



Tuesday 22nd August, 2023

**To:**

Rachel Butler, AScT  
Environmental Management Technologist  
BC Energy Regulator  
6534 100th Ave., Fort St. John, B.C., V1J 8C5

*Sent via email to: Rachel.Butler@bc-er.ca*

**RE: Review of Woodfibre LNG's Wastewater Discharge Authorization application**

Dear Ms. Butler:

Woodfibre LNG has submitted a Wastewater Discharge Authorization (WDA) application to the B.C. Energy Regulator (BCER) for the discharge of water associated with the construction of an LNG export facility near Squamish. Discharge is anticipated to occur for four years, at an average daily rate of 1,600 m<sup>3</sup> per day and maximum rate of 30,000 m<sup>3</sup> per day.

Attached, please find an in-depth report authored by Dr. Vicki Marlatt, Associate Professor of Environmental Toxicology at Simon Fraser University, documenting significant concerns with the application. It is her professional assessment that, if this WDA is approved, it is highly probable that it will result in cumulative, long-term toxic effects on intertidal and subtidal ecosystems in Átl'ka7tsem / Howe Sound.

To briefly summarize the key findings of the report:

**WEAKNESSES OF BASELINE DATA**

Woodfibre LNG is proposed on a site historically contaminated with toxic heavy metals and organic chemicals (i.e., hydrocarbons, dioxins, and furans) from a former pulp mill that operated from the early 1900's to 2006. There is no historical water quality data available to provide an understanding of pre-industrial baseline conditions. Woodfibre LNG also failed to collect continuous long-term water quality data and did not establish freshwater reference sites. The Technical Assessment Report relies on limited water quality data collected after the pulp mill closed in 2006 to characterize baseline conditions at the site and guide the minimum water quality objectives. These data are not representative of baseline conditions in undisturbed waters, sediment, and soil due to industrial contamination. Using these data to guide water quality objectives will allow Woodfibre LNG to discharge inappropriately high contaminant concentrations and contribute to continued degradation of the environment in and around the project site.

**IMPACTS OF CONTAMINANTS ON WILDLIFE AND ECOSYSTEMS**

Woodfibre LNG is requesting to discharge effluents ranging from pH 5.5 to 9.0, which exceeds the lower and upper limits of the long-term water quality guidelines for the protection of marine aquatic life. British Columbia's long-term Water Quality Guideline is pH 7.0 to 8.7 for marine waters, and pH 6.5 to 9.0 for



freshwater. The anticipated pH range also exceeds the range of pH values allowable in metal or diamond mine effluents as specified under the *Fisheries Act*.

Four heavy metals (copper, lead, zinc, and vanadium) are predicted to be discharged into Howe Sound at concentrations exceeding Canadian water quality guidelines under the scenario predicted by Woodfibre LNG. Heavy metals are of particular concern because of their persistence, bioaccumulation, and harmful impacts on growth, survival, and reproduction of aquatic organisms.

Total suspended solids (TSS) are also predicted to exceed Canadian water quality guidelines, with chronic sublethal effects for marine wildlife within the foreshore near the discharge sites. Elevated TSS are known to reduce biological productivity in aquatic ecosystems, and can smother benthic organisms such as rockweed and herring eggs, or block the penetration of sunlight required for plant and algal growth, resulting in lower habitat quality for fish and marine invertebrates.

Remnants of toxic organic chemicals (dioxins, furans, and hydrocarbons) from the former pulp mill that are present in the soil, water, sediment, and groundwater are likely to be mobilized and released into Átl'ka7tsem / Howe Sound. While Woodfibre LNG predicts that these will not exceed water quality guidelines, these compounds are persistent, toxic, and are known to bioaccumulate and biomagnify in animals.

All of these contaminants are likely to have significant, long-term, and cumulative impacts to local aquatic life in intertidal and subtidal ecosystems in Átl'ka7tsem / Howe Sound, including fish (particularly herring and salmon), crustaceans, molluscs, echinoderms, plants, and algae.

It is also highly probable that the exposure to multiple heavy metals, reduced pH, and elevated total suspended solids and other organic contaminants released from the Woodfibre LNG project area simultaneously will cause combined toxic effects on intertidal and subtidal ecosystems to some spatial extent. Exposure to several contaminants at the same time can increase the likelihood of toxic effects and can result in reduced survival, growth, and reproductive success in fish and invertebrates.

## **HUMAN HEALTH IMPACTS**

There is a risk of chronic/long-term human exposure to toxic levels of four heavy metals (copper, lead, zinc and vanadium) and persistent organic pollutants (e.g., dioxins and furans) through repeated recreational use and/or ingestion of fish and shellfish.

Most non-essential and excessive levels of essential metals are systemic poisons and have toxic effects on many organs once taken up and absorbed into the circulatory system in humans and animals.

Potential human health impacts of lead toxicity include neurological, respiratory, urinary, and cardiovascular disorders due to immune-modulation, oxidative, and inflammatory mechanisms. Vanadium toxicity in humans has been shown to cause decreases in the number of red blood cells, increased blood pressure, and mild neurological effects, as well as increased birth defects and reduced birth weight after in utero exposure.

It is likely that the disturbance of metals and persistent organic pollutants due to construction of the Woodfibre LNG project will further extend restrictions for fish and shellfish harvesting within the effluent plume of Woodfibre LNG's proposed wastewater discharge.



## LACK OF CUMULATIVE EFFECTS ASSESSMENT

Historic, current, and proposed pollution results in a complex mix of contaminants in Átl'ka7tsem / Howe Sound; however, there is no analysis of potential cumulative effects for the proposed effluent discharge. The application also fails to consider the cumulative effects of effluent discharge during construction of the tunnel for the proposed FortisBC Eagle Mountain to Woodfibre Pipeline project.

## SUMMARY OF RECOMMENDATIONS

- Conduct additional water quality sampling to establish baseline conditions, including freshwater reference sites upstream of the certified project area and historical industrial site.
- Conduct a multi-season effluent plume study to verify the geographic extent of contamination.
- Ensure contaminant concentrations do not exceed BC long-term water quality guidelines for pH, metals, organic pollutants, and total suspended solids to ensure the protection of aquatic life in marine waters.
- Require environmental effects monitoring of intertidal and subtidal biota to monitor fish and ecosystem health prior to and during the project.
- Require ongoing monitoring of contaminants in fish and shellfish.
- Conduct a cumulative effects assessment to determine the risk of combined hazards of multiple contaminants on aquatic life.
- Conduct a cumulative effects assessment to evaluate the combined impacts of historic, current, and proposed pollution on Howe Sound's ecosystems.

**We urge you to implement the recommendations identified by Dr. Vicki Marlatt in her review of Woodfibre LNG's application for a Wastewater Discharge Authorization. Approval of this application must be withheld until these recommendations are implemented.**

On Woodfibre LNG's own website, it states:

- that Woodfibre LNG is committed to: *"...advanc[ing] the LNG industry via innovative programs and adopting best practices";*<sup>1</sup> and
- *"We aim to minimize impacts to local ecosystems."*<sup>2</sup>

It is our assertion that the WDA application submitted by Woodfibre LNG fails to meet the company's own obligations to adopt best practices and minimize impacts to local ecosystems, and that the proponent does not intend to employ the highest environmental standards and apply the precautionary principle regarding impacts to the marine environment.

Woodfibre LNG already has a history of toxic spills, with [a spill of around 3,000 litres](#) of wash water and leachate in 2016 following routine maintenance. Earlier this year, Woodfibre LNG was [issued a warning](#) that the

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<sup>1</sup> Woodfibre LNG website (retrieved 2023) [United Nations Sustainable Development Goals](#).

<sup>2</sup> Woodfibre LNG website (retrieved 2023) [Sustainability](#).



## MY SEA TO SKY

project is non-compliant with the Environmental Assessment Certificate notification and submission requirements and twelve of its conditions.

We are skeptical that Woodfibre LNG will manage wastewater release responsibly when the company has a history of failing to comply with basic regulations.

District of Squamish, the Squamish Lillooet Regional District, and Howe Sound Biosphere Region have all expressed concern about these proposed wastewater discharge permits. There is clearly significant regional interest in ensuring adequate oversight of Woodfibre LNG and FortisBC to limit pollution of toxic contaminants and sediment into the fragile and recovering Átl'ka7tsem / Howe Sound ecosystem.

Átl'ka7tsem / Howe Sound has recently been designated as B.C.'s third UNESCO biosphere, and deserves especial attention and oversight.

We urge you to hold Woodfibre LNG to the highest standards as you consider its application to discharge effluent into Átl'ka7tsem / Howe Sound, and to implement these recommendations.

Please feel free to contact us for further information or clarification.

Sincerely,

**Rhiannon Fox, M.Sc.**

**Environmental Scientist and Campaign Coordinator**

**My Sea to Sky**

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**Copied to:**

Squamish Nation Band Council

The Honourable Steven Guilbeault, Minister of Environment and Climate Change of Canada

The Honourable Diane Lebovillier, Minister of Fisheries and Oceans

The Honourable Jonathan Wilkinson, Minister of Natural Resources and MP for North Vancouver

Patrick Weiler, MP for West Vancouver—Sunshine Coast—Sea to Sky Country

Premier David Eby

MLA Hon. Josie Osborne, Minister of Energy, Mines, and Low Carbon Innovation

MLA Hon. George Heyman, Minister of Environment and Climate Change Strategy

MLA Hon. Bowinn Ma, Minister of Emergency Management and Climate Readiness

MLA Jordan Sturdy, West Vancouver-Sea to Sky

MLA Nicolas Simons, Powell River-Sunshine Coast

Squamish Lillooet Regional District

Sunshine Coast Regional District

Gambier Island Local Trust Area

District of Squamish

District of West Vancouver

Bowen Island Municipality

Village of Lions Bay

Town of Gibsons

Resort Municipality of Whistler

Ruth Simons, Át'ł̓ka7tsem / Howe Sound Biosphere Region

Fern Stockman, Executive Project Director, Oil, Gas and Industrials, BC Environmental Assessment Office