. ECCC will look for reliable modelling for contaminants released to air or spilled to water that informs the Proponent's emergency management plans and associated response measures and capacities for each major type of foreseeable incident.

Robyn McLean, Environment and Climate Change Canada
Pacific and Yukon

Name of Departmental / Agency Responder

Senior Environmental Assessment Officer
Title of Responder

September 7, 2021
Date