



Impact Assessment Agency of Canada



DRAFT ANALYSIS OF PROPOSED CHANGES TO THE WOODFIBRE LNG
PROJECT DECISION STATEMENT CONDITIONS

NOVEMBER 2022

Impact Assessment Agency of Canada
Agence d'évaluation d'impact du Canada





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1. Introduction

Woodfibre LNG Limited (the proponent) has proposed to construct and operate a liquefied natural gas (LNG) export facility on the former Woodfibre Pulp and Paper Mill site (the Project) in Nexwnnewu7ts atll'a7tsem (Howe Sound), approximately seven kilometres south of Skwxwu7mesh (Squamish) in British Columbia (B.C.). The Project includes the development of a natural gas liquefaction facility and an LNG transfer facility to enable the export of LNG to global markets via marine vessels. The Project will be operational for a minimum of 25 years, and produce an estimated 2.4 million tonnes of LNG per year at full capacity. The Project has begun construction.

1.1. Impact Assessment Act

On August 28, 2019, the *Impact Assessment Act* (IAA) came into force, repealing the *Canadian Environmental Assessment Act, 2012* (CEAA 2012). Section 184 of the IAA provides that Decision Statements issued under CEAA 2012 are deemed to be Decision Statements under the IAA and, therefore, subject to the provisions of the IAA. In addition, the former Canadian Environmental Assessment Agency is now the Impact Assessment Agency of Canada. In this report, the term “Agency” refers to either the former Canadian Environmental Assessment Agency or the current Impact Assessment Agency of Canada.

Section 68 of the IAA provides the Minister with the legislative authority to amend a Decision Statement to add new conditions, remove existing conditions or modify existing conditions. The Minister must be of the opinion that adding, removing or modifying a condition does not increase the extent to which the effects of the Project, as assessed during the environmental assessment, are adverse.

1.2. Assessment History

The Project was subject to an environmental assessment pursuant to CEAA 2012 and B.C.'s *Environmental Assessment Act, 2002* (EAA). Substitution was granted to the province of B.C. to conduct the environmental assessment for this project in February 2014, in accordance with the substitution conditions under CEAA 2012.

As part of the substituted process, the B.C. Environmental Assessment Office (EAO) submitted to the Agency an Assessment Report that informed the former Minister of Environment and Climate Change's (the Minister) environmental assessment decisions under CEAA 2012. EAO prepared the Assessment Report in consultation with an Advisory Working Group, made up of federal, provincial, and local government representatives as well as representatives from Squamish Nation and Tsleil-Waututh Nation. Representatives from Cowichan Tribes First Nation, Halalt First Nation, Lake Cowichan First Nation, Lyackson First Nation, Musqueam First Nation, Penelakut Tribe, Stz'uminus First Nation and Métis Nation BC were also consulted during the assessment process. The Agency provided advice to EAO to fulfill the requirements related to CEAA 2012.

Following the substituted environmental assessment process, the former Minister determined that the Project would not be likely to cause significant adverse environmental effects, taking into account the mitigation



considered appropriate. On March 18, 2016, in accordance with subsection 53(1) of CEAA 2012, the former Minister issued a Decision Statement for the Project. The Decision Statement contains legally-binding conditions, which include mitigation measures and follow-up requirements that the proponent must comply with for the life of the Project. The Decision Statement was reissued on March 7, 2018 to reflect changes to the Project's cooling system.

1.3. Purpose of this Report

On June 7, 2022, the proponent submitted an application for an amendment (the amendment application) to the Agency requesting changes to two conditions of the Decision Statement (conditions 3.8 and 6.4) to address feasibility issues. The amendment application outlined the requested changes to the conditions, rationale for the changes and an assessment of the potential effects associated with these changes, along with supporting information and responses to comments received by the proponent about the proposed changes (including comments from Indigenous groups).

This draft Report provides a summary of the requested changes and an analysis of whether these changes may result in adverse environmental effects within areas of federal jurisdiction that may not have been considered in the environmental assessment. The Agency is holding a comment period on the draft Report to validate its views on the proposed changes to the conditions with Indigenous groups, government authorities and the public, and to provide an opportunity for any further comments before providing advice to the Minister on potential amendment(s) to the Decision Statement.

1.4. Proponent's Engagement with Indigenous Groups

The proponent has engaged with potentially affected Indigenous groups and provided them written notice of the requested changes to conditions 3.8 and 6.4, with details regarding the nature and rationale for the changes. This included providing each community with a draft copy of the amendment application. In the development of its amendment application, the proponent engaged with Squamish Nation, Tsleil-Waututh Nation, Musqueam Indian Band, Snuneymuxw First Nation, Penelakut Tribe, Lyackson First Nation, Lake Cowichan First Nation, Stz'uminus First Nation, Metis Nation of British Columbia, Halalt First Nation, and Cowichan Tribes.



2. Potential Adverse Environmental Effects of Proposed Changes

2.1 Proposed Changes to Condition 3.8

Proponent's Assessment

The environmental assessment for the Project assessed the potential effects to marine mammals (including seals and sea lions) during the construction period, including harm (hearing injury) and behavioural effects. The proponent stated that construction of marine infrastructure would involve approximately five to six months of intermittent pile-driving activity, which would result in increased underwater noise. The assessment included underwater noise modelling and determined at what distance from the source the sound level would reach injury and behavioural threshold values for marine mammals and fish.¹ Modelling predicted that the 160 decibel behavioural disturbance threshold for marine mammals would extend 7,322 meters from the Project site. The proponent proposed measures to mitigate effects to marine mammals from underwater noise, including but not limited to an underwater noise management plan, a preference for vibrational pile driving where feasible, and the appointment of an Environmental Monitor responsible for monitoring noise and potential effects to marine mammals.

EAO concluded that no significant adverse effects, cumulative effects or residual effects (injury or mortality and behavioural change) to marine mammals (including seals and sea lions) resulting from underwater noise during construction would be likely after the implementation of the proposed mitigation measures. The residual effects were characterized as low to moderate in magnitude, local to regional in extent, short term and temporary in duration, regular in frequency during operation, and reversible in a context that has low to high resilience.

Condition 3.8 currently requires the proponent to shut-down marine construction activities that generate underwater noise any time a marine mammal, including a pinniped, is detected within a noise impact area established where underwater noise levels are predicted to exceed 160 decibels, i.e. within 7,322 meters of any such activity. The proponent states that due to the curious and gregarious nature of pinnipeds (for example, harbour seals and Steller sea lions) and their ubiquitous presence in Howe Sound, this requirement would lead to regular and prolonged full Project shutdowns of pile installation associated with the construction of key marine Project components. This would make construction neither technically nor economically feasible.

¹ The National Oceanic and Atmospheric Administration (NOAA) pre-2016 injury thresholds for pinnipeds (190 decibels) and disturbance thresholds (160 decibels) were applied for modelling because there are currently no Canadian regulatory requirements or guidance regarding underwater sound thresholds for injury or behavioural disturbance to marine mammals.



In order for the construction of marine infrastructure to be feasible, the proponent proposes to delineate a pinniped-specific exclusion area of 125 meters distance from underwater noise producing activities. The proponent is of the view that a pinniped-specific exclusion area of 125 meters is not anticipated to be detrimental nor result in adverse effects to the health of individuals or population viability of harbour seals or Steller sea lions based on the following factors:

- Steller sea lion populations are stable and growing, while harbour seal populations remain stable in Howe Sound.
- Behaviourally, pinnipeds tend to be curious and undisturbed by in-water construction activities as observed and documented during marine terminal infrastructure construction on two other northern BC projects. Pinnipeds also have the ability to avoid acute underwater noise by raising their heads out of water for an extended period of time or exiting the water entirely, in contrast to cetaceans.
- Similar mitigation measures for frequent pinniped presence were approved for *Fisheries Act* authorizations in the LNG Canada Export Terminal Project and the Rio Tinto Terminal A Expansion Project.
- Prior to mitigation and with conservative assumptions, the pinniped injury threshold boundary of 190 decibels was estimated to be 73 meters from impact source. This distance is expected to be reduced further with the implementation of commonly-applied and effective underwater sound dampening measures in place (for example, bubble-curtain placement around active impact pile driving).

The proponent concludes that the use of a 125 meter pinniped-specific exclusion zone during in-water impact pile installation is unlikely to be detrimental or adverse to individual health or the health and viability of harbour seal or Steller sea lion populations in B.C. This is consistent with the environmental assessment predictions of no significant residual effects to marine mammals (including seals and sea lions) after the implementation of proposed mitigation measures, and verification of sound levels during pile installation in the construction period.

The proponent is not proposing any change to condition 3.8 in relation to cetaceans given that their behaviour does not lead to a feasibility issue similar to the one identified for pinnipeds. Cetaceans would remain protected to the same degree with the proposed changes to condition 3.8.

Views Expressed

Fisheries and Oceans Canada (DFO) advised the Agency that the proposed changes to condition 3.8 would not increase the extent to which the effects of the Project, as assessed during the environmental assessment, are adverse. However, DFO also advised the Agency that modification to the mitigations may be warranted, for example if underwater noise recordings indicate that the threshold for injury is exceeded at the 125 meter pinniped exclusion zone boundary. In response to this concern, the proponent reiterated that the 125 meter boundary is a conservative distance to avoid injury to pinnipeds and that monitoring would be performed to demonstrate compliance with the threshold. This monitoring would inform the use of mitigation measures (for example, bubble curtains) to attenuate underwater noise from pile driving. Nevertheless, DFO recommended that condition 3.8 be modified to allow for the pinniped exclusion zone boundary to be established at a new distance if monitoring indicate that the threshold for injury is exceeded at the 125 meter boundary. In addition, the amended condition should identify that the boundary be either 125 meters, or where noise levels exceed



190 decibels (the injury threshold for pinnipeds), whichever is more conservative under specific environmental conditions.

Through the proponent's engagement with potentially affected Indigenous groups, Tsleil-Waututh Nation and Squamish Nation expressed concerns regarding underwater noise effects on marine mammals from impact pile driving, vibratory pile driving, and other in-water activities. In response, the proponent made two changes to their amendment application. First, a request to focus underwater noise monitoring on impulsive underwater noise activities has been removed. All activities that directly generate underwater noise would be monitored to establish the underwater noise impact areas for construction. Second, the proposed pinniped-specific exclusion zone in the amendment application was increased from 100 meters to 125 meters.

Agency's Analysis and Conclusions

Based on the information provided by the proponent and the views provided by DFO, the Agency does not consider the proposed changes to condition 3.8 as proposed by the proponent to increase the extent to which the effects of the Project, as assessed during the environmental assessment, are adverse.

DFO is of the opinion that the information and modelling provided in the proponent's amendment application indicate that the 125 meter exclusion zone would be a conservative distance to avoid injury to pinnipeds. The injury threshold for pinnipeds, according to NOAA guidance considered during the environmental assessment, is 190 decibels. Therefore, the amended condition should require the proponent to establish the pinniped exclusion zone at a distance of either 125 meters, or where noise levels exceed 190 decibels, whichever is more conservative under specific environmental conditions (see proposed changes to condition 3.8.3 below). It should be noted that the conditions use the technical term 'marine mammal underwater noise impact area' to describe the aforementioned exclusion zones.

The behavioral disturbance threshold for marine mammals is 160 decibels. Therefore, residual effects in the form of pinniped behavioural changes are considered likely within the pinniped underwater noise impact area. However, these effects are not considered significant; as the underwater noise is temporary, they would not result in the loss of an individual marine mammal (regardless of conservation status), and effects to marine mammal populations are likely to be negligible. The Agency also notes that the effects would be short-term, localized and reversible once construction is complete.

The Agency is therefore of the view that modifying conditions 3.8, as follows, would not increase the extent to which the effects of the Project, as assessed during the environmental assessment, are adverse (proposed revisions to existing condition language in **bold**):

3.8. The Proponent shall establish and maintain **a marine mammal underwater noise impact areas** for all construction activities ~~where underwater noise levels are predicted to exceed 160 decibels at a reference pressure of one micropascal~~ to avoid adverse behavioural change in or injury to marine mammals. In doing so, the Proponent shall:

3.8.1. identify each construction activity that generates underwater noise levels greater than 160 decibels **and 190 decibels** at a reference pressure of one micropascal and the periods of time when each activity occurs;

3.8.2. for cetaceans, establish the boundary of the marine mammal underwater noise impact area for



each construction activity identified in condition 3.8.1 at the distance from the activity at which the underwater noise level is predicted to reach 160 decibels;

- 3.8.3. **for all other marine mammals, including pinnipeds, establish the boundary of the marine mammal underwater noise impact area for each construction activity identified in condition 3.8.1 at the distance from the activity where underwater noise levels reach 190 decibels or at a distance of 125 metres, whichever is the greater distance;**
- 3.8.4. employ a marine mammal observer, who is a qualified individual, and require that person to detect and report the presence of marine mammals in the marine mammal underwater noise impact areas **identified in conditions 3.8.2 and 3.8.3** during construction activities identified in condition 3.8.1;
- 3.8.5. stop or not start the construction activities identified in condition 3.8.1 if a ~~marine mammal~~ **cetacean** is detected in the ~~marine mammal~~-underwater noise impact **area identified in condition 3.8.2 or if a pinniped is detected in the underwater noise impact area identified in condition 3.8.3**, and only begin or continue the construction activities identified in condition 3.8.1 once the **cetacean or pinniped** ~~marine mammal~~ has moved out of ~~the~~ **their respective** ~~marine mammal~~-underwater noise impact area; and
- 3.8.6. implement mitigation measures, including sound dampening technology and soft-start procedures, to reduce construction noise levels in the marine mammal underwater noise impact areas **identified in conditions 3.8.2 and 3.8.3**.

2.2 Proposed Changes to Condition 6.4

Proponent's Assessment

During the environmental assessment, EAO assessed potential effects of the Project on water quality during the construction, operation and decommissioning phases, including effects on surface water (freshwater) quality and marine water quality. The proponent stated that potential effects to water quality were assessed as intermediate components for the assessments of other valued components (for example, fish and fish habitat, current use of lands and resources for traditional purposes and human health). Project activities identified as having the potential to interact with water quality include soil erosion and sediment transport by surface runoff during construction and remobilization of legacy pulp mill contaminants due to disturbance of seafloor sediments.

EAO considered water quality and sediment as a valued component for human health. Water and country foods (including fish) are two key pathways for human exposure to contaminants that may be caused by the Project. The Human Health Risk Assessment focused on contaminants of potential concern and found that changes to chemical concentrations in tap water, surface water, sediment and fish are not expected as a result of the Project. No significant residual effects on human health resulting from changes in water quality were identified. EAO stated that given the proposed mitigation measures, including the development and implementation of an Environmental Management Plan, changes in water quality are likely to remain within the guidelines for aquatic life (including fish).

Condition 6.4 currently requires the proponent to monitor water quality and marine sediment quality using the



Canadian Council of Ministers of the Environment's (CCME) *Water Quality Guidelines for the Protection of Aquatic Life* and *Interim Sediment Quality Guidelines for the Protection of Aquatic Life* as benchmarks, report any exceedances to the thresholds identified in the guidelines and implement measures to remedy those exceedances. Should monitoring detect exceedances of the CCME guidelines, the proponent is responsible for implementing additional mitigation measures to remedy those exceedances, regardless of their source. However, baseline studies indicated pre-existing exceedances of the CCME guidelines. Therefore, the proponent is of the opinion that condition 6.4 effectively makes them responsible for the water and sediment quality in all watercourses that flow through the Certified Project Area and for the marine environment in Howe Sound. This is not technically or economically feasible considering the limited control that the proponent has on the multitude of anthropogenic and naturally occurring sources that may influence water and sediment quality within these waterbodies. The proponent further understands the intent of condition 6.4 as a requirement to evaluate (and mitigate) potential bioaccumulation of contaminants in aquatic species that are harvested and consumed.

In order for condition 6.4 to be feasible, the proponent proposes to clarify the language of the condition to specify their responsibility for only water and soil quality exceedances that are attributable to the Project. In addition, the language should be clarified to specify only those exceedances associated with a risk to human health, and limit the monitoring to construction and operation. The proponent notes that no potential effects on water quality from decommissioning of the Project were identified during the environmental assessment and therefore the monitoring of said effects should not be a requirement of the condition. Together, these proposed changes would provide compliance certainty to the proponent and place the interpretation of monitoring results into a context that recognizes both pre-existing conditions and environmental conditions that are attributable to the Project.

Views Expressed

Environment and Climate Change Canada (ECCC) advised the Agency that the proposed changes to condition 6.4 to clarify exceedances attributable to the Project are not expected to increase the extent to which the effects of the Project, as assessed during the environmental assessment, are adverse. However, ECCC recommended that condition 6.4 clearly state that monitoring must occur during all Project phases, not only during construction and operation. Project activities during decommissioning and closure could also affect water and sediment quality and therefore these activities should also be monitored. Further, ECCC recommended the phrase "or reduce the associated risk to human health" be removed from the proponent's suggested language change as this would allow the Project to contaminate water and sediment, as long as the risk to human health is managed. ECCC noted the intent of the original condition was to protect water and sediment quality for future human use. If the Project contaminates water or sediment, the proponent could reduce risk to human health by prohibiting humans from using the water (for example, by closing beaches for swimming or by prohibiting fish and shellfish consumption). If the phrase is not deleted, ECCC is of the opinion that condition 6.4 would allow water and sediment quality to deteriorate as a result of the Project. ECCC also asked how the proponent would determine whether guideline exceedances are attributable to the Project or not.

In response to the comments from ECCC, the proponent reiterated no potential decommissioning activities would result in risks to water quality that were not considered during the environmental assessment. In addition, the proponent noted that all decommissioning activities would need to comply with both provincial



and federal legislation in place at that time, including the *Fisheries Act* which prohibits the deposition of deleterious substances into waters frequented by fish. As such, the proponent does not believe there is any rationale for including decommissioning in the scope of condition 6.4. Further, the proponent would determine whether sediment and water quality exceedances are attributable to the Project through monitoring programs.

The Proponent did not receive comments about the proposed changes to condition 6.4 from Indigenous groups.

Agency's Analysis and Conclusions

Based on the information provided by the proponent and the views provided by ECCC, the Agency does not consider the proposed changes to condition 6.4 to increase the extent to which the effects of the Project, as assessed during the environmental assessment, are adverse.

The proponent and ECCC agree monitoring for only the effects to water and sediment quality that are attributable to the Project during construction and operation would not result in additional adverse effects. However, there is disagreement over the phases in which this monitoring must occur. With respect to decommissioning, the Agency notes that effects to water quality during decommissioning will be taken into account during the development and implementation of a decommissioning plan as required under conditions 10.1 through 10.3. This plan will be developed in consultation with Indigenous groups and relevant government authorities. As such, the Agency expects that potential effects from decommissioning activities on water quality will be addressed through the plan.

According to ECCC, limiting monitoring of effects to only those affecting human health would allow the potential contamination of water to the point where fish and shellfish may no longer be safe to consume, or where the waters may no longer be safe for swimming. If this happens, a prohibition to use contaminated waters may have to be implemented. However, in the Human Health Risk Assessment contained within the Assessment Report, contaminants of concern are identified for aquatic species, and bioaccumulation is explicitly identified as a potential health impact. The proponent is proposing to focus monitoring on human health effects as identified in the Assessment Report. In this way, by clarifying condition 6.4 to focus only on effects to human health, potential impacts from bioaccumulation and other contaminants of concern will still be assessed through monitoring. With respect to outdoor recreation (for example, swimming in the Project area), the environmental assessment concluded that recreation in the Crown lands surrounding the Project area have been limited since 2006 due to access restrictions with the closure of the Woodfibre pulp and paper mill and that access to these areas would remain restricted to the general public for security and safety reasons. Therefore, new potential effects on recreational activities are not anticipated.

The Agency is therefore of the view that modifying conditions 6.4, as follows, would not increase the extent to which the effects of the Project, as assessed during the environmental assessment, are adverse (proposed revisions to existing condition language in **bold**):

6.4. The Proponent shall monitor, **during construction and operation**, water quality and sediment, using as a benchmark the Canadian Council of Ministers of the Environment's *Water Quality Guidelines for the Protection of Aquatic Life* and *Interim Sediment Quality Guidelines for the Protection of Aquatic Life*, and shall communicate any exceedance(s) of the Guidelines **attributable to the Designated Project** to relevant government authorities and Aboriginal groups, and implement additional mitigation measures to remedy those exceedances **to reduce the associated risk to human health**.



2.3 Rights of Indigenous Peoples

The environmental assessment assessed impacts on the rights of Indigenous peoples as recognized and affirmed in section 35 of the *Constitution Act, 1982*. Based on input from Indigenous groups, EAO did not identify the hunting of marine mammals as a significant valued component. Marine mammals were acknowledged as a source of social and cultural importance in the Project Area. The Agency has determined based on the information from the proponent, the advice from DFO and the results of the engagement conducted by the proponent that the establishment of an underwater noise impact area for pinnipeds would not result in direct injury or behavioural change in seals and sea lions, nor diminish their social and cultural value.

Indigenous groups were identified during the environmental assessment as a receptor group for contaminants of potential concern in sediment and water, specifically through the consumption of food from the marine environment (for example, crab and sole). However, risks to Indigenous groups through the bioaccumulation of contaminants were not found to be significant. The Agency has determined that based on information from the proponent, advice from ECCC and the results of engagement conducted by the proponent that clarifying condition 6.4 to focus on impacts to human health would not increase the risk of exposure of Indigenous groups to potential contaminants of concern.

The Agency anticipates that the proposed changes to condition 3.8 and condition 6.4 would not change the residual effects assessment on environmental effects within federal jurisdiction, and is therefore satisfied that there would be no additional impacts on the rights of Indigenous peoples beyond those assessed in the environmental assessment.

3. Conclusion

The Agency is proposing changes to conditions contained within the Decision Statement to address feasibility issues identified by the proponent. Based on the information provided by the proponent, and the views provided by DFO and ECCC, the Agency does not consider the proposed changes to increase the extent to which the effects of the Project, as assessed during the environmental assessment, are adverse.

The Agency considers that the 125 meter boundary for the underwater noise impact area for pinnipeds is already a conservative distance to mitigate injury to pinnipeds from underwater noise, and the addition of condition 3.8.3 would further reinforce that the 190 decibel injury threshold for pinnipeds would be respected. The Agency also considers the effects to human health as identified during the environmental assessment (including through the Human Health Risk Assessment) to be protected by the clarifications proposed to condition 6.4. Additionally, the Agency considers the decommissioning plan required in section 10 of the Decision Statement, which will be developed in consultation with Indigenous groups and relevant authorities, to be sufficient for identifying any potential adverse effects related to human health from the Project during decommissioning and closure.



The Agency is therefore of the view that modifying the conditions in the Decision Statement, as indicated in Table 1, would not increase the extent to which the effects of the Project, as assessed during the environmental assessment, are adverse. The Agency is also of the view that the rights of Indigenous peoples would not be additionally impacted due to the changes to the Decision Statement.

The Agency also recommends that conditions 2.10 and 2.11 be amended to improve how future Project change(s) will be assessed to determine whether any change to the mitigation measures and/or follow-up requirements included as conditions may be necessary in response to the Project change(s) (Table 1). These amendments would ensure that the process for assessing Project change(s) is consistent with other decision statements issued since January 2021, and that there is greater clarity and certainty about the information that the Proponent must submit to the Agency and how the Agency will consider this information.

TABLE 1 SUMMARY OF PROPOSED AMENDMENTS TO CONDITIONS

Original version	Proposed amended conditions
<p>2.10 The Proponent shall consult with Aboriginal groups prior to initiating any material change(s) to the Designated Project that may result in adverse environmental effects, and shall notify the Agency in writing no later than 60 days prior to initiating the change(s).</p>	<p>2.10 If the Proponent is proposing to carry out the Designated Project in a manner other than described in condition 1.9, the Proponent shall notify the Agency in writing in advance of carrying out the proposed activities. As part of the notification, the Proponent shall provide:</p> <p>2.10.1 a description of the proposed change(s) to the Designated Project and the environmental effects that may result from the proposed change(s);</p> <p>2.10.2 any modified or additional measure to mitigate any environmental effect that may result from the proposed change(s) and any modified or additional follow-up requirement; and</p> <p>2.10.3 an explanation of how, taking into account any modified or additional mitigation measure referred to in condition 2.10.2, the environmental effects that may result from the proposed change(s) may differ from the environmental effects of the Designated Project identified during the environmental assessment.</p>
<p>2.11 In notifying the Agency pursuant to condition 2.10, the Proponent shall provide the Agency with an analysis of the adverse environmental effects of the change(s) to the</p>	<p>2.11 The Proponent shall provide to the Agency any additional information required by the Agency about the proposed change(s) referred to in condition 2.10, which may include the results of consultation with Indigenous groups and relevant</p>



<p>Designated Project, as well as the results of the consultation with Aboriginal groups.</p>	<p>authorities on the proposed change(s) and environmental effects referred to in condition 2.10.1 and the modified or additional mitigation measures and follow-up requirements referred to in condition 2.10.2.</p>
<p>3.8 The Proponent shall establish and maintain a marine mammal underwater noise impact area for all construction activities where underwater noise levels are predicted to exceed 160 decibels at a reference pressure of one micropascal to avoid adverse behavioural change in or injury to marine mammals. In doing so, the Proponent shall:</p> <p>3.8.1 identify each construction activity that generates underwater noise levels greater than 160 decibels and the periods of time when each activity occurs;</p> <p>3.8.2 establish the boundary of the marine mammal underwater noise impact area for each construction activity identified in condition 3.8.1 at the distance from the activity at which the underwater noise level is predicted to reach 160 decibels;</p> <p>3.8.3 employ a marine mammal observer, who is a qualified individual, and require that person to detect and report the presence of marine mammals in the marine mammal underwater noise impact area during construction activities identified in condition 3.8.1;</p> <p>3.8.4 stop or not start the construction activities identified in condition 3.8.1 if a marine mammal is detected in the marine mammal underwater noise impact area, and only begin or continue the construction activities identified in condition 3.8.1 once the marine mammal has moved out of the marine mammal underwater noise impact area;</p> <p>and</p>	<p>3.8 The Proponent shall establish and maintain marine mammal underwater noise impact areas for all construction activities to avoid adverse behavioural change in or injury to marine mammals. In doing so, the Proponent shall:</p> <p>3.8.1 identify each construction activity that generates underwater noise levels greater than 160 decibels and 190 decibels at a reference pressure of one micropascal and the periods of time when each activity occurs;</p> <p>3.8.2 for cetaceans, establish the boundary of the marine mammal underwater noise impact area for each construction activity identified in condition 3.8.1 at the distance from the activity at which the underwater noise level is predicted to reach 160 decibels;</p> <p>3.8.3 for all other marine mammals, including pinnipeds, establish the boundary of the marine mammal underwater noise impact area for each construction activity identified in condition 3.8.1 at the distance from the activity where underwater noise levels reach 190 decibels or at a distance of 125 metres, whichever is the greater distance;</p> <p>3.8.4 employ a marine mammal observer, who is a qualified individual, and require that person to detect and report the presence of marine mammals in the marine mammal underwater noise impact areas identified in conditions 3.8.2 and 3.8.3 during construction activities identified in condition 3.8.1;</p> <p>3.8.5 stop or not start the construction activities identified in condition 3.8.1 if a cetacean is detected in the underwater noise impact area identified in condition 3.8.2 or if a pinniped is detected in the underwater noise impact area</p>



<p>3.8.5 implement mitigation measures, including sound dampening technology and soft-start procedures, to reduce construction noise levels in the marine mammal underwater noise impact area.</p>	<p>identified in condition 3.8.3, and only begin or continue the construction activities identified in condition 3.8.1 once the cetacean or pinniped has moved out of their respective underwater noise impact area; and</p> <p>3.8.6 implement mitigation measures, including sound dampening technology and soft-start procedures, to reduce construction noise levels in the underwater noise impact areas identified in conditions 3.8.2 and 3.8.3.</p>
<p>6.4 The Proponent shall monitor water quality and sediment, using as a benchmarks the Canadian Council of Ministers of the Environment’s Water Quality Guidelines for the Protection of Aquatic Life and Interim Sediment Quality Guidelines for the Protection of Aquatic Life, and shall communicate any exceedance(s) of the Guidelines to relevant government authorities and Aboriginal groups, and implement additional mitigation measures to remedy those exceedances.</p>	<p>6.4 The Proponent shall monitor, during construction and operation, water quality and sediment, using as a benchmark the Canadian Council of Ministers of the Environment's <i>Water Quality Guidelines for the Protection of Aquatic Life</i> and <i>Interim Sediment Quality Guidelines for the Protection of Aquatic Life</i>, and shall communicate any exceedance(s) of the Guidelines attributable to the Designated Project to relevant government authorities and Aboriginal groups, and implement additional mitigation measures to remedy those exceedances to reduce the associated risk to human health.</p>