



Impact Assessment Agency of Canada



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

AUGUST 2023

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






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1. Introduction

Woodfibre LNG Limited (the proponent) is developing a liquefied natural gas (LNG) export facility on the former Woodfibre Pulp and Paper Mill site (the Project) in Átl'ka7tsem/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 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. The decision to approve the Project cannot be changed.

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.

Following the substituted environmental assessment process, the former Minister determined that the Project would likely not cause significant adverse environmental effects, taking into account the mitigation measures 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 address issues they identified in relation to feasibility of the mitigation measures included in condition 3.8 and clarify requirements associated with condition 6.4 of the Decision Statement.

Condition 3.8 requires the proponent to implement a marine mammals exclusion zone within which in-water construction activities must be stopped if a marine mammal is detected within the zone to minimize impacts on all marine mammals. The proponent is proposing that pinnipeds (seals and sea lions) should be subject to a less restrictive exclusion zone than other marine mammals due to feasibility concerns associated with restricting pinnipeds from the Project area.

Condition 6.4 requires the proponent to monitor water and sediment quality in the Project area and to implement additional mitigation measures to remedy exceedance(s) of water and sediment quality guidelines observed through monitoring. The proponent is proposing a wording change in order to clarify the scope of the condition; to remove monitoring requirements during decommissioning; and to narrow the application of the condition to effects on human health only.

The Proponent proposed changes to the conditions to address the issues and provided an analysis of the potential adverse environmental effects of these proposed changes, along with a summary of consultation undertaken with potentially affected Indigenous groups in relation to the proposed changes.

The Agency reviewed the amendment application considering the rationale provided by the proponent for the proposed amendments to conditions, and any potential adverse environmental effects that the proposed amendment may cause, including impacts on the rights of Indigenous groups.

The Agency's analysis is summarized in this report, along with its recommendations to the Minister to support the Minister's decision with respect to Decision Statement amendments.



2. Consultation and Engagement on Proposed Changes

The Agency reviewed the proponent's amendment application and determined that changes to conditions in the Decision Statement are required to address issues identified by the proponent in relation to feasibility of the mitigation measures in condition 3.8 and clarity of requirements of condition 6.4. The Agency analyzed the potential adverse environmental effects associated with potential changes to the conditions, and held a public comment period between November 17, 2022 and January 30, 2023 to solicit feedback on the proposed changes to the conditions and associated analysis from Indigenous groups, government authorities and the public before providing a recommendation to the Minister.

The Agency received 559 individual comments from the public, as well as five form letters submitted by a total of 6151 individuals at the close of the public comment period (comments are posted to the Canadian Impact Assessment Registry). The Agency also received one submission from Tsleil-Waututh Nation. A summary of the key issues pertaining to the proposed changes to conditions 3.8 and 6.4 raised during the public comment period is included in sections 3.1 and 3.2, respectively.

Some comments raised issues pertaining to the amendment process in general and the Minister's authority to amend decision statements.

Several comments also expressed general opposition to the Project and/or raised issues that were outside of the scope of the proposed changes to conditions 3.8 and 6.4 and the amendment process.

2.1. Proponent's Engagement with Indigenous Groups

The proponent engaged with potentially affected Indigenous groups and provided them written notice of its request for 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 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.



3. Potential Adverse Environmental Effects of Proposed Changes

3.1 Proposed Changes to Condition 3.8

Proponent’s Assessment

This section focuses on the revised assessment of environmental effects on pinnipeds, since the proponent is not proposing any change in relation to other marine mammals, including cetaceans.

CONTEXT

The 2016 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 to determine the distances from the source at which the sound level would reach injury and behavioural threshold values for marine mammals and fish¹. This modeling did not take into account mitigation measures, such as use of vibratory pile installation methods (where feasible), and placement of bubble-curtains around impact pile driving. The modelling predictions are outlined in the table below:

TABLE 1. INJURY AND BEHAVIORAL NOISE THRESHOLDS FOR PINNIPEDS

	Injury threshold (decibel)	Distance from the noise source (metres)	² Behavioural disturbance threshold (decibel)	Distance from the noise source (metres)
Pinnipeds	190	73	160	7,322
Cetaceans	180	340	160	7,322

¹ The U.S National Marine Fisheries Service (NMFS) (also known as the National Oceanic and Atmospheric Administration) 2013 injury thresholds for pinnipeds (190 decibels) and disturbance thresholds for marine mammals (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.

² The behavioural disturbance threshold applies to all marine mammals.



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, bubble curtains, and the appointment of an Environmental Monitor responsible for monitoring noise and potential effects to marine mammals.

With the implementation of the mitigation measures, the residual effects in the form of injury to marine mammals from underwater noise were considered not likely. Residual effects on the behavioural changes to marine mammals were considered likely, but these effects were not considered significant³ as the behavioural effects (*i.e.* startle response or increased susceptibility to predation) would be localized to the area where the activity is taking place and would occur intermittently and temporarily over a period of five to six months during construction, and therefore unlikely to cause population level changes within the Regional Assessment Area (RAA).

EAO agreed with the proponent's assessment and concluded that the Project is not likely to cause significant adverse or cumulative effects to marine mammals (including seals and sea lions) resulting from underwater noise during construction, taking into account the proposed mitigation measures. The residual effects on the behavioural changes were characterized as low to moderate in magnitude, local to regional in extent, short term and temporary in duration, and reversible in a context that has low to high resilience.

PROPONENT'S PROPOSAL TO AMEND CONDITION 3.8

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 Átl'ka7tsem/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.

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 will not cause adverse effects beyond those that were identified in the environmental assessment based on the following factors:

- Based on modeling presented in Table 1, the pinniped injury threshold of 190 decibels is estimated to be met at 73 meters from the impact source. This distance is expected to be reduced further with the implementation of underwater sound dampening measures (for example, bubble-curtain placement around active impact pile driving).
- The behavioural disturbance threshold of 160 decibels will not be met at 125 metres from the impact source, however, any behavioural effects on pinnipeds will be localized to the area and temporary in nature.

³ A significant effect was defined in the environmental assessment as an effect causing a population within the defined Regional Assessment Area to be unable to sustain itself or unable to continue to be ecologically effective, or the loss of any individuals of a species listed as Endangered or Threatened on Schedule 1 of the *Species at Risk Act*.



- Steller sea lion populations are stable and growing, while harbour seal populations remain stable in Átl'ka7sem/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 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.

Views Expressed

Fisheries and Oceans Canada (DFO) advised that the proponent undertake ongoing monitoring of underwater noise at the exclusion zone boundary to ensure that the threshold for pinniped injury is not exceeded at the 125 metres exclusion zone boundary. Should there be exceedances of noise thresholds at the exclusion zone boundary, DFO recommended that condition 3.8 should be modified such that the proponent can increase the exclusion zone boundary. The proponent responded that the 125 metres exclusion zone boundary is a conservative distance to avoid injury to pinnipeds and that monitoring would be performed to demonstrate compliance with the threshold.

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, the proponent proposed to monitor all activities that directly generate underwater noise in order to establish the underwater noise impact areas for construction, instead of their original proposal which was to only monitor impulsive underwater noise. Second, the proposed pinniped-specific exclusion zone in the amendment application was increased from 100 meters to 125 meters. Tsleil-Waututh Nation also expressed concerns related to how the proponent will manage effects on broader groups of marine mammals, such as fissipeds, how the proponent will verify sound levels during pile installation, and whether bubble curtains can be specifically identified as a sound dampening mitigation measure. The Agency factored these concerns into the proposed changes to condition 3.8.

Many comments were received during the public comment period that expressed concern that the delineation of a smaller pinniped-specific exclusion zone instead of the original marine mammal exclusion zone of 7,322 meters would increase the extent to which effects from underwater noise on pinnipeds are adverse. Annex I provides key issues raised during the public comment period pertaining to the proposed implementation of a pinniped-specific exclusion zone, along with mechanisms that may address the concerns.

Agency's Analysis and Conclusions

Based on the information provided by the proponent and the views provided by DFO, the Agency is proposing to amend condition 3.8 such that the proponent establishes a pinniped exclusion zone boundary at a distance of either 150 meters from the impact source, or where noise levels exceed 190 decibels, whichever is more conservative under specific environmental conditions (see new recommended condition 3.8.3 below). The Agency recommends 150 meters instead of 125 meters in order to be conservative due to the many concerns expressed and to be consistent with past amendments of this nature.



It should be noted that the conditions use the technical term 'marine mammal underwater noise impact area' to describe the aforementioned exclusion zones. The Agency also agrees with DFO that monitoring of underwater noise should be ongoing at the exclusion zone boundary, and incorporated concerns from Tsleil-Waututh Nation on how the proponent should monitor noise at the exclusion zone boundary.

The behavioral disturbance threshold for marine mammals is 160 decibels. As a result of the proposed changes to condition 3.8, residual effects in the form of pinniped behavioural changes are considered likely within the pinniped exclusion zone. However, the extent of these residual effects will remain localized to the RAA, the context will remain low to high resilience and the duration will remain short term, irregular and reversible after construction is complete given that the underwater noise from construction is temporary. As Steller sea lion populations are stable and growing, harbour seal populations remain stable in the RAA, and neither species is listed as Endangered or Threatened, the behavioral changes are not expected to cause pinniped populations within the RAA to be unable to sustain themselves or unable to continue to be ecologically effective. In addition, though the magnitude of effects may increase, the assessment rating of low to medium remains accurate to describe these changes. Since magnitude is the only factor affected by the proposed changes, the original determination that the project would not cause significant adverse residual effects on marine mammals remains unchanged. Therefore, the Agency is of the view that the proposed changes to condition 3.8 will not increase the extent to which Project effects on pinnipeds are significant, compared against both the definition of significance and the original assessment of significance.

Residual effects in the form of pinniped behavioural changes are considered likely within the pinniped underwater noise impact area. However, since the underwater noise from construction is temporary, it is unlikely to result in the loss of marine mammals individually or at a population level (regardless of conservation status), an assessment similar to what was concluded in the original environmental assessment. The proposed revisions to the existing condition are **bolded**.

- 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 all marine mammals except 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 at which the underwater noise level is predicted to reach 160 decibels;
 - 3.8.3. for 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 150 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 **marine mammal(s) are detected in their respective ~~marine mammal~~-underwater noise impact area identified in condition 3.8.2 or condition 3.8.3**, and only begin or continue the construction activities identified in condition 3.8.1 once the **marine mammal(s) ~~marine mammal~~ have** moved out of the **their respective ~~marine mammal~~-underwater noise impact area**; and
- 3.8.6. implement mitigation measures, including sound dampening technology **such as bubble curtains** 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**.
- 3.8.7. monitor continuously the levels of underwater noise at the boundaries of both marine mammal underwater noise impact areas while the construction activities identified in condition 3.8.1 are ongoing. The Proponent shall immediately halt the construction activities if hydroacoustic monitoring indicates that noise levels at either boundary exceed their respective threshold, and not resume without implementing sound attenuation measure(s), which could include increasing the distance of the underwater noise impact areas, to reduce noise levels below the thresholds.**

3.2 Proposed Changes to Condition 6.4

Proponent's Assessment

CONTEXT

During the environmental assessment, EAO assessed potential effects of the Project on water quality (freshwater and marine water) during the construction, operation and decommissioning phases. 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 drinking 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 concluded 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. Since the issuance of the Decision Statement in 2016, baseline studies conducted by the proponent indicated pre-existing exceedances of the CCME guidelines. Condition 6.4, as currently drafted, makes the proponent responsible for the water and sediment quality in all watercourses that flow through the Certified Project Area and for the marine environment in Átl'ka7tsem/Howe Sound.

PROPONENT'S PROPOSAL TO AMEND CONDITION 6.4

The intent of condition 6.4 was to evaluate (and mitigate) potential bioaccumulation of contaminants in aquatic species that are harvested and consumed. The proponent proposes to clarify the language of the condition to specify their responsibility for water and soil quality exceedances that are attributable to the Project, and limit their responsibility to addressing exceedances associated with a risk to human health. In addition, the proponent also proposes that monitoring should be limited to construction and operation phases since no potential effects on water quality from decommissioning of the Project were identified during the environmental assessment. The proponent also 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.

The Agency asked for clarification on how the proponent would determine whether guideline exceedances are attributable to the Project. The proponent stated that it would determine whether water and sediment quality exceedances are attributable to the Project through monitoring programs.

Views Expressed

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 abandonment could also affect water and sediment quality, and therefore these activities should also be monitored. Further, ECCC recommended against narrowing the scope of the condition to only addressing effects on human health since this could allow for the Project to contaminate water and sediment. ECCC understood 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 comply with the amended condition as proposed by prohibiting humans from using the water (for example, by closing beaches for swimming or by prohibiting fish and shellfish consumption), instead of mitigating the source of the contamination.

ECCC noted that the CCME guidelines referenced in condition 6.4 as a benchmark for monitoring are for the protection of aquatic life, and are not appropriate for the protection of human health. Consequently, specifying that the proponent must mitigate only those guideline exceedances associated with a risk to human health would make the condition difficult to enforce.

Other issues raised during the public comment period on the draft analysis report pertaining to the proposed changes to condition 6.4 are included in Annex II.



Agency's Analysis and Conclusions

The Agency is of the opinion that the proponent should be responsible for only those exceedances of the CCME guidelines that are attributable to the Project during construction and operation.

According to the *Canadian Environmental Assessment Act, 2012* and the *Impact Assessment Act*, the Minister can only establish conditions that are in relation to the adverse effects of the designated project subject to the environmental assessment. Conditions cannot be established in relation to effects from activities that are outside of the scope of the Project being assessed. In addition, the Minister can only establish conditions directed at the Proponent and in relation to Project components and activities that are under the care and control of the Proponent. The recommended addition of "attributable to the Designated Project" to condition 6.4 reflects the legislative authority of the Minister, as well as the original intent of the condition.

With respect to the phases of the Project during which the Proponent is required to implement mitigation and monitoring measures in relation to water and sediment quality, the Agency notes that adverse effects to water and sediment quality from decommissioning activities associated with the Project are already required to be addressed during the development and implementation of a decommissioning plan, as required under conditions 10.1 to 10.3. No changes to conditions 10.1 to 10.3 are considered.

At least one year prior to the end of operation of the Project, condition 10.1 requires the Proponent to present a decommissioning plan to the Agency, developed in consultation with Indigenous groups and relevant government authorities and that describes:

- the components of the Project that will be decommissioned by the Proponent and the components that will not be decommissioned;
- the desired end-state objectives of the Project area;
- the components of the environment that may be adversely affected by decommissioning activities or by components of the Project that will not be decommissioned; and
- how the Proponent will mitigate and monitor adverse environmental effects from decommissioning activities

Condition 10.2 requires the Proponent to implement the decommissioning plan as developed and condition 10.3 requires the Proponent to report annually to the Agency about the implementation of the decommissioning plan. The Agency will verify the Proponent's compliance with the requirements prescribed in conditions 10.1 to 10.3. The Agency also notes that decommissioning activities by the proponent will need to comply with all provincial and federal legislation in place at that time (or equivalent), such as the *Fisheries Act* which prohibits the deposition of deleterious substances into waters frequented by fish.

The Agency notes that the use of the CCME guidelines as a benchmark for monitoring water and sediment quality was recommended by EAO during the initial environmental assessment in order to protect the overall ecosystem health of Átl'ka7tsem/Howe Sound and was considered a key mitigation measure considered by



the Minister when making decisions in the Project. Following the CCME guidelines would manage potential contamination of water quality, and would contribute towards protecting water quality for future human use.

The Agency is therefore of the view that modifying condition 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.

3.3 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 a distinct 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 based on information from the proponent, advice from ECCC and the results of engagement conducted by the proponent that amending condition 6.4 would not increase Indigenous peoples' risk of potential exposure to 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.

The Agency notified all potentially affected Indigenous groups of the opportunity to submit comments on the proposed changes to conditions 3.8 and 6.4 during the public comment period. The Agency also received comments from Tsleil-Waututh Nation, which are incorporated into this analysis (see section 2.1).



4. Conclusion

The Agency is proposing changes to conditions included in the Decision Statement to address 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 that changes to condition 3.8 and 6.4 in relation to the exclusion zone boundary for pinnipeds, and proponent’s responsibility to meet CCME guidelines for what is attributable to the Project, are likely to increase the extent to which the effects of the Project, as assessed during the environmental assessment, are adverse. The mitigation and follow-up program measures identified in the Decision Statement during the environmental assessment (summarized in Table 2) will continue to provide protection against adverse environmental effects from the Project. 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 2). These amendments would ensure that the process for assessing Project change(s) is consistent with other decision statements issued more recently, 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.

Finally, the Agency recommends amending the Decision Statement to reflect a change in the name of the Proponent and legal ownership of the Project (Table 2).

TABLE 2 SUMMARY OF RECOMMENDED AMENDMENTS TO THE DECISION STATEMENT

Original Decision Statement (March 18, 2016)	Recommended Amendment to the Decision Statement
1.25 <i>Proponent</i> means Woodfibre LNG Limited and its successors or assigns.	1.25 <i>Proponent</i> means Woodfibre LNG Limited Partnership, by its general partner Woodfibre LNG General Partner Inc. and its successors or assigns.
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).	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: 2.10.1 a description of the proposed change(s) to the Designated Project and the environmental



Original Decision Statement (March 18, 2016)	Recommended Amendment to the Decision Statement
	<p>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 Designated Project, as well as the results of the consultation with Aboriginal groups.</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 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</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 all marine mammals except pinnipeds, establish the boundary of the marine mammal underwater noise impact area for each construction activity identified in condition 3.8.1 at</p>



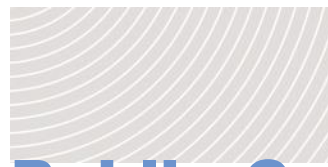
Original Decision Statement (March 18, 2016)	Recommended Amendment to the Decision Statement
<p>the distance from the activity at which the underwater noise level is predicted to reach 160 decibels;</p> <p>3.8.3 employ a marine mammal observer, who is a qualified individual, and require that person to 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>3.8.5 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>the distance from the activity at which the underwater noise level is predicted to reach 160 decibels;</p> <p>3.8.3 for 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 150 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 marine mammal(s) are detected in their respective marine mammal underwater noise impact area identified in condition 3.8.2 or condition 3.8.3, and only begin or continue the construction activities identified in condition 3.8.1 once the marine mammal(s) have moved out of their respective marine mammal underwater noise impact area; and</p> <p>3.8.6 implement mitigation measures, including sound dampening technology such as bubble curtains 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>3.8.7 monitor continuously the levels of underwater noise at the boundaries of both marine mammal underwater noise impact areas while the construction activities identified in condition 3.8.1 are ongoing. The Proponent shall immediately halt the construction activities if</p>



Original Decision Statement (March 18, 2016)	Recommended Amendment to the Decision Statement
	<p>hydroacoustic monitoring indicates that noise levels at either boundary exceed their respective threshold, and not resume without implementing sound attenuation measure(s), which could include increasing the distance of the underwater noise impact areas, to reduce noise levels below the thresholds.</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.</p>

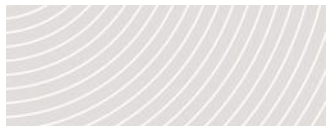


Annex I

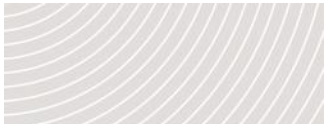


Public Concerns related to the amendment of condition 3.8 of the Decision Statement for the Woodfibre LNG Project

Concern Expressed	Agency analysis
<p>Exposing Steller sea lion populations, a species of “Special Concern” by the Committee on the Status of Endangered Wildlife in Canada, to increased noise disturbance and encroachment by implementing smaller pinniped-specific exclusions zone(s) could reverse recent observed population increase in Átl’ka7tsem/Howe Sound.</p>	<p>According to Fisheries and Oceans Canada (DFO), the implementation of a suitable pinniped exclusion zone is expected to prevent adverse effects to pinnipeds, including Steller sea lion, irrespective of other factors or conditions inherent to the larger project setting. The proponent is required to meet the injury thresholds for pinnipeds at a distance either at 150 metres from the impact source, or where noise levels exceed 190 decibels, whichever is more conservative.</p> <p>Additionally, the Agency is also aware that DFO is currently reviewing an application for <i>Fisheries Act</i> authorization for the Woodfibre LNG Project. Conditions of the <i>Fisheries Act</i> with respect to implementation of avoidance and mitigation measures would be informed by existing federal project conditions, current science, and site-specific modeling.</p>
<p>The amendment would be inconsistent with the status of Átl’ka7tsem/Howe Sound as a UNESCO Biosphere Reserve as it would threaten the ongoing recovery of marine ecosystems that were adversely affected by many years of industrialization and would be incompatible with ecosystem-based management principles required to support the Biosphere’s designation and legitimacy.</p>	
<p>The Proponent’s assertion that similar mitigation measures than those implemented for other industrial projects in British Columbia does not</p>	



Concern Expressed	Agency analysis
<p>take into account the unique conditions of Átl'ka7tsem / Howe Sound in terms of current and historical anthropogenic disturbance levels and geological or bathymetric considerations.</p>	
<p>Using only the injury threshold to determine the boundary distances of the exclusion zone(s) fails to take into account behavioral impacts that may be caused by long-term exposure to higher noise levels.</p>	<p>The Agency acknowledges that there may be residual behavioural effects on pinnipeds from a 150 metres exclusion zone boundary; however, these effects are unlikely to cause population level changes in pinnipeds within the Regional Assessment Area as the effects would be localized to the area where the activity is taking place and would occur intermittently and temporarily over a period of five to six months during construction.</p>
<p>Any additional adverse effects on pinnipeds may adversely affect the prey/predator relationships between pinnipeds and other marine mammals that prey on pinnipeds in the Project area.</p>	
<p>The different sensitivities of pinnipeds to various noise types (including impulse and non-impulse noise and aerial noise) have not been accounted for.</p>	<p>The proponent will conduct monitoring of all activities that generate underwater noise to establish a revised exclusion zone boundary, if 190 decibel is not met at 150 metres from the impact source.</p>
<p>The analysis does not apply the most current scientific information because it refers to outdated injury threshold recommendations for pinnipeds.</p>	<p>According to DFO, the NMFS guidance from 2013 is similar to the NMFS 2018 guidance and conservative with respect to avoiding permanent injury to pinnipeds. Therefore, the current guidelines will continue to provide protection against injury to pinnipeds.</p>



Concern Expressed	Agency analysis
<p>The analysis fails to consider how exposing pinnipeds to higher levels of underwater noise during construction may interact cumulatively, even if only temporary, with other noise disturbances in the area, including from Project operation and increased ship traffic.</p>	<p>Cumulative effects were considered as part of the environmental assessment completed for the Project in 2016. Amendment of condition 3.8 is not likely to cause further cumulative effects beyond what was assessed as part of the environmental assessment.</p>



Annex II





Public Concerns related to the amendment of condition 6.4 of the Decision Statement for the Woodfibre LNG Project

Concern Expressed	Agency analysis
<p>The requirement for the Proponent to report and remedy exceedance(s) for water and sediment quality guidelines only if the exceedance(s) are attributable to the Project would discharge the Proponent from being responsible for historic contamination in the Project area.</p>	<p>According to the <i>Canadian Environmental Assessment Act, 2012</i> and the <i>Impact Assessment Act</i>, the Minister can only establish conditions that are in relation to the adverse effects of the designated project subject to the environmental assessment. Conditions cannot be established in relation to effects from activities that are outside of the scope of the Project being assessed. In addition, the Minister can only establish conditions directed at the Proponent and in relation to Project components and activities that are under the care and control of the Proponent. The recommended addition of “attributable to the Designated Project” to condition 6.4 reflects the legislative authority of the Minister.</p>
<p>The requirement for the Proponent to report and remedy exceedance(s) for water and sediment quality guidelines only for the purpose of protecting human health may expose marine life to harmful substances.</p>	<p>Project activities would need to comply with both provincial and federal legislation, including the <i>Fisheries Act</i>, which prohibits the deposition of deleterious substances into waters frequented by fish. The Agency is aware that DFO is currently reviewing an application for <i>Fisheries Act</i> authorization for the Woodfibre LNG Project. Conditions of the <i>Fisheries Act</i> with respect to implementation of avoidance and mitigation measures would be informed by existing federal project conditions, current science, and site-specific modeling.</p>