



*March 23, 2015*

BC Environmental Assessment Office  
PO Box 9426 Stn Prov Govt  
Victoria, BC V8W 9V1

**Attention:** Michael Shepard,

**RE: Key concerns regarding Woodfibre LNG Environmental Assessment Application**

Dear Mr Shepard,

Please find below our comments and key concerns regarding the Environmental Assessment Application for the Woodfibre LNG project proposed in Howe Sound, on behalf of the volunteer organization, My Sea to Sky.

My Sea to Sky is a grassroots, volunteer organization that was started by a group of Squamish citizens in March 2014 in response to growing concerns about the proposed Woodfibre LNG project. Concerned citizens around Howe Sound have joined us to share their voices and express their shared concerns about the amount of unsustainable development proposed for this beautiful fjord we call home. We currently number more than 100 active volunteers, 900 people on our mailing list, and more than 2,100 people on our Facebook page.

We represent a diverse group of people: business owners, scientists, construction workers, medical professionals, teachers, students, lawyers, parents, tradesmen, artists, engineers, accountants, mountain guides, and other professionals. We have volunteered hundreds of hours of our own personal time to understand what impact an LNG export facility would have on our community, in our generation and the years to come.

The objectives of My Sea to Sky are:

- To educate communities in the Sea to Sky and raise awareness about the key issues associated with Woodfibre LNG and the Fortis BC pipeline.
- To work together, partnering with other communities and other organizations to create a strong, unified voice to share a sustainable vision for Howe Sound.
- Actively protest unsustainable development proposals within Howe Sound.

The values of My Sea to Sky are to:

- Respect all points of view.
- Empower citizens to engage by finding common ground.
- Be inclusive and transparent.
- Use rational fact-based information.



Our team of volunteers has identified the following key concerns with Woodfibre LNG's environmental assessment application:

### **INADEQUACY OF BASELINE STUDIES: Woodfibre LNG's application is missing several key baseline studies**

The following baseline studies are either missing or are inadequate as they do not conform to any recognized scientific standards: fish, birds, marine mammals, air quality, shipping, water quality, marine sound, and atmospheric sound, marine life near the Woodfibre site, and the cumulative impact assessment. Proper studies need to be completed before any decisions can be made regarding this proposed project.

### **GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues**

There are no regulations adopted to regulate this LNG industry from a technical standpoint. Any of the current standards are not applicable to the LNG industry. Do the regulators have the knowledge and the expertise and the capacity to oversee this industry or will they be relying on the proponent to monitor themselves and report to the regulator? Self-monitoring industries have created several examples of accidents with resulting environmental destruction in recent years, including the Lac Megantic rail disaster and the Mt Polley tailing pond spill.

Last year, BC issued draft regulations covering the operation of LNG facilities. These are, as yet, untested and lack key metrics on allowable emissions, setbacks and other safety standards, emergency plans etc. These are not of the same standard as those used in other jurisdictions such as the recently-constructed plants in Cheniere, Louisiana and Gladstone, Australia. For example, it indicates that the CSA standard Z276-11 will apply generally to the plant construction and design, but allows that the de-registered floating storage tankers Woodfibre proposes to use are exempt from this standard. That would seem to allow these vessels to escape both international port state inspection regimes and conformity to accepted Canadian standards. Also, the draft regulations allow any official of the BC Oil & Gas Commission to exempt the facility from any of the regulations, without explanation or further regulatory oversight or review – a power clearly open to potential abuse.

### **INFORMATION RELEASE: Information released by BC Hydro on 19<sup>th</sup> March needs to be included in cumulative impacts for Woodfibre LNG's application**

BC Hydro is proposing to clear-cut two 64 metre swaths of forest at the Woodfibre site which will create visible scars in the Howe Sound viewscape which will be very visible from the Sea to Sky highway and the gondola. This information was only made available during the recent BC Hydro open house held on 19th March, near the end of the public comment period. This information is not included in the



cumulative impact assessment of the Woodfibre application and it should be. This late release of information pertinent to this project and the timing of the BC Hydro open houses are unsatisfactory.

## **SOCIAL: There is no social license for this project**

This project has already divided the community of Squamish, and created a lot of social unrest. There are several sites both in support and in opposition to this project.

- a) **Support:** Yes to LNG = 860 facebook likes  
Facebook: <https://www.facebook.com/pages/Yes-to-LNG-Squamish/243849229149438>  
Website: <http://squamishsustainable.com>
- b) **Opposition:** No to LNG = 5260 facebook likes  
Facebook: <https://www.facebook.com/notoIngsquamish>
- c) **Opposition:** My Sea to Sky = 2,100 facebook likes  
Facebook: <https://www.facebook.com/myseatosky>  
Website: [www.myseatosky.org](http://www.myseatosky.org)

My Sea to Sky also has ~900 people on our mailing list, and we are actively working with over 20 other partner organizations around Howe Sound to campaign against this project.

Communities and Regional Districts around Howe Sound have also signaled strong opposition to the proposed Woodfibre LNG project. Below is an incomplete list of recent resolutions and votes:

1. **Village of Lion's Bay, May 20, 2014**  
"the Village of Lions Bay urges the federal government to ban the passage of LNG tankers in the waters of the Malaspina, Georgia, Juan de Fuca and Haro Straits, and Boundary Pass."
2. **Powell River Regional District, May 22, 2014**  
Resolution 9.1 Ban LNG Tankers from Howe Sound & Georgia/Haro Strait  
D.Murphy/P. Brabazon THAT the Board concur with the recommendations of the Committee of the Whole to send a letter to the Premier of BC, the Prime Minister of Canada and copy to other appropriate local governments to advise the Regional District's support for the 2008 UBCM resolution to ban LNG tanker traffic in the Georgia/Haro Straits is still in effect.
3. **Town of Gibsons, July 15, 2014**  
"Gibsons Council urge the federal government to ban the passage of LNG tankers in the waters of Howe Sound and the Georgia Strait, and to request the support of other communities around the Howe Sound to support this resolution."  
<http://www.gibsons.ca/include/get.php?nodeid=808>



4. **District of West Vancouver, July 21, 2014**

"to write to the federal government with a suggestion to ban the passage of LNG tankers in the waters of Howe Sound."

5. **Municipality of Squamish, January 20th 2015**

"Council votes no to LNG pipeline test drilling in Squamish estuary"

<http://www.squamishchief.com/news/local-news/council-votes-no-to-fortis-drilling-1.1737742>

6. **Bowen Island Municipality: Feb 24, 2015**

"Resolution regarding an LNG tanker ban in Howe Sound carried"

[http://www.livestream.com/bowenislandmunicipalhall/video?clipId=flv\\_ce2d0178-0cb1-4a9f-a0fb-97cbf7324121](http://www.livestream.com/bowenislandmunicipalhall/video?clipId=flv_ce2d0178-0cb1-4a9f-a0fb-97cbf7324121)

## **SAFETY: Safety of Howe Sound residents**

To date, LNG tankers have been relatively safe, but that is because there are stringent international guidelines to prevent accidents. These guidelines are not being followed for this proposed project. Both the proposed siting of this LNG terminal and transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.

### **Siting an LNG facility in Howe Sound violates international safety standards and practices, putting Howe Sound residents at risk**

According to the Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards:

- LNG ports must be located where they do not conflict with other waterway uses, including fishing, recreational boating, and ferries.
- Long, narrow inland waterways are to be avoided, due to greater navigation risk. Fjords (such as Howe Sound) are by definition "long, narrow inlets characterized by steep sides, created in a valley carved by glacial activity."
- LNG ports must not be located on the outside curve in the waterway, since other transiting vessels would at some time during their transits be headed directly at the berthed LNG ship.
- Human error potential always exists, so it must be taken into consideration when selecting and designing an LNG port.

None of these guidelines are being followed for the proposed Woodfibre LNG project.

### **Validity of quoting SIGTTO members' safety records whilst violating SIGTTO guidelines**

The Woodfibre port is located on the outside curve in the waterway for any vessel heading into or exiting Squamish (e.g., from Squamish Terminals). When the proponent talks about probabilities, they are basing their probabilities on an industry compelled by SIGTTO. This location violates the rules upon which SIGTTO has based its sterling safety record. Consequently, it is not valid for the proponent to simultaneously quote SIGTTO members' safety record AND violate the rules that engendered it.

#### **SOURCES:**

SIGTTO LNG Terminal Siting Standards

<http://www.witherbyseamanship.com/site-selection-design-ip-no-14-for-lng-ports-jetties.html>

### **Tanker traffic puts Howe Sound residents at risk**

As LNG tankers transit Howe Sound, there is a high-danger zone for 1,600 metres (1-mile) on either side of the LNG tanker. If an accident happens, people within this zone risk death by asphyxiation or death/injury by fire or explosion. Every time a tanker travels through Howe Sound (approximately 6-8 transits a month according to Woodfibre LNG) several Howe Sound communities will be in that high-danger zone, including: Bowen Island, Bowyer Island, Anvil Island, Passage Island, Porteau Cove, West Vancouver, and parts of the Sea to Sky highway.

#### **SOURCES:**

*Sandia Report, 2004*

[http://www.energy.ca.gov/lng/documents/2004-12\\_SANDIA-DOE\\_RISK\\_ANALYSIS.PDF](http://www.energy.ca.gov/lng/documents/2004-12_SANDIA-DOE_RISK_ANALYSIS.PDF)

SIGTTO LNG Terminal Siting Standards

<http://www.witherbyseamanship.com/site-selection-design-ip-no-14-for-lng-ports-jetties.html>

### **Ship wake analysis**

One of the more critical aspects of public safety associated with the Woodfibre LNG (WLNG) project is the impact of vessel wake on the foreshore beaches of Howe Sound. Waves generated by passing ships will impact every beach adjacent to the channel. At low tide these waves become steep and break on the shoreline and can be dangerous to people, especially small children, who are close to or in the shallow water or tide pool areas at that time.

In addition, residents are familiar with the wake generated by the occasional smaller bulk carrier transiting to Squamish and with the occasional cruise ship running at reduced speed up Howe Sound as a diversion from its normal route north to the Inside Passage. Both these vessel types also generate significant wakes that have at least the same or greater energy as those developed by the faster BC Ferries and which are highly noticeable when they hit the beach.

The information disseminated by Woodfibre LNG with respect to ship wake issues appears to be flawed. The published claim that the gas carriers running at 8-10 knots will generate only a 10cm wake at 50m from the ship defies both logic and maritime experience. Based on first-hand observations and the conservation of momentum principles of Newtonian physics, that conclusion is questionable.

## **SITE SELECTION: Woodfibre is not a safe location for a hazardous LNG facility**

On February 15th, 2015, a 3.4 magnitude earthquake hit Vancouver's coast that was felt throughout Howe Sound. The Woodfibre LNG proposal is located within this zone of moderate to high earthquake risk, on two known thrust faults. A seismologist from Natural Resources Canada has warned that "the big one" is just a matter of time. Do you think it is smart to site explosive Class A hazardous material on a site that has a history of landslides?

The Woodfibre site also has a history of slope failure. In 1955 a wharf and three warehouses collapsed into Howe Sound at the Woodfibre site, causing \$500,000 – \$750,000 in damages (Bornhold, B.D., 1983, *Fiords, GEOS*, no. 1, p 1-4).

A recent, but unreleased, geotechnical study by Knight Piesold identifies that approximately 46% of the study area was mapped as having rapid mass movement. This means landslides and slope slumpage... including existing natural landslide hazards as well as terrain where construction activity may increase landslide initiation. Why hasn't the geotechnical study by Knight Piesold been released?

### **SOURCES:**

<http://www.cbc.ca/news/multimedia/every-fault-line-in-british-columbia-1.2919420>

<http://www.cbc.ca/news/canada/british-columbia/b-c-megathrust-earthquake-will-rip-earth-open-like-a-zipper-expert-says-1.2917261>

[\*Bornhold, B.D., 1983, Fiords, GEOS, no. 1, p 1-4\*](#)

[\*B.C. Ministry of Energy and Mines\*](#)

## **HAZARDS & MALFUNCTIONS: Ship refueling**

The proponent has not answered repeated questions of where and how the LNG tankers will be refueled for the journey to Asia. If at the site or in the Sound, we face the prospect of tugs towing oil barges of 4,000+ tonnes of heavy fuel oils/ diesel fuel (HFO/DF) up and down the Sound. This will add to the traffic congestion, cross several ferry lanes and generally add to the risk of collisions and spills in the Sound. This traffic has not been accounted for in the proponents EA.

## **ECONOMY: The requested socio-economic study has not been provided**

What are the benefits to Squamish? What are the costs? There is still no clarity around how much in municipal taxes will be paid to the District of Squamish. How will this project impact existing small businesses and existing industries in Howe Sound? Why has the requested socio-economic study not been provided? My Sea to Sky requests an independent cost-benefit analysis including details of:

- direct, indirect, and induced local employment
- municipal tax benefits
- loss of municipal taxes from businesses, industries that are directly or indirectly impacted by locating an LNG facility in Howe Sound
- future loss of possible municipal tax revenue from businesses and industries that would have located in Howe Sound but don't because of the presence of an LNG facility (e.g., high tech companies, knowledge-based industry, recreation technology companies, film industry etc.)
- impacts of "capping" Woodfibre LNG's municipal taxes at \$2 million, with an annual increase of 2.5% to a maximum of \$3 million. This effectively limits the potential benefits to the District of Squamish, and transfers the tax burden to other DoS taxpayers and property owners.
- infrastructure and other socio-economic benefits
- quality of life
- costs of air pollution, noise pollution, light pollution, and water pollution
- services and infrastructure costs
- impacts to human health
- impacts on residential, recreational, and commercial real estate values
- loss of revenue for existing businesses and industries (e.g., tourism industry, film industry, outdoor recreation industry, high tech industry, knowledge-based industry, fisheries industry)
- loss of revenue through offshore infrastructure
- loss of revenue through foreign temporary workers
- loss of revenue due to poor air quality, visual impacts, and environmental impacts
- social costs and health impacts of air pollution

### **Benefits from property taxes still not certain**

The EA is very vague regarding the amount of property taxes Woodfibre LNG will pay. The matter is complicated by the use of floating storage tankers – will these be included when BC Assessment evaluates the property value which then defines the municipal tax rate? There is also concern that the Province will cap the municipal tax rate, further limiting tax benefits for Squamish.



## Impacts on tourism and existing branding

The Sea to Sky corridor from West Vancouver, through Squamish to Whistler is an important tourism corridor, strongly associated with the “Supernatural BC” brand image. 2.5 million Visitors travel up the Sea-to-Sky highway each year, contributing \$1.4 billion to the regional economy. How will those tourists react to seeing a smog-filled Sound filled with acrid sulphurous smells? How will this affect the business of the newly-opened Squamish gondola, which is directly opposite the proposed plant?

## ECONOMY: Low job numbers provide minimal benefit for Squamish

During construction, only 4.3% of jobs (=38.5 out of 895) will be for locals living in the Squamish/Whistler corridor (See Table 6.2-8 of the [Labour Market section](#) of Woodfibre LNG’s environmental assessment application). Why are there so few jobs predicted to be filled by workers in the Squamish/SLRD area? The EA application is also very unclear about how many of the 100 full-time jobs will be filled by residents of Howe Sound once the LNG terminal is operational.

### SOURCES:

*Labour Market Section of Woodfibre LNG’s EA application*

[http://a100.gov.bc.ca/appsdata/epic/documents/p408/d38525/1421092618420\\_KQQVJ0PJSG1lcH9LDD8L1J0CQhQw7NgD32kZQsvpHsxWNdyq1qCg%211378338455%211421086505978.pdf](http://a100.gov.bc.ca/appsdata/epic/documents/p408/d38525/1421092618420_KQQVJ0PJSG1lcH9LDD8L1J0CQhQw7NgD32kZQsvpHsxWNdyq1qCg%211378338455%211421086505978.pdf)

## HEALTH: Social costs and health impacts of air pollution

Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO<sub>2</sub>) and 43.8 tonnes of sulfur dioxide (SO<sub>2</sub>) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG’s environmental assessment application).

Emissions of NO<sub>x</sub> and SO<sub>2</sub> interact with other compounds to form fine particles, which can affect both the lungs and the heart. Exposure to these particles is linked to increased risk of respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; decreased lung function; aggravated asthma; onset of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease.

A new study published in the scientific journal, *Climatic Change*, estimates the true social costs of air pollution that aren’t accounted for in the cost of fossil fuels and other pollutants. Social costs include the health impacts of air pollution as well as impacts from climate change. The study found that sulfur dioxide costs \$42,000 per tonne, and nitrous oxides cost \$67,000 per tonne.

### SOURCES:

*Mills et al (2009) Adverse cardiovascular effects of air pollution. Nature Clinical Practice Cardiovascular Medicine 6: 36-44*

*Shindell (2015) The social costs of atmospheric release. Climatic Change*

## **ENVIRONMENT & HEALTH: Will there be smog? Will there be a smell?**

Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO<sub>2</sub>) and 43.8 tonnes of sulfur dioxide (SO<sub>2</sub>) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application).

Nitrogen Dioxide (NO<sub>2</sub>) is a reddish-brown gas with a pungent, irritating odour. It absorbs light and leads to the yellow-brown "smog" pollution haze seen hanging over cities. It is known to irritate the lungs and increase susceptibility to respiratory infections. In combination with either ozone (O<sub>3</sub>) or sulphur dioxide (SO<sub>2</sub>), nitrogen dioxide may cause injury at even lower concentration levels.

Sulphur Dioxide (SO<sub>2</sub>) is a toxic gas with a pungent, irritating, and rotten smell. Current scientific evidence links short-term exposures to SO<sub>2</sub>, ranging from 5 minutes to 24 hours, with an array of adverse respiratory effects including bronchoconstriction and increased asthma symptoms. These effects are particularly important for asthmatics at elevated ventilation rates (e.g., while exercising or playing).

Studies also show a connection between short-term exposure and increased visits to emergency departments and hospital admissions for respiratory illnesses, particularly in at-risk populations including children, the elderly, and asthmatics. The addition of these air pollutants in Howe Sound is of particular concern as recent research by MSc student Annie Seagram (studying under Professor Douw Steyn, Department of Earth, Ocean and Atmospheric Sciences at the University of British Columbia) has shown that the Howe Sound airshed and Lower Fraser Valley airshed are connected. Emissions from Woodfibre LNG will add to the pollution in Howe Sound, exacerbating the existing air quality conditions, particularly in the Squamish-Brackendale corridor.

Note that Metro Vancouver annually issues several Air Quality Advisories due to high concentrations of ground-level ozone. This pollution also impacts the Howe Sound and Squamish, and exposure to these pollutants is of particular concern for infants, the elderly, and is directly linked to health issues such as lung or heart disease and asthma.

### **SOURCES:**

*Professor Douw Steyn, Personal communication, April 9th, 2014*

*Metro Vancouver (2014, July 14<sup>th</sup>) Continued Air Quality Advisory. Retrieved from [www.metrovancouver.org](http://www.metrovancouver.org)*



## **ENVIRONMENT: cumulative impacts of 142 thousand tonnes of greenhouse gas emissions is unacceptable**

Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO<sub>2</sub> equivalent every year. These annual emissions of CO<sub>2</sub> equivalent from Woodfibre LNG is equal to adding over 18,000 cars to the highway, driving to Vancouver and back, every day. This is more than six times greater than current highway traffic. It is irresponsible to approve this kind of polluting industry at a time when we need to transition away from fossil fuels to mitigate the risks associated with climate change, and to reduce the economic and health impacts of air pollution in general. This is of critical importance.

### **Climate change is amplified in Canada:**

Canada has experienced about double the average global temperature increase during the past century. Climate change, including temperature increases, tends to be amplified in Canada because we're a northern country and global warming is magnified at or near the North and South Poles. This intensification in temperature increase near the poles is largely the result of the loss of ice and snow cover. The IPCC report has information for Canada by region on temperature increases, precipitation trends, drought possibility, snow cover and more.

#### **SOURCE:**

<http://www.ipcc.ch/report/ar5/wg1/mindex.shtml>

### **Natural disasters estimated to cost Canadians \$5 billion per year by 2020:**

There is evidence from around the world that natural catastrophes such as floods, storms, drought, heatwaves, fires, and earthquakes are on the rise. This is a serious issue for society, as these catastrophes can destroy homes, disrupt businesses, and take lives. According to TD Bank's Chief Economist, this increase in natural catastrophes is estimated to cost Canadians \$5 billion per year by 2020, and \$21-\$43 billion per year by 2050.

#### **SOURCE:**

<http://www.td.com/document/PDF/economics/special/NaturalCatastrophes.pdf>

### **The cost of "business as usual"**

According to 350.org, right now we're on track to blow the 2 degrees celsius global carbon budget in less than 18 years. We can't afford to keep supporting these fossil fuel industries. They are unsustainable, economically unviable, and seriously threaten the future survival of the human race on this planet.

#### **SOURCE:**

<http://www.theguardian.com/environment/ng-interactive/2015/mar/16/the-biggest-story-in-the-world>

## **ENVIRONMENT: The once-through seawater cooling system proposed by Woodfibre LNG is outdated**

Woodfibre LNG is proposing an outdated and damaging cooling method to help cool the LNG facility. They propose to extract 17,000 tonnes (= 3.7 million gallons, or 7 Olympic-sized 50-meter swimming pools) of seawater from Howe Sound, chlorinate it, heat it, and then spit it back out into the sound every hour of every day for the next 25 years. This method has been banned in California and several other places as it is very damaging to marine life such as juvenile salmon, herring, and plankton which are the building blocks for all other life in Howe Sound. If the herring are impacted, the dolphins, orcas, and humpbacks are also impacted as they no longer have a food supply. The impacts of increased water temperatures and the addition of chlorinated seawater will likely reverse the recent revival of marine life in Howe Sound, which is just now recovering from the toxic legacies of previous industries. This is unacceptable.

### **MARINE WATER QUALITY:**

Some comments and questions arising from a preliminary review of this section include:

#### **1) Management Plans**

- How can an environmental impact assessment be approved if management plans to mitigate the highlighted environmental impact concerns (particularly during the construction phase) have yet to be developed, let alone evaluated? And with what oversight?
- Why is the proponent, Woodfibre LNG, responsible for developing these management plans at a stage of approval that the public has no ability to comment on? For example, the Construction Environmental Management Plan, Waste Management Plan, Concrete Works Management Plan, Marine Works Management Plan, Erosion Prevention and Sediment Control Plan, Storm water management measures, etc.

#### **2) Dechlorination of Output Water**

- the use of the term “if required” is prevalent throughout the sections addressing the dechlorination requirements of output water after use within the once-through water cooling system.
- Please define what ‘as required’ encompasses.
- Please define to whom you are beholden in determining what/when action is required. How would you determine when action is required? Following what management plan?
- How would this dechlorination process be implemented?
- The stated purpose of chlorination of intake water is to prevent bio-fouling, as such, how would the defouling of the outlet pipes be achieved and maintained if the outlet water is to be

dechlorinated to acceptable safe limits for aquatic life? Please describe how this would be accomplished in detail.

- Sodium Hypochlorite, Chlorate and Chlorite are documented to be toxic to many marine species, including brown algae (see: Lopez-Galindo et al., 2010; van Wijk DJ et al., 1998). Please explain how the impacts of chlorination will affect the habitat structuring brown algae species that dominate the intertidal and sub tidal zones of the site and Howe Sound as whole (eg. *Fucus garneri* – rockweed). Why has this study not been conducted?

### 3) Self-Assessment

With regards to the following quote on page 5.10-30 “Creosote piling removal will be conducted during the least-risk fisheries work window specified by the DFO, unless a self-assessment determines that the work will not cause serious harm to fish or their habitat.”

- Please define the term “self-assessment”?
- What does it involve?
  - o What parameters will be measured and assessed?
  - o What guidelines will be followed?
  - o What oversight is there to the process and assessed results?
  - o Does this self-assessment caveat allow the proponent to overrule DFO guidelines?

### 4) Underwater video surveys conducted by Golder and Associates determined that there was no eelgrass and no living glass sponge reefs within the project area.

- This is very narrow in focus and scope, as impacts from the project can expand well beyond the defined immediate project geographic area, which, according to recent surveys conducted on behalf of Islands Trust, is well populated with eel-grass
- Both eelgrass and sponge species are negatively affected by increased sedimentation and decreased photo availability.
- Eelgrass in particular is critical habitat for juvenile fish.
- Dredging, erosion, land-runoff, construction and propeller wash will all inevitable result in increased marine sedimentation. This increased sedimentation can travel well beyond the immediate area and impact nearby eelgrass beds and glass sponge reefs.
- Failure to account for this as a potential or even likely impact evokes a sense of irresponsibility on the part of the proponent.



#### **SOURCES:**

*Dolf J. van Wijk, Sander G.M. Kroon, Irmgard C.M. Garttener-Arends, Toxicity of Chlorate and Chlorite to Selected Species of Algae, Bacteria, and Fungi, Ecotoxicology and Environmental Safety, Volume 40, Issue 3, July 1998, Pages 206-211, ISSN 0147-6513, <http://dx.doi.org/10.1006/eesa.1998.1685>.  
(<http://www.sciencedirect.com/science/article/pii/S0147651398916852>)*

*Cristina López-Galindo, M. Carmen Garrido, José F. Casanueva, Enrique Nebot, Degradation models and ecotoxicity in marine waters of two antifouling compounds: Sodium hypochlorite and an alkylamine surfactant, Science of The Total Environment, Volume 408, Issue 8, 15 March 2010, Pages 1779-1785, ISSN 0048-9697, <http://dx.doi.org/10.1016/j.scitotenv.2010.01.029>.  
(<http://www.sciencedirect.com/science/article/pii/S0048969710000549>)*

#### **ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life**

Woodfibre LNG has inherited the water license from Western Forest Product to extract water from Mill Creek, which flows through the Woodfibre site. The Department of Fisheries and Oceans has objected to this because the amount of water that WLNG is proposing to remove will reduce water levels in Mill Creek to levels that will no longer support fish life, especially in the summer months. Woodfibre LNG needs to source water for this project from somewhere else to protect this important stream habitat which is home to several native fish species. An environmental assessment certificate should not be issued to Woodfibre LNG until the current flow regime of Mill Creek has been assessed and the regulations of the new Water Sustainability Act have been finalized. There is a strong potential for the loss of native fish species should Woodfibre LNG extract water from Mill Creek.

#### **ENVIRONMENT: 9000 year old glass sponge reefs endangered by tanker traffic**

LNG tankers do not have enough clearance to get over the 9000 year old reef if they go off course. These 9000 year old glass sponge reefs have been called "Living Fossils" by National Geographic as until recently this species was thought to have gone extinct over 60 million years ago. MLA Jordan Sturdy recently made a statement in the House about the importance of this discovery in Halkett Bay near Gambier Island, and to support the proposal to expand the Provincial Park Protected Area to ensure these reefs are protected.

*Sources:*

<http://news.nationalgeographic.com/news/2013/10/131018-glass-sponge-reef-canada-ocean-science/>  
[http://jordansturdimla.ca/bcltv\\_videos/mla-sturdy-halkett-bays-glass-sponges/](http://jordansturdimla.ca/bcltv_videos/mla-sturdy-halkett-bays-glass-sponges/)

## **ENVIRONMENT: Impacts of dredging**

Woodfibre LNG proposes to dredge 140,000m<sup>3</sup> of toxin-laced mud from the foreshore of the site, and to dump it on an existing landfill at the rear of the liquefaction facility. This creates several questions, including:

- a) How did this site, in its current condition, ever get an environmental clearance certificate from the BC Government?
- b) How will Woodfibre LNG prevent toxins in the dumped dredging material from leaching back into the ocean?

## **ENVIRONMENT: Impacts of underwater noise on marine mammals**

According to Dr Kathy Heise from the Vancouver Aquarium, noise from the LNG tankers transiting in and out of Howe Sound is only one source of underwater noise for marine mammals. While a land-based LNG facility may reduce underwater noise, sound is still transmitted from these kinds of industrial facilities through the substrate and into the marine environment. There will also be significant underwater noise generated by the loading pumps inside the floating storage and offloading facility for the duration of the loading. The floating storage facility also needs to continuously stir the LNG which will be an additional source of noise. If the number of tankers transiting into Howe Sound increases, this will further increase the amount of significant underwater noise from both the LNG tankers transiting to and from Woodfibre LNG, and the 2-4 tugs that accompany the tankers.

More information about underwater noise and the impact of marine mammals can be seen here in this talk by expert, Kathy Heise.

[https://www.youtube.com/watch?feature=player\\_embedded&v=7EbyZwXbJ3Q](https://www.youtube.com/watch?feature=player_embedded&v=7EbyZwXbJ3Q)

## **CONCERNS WITH EA PROCESS: Inadequate time to respond to concurrent public comment periods for Woodfibre LNG and FortisBC pipeline projects**

These public comment periods are one of the only opportunities granted to the general public to have their concerns considered as part of the Environmental Assessment process. Under any circumstances, participating in this kind of process is onerous within the standard 45-60 day time limit. This is even more difficult when the public comment periods for two proposed projects are occurring at the same time.

While we appreciate that the EAO extended the public comment period to 60 days, this is still not long enough given that both projects were under review at the same time. How can the general public respond in a meaningful way in such a short timeframe? With a grand total of 12,972 pages of highly technical documents, how is asking the public to read 216 pages per day over 60 days reasonable?



Most importantly, with this huge volume of information and limited time to review and comment, does the EAO believe that it is compliant with the Federal Minister of Environment’s substitution decision, which specifically states that a goal of this substituted process is to enable “meaningful participation” by the public?

The timing of these concurrent public comment periods essentially cuts the amount of time that our communities would typically have to review these kinds of projects in half. The volume of material is simply too vast to review in the time allotted.

There is also significant concern that the timing of the District of Squamish’s public engagement during the final two weeks of the EA public comment period created additional confusion among the general public, and resulted in significantly less engagement in the EA process.

The BC Hydro open houses created additional “engagement fatigue” given their timing in the middle of these EA public comment periods.

Both the amount of time allotted for review of these projects, as well as the simultaneous public comment period is unacceptable, and we question whether this substitution process has enabled “meaningful participation” by the general public.

My Sea to Sky will be providing a more complete list of issues we have noted as we have navigated the Environmental Assessment process for these two projects in the near future.

For further information or clarifications of these key concerns, please don’t hesitate to contact us. We look forward to receiving responses regarding the key concerns outlined above, as part of the Environmental Assessment process for the proposed Woodfibre LNG project.

Sincerely,

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**Co-Founder**

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