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Nexwlelexwem/Bowen Island, January 30, 2023

The Honourable Steven Guilbeault, MP
Minister of the Environment and Climate Change
House of Commons
Ottawa ON K1A 0A6

Compliance Promotion & Follow-up Team
Impact Assessment Agency of Canada
160 Elgin Street, 22nd Floor
Ottawa, Ontario K1A 0H3

Send by mail and email: ministre-minister@ec.gc.ca and submitted by web-form

Re: **Proposed changes to Woodfibre LNG Project Decision Statement Conditions, March 18, 2016 reissued March 7, 2018**

Dear Minister:

We are adding one last point regarding the proposed changes to the Decision Statement Conditions, and in particular condition 3.8 and the calculation of the behaviourial and injury thresholds of underwater noise for pinnipeds and cetaceans.

As we understand, the numbers for the thresholds were lifted right out of Woodfibre LNG's 2015 Environmental Assessment application, Section 5.19. The methods of calculating these thresholds were researched and developed by the US National Oceanic and Atmospheric Administration and the Washington State Department of Transportation. Also the actual modeling is not part of the application, but some formulas are. (Appendix.)

During the initial EA, BC EAO and later the IAAC had no problem accepting these US legislated methods, although being from the US. The rational for acceptance was and still is: *"because there are currently no Canadian regulatory requirement or guidance regarding underwater sound thresholds for injury or behavioural disturbance ro marine mammals."*[1]

That is in contrast with our experience, when we were working on making the case that the proposed Once Through Cooling System for the Woodfibre LNG project should be rejected based on US EPA research and legislation and California State research and Legislation. At the time there were also no Canadian regulatory requirements for this.

[1]Draft Analysis of Proposed Changes to the Woodfibre LNG project Decision Statement Conditions, IAAC (2022 Nov) IAAC.

But we heard from the proponent, their consultants, from DFO staff, B.C. politicians: “that is US based once-through-cooling system legislation, the Woodfibre LNG project is proposed to be build in Canada.”

We say now: You cannot have your cake and eat it too.

This example, and Woodfibre LNG ignoring the herring spawn data of third party - which we only found out existed through the Woodfibre LNG EA application itself - shows directly how arbitrary the Professional Reliance model used in B.C. and Canadian environmental assessments, is.

It seems that what serves the project will end up in the application, what doesn’t, is left out. We also have no insight into the process of what is submitted by the consultants in good faith and left out by the proponent, as this concerns client - consultant confidentiality.

This does not make for reliable environmental assessments. There needs to be more transparency. Obviously we need a far better act than the IAA is.

Awaiting your reply, we remain.

Kind regards,

J.H. Anton van Walraven

On behalf of Concerned Citizens Bowen
anton@ccbowen.ca
www.ccbowen.ca

CC MOU:

-Nexwsxwníwˀntm ta Úxwumixw, Chiefs and Council Squamish Nation
-Impact Assessment Agency of Canada
-Environmental Assessment Office of British Columbia

CC:

-The Honourable George Heyman, Minister of Environment of British Columbia
-Patrick Weiler, MP West Vancouver - Sunshine Coast - Sea to Sky Country
-Jordan Sturdy, MLA West Vancouver - Sea to Sky
-Mayor and Council, District of Squamish
-Mayor and Council, District of West Vancouver
-Mayor and Council, Bowen Island
-Mayor and Council, Village of Lions Bay
-Ruth Simons, President and ED, Atl’Ka7tsem / Howe Sound Biosphere Region
-Tracey Saxby, My Sea to Sky

Appendix WFLN section 5.19 - page 32 and 33

(NOAA 2014). Behavioural responses are not necessarily predictable from the sound-source level (loudness) and may vary depending on factors such as age and status of the animal, type of activity, and social context (McCauley et al. 2003).

Marine mammals may be affected by increased underwater noise generated in the Project area during construction of the proposed marine infrastructure including the floating storage and offloading unit (FSO) jetty and as a result of Project vessel and shipping activities. The main sources of underwater noise considered in this assessment include impact driving of steel[d] piles during the construction phase and Project vessel activities during construction, operation, and decommissioning (e.g., deep-sea vessels, liquefied natural gas (LNG) carriers, worker ferries, tugs and other Project vessels).

Noise modeling was conducted using the Practical Spreading Loss Model, a two-dimensional noise model designed by NMFS specifically for pile driving and drilling activities (WSDOT 2009). Underwater noise levels were calculated on the basis of methods described in the Washington State Department of Transportation's (WSDOT's) Advanced Training Manual, *Biological Assessment Preparation for Transportation Projects*, Version 10-08 (WSDOT 2014).

The Practical Spreading Loss Model is based on the following formula for geometric spreading:

TL = 15 X Log (R1/R2) + αR

Where:

TL: is the transmission loss in dB.

R1: is range in meters of the sound pressure level.

R2: is the distance from the source of the initial measurement.

αR: linear absorption and scattering loss

Solving for transmission loss will provide the underwater SPL at a given distance. To determine at what distance or range a known SPL will occur, the equation must be solved for R1:

incorrect.! → R1= (10(TL/15)) •R2 should be $R_1 = R_2 \cdot 10^{(TL/15)}$

TL/15 is an exponent of base 10 not a multiplier as suggested.

The NMFS model was used to calculate the noise attenuation in the Project area to determine at what distance from the source the sound level would be expected to reach injury and behavioural threshold values for marine mammals. The most conservative injury threshold for marine mammals was adopted in the assessment for determining the spatial limits of underwater noise effects and associated mitigation measures.

[d] It is assumed for the purpose of this assessment that only **steel** piles (and not another material, e.g., wood or concrete) will be used during construction of Project infrastructure.

Prediction confidence in the underwater noise model was considered to be moderate based on the following factors:

- The activities associated with construction and operation of the marine facilities were modeled using conservation values and measured values from similar materials, equipment, and operations.
- The NMFS model is designed specifically for pile driving activities.
- There are no other significant noise sources in the Project area that would need to be modeled with the anticipated Project noise sources.
- The short duration of all noise sources minimizes potential adverse effects.
- Quality assurance was accomplished by implementing quality control checks on all model runs to ensure that model input parameters were correct, model output was plotted correctly, and any calculations were checked.
- There are limitations of using a two-dimensional model with respect to sound attenuation in a three-dimensional environment. The spreading loss model used for the underwater noise assessment only provides a rough approximation to the actual spreading loss in the marine environment. The model assumes that sound travels in a homogeneous environment. It does not take into account potential propagation effects related to absorption and reflection, which may occur as a result of sound interacting with local marine topographical features, nor effects related to refraction that may occur as a result of boundary layer effects and water column stratification. For example, physical aspects of the receiving environment (e.g., freshwater surface lens, in-field gradients in temperature, bottom topography) could cause sound levels to attenuate more rapidly than predicted by this geometric spreading-based model. Sophisticated sound field models do exist that that take into account the actual sound speed field in the ocean, and the reflections from the sea surface and sea floor as the sound travels away from the source. However, these types of models require detailed, site-specific inputs for the model with respect to existing oceanographic, bathymetric, and substrate conditions, which are not available for the Project area. Nonetheless, when the data required for a more complex model are not available, the practical spreading loss model is commonly used to estimate sound levels around a source.

Pile Driving

Woodfibre LNG Limited is proposing to install an FSO jetty and associated marine infrastructure to receive LNG carriers and other Project vessels at its proposed LNG terminal in Howe Sound. High levels of underwater noise are likely to result from pile-driving activities occurring intermittently over a 5- 6 month period during the construction phase. Underwater noise generated during pile driving is dependent on the type of pile being driven, the type of hammer, substrate type, and water depth (ICF Jones and Stokes and Illingworth and Rodkin Inc. 2009). Underwater noise related to pile driving will be temporary and limited to the construction phase. The size and number of piles that will be used for construction of the proposed marine infrastructure are outlined in **Table 5.19-10**.