

Proposed Woodfibre LNG Project – Comments #1301 – 1400, Table 14 of 17

The following table includes Woodfibre LNG Limited’s responses to comments #1301 - 1400 submitted to the BC Environmental Assessment Office (EAO) as part of the 60-day public comment period held between January 22 and March 23, 2015. The following table is sorted chronologically. Where multiple comments were received in one submission, they have been separated to allow for specific responses.

EAO has reviewed the public’s comments and Woodfibre LNG Limited’s responses and is satisfied that Woodfibre LNG Limited has addressed the public’s comments for the purpose of the Application stage of the Environmental Assessment for the proposed Woodfibre LNG Project. The time and effort taken by those who submitted comments to EAO during the public comment period is appreciated and all of the comments received will be considered in the Environmental Assessment of the proposed Woodfibre LNG Project.

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent’s Response	EAO’s Response
1301	March 23, 2015	Steve March - Gibsons, British Columbia	Should this project be allowed to proceed, do you think that it may be possible to request the proponent to provide a WEB based dashboard showing the surrounding water and air temperatures plus water and air censor information such as the amount of chlorine in the water and the amount of methane in the air? This would help all of us in knowing the realities of this project going forward.	Environmental Monitoring	Thank you for the suggestion. Woodfibre LNG Limited heard the request to publish data at the public open houses, and is looking into the idea further.	
1302(i)	March 23, 2015	Tennessee trent - Squamish, British Columbia	<p>The two significant concerns that I have related to the wood fibre LNG proposal have not been addressed throughout the consultation or eao process. My two concerns are greenhouse gas emissions and ground water contamination. The eao process does not consider the ghg emissions of extraction, transmission or combustion of natural gas in this proposal but if it did, the eao would understand that burning liquified natural gas is roughly equivalent to burning coal. Ghg emissions through hydraulic fracturing, fugitive emissions from pipelines and combustion of the product at the destination market release a comparable amount of ghg's than does the combustion of coal.</p> <p>This is not a clean source of energy. The fact that this is not considered by the eao shows that the process is flawed. Hydraulic fracturing generates IRge amounts of waste water which is further contaminated by compounds naturally present underground such as metals, salts and naturally occurring radioactive materials, as well as compounds intentionally added during the hydraulic fracturing process. Compounds added during fracking include methanol, ethylene glycol, naphthalene, benzene, ethylbenzene, copper or lead. The above compounds are injected with massive amounts of waste water into capped wells and can leak into ground water sources. Again, like natural gas production, the use of water resources and storage of waste water in hydraulic fracturing is not considered by the eao.</p> <p>Once again I suggest that this is a flaw in the eao process. Effects on water resources and atmospheric pollution with green house gasses must be considered when discussing and considering the wood fibre LNG proposal. These concerns are inextricable from the proposal. I cannot support the wood fibre LNG proposal because I recognize that climate change is the single biggest challenge facing</p>	GHG Emissions Hydraulic Fracturing EAO Process	<p>Thank you for your comment.</p> <p>Natural gas is the world’s cleanest burning fossil fuel, and plays an important role in reducing GHG emissions globally. However, assessing either the upstream or the downstream effects of the Project on climate change or greenhouse gas emissions is outside the scope of the environmental assessment, as defined in the section 11 order.</p> <p>Woodfibre LNG Limited is not engaged in oil or gas extraction or production activities. The gas delivered to the Project site will be supplied to the Project from western Canadian market hubs through an expansion of the existing gas transmission system by Fortis BC, and is the same gas that is supplied to Squamish, Metro Vancouver, Whistler, the Sunshine Coast and Vancouver Island through the Fortis BC pipeline system.</p> <p>Like other customers along the pipeline route, Woodfibre LNG will buy its feed gas from third party suppliers, potentially including aggregators. This natural gas will be delivered in a co-mingled stream through the Fortis BC pipeline to the site.</p> <p>Natural gas liquefied in the Woodfibre LNG facilities will be produced and processed primarily in the northeastern region of BC, but may also originate from other wells connected to the Western Canadian Gas Transmission System. The Oil &amp; Gas Commission regulates these extraction activities under the Oil &amp; Gas Activities Act and related regulations.</p> <p>Natural gas is the cleanest burning fossil fuel and has been identified as the best and most reliable way to help transition away from high-emission fuels such as oil and coal. This is particularly true in energy-hungry Asian markets, where Woodfibre LNG Limited plans to sell its product.</p>	

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			humanity. The need to maintain safe clean water is also important to me and I believe that development of a LNG industry in bc is short sighted and lacks vision. I do support industry development at wood fibre but that industry must take the reality of climate change seriously.			
1302(ii)	March 23, 2015	Tennessee trent - Squamish, British Columbia	Clearly the proposed LNG industry in bc, and the wood fibre LNG proposal as part of that, ignores the realities of climate change. We should pursue an industry that addresses these concerns rather than burying our heads in the sand while we continue with outdated industrial development models because we find change inconvenient.	LNG Industry Climate Change	<p>Current forecasts are that the global demand for energy will increase by 35% by 2035, and the specific demand for natural gas is expected to increase by 55%<sup>1</sup>.</p> <p>The increasing standards of living and rapid economic growth in Asia (6-8% GDP growth annually) are the key triggers for the increase in demand<sup>2</sup>. China's energy demand increases by 5% annually<sup>3</sup>. Not only is Asia seeking new sources of energy to meet needs (diversify), Asia is looking for cleaner alternatives (e.g. China aims to reduce coal consumption to less than 65% total energy usage by 2017)<sup>4</sup>.</p> <p>Natural gas is the cleanest burning fossil fuel and has been identified as the best and most reliable way to help transition away from high-emission fuels such as oil and coal. This is particularly true in energy-hungry Asian markets, where Woodfibre LNG Limited plans to sell its product. In fact, replacing just one 500 Megawatt coal-fired power plant with natural gas fueled power generation for one year equates to taking 557,000 cars off the roads over the same time period<sup>5</sup>.</p>	
1303(i)	March 23, 2015	Personal Information Withheld - Whistler, British Columbia	I have voted for the liberal party for my entire life. If you approve Woodfibre LNG I will be forced to vote for the Green Party. For too long Howe Sound has been abused as an industrial dumping ground.	LNG Project	<p>Thank you for your comment.</p> <p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p>	

<sup>1</sup> BP Statistical Review of World Energy Report, June 2013. < [http://www.bp.com/content/dam/bp/pdf/statistical-review/statistical\\_review\\_of\\_world\\_energy\\_2013.pdf](http://www.bp.com/content/dam/bp/pdf/statistical-review/statistical_review_of_world_energy_2013.pdf)>

<sup>2</sup> ICIS. China Natural Gas Annual Report <<http://www.icis.com/energy/channel-info-about/china-natural-gas-annual-report/>>

<sup>3</sup> Wood Mackenzie. LNG Service Tools: Understanding the dynamics of the global LNG industry < [http://public.woodmac.com/content/portal/energy/highlights/wk3\\_Nov\\_13/LNG%20Service%20and%20Tool.pdf](http://public.woodmac.com/content/portal/energy/highlights/wk3_Nov_13/LNG%20Service%20and%20Tool.pdf)>

<sup>4</sup> National Development and Reform Commission. 2014. Social Development and National Economics Statistics Bulletin 2011 – 2013.

<sup>5</sup> Centre for Liquefied Natural Gas. [http://www.lngfacts.org/resources/CLNG-PACE\\_Study\\_one-pager.pdf](http://www.lngfacts.org/resources/CLNG-PACE_Study_one-pager.pdf).

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1303(ii)	March 23, 2015	Personal Information Withheld - Whistler, British Columbia	The argument that Woodfibre LNG will deliver economic benefits to the community that outweigh the costs does not hold water. Since the Woodfibre Pulp mill has closed, Squamish's economy and community has grown, not declined. The largest contributor the growth in Squamish has been the closing of the pulp mill. Woodfibre LNG will be a step backwards for the environment and the local economy.	Economic Benefits	<p>Woodfibre LNG Limited is of the view that the Woodfibre site is the right fit for an LNG facility. It features: zoned industrial, more than 100 years of industrial use, deepwater port, access to established shipping routes, access to FortisBC pipeline, access to BC Hydro transmission grid, and access to labour force.</p> <p>Woodfibre LNG Limited is also of the view that tourism and industry can work together to create responsible economic development in Squamish. BC Ferries and Squamish Terminals have shown how industry can successfully coexist with local tourism and recreation, and Woodfibre LNG Limited is working hard to follow that example.</p> <p>An assessment of the potential effects of the Project on tourism is included in Section 6.2 Labour Market and Section 6.3 Sustainable Economy of the Application. The Application concluded that there were no Project-related significant adverse residual effects to the economy.</p> <p>Please also refer to the Sustainable Economy information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	
1304(i)	March 23, 2015	Bette Chadwick - Sechelt, British Columbia	<p>I am writing to express several concerns about the transit of LNG in super tankers in Howe Sound, not the least of which is that it seems insane to plan to ship natural gas through a congested but pristine water way. It is a disaster just waiting to happen.</p> <p>SAFETY: Siting an LNG facility in Howe Sound violates international safety standards and practices, putting 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.</p> <p>The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>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</p>	LNG Project	<p>Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 11, 13, 14, 15, 17 and 45.</p>	

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			<p>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.</p> <p>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</p> <p>ECONOMY: The requested socio-economic study has not been provided 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. 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?</p> <p>SITE SUITABILITY: The Woodfibre site 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. 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?</p> <p>Sources: <a href="http://www.cbc.ca/news/multimedia/every-fault-line-in-british-columbia-1.2919420">http://www.cbc.ca/news/multimedia/every-fault-line-in-british-columbia-1.2919420</a> Bornhold, B.D., 1983, Fiords, GEOS, no. 1, p 1-4 B.C. Ministry of Energy and Mines GOVERNMENT</p>			

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			<p>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.</p> <p>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.</p> <p>Sources: <a href="http://news.nationalgeographic.com/news/2013/10/131018-glass-sponge-reef-canada-ocean-science/M">http://news.nationalgeographic.com/news/2013/10/131018-glass-sponge-reef-canada-ocean-science/M</a> <a href="http://jordansturdymla.ca/bcltv_videos/mla-sturdy-halkett-bays-glass-sponges/">http://jordansturdymla.ca/bcltv_videos/mla-sturdy-halkett-bays-glass-sponges/</a></p>			



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1304(ii)	March 23, 2015	Bette Chadwick - Sechelt, British Columbia	I think this is a very poor location for an LNG Plant. As a resident of the Sunshine Coast and user of BC Ferries from Horseshoe Bay to Langdale, I cannot see why you are considering putting our communities at such risk. Please do not proceed with this crazy plan.	Safety	<p>At Woodfibre LNG, safety is the number one priority.</p> <p>Woodfibre LNG will be designed for the safe and efficient handling of liquefied natural gas, both on land and on water. This includes standards set out in the BC Oil and Gas Activities Act and the associated Liquefied Natural Gas Facility Regulation, national and BC building codes, as well as national and international standards, guidelines and codes of practice where there are no applicable codes for BC.</p> <p>The assessment of marine transport (e.g. Project-related vessel interactions with BC Ferries) and marine recreational boating activities is included in Section 7.3 Marine Transport of the Application. The Application concluded that with mitigation measures, there are no significant Project-related adverse effects to marine transport.</p> <p>Following detailed discussions with BC Ferries, Pacific Pilotage Authority and BC Coast Pilots, it has been determined that there will be no serious effect to BC Ferries when sharing the waterway near Horseshoe Bay with LNG carriers. Coordination with these vessels will follow normal communication protocols under the Marine Communication and Traffic Services (MCTS). Subject to the recommendations of TERMPOL, Woodfibre LNG would deploy at least three tugs in an escort pattern, at least one of which will be tethered, to provide a dynamic safety awareness zone for recreational and pleasure craft around the LNG carrier during its transit within Howe Sound. This dynamic safety awareness zone would extend up to 50 meters on either side of the vessel and up to 500 metres in front and, being dynamic in nature, would be transient with the movement of the LNG carrier. This arrangement of tugs also serves an emergency provision to address contingencies that may require the vessel to stop or engage in maneuvers at very short notice.</p> <p>Representatives from BC Ferries were also part of the HAZID identification workshop for TERMPOL.</p>	
1305(i)	March 23, 2015	Matt Maxwell - Bowen Island, British Columbia	We don't need to frack for gas: GHG emissions are unacceptable.	Hydraulic Fracturing GHG Emissions	<p>Woodfibre LNG acknowledges the expressed concern regarding hydraulic fracturing. Hydraulic fracturing activities are outside the EA scope of the Project.</p> <p>Woodfibre LNG Limited is not engaged in oil or gas extraction or production activities. The gas delivered to the Project site will be supplied to the Project from western Canadian market hubs through an expansion of the existing gas transmission system by Fortis BC, and is the same gas that is supplied to Squamish, Metro Vancouver, Whistler, the Sunshine Coast and Vancouver Island through the Fortis BC pipeline system.</p> <p>Like other customers along the pipeline route, Woodfibre LNG will buy its feed gas from third party suppliers, potentially including aggregators. This natural gas will be delivered in a co-mingled stream through the Fortis BC pipeline to the site.</p> <p>Natural gas liquefied in the Woodfibre LNG facilities will be produced and processed primarily in the northeastern region of BC, but may also originate from other wells connected to the Western Canadian Gas Transmission System. The Oil &amp; Gas Commission (OGC) regulates these extraction activities under the Oil &amp; Gas Activities Act and related regulations.</p>	

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1305(ii)	March 23, 2015	Matt Maxwell - Bowen Island, British Columbia	The shipping corridors are too narrow. For once, let's apply the Precautionary Principle.	Marine Transport	<p>LNG shipping is absolutely safe. In fact, LNG has been shipped for more than 50 years around the world without one incident of loss of containment.</p> <p>It's also important to know that Howe Sound has been an established shipping route for more than a century, and that it is well suited for the movement of LNG.</p> <p>The Accidents and Malfunctions section (Section 11.0) of the Application assessed the consequence and frequency of effects resulting from credible worst case scenarios for the Project. It showed that potential risks to the public were within the tolerable risk criteria regulated by the BC Oil and Gas Commission (OGC). The OGC will include a review of the quantitative risk assessment for this Project in the permit application review to confirm that the study and results meet the regulated requirements. Additional information on accidents and malfunctions was provided to the EAO on April 29, 2015.</p> <p>Siting of the Woodfibre LNG facility complies in every way with SIGTTO guidance as the location of the site is not within a narrow waterway as defined by SIGTTO and TERMPOL.</p> <p><i>Narrow channel/waterway</i></p> <p>TERMPOL specifies a body of navigable water of width four times the vessel's beam to be a one-way narrow channel, and seven times the beam to be a two-way narrow channel. SIGTTO specifies a body of navigable water of width five times the vessel's beam to be a one-way narrow channel. So, for a characteristic 45 metre beam LNG carrier calling at the proposed Woodfibre LNG Terminal, this would imply a width of 180 meters for a one-way narrow channel and 315 metres for a two-way narrow channel.</p> <p>The US 5th Circuit court in its judgments has specified that under Rule 9 of the International Regulations for Preventing Collisions at Sea (COLREGS) and the U.S. Inland Navigation Rules, a "narrow channel" to be 1000 feet (305 metres) while other court judgments have considered any body of water with width less than 1060% the beam of the vessel, which would be 488 metres for Woodfibre LNG, to be a narrow channel.</p> <p>SIGTTO's guidance principles also recommend turning circles to have a minimum diameter of twice the overall length of the largest LNG carrier (i.e., 600 m for Woodfibre LNG) and TERMPOL requires turning circle of 2.5 times the length, which equates to 750 m.</p> <p><i>LNG Carriers &amp; Howe Sound Shipping Channel / Route</i></p> <ul style="list-style-type: none"><li>• An LNG carrier needs a 180-metre (one way) wide channel for transit and 600 metre wide channel for turning with tugs.</li><li>• Howe Sound at its narrowest along the shipping route is 1440 metres, or 4725 feet.</li><li>• The width of Howe Sound at the proposed Woodfibre LNG terminal is 5.2km or 17,060 feet with nearest distance to Darrell Bay being 2.7 km or 8858 feet, and 60 meters deep with no large vessel movements within 2.7 km or 8858 feet.</li></ul> <p><i>Additional Information</i></p> <p>Subject to the recommendations of Transport Canada's TERMPOL Review Committee, which includes Transport Canada, Pacific Pilotage Authority, BC Coast Pilots and Canadian Coast Guard, Woodfibre LNG has always maintained that it would deploy at least three tugs in an escort pattern, at least one of which will be tethered, to provide a dynamic safety awareness zone for recreational and pleasure craft around the LNG carrier during its transit within Howe Sound. This</p>	

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					<p>dynamic safety awareness zone would extend up to 50 meters on either side of the vessel and up to 500 metres in front and, being dynamic in nature, would be transient with the movement of the LNG carrier. This arrangement of tugs also serves as an emergency provision to address contingencies that may require the vessel to stop or engage in manoeuvres at very short notice.</p> <p>Woodfibre LNG will develop a Squamish Harbour Vessel Traffic Plan to identify strategies to minimize displacement of marine-based recreational activities. As a component of the Squamish Harbour Vessel Traffic Plan, Woodfibre LNG will also work with Matthews Southwest and Bethel Lands Corporation, and District of Squamish, to minimize displacement of recreation activity by Project-associated ferry and water taxi traffic that travels to and from the Project site.</p> <p>Please also refer to the Marine Transport information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	
1306	March 23, 2015	Steve and Susanne Lawson - Tofino, British Columbia	<p>We do not want any further erosion, pollution, accidents or destruction of our watersheds, our fisheries, our transit areas or any further public water ways and shores here in B.C. by offshore and foreign owned corporations, countries and individuals. We have already lost so much it is becoming a challenge to live our traditional lifestyles here, it must stop and reverse itself to ensure that British Columbians have a long term future of clean water, air, transport areas and fisheries. You must remember your moral duty to future generations and it isn't all wrapped up in finance, it is wrapped up in a healthy environment for all, including all species. For All Our Relations, Steve and Susanne Lawson, First Nations Environmental Network of Canada</p>	<p>Effects of the Project on the Environment</p> <p>Corporate Ownership</p>	<p>Thank you for your comments.</p> <p>The Woodfibre LNG Project is owned by Woodfibre LNG Limited, a privately held Canadian company based in Vancouver with a Community Office in Squamish.</p> <p>Woodfibre LNG Limited is a subsidiary of Pacific Oil and Gas (PO&amp;G) which develops, builds, owns and operates projects throughout the energy supply chain.</p> <p>Woodfibre LNG Limited intends to operate in a manner consistent with its core values of a triple bottom line approach, where results benefit the community, the country and the company.</p> <p>Woodfibre LNG will comply with all applicable regional, provincial and federal laws, regulations, guidelines and standards including but not limited to: employment standards; health and environmental regulations and standards; taxation; and, First Nations agreements.</p> <p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p>	



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1307	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>Whilst WLNG will argue their facility and their operations will not be undertaking the extraction of fracked natural gas, its is almost impossible to disassociate the two.</p> <p>Any operation that facilitates the destruction of land as a byproduct of the requirement to fill its tankers with gas obtained using techniques whose long term effects can only be considered as significantly negative to BC's environment SHOULD have this factored into their EOA.</p> <p>Have WLNG provided information for consideration on the expected environmental impact of the number of NEW wells required to meet and maintain their supply of exported LNG?</p> <p>This information should be considered as a requirement of this project and include forecast numbers on:</p> <p>Deforestation required to establish each extraction pad Deforestation required to provide access roads to each extraction pad Volume of water required for each extraction operation Volume of chemicals required Volume of sand required Percentage of used water which will be returned to a potable state Volume of toxins and waste product retained in the well Volume of toxins and waste returned to the surface Percentage of toxins and waste products remediated</p> <p>C02 emmissions of each well head through its life span (to include emissions during creation of infrastructure, construction of well site, operation of well site, clean up of wlel site and shut down of well site) What happens when these wells are shut down/ Are these well heads then returned to prior condition? Refortested, infrastructure removed to allow regeneration of the forest etc?</p> <p>So many concerns that extend past the WLNG site itself but all this that should be factored into the projects consideration when WLNG may well be the only customer that requires the potential addition of 50,000 well sites here in Northern BC.</p> <p>Without providing approval to this 'export service provider', massive ecological damage can and will be mitigated!</p>	Hydraulic Fracturing	<p>Thank you for your comments.</p> <p>Natural gas is the world's cleanest burning fossil fuel, and plays an important role in reducing GHG emissions globally. However, assessing either the upstream or the downstream effects of the Project on climate change or greenhouse gas emissions is outside the scope of the environmental assessment, as defined in the section 11 order.</p> <p>Woodfibre LNG Limited is not engaged in oil or gas extraction or production activities. The gas delivered to the Project site will be supplied to the Project from western Canadian market hubs through an expansion of the existing gas transmission system by Fortis BC, and is the same gas that is supplied to Squamish, Metro Vancouver, Whistler, the Sunshine Coast and Vancouver Island through the Fortis BC pipeline system.</p> <p>Like other customers along the pipeline route, Woodfibre LNG will buy its feed gas from third party suppliers, potentially including aggregators. This natural gas will be delivered in a co-mingled stream through the Fortis BC pipeline to the site.</p> <p>Natural gas liquefied in the Woodfibre LNG facilities will be produced and processed primarily in the northeastern region of BC, but may also originate from other wells connected to the Western Canadian Gas Transmission System. The Oil &amp; Gas Commission (OGC) regulates these extraction activities under the Oil &amp; Gas Activities Act and related regulations.</p>	

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1308(i)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	I would like to express my concerns about the tanker traffic in Howe Sound mixing with the ferries and pleasure craft.	Marine Transport	<p>Thank you for your comments.</p> <p>According to the Canadian Coast Guard, there were a total of 12,909 large vessel movements in Howe Sound in 2013, all enabled by existing navigational aids along the route. The Woodfibre LNG Project will bring three to four LNG carriers to the site each month. The carriers will navigate through the established commercial shipping route in/out of Howe Sound (through Queen Charlotte Channel) to the Strait of Georgia and out to the Pacific Ocean.</p> <p>Section 7.3.2.3.4 Small Vessel Traffic of the Application includes data on recreational boating routes and destinations, and marine based tourism activities. The assessment of marine transport concludes that with mitigation measures, there are no significant Project-related adverse effects to marine transport. Examples of mitigation measures that will be implemented include: preparing and implementing a Marine Transport Management Plan, installing aids and navigational lights in the Control Zone based on the Navigation Protection Act review process, and notifying the relevant authorities so that Notices to Mariners and Notices to Shipping can be issued.</p> <p>Following detailed discussions with BC Ferries, Pacific Pilotage Authority and BC Coast Pilots, it has been determined that there will be no serious effect to BC Ferries when sharing the waterway near Horseshoe Bay with LNG carriers. Coordination with these vessels will follow normal communication protocols under the Marine Communication and Traffic Services (MCTS). Subject to the recommendations of TERMPOL, Woodfibre LNG would deploy at least three tugs, at least one of which will be tethered, in an escort pattern to provide a dynamic safety awareness zone for recreational and pleasure craft around the LNG carrier during its transit within Howe Sound. This dynamic safety awareness zone would extend up to 50 meters on either side of the vessel and up to 500 metres in front and, being dynamic in nature, would be transient with the movement of the LNG carrier. This arrangement of tugs also serves as an emergency provision to address contingencies that may require the vessel to stop or engage in maneuvers at very short notice. The carriers will be piloted by BC Coast Pilots who are experts with Howe Sound navigation.</p> <p>Woodfibre LNG Limited has committed to further consultation with recreation stakeholder groups in Howe Sound to identify concerns and, where practical, additional mitigation measures to reduce effects.</p> <p>Please also refer to the Marine Transport and Marine Recreation information sheets that have been prepared as part of the Woodfibre LNG Limited responses to public comments.</p>	

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1308(ii)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	I'm afraid that the tankers by avoiding their path could seriously impact the glass sponge reefs which do not exist anywhere else in the world! Also how will these tankers affect the mammals ie orcas and dolphins that have returned to our area?	Effects of the Project on Glass Sponge Reefs, Marine Mammals	<p>Glass sponges are addressed in both the Application document (Section 5.16.2.4.1) and Marine Baseline Studies Report (Appendix 5.10).</p> <p>Woodfibre LNG expects that three to four LNG carriers will arrive at the site each month. The carriers will navigate through the established commercial shipping route in/out of Howe Sound (through Queen Charlotte Channel) to the Strait of Georgia and out to the Pacific Ocean. The carriers will be escorted by at least three tug boats, at least one of which will be tethered, and will be piloted by BC Coast Pilots who are experts with Howe Sound navigation.</p> <p>The minimum water depth along the shipping route is 60 metres, and the LNG carriers draft will sit approximately 12 metres to 15 metres below the water surface.</p> <p>The sailing line (shipping route) is a minimum of 1300 metres (and typically more than 1500 metres) from the location of the sponge reefs located at Halkett Point and Lost Reef between Pam rocks and Christie Islets. At depths ranging between 20 m and 40 m (i.e., associated depths where glass sponge reefs have been observed at these locations), the velocity produced by a propeller wash is considered negligible due to dissipation of the prop-wash with distance from sailing line.</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the Fisheries Act. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>For more information on the effects of the Project on marine water quality please refer to Section 5.10 Marine Water Quality. Additional components of the marine environment that have been assessed include Freshwater Fish and Fish Habitat (Section 5.15), Marine Benthic Habitat (Section 5.16), Forage Fish and Other Fish (Marine) (Section 5.18) and Marine Mammals (Section 5.19). A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. The Application concluded that there were no Project-related significant adverse residual effects to the environment.</p> <p>The assessment of potential effects of the Project on marine mammals in Howe Sound is described in Section 5.19 of the Application. The most common marine mammal species reported in the upper reaches of Howe Sound, closest to the Project area, are harbour seals, Pacific white-sided dolphins, and killer whales. Additional marine mammals that are sighted in Howe Sound include humpback whales, minke whales, grey whales, harbour porpoises, sea lions, harbour seals and porpoises.</p> <p>The assessment indicated that vessel traffic may cause a short-term change in behaviour of marine mammals due to underwater noise. Woodfibre LNG Limited will develop and implement Underwater Noise Management Plan and a Marine Mammal Management Plan. These plans will include mitigation measures designed to address adverse effects and cumulative effects from underwater noise and monitoring programs.</p>	

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					<p>Woodfibre LNG Limited will retain a contractor to perform underwater acoustic monitoring for pre, during and post Project construction. The underwater monitoring will collect underwater sound levels and marine mammal presence (e.g., of those species present, their frequency and seasonality). This will contribute further to baseline information for both underwater sound levels and mammal presence in the Project area and in the vicinity of the Project site to monitor potential changes of marine mammals over time.</p> <p>Please also refer to the Marine Mammals information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	
1308(iii)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>And last but not least, how is this going to impact our growing tourism industry? People are coming here to drive this amazing sea to sky highway with its beautiful ocean, islands and mountain views as well as sighting ocean mammals. These humongous tankers in the water will seriously deter tourists to come to see our breathtaking scenic sound!</p>	Effects of the Project on Tourism	<p>Woodfibre LNG Limited is of the view that the Woodfibre site is the right fit for an LNG facility. It features: zoned industrial, more than 100 years of industrial use, deepwater port, access to established shipping routes, access to FortisBC pipeline, access to BC Hydro transmission grid, and access to labour force.</p> <p>Woodfibre LNG Limited is also of the view that tourism and industry can work together to create responsible economic development in Squamish. BC Ferries and Squamish Terminals have shown how industry can successfully coexist with local tourism and recreation, and Woodfibre LNG Limited is working hard to follow that example.</p> <p>An assessment of the potential effects of the Project on tourism is included in Section 6.2 Labour Market and Section 6.3 Sustainable Economy. The Application concluded that there were no Project-related significant adverse residual effects to the economy.</p> <p>The Application assesses the potential effects of the Project to outdoor recreation in Section 7.4 Land and Resource Use. With the proposed mitigation, it is not likely that there will be significant residual effects to outdoor recreation.</p>	

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1309	March 23, 2015	Jaime Dunn - Squamish, British Columbia	Approving Woodfibre LNG could bring the town of Squamish into a decline. For that last few years, we have seen growth in this town (actually since the closing of the mill), so it seems crazy to mess that up now. I feel that I owe it to my children to fight against everything this stands for. My life may already be taken down by some kind of cancer caused from businesses like Woodfibre LNG, but surely we can assist in cleaning it up to protect our kids and their generation. Perhaps thinking about a way to save tax money is to look at opportunities that create a healthier society, which takes burden off the public health care system, NOT create more opportunity for people to get sick and create more burden on the health care system.	Human Health	<p>Thank you for your comments.</p> <p>The Woodfibre LNG Project will be powered by electricity from BC Hydro. By powering the plant with electricity, instead of natural gas, Woodfibre LNG will reduce its greenhouse gas emissions by about 80%. This will make Woodfibre LNG one of the cleanest LNG facilities in the world.</p> <p>The majority of Woodfibre LNG air emissions will come from elements removed from the natural gas prior to liquefaction, which are incinerated.</p> <p>Estimated emissions in tonnes per year for the LNG plant powered by electric drive vs. the plant powered by gas turbines:</p> <table><tr><th></th><th>Electric Drive</th><th>Gas Turbine</th></tr><tr><td>GHG</td><td>80,000</td><td>450,000</td></tr><tr><td>NOx</td><td>20</td><td>310</td></tr><tr><td>SOx</td><td>17</td><td>17</td></tr></table> <p>As part of the Application, air dispersion modelling based on planned activities and equipment use — including marine vessels and flaring — were undertaken to predict air emissions from the Project operation phase. Baseline air quality data from Langdale, Squamish, and Horseshoe Bay were used in the model. The results of the dispersion modelling were compared against federal and provincial ambient air quality criteria. All predicted concentrations were below the air quality criteria.</p> <p>Woodfibre LNG Limited expects that monitoring of plant air emissions will be required as part of the waste discharge permit under section 14 of the <i>Environmental Management Act</i>,</p> <p>At peak capacity, the Project will have a greenhouse gas intensity of 0.059 t CO2e per tonne LNG, which is well below the threshold of 0.16 t CO2e per tonne LNG in the Greenhouse Gas Industrial Reporting and Control Act.</p> <p>Section 9.2.2 Human Health Risk Assessment included an assessment of the potential effects on humans by Project-related emissions. The purpose of the human health risk assessment (HHRA) is to quantify the potential health risks to people from the baseline case (present-day) and application case (predicted using modelling) environmental quality in the Project area, and to determine any effects resulting from the Project. The Application concluded that there were no Project-related significant adverse effects to human health.</p> <p>Please also refer to the Air Quality information sheet that has been prepared as part of the Woodfibre LNG response to public comments.</p>		Electric Drive	Gas Turbine	GHG	80,000	450,000	NOx	20	310	SOx	17	17	
	Electric Drive	Gas Turbine																
GHG	80,000	450,000																
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1310	March 23, 2015	Angela Rivers - Squamish, British Columbia	<p>SAFETY: Siting an LNG facility in Howe Sound violates international safety standards and practices, putting 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.</p> <p>The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards</p> <p>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.</p> <p>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.</p> <p>HEALTH: Social costs and health impacts of air pollution Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrous oxides (NOx) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Emissions of NOx and SO2 interact with other compounds to form fine particles, which can affect both the lungs and the heart. Exposure to</p>	LNG Project	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 11-21, 46.	

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			<p>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.</p> <p>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.</p> <p>Sources:</p> <p>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</p> <p>SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility</p> <p>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. 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?</p> <p>Source: B.C. Ministry of Energy and Mines</p> <p>ECONOMY: The requested socio-economic study has not been provided</p> <p>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. 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?</p>			

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			<p>CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable</p> <p>Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year. These annual emissions of CO2 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.</p> <p>GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues</p> <p>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.</p> <p>ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life</p> <p>Woodfibre LNG has bought the water license to take water from Mill Creek. 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</p> <p>ENVIRONMENT: Missing baseline studies</p> <p>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 project.</p> <p>VIEWSCAPES: BC Hydro clearcut of two 64 metre swaths of forest at the Woodfibre site will impact viewscapes from the Sea to Sky highway and the gondola</p> <p>BC Hydro is proposing to clearcut 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 highway and the gondola. This information was only made available</p>			

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			<p>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 is unsatisfactory.</p> <p>ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?</p> <p>Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Nitrogen Dioxide (NO2) 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.</p> <p>In combination with either ozone (O3) or sulphur dioxide (SO2), nitrogen dioxide may cause injury at even lower concentration levels.Sulphur Dioxide (SO2) is a toxic gas with a pungent, irritating, and rotten smell. Current scientific evidence links short-term exposures to SO2, 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).</p> <p>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 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.</p> <p>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 are of particular concern for infants, the elderly, and is directly linked to health issues such as lung or heart disease and asthma.</p>			

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1311	March 23, 2015	Eoin Finn - Bowyer Island, British Columbia	<p>In support of my comments re Safety- Tanker traffic through Howe Sound, I submit the key graphic in the 2004 Sandia report which shows the likely result of an LNG spill over water. This clearly shows the results of the seminal Sandia report- LNG does not, as uninformed commenters have speculated, simply vapourize into the upper atmosphere. There is an interim phase where the cold fog of methane vapour poses a severe threat to ship personnel and onshore populations within 2 miles of the tankers' path.</p> <p>I want to request, as is done in the US and elsewhere, that the EA process be halted until the hazard posed by LNG tankers in Howe Sound is thoroughly studied and resolved. A voluntary TERMPOL process is quite insufficient in that regard.</p>	Marine Safety	<p>Thank you for your comment.</p> <p>Liquefied natural gas has been shipped safely around the world for more than 50 years. There has never been a recorded incident involving a loss of containment of an LNG carrier at sea. LNG carriers are among the most modern and sophisticated ships in operation. These ships have robust containment systems, double-hull protection and are heavily regulated by international and federal standards.</p> <p>In the unlikely event there is a spill from an LNG carrier, LNG will never mix with water. Instead, it will quickly return to a gas state, and because methane is lighter than air, the gas will rise and dissipate into the air.</p> <p>The Accidents and Malfunctions section (Section 11.0) of the Application assessed the consequence and frequency of effects resulting from credible worst case scenarios for the Project. It showed that potential risks to the public were within the tolerable risk criteria regulated by the BC Oil and Gas Commission (OGC). The OGC will include a review of the quantitative risk assessment for this Project in the permit application review to confirm that the study and results meet the regulated requirements. Additional information on accidents and malfunctions was provided to the EAO on April 29, 2015..</p> <p>Please also refer to Public Safety and Marine Transport information sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments</p>	
1312(i)	March 23, 2015	Tamara Soloway - Bowen Island, British Columbia	<p>Dear Environmental Assessment Office,</p> <p>I am a third generation Bowen Islander- and I have recently moved back 'home' to Bowen Island to raise my two children (the fourth generation) because of my deep appreciation and love for the island and the local waters/nature that surrounds it.</p> <p>Young families like mine are drawn to this area for obvious reasons (e.g. for its beauty and safety), but other less obvious, and even more important, reasons exist too. Young families move to Bowen to SURVIVE. Vancouver is exceedingly expensive and out of reach for so many of us. So, Bowen Island is seen as an alternative; a place to call home that is affordable. As such, most of the working age islanders commute daily to the mainland for work. We are a bedroom community. We rely on employment in the 'city'. We rely on BC ferries. We are dependent on BC ferries to get us to work on time' and bring us home to our children and families for dinner. At the best of times, the ferries are subject to many factors that cause delays, thus it seems absolutely IMPOSSIBLE that the existing ferry sailings won't be affected by 30 LNG supertanker trips per month each way!!!!</p> <p>Our livelihoods depend on a reliable ferry service. Even just one delay is too much.</p> <p>Not to mention the risk that ferry delays may have on the islanders' health? Medical appointments for chronic disease and chemotherapy, urgent care needs (e.g. gashes that require stitches), women in labour....etc...This isn't just a matter of convenience- these are islanders' lives we are gambling with.</p> <p>I could go on... but my top two objections concern</p>	Marine Traffic	<p>Thank you for your comments</p> <p>According to the Canadian Coast Guard, there were a total of 12,909 large vessel movements in Howe Sound in 2013, all enabled by existing navigational aids along the route. The Woodfibre LNG Project will bring three to four LNG carriers to the site each month. The carriers will navigate through the established commercial shipping route in/out of Howe Sound (through Queen Charlotte Channel) to the Strait of Georgia and out to the Pacific Ocean.</p> <p>Section 7.3.2.3.4 Small Vessel Traffic of the Application includes data on recreational boating routes and destinations, and marine based tourism activities. The assessment of marine transport concludes that with mitigation measures, there are no significant Project-related adverse effects to marine transport. Examples of mitigation measures that will be implemented include: preparing and implementing a Marine Transport Management Plan, installing aids and navigational lights in the Control Zone based on the Navigation Protection Act review process, and notifying the relevant authorities so that Notices to Mariners and Notices to Shipping can be issued.</p> <p>Following detailed discussions with BC Ferries, Pacific Pilotage Authority and BC Coast Pilots, it has been determined that there will be no serious effect to BC Ferries when sharing the waterway near Horseshoe Bay with LNG carriers. Coordination with these vessels will follow normal communication protocols under the Marine Communication and Traffic Services (MCTS). There is currently no regulation which stipulates an exclusion zone in Canada; however, subject to the recommendations of TERMPOL, Woodfibre LNG would deploy at least three tugs, at least one of which will be tethered, in an escort pattern to provide a dynamic safety awareness zone for recreational and pleasure craft around the LNG carrier during its transit within Howe Sound. This dynamic safety awareness zone would extend up to 50 meters on either side of the vessel and up to 500 metres in front and, being dynamic in nature, would be transient with the movement of the LNG carrier. This arrangement of tugs also</p>	



Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
			<p>tanker traffic and sea water 'health'. My concerns/demands are succinctly described in the following passages:</p> <p>1. Woodfibre LNG must be required to provide details of a complete study of the recreational traffic in Howe Sound – ferries, sailboats, power boats, tour boats, kayaks, etc.</p> <p>Once this is done, a further study of how the presence of these large LNG tankers and their escort of tugs and fuel barges, and the necessary exclusion zones, will affect this traffic.</p> <p>Please ensure these studies are done when there is summer traffic in Howe Sound. Note, there are at least 60 ferry sailings in and out of Horseshoe Bay every day, year round.</p>		<p>serves as an emergency provision to address contingencies that may require the vessel to stop or engage in maneuvers at very short notice. The carriers will be piloted by BC Coast Pilots who are experts with Howe Sound navigation.</p> <p>Woodfibre LNG Limited has committed to further consultation with recreation stakeholder groups in Howe Sound to identify concerns and, where practical, additional mitigation measures to reduce effects.</p> <p>Please also refer to the Marine Transport and Marine Recreation information sheets that have been prepared as part of the Woodfibre LNG Limited responses to public comments.</p>	
1312(ii)	March 23, 2015	Tamara Soloway - Bowen Island, British Columbia	<p>2. The system of bulk, "one time through" sea water cooling has recently been DECLARED ILLEGAL on the "open to the Pacific Ocean", California coast because of the extreme damage it has already done to sea life there. Most of the California oil and nuclear plants have recently been converted to "Air Cooling", at great expense. How can our Governments possibly even consider allowing one-time-through cooling in the confined waters of Howe Sound.</p> <p>How can you, our elected Government and Protector, consider allowing the desiccation and destruction of our Howe Sound, OUR CANADA?</p>	Seawater Cooling System	<p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>In LNG facilities, seawater cooling is used primarily to remove waste heat generated from the main refrigerant compressors, which are used to cool the gas. Seawater cooling is used widely, including in about half of the LNG facilities currently in operation in the world. Seawater cooling is energy efficient, and produces less environmental noise and less visual effects than air cooling.</p> <p>California did not ban seawater cooling. Section 316(b) of the US Clean Water Act requires the Environmental Protection Agency (EPA) to issue regulations on the design and operation of intake structures, in order to minimize adverse environmental impacts<sup>6</sup>. The EPA brought regulations into force in 2014 that cover facilities that withdraw more than two million gallons per day (315 m<sup>3</sup>/h) of cooling water. These regulations govern the controls that must be in place at new and existing plants related to entrainment and impingement of marine organisms.</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the <i>Fisheries Act</i>. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>For more information on the effects of the Project on marine water quality please refer to Section 5.10 Marine Water Quality. Additional components of the marine environment that have been assessed include Freshwater Fish and Fish Habitat (Section 5.15), Marine Benthic Habitat (Section 5.16), Forage Fish and Other Fish (Marine) (Section 5.18) and Marine Mammals (Section 5.19). A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include</p>	

<sup>6</sup> Source: <http://water.epa.gov/lawsregs/lawsguidance/cwa/316b/upload/Final-Regulations-to-Establish-Requirements-for-Cooling-Water-Intake-Structures-at-Existing-Facilities.pdf>

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
					mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that there were no Project-related significant adverse residual effects to the environment. Additional information on the seawater cooling system intake and discharge was provided to the EAO on April 23, 2015. Please also refer to the Seawater Cooling System Information Sheet that has been prepared as part of the Woodfibre LNG Limited Response to Public Comments.	
1313(i)	March 23, 2015	John Gellard - Vancouver, British Columbia	Fracking is bad for BC. LNG will not make any money anyway.	Hydraulic Fracturing LNG Industry	<p>Thank you for your comments.</p> <p>Woodfibre LNG acknowledges the expressed concern regarding hydraulic fracturing. Hydraulic fracturing activities are outside the EA scope of the Project.</p> <p>Woodfibre LNG Limited is not engaged in oil or gas extraction or production activities. The gas delivered to the Project site will be supplied to the Project from western Canadian market hubs through an expansion of the existing gas transmission system by Fortis BC, and is the same gas that is supplied to Squamish, Metro Vancouver, Whistler, the Sunshine Coast and Vancouver Island through the Fortis BC pipeline system.</p> <p>Like other customers along the pipeline route, Woodfibre LNG will buy its feed gas from third party suppliers, potentially including aggregators. This natural gas will be delivered in a co-mingled stream through the Fortis BC pipeline to the site.</p> <p>Natural gas liquefied in the Woodfibre LNG facilities will be produced and processed primarily in the northeastern region of BC, but may also originate from other wells connected to the Western Canadian Gas Transmission System. The Oil &amp; Gas Commission (OGC) regulates these extraction activities under the Oil &amp; Gas Activities Act and related regulations.</p>	
1313(ii)	March 23, 2015	John Gellard - Vancouver, British Columbia	It is more important to preserve the nature of Howe Sound than to make it another "Sacrifice Zone" to enrich the elite.	Value of Howe Sound	<p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>For more information on the effects of the Project on marine water quality please refer to Section 5.10 Marine Water Quality. Additional components of the marine environment that have been assessed include Freshwater Fish and Fish Habitat (Section 5.15), Marine Benthic Habitat (Section 5.16), Forage Fish and Other Fish (Marine) (Section 5.18) and Marine Mammals (Section 5.19). A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that there were no Project-related significant adverse residual effects to the environment.</p>	

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1314(i)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	Apart from all the environmental concerns and setting a bad example once again to the world of not supporting renewable energy.	Climate Change	<p>Thank you for your comments</p> <p>Natural gas is the cleanest burning fossil fuel and has been identified as the best and most reliable way to help transition away from high-emission fuels such as oil and coal. This is particularly true in energy-hungry Asian markets, where Woodfibre LNG Limited plans to sell its product. In fact, replacing just one 500 Megawatt coal-fired power plant with natural gas fueled power generation for one year equates to taking 557,000 cars off the roads over the same time period<sup>7</sup>.</p> <p>Section 5.3 Greenhouse Gas Management of the Application includes an assessment of the potential Project-related effects to greenhouse gases. The influence of Project-related greenhouse gas emissions on climate change was evaluated by assessing whether any measurable change in climate could result from the Project-generated greenhouse gas emissions. The relatively minor increase in global emissions associated with the Project would correspond to a change in climate that is unlikely to be measurable.</p>	
1314(ii)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	Another concern was brought to my attention that LNG ports are terrorist targets.	Safety	<p>Transport Canada's marine security programs, including strategies, programs and regulations, protect and preserve the efficiency of Canada's marine transportation system against unlawful interference, terrorist attacks or use as a means to attack our allies. (see <a href="http://www.tc.gc.ca/eng/marinesecurity/menu.htm">http://www.tc.gc.ca/eng/marinesecurity/menu.htm</a>)</p> <p>In addition, as part of the OGC permitting process, Woodfibre LNG Limited will be required to prepare a Safety and Loss Management Plan, which will include an emergency response plan and a security management plan. In addition, the site will be fenced and a control zone around the marine portion of the Project area will be established. The objective for the control zone and fencing is for public safety reasons, but will also be designed to prevent access by saboteurs.</p> <p>Security for LNG carriers in transit will be addressed by the Canadian Coast Guard and Transport Canada. It is unlikely that an attack on a LNG carrier would successfully penetrate an LNG container and result in loss of containment, given the multiple layers of steel that would need to be penetrated. The consequence and frequency for a worst case scenario for potential loss of containment of LNG on an LNG carrier due to grounding and collision with another vessel is considered in Appendix 11-1 of the Application.</p> <p>Is it not anticipated that penetration of an LNG container on an LNG carrier would result in an explosion. It is not anticipated that a collision can result in damage to more than one container. Additional analysis for marine risks will be carried out during the TERMPOL assessment for the Project.</p> <p>Please also refer to the Public Safety information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

<sup>7</sup> Centre for Liquefied Natural Gas. [http://www.lngfacts.org/resources/CLNG-PACE\\_Study\\_one-pager.pdf](http://www.lngfacts.org/resources/CLNG-PACE_Study_one-pager.pdf).

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1315	March 23, 2015	Laurie Parkinson - Bowyer Island, British Columbia	<p>Marine Mammals pg 5.19-36 5.19.3.2.2 end of first paragraph</p> <p>Marine mammals that enter the vicinity of the LAA will likely have prior experience of exposure to large vessels (eg deep see cargo and BC ferries) that contribute to existing background (ambient) noise levels.</p> <p>The marine mammals communicate with sound, and the more large vessel movements there are, the noisier it is for them, the harder life will be for them, and the less they will come around here.</p> <p>Why was ambient marine noise only measured once, for only 9 hours, with no info re whether ships were going by or not? Why was the computer model used to analyze - a 2D computer model? The EA states that good 3D models are available.</p>	Effects of the Project on Marine Mammals	<p>Thank you for your question.</p> <p>The practical spreading loss model is a conservative model developed and endorsed by the National Oceanic and Atmospheric Administration and other U.S. regulatory agencies, using National Marine Fisheries Service-promulgated thresholds, for assessing pile driving impacts on marine mammals. Since there is no available data regarding propagation loss along the Project waterfront, the practical spreading loss model was adopted as a conservative approximation of the sound propagation environment.</p> <p>This model is commonly used by federal regulatory agencies to obtain an estimate of sound levels around a source. This was deemed to be sufficient for the purpose of Project, given that mitigation during construction includes marine mammal monitoring by a certified Marine Mammal Observer within a set safety zone during pile driving activities (with application of shutdowns as necessary), as well as regular verification of underwater sound levels in the field during construction (i.e., using a hydrophone and a real-time sound monitor to confirm that sound levels at the modeled safety zone radius are below the established injury thresholds for marine mammals).</p> <p>There were several active vessels present in the area during ambient underwater acoustic monitoring baseline survey and sounds from these vessels were analyzed on the recording. Vessel noise is discussed in Appendix 5.10-1 Marine Resources Baseline Study.</p> <p>Appendix 5.10-1 Marine Resources Baseline Study specifically discusses several contributing factors to the recorded underwater noise ambient levels during the 9-hour recording, including 'several broadband increases in pressure spectral density {~115 dB SPL at ~ 1000 Hz} that are evident in the spectra plot (Figure 63), particularly over the first half of the recording. These periodic increases up to 40 min in length are reflective of ship/vessel traffic transiting through the Howe Sound area during the recording.</p> <p>The ambient underwater noise data collected over the 9 hour period was intended to provide a snapshot of ambient noise over a full tidal cycle under 'fair' environmental conditions (wind speed =10 knots; &lt;1m sea state; 3m tide switch) during which several ship movements in the LAA would be captured and were recorded.</p> <p>Providing a longer time series of ambient underwater noise data would not affect the conclusions of the assessment, it would simply provide a more accurate bracketing of daily noise levels. Ambient underwater noise levels would likely always be well below the established injury thresholds for marine mammals, which are the thresholds applied during mitigation/management planning (marine mammal safety zones, shut downs, etc).</p> <p>It should be noted that, in addition to marine mammal monitoring that will be conducted during construction activities (e.g. pile driving), Woodfibre LNG Limited will retain a contractor to perform underwater acoustic monitoring for pre, during and post Project construction. The underwater monitoring will collect underwater sound levels and marine mammal presence (e.g., of those species present, their frequency and seasonality). This will contribute further to baseline information for both underwater sound levels and mammal presence in the Project area and in the vicinity of the Project site to monitor potential changes of marine mammals over time.</p>	

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1316(i)	March 23, 2015	Personal Information Withheld - Bowen Island, British Columbia	I would like to comment on the proposed Woodfibre LNG facility in Squamish BC and declare my opposition to this plan. I am especially concerned about the tanker traffic and environmental impacts of such as heavy industrial facility.	Effects of the Project on the Environment	<p>Thank you for your comment.</p> <p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p>													
1316(ii)	March 23, 2015	Personal Information Withheld - Bowen Island, British Columbia	<p>Bowen Island and the beautiful Howe Sound, of which Bowen is an integral part, is my home and sanctuary. I grew up and spent the majority of my life on Bowen Island where I am now raising my own kids I understand economic development is important however I feel this can be achieved in ways that are more suitable for the citizens who reside in this area.</p> <p>I feel this project will have a negative impact on the quality of life for residents of Howe Sound as well as the wildlife.</p>	Effects of the Project on Social Values	<p>The Woodfibre LNG Project will be powered by electricity from BC Hydro. By powering the plant with electricity, instead of natural gas, Woodfibre LNG will reduce its greenhouse gas emissions by about 80%. This will make Woodfibre LNG one of the cleanest LNG facilities in the world.</p> <p>The majority of Woodfibre LNG air emissions will come from elements removed from the natural gas prior to liquefaction, which are incinerated.</p> <p>Estimated emissions in tonnes per year for the LNG plant powered by electric drive vs. the plant powered by gas turbines:</p> <table><tr><th></th><th>Electric Drive</th><th>Gas Turbine</th></tr><tr><td>GHG</td><td>80,000</td><td>450,000</td></tr><tr><td>NOx</td><td>20</td><td>310</td></tr><tr><td>SOx</td><td>17</td><td>17</td></tr></table> <p>As part of the Application, air dispersion modelling based on planned activities and equipment use — including marine vessels and flaring — were undertaken to predict air emissions from the Project operation phase. Baseline air quality data from Langdale, Squamish, and Horseshoe Bay were used in the model. The results of the dispersion modelling were compared against federal and provincial ambient air quality criteria. All predicted concentrations were below the air quality criteria.</p> <p>Woodfibre LNG Limited expects that monitoring of plant air emissions will be required as part of the waste discharge permit under section 14 of the <i>Environmental Management Act</i>.</p> <p>At peak capacity, the Project will have a greenhouse gas intensity of 0.059 t CO2e per tonne LNG, which is well below the threshold of 0.16 t CO2e per tonne LNG in the Greenhouse Gas Industrial Reporting and Control Act.</p> <p>Section 9.2.2 Human Health Risk Assessment included an assessment of the potential effects on humans by Project-related emissions. The purpose of the human health risk assessment (HHRA) is to quantify the potential health risks to people from the baseline case (present-day) and application case (predicted using modelling) environmental quality in the Project area, and to determine any effects resulting from the Project. The Application concluded that there were no Project-related significant adverse effects to human health.</p> <p>Please also refer to the Air Quality information sheet that has been prepared as part of the Woodfibre LNG response to public comments.</p>		Electric Drive	Gas Turbine	GHG	80,000	450,000	NOx	20	310	SOx	17	17	
	Electric Drive	Gas Turbine																
GHG	80,000	450,000																
NOx	20	310																
SOx	17	17																



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1316(iii)	March 23, 2015	Personal Information Withheld - Bowen Island, British Columbia	<p>Furthermore, Howe Sound has a number of small tourism based businesses that will be impacted by this project. WLNG offers very little benefits for local residents and in my opinion very high costs. For me personally I see absolutely zero benefits and horrible costs which I am unwilling to bare.</p> <p>Please do not allow this project to go forward. For the sake of all this who live here and love this area.</p>	Effects of the Project on Tourism	<p>Woodfibre LNG Limited is of the view that the Woodfibre site is the right fit for an LNG facility. It features: zoned industrial, more than 100 years of industrial use, deepwater port, access to established shipping routes, access to FortisBC pipeline, access to BC Hydro transmission grid, and access to labour force.</p> <p>Woodfibre LNG Limited is also of the view that tourism and industry can work together to create responsible economic development in Squamish. BC Ferries and Squamish Terminals have shown how industry can successfully coexist with local tourism and recreation, and Woodfibre LNG Limited is working hard to follow that example.</p> <p>An assessment of the potential effects of the Project on tourism is included in Section 6.2 Labour Market and Section 6.3 Sustainable Economy. The Application concluded that there were no Project-related significant adverse residual effects to the economy.</p> <p>The Application assesses the potential effects of the Project to outdoor recreation in Section 7.4 Land and Resource Use. With the proposed mitigation, it is not likely that there will be significant residual effects to outdoor recreation.</p> <p>Please also refer to the Sustainable Economy information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	
1317	March 23, 2015	Michael Caines - Squamish, British Columbia	<p>Will the LNG tankers use ballast systems? Will water from other ecosystems be dumped in Howe Sound? Could this have an affect on the ecosystems of the Squamish estuary and Howe sound?</p>	Ballast Water	<p>Thank you for your comments.</p> <p>LNG carriers must comply with the <i>Canada Shipping Act 2011</i>, Ballast Water Control and Management Regulations. The regulations state that ballast taken onboard a vessel outside of waters under Canadian jurisdiction must be discharged at least 200 nautical miles from shore where water depth is at least 2000 m in order to avoid aquatic invasive species from foreign waters entering Canadian jurisdiction.</p> <p>In addition, all LNG carriers will comply with the International Maritime Organization (IMO) Regulations, MARPOL Annex IV (Prevention of Pollution by Sewage from Ships) and Annex V (Prevention of Pollution by Garbage from Ships). The LNG carriers will carry an International Sewage Pollution Prevention Certificate and Garbage Management Plan that prohibit the discharge of any wastewater or garbage within ports or offshore terminals.</p> <p>Further, as the LNG carriers proceeding to Squamish will initially enter US waters, they must comply with the US Environmental Protection Agency requirements for the National Pollutant Discharge Elimination System Vessel General Permit for Discharges Incidental to the Normal Operation of Vessels.</p>	

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1318(i)	March 23, 2015	Candace Maines - Squamish, British Columbia	I have a young family and have just recently moved back to squamish to avoid the pollution of the city and to live a healthy lifestyle. Air quality is the most important aspect of LNG that concerns me. I don't want to raise my daughter in a place that would cause her respiratory problems.	Effects of the Project on Air Quality	<p>The Woodfibre LNG Project will be powered by electricity provided by BC Hydro. By powering the plant with electricity, instead of natural gas, greenhouse gas emissions will be reduced by about 80%. This will make Woodfibre LNG one of the cleanest LNG facilities in the world.</p> <p>Woodfibre LNG undertook air dispersion modelling based on planned activities and equipment use — including marine vessels — to predict air emissions from the Project operation phase. The results of the dispersion modelling were compared against federal and provincial standards and guidelines; and all predicted concentrations were below these standards and guidelines.</p> <p>Woodfibre LNG characterized current climate and climate trends using the Squamish Airport climate station. At peak capacity, the Project will have a greenhouse gas intensity of 0.059 t CO2e per tonne LNG, which is below the threshold of 0.16 t CO2e per tonne LNG in the Greenhouse Gas Industrial Reporting and Control Act.</p> <p>For more information, please see:</p> <ul style="list-style-type: none"><li>• Section 9.2.2 Human Health Risk Assessment includes an assessment of the potential effects on humans by Project-related emissions. The Application concluded that there were no Project-related significant adverse effects.</li><li>• Section 5.2 Atmospheric Environment (Air Quality) of the Application includes an assessment of the potential Project-related effects to air quality. The Application concluded that the changes to air quality as a result of Project-related effects are below ambient air quality criteria for all indicator compounds and the residual effects are considered negligible or not significant.</li></ul> <p>Please also refer to Air Quality information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

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1318(ii)	March 23, 2015	Candace Maines - Squamish, British Columbia	Recently there have visitations by our local porpoises, this would likely stop if the plant uses seawater to cool the plant and discards the water back into Howe Sound. The herring population is very fragile and has only just returned after many pilings that were soaked in creosote have been retrofitted. We have just won some environmental battles and LNG would push us back to where we used to be environmentally.	Effects of the Project on Marine Life Seawater Cooling System	<p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>The Woodfibre site has been used for industrial purposes for 100 years and is zoned for industrial use. Woodfibre LNG's purchase of the property was contingent on its former owner, Western Forest Products (WFP), obtaining a Certificate of Compliance (COC) from the BC Ministry of Environment (MOE). On December 22, 2014, the MOE issued two COCs for the Woodfibre property. The COCs confirm that WFP has cleaned up the site to acceptable contaminant levels and existing site contamination does not pose an ecological or human health risk. These COCs include conditions related to monitoring and management of residual contamination, and reporting requirements that must be undertaken by a BC MOE Approved Professional.</p> <p>Woodfibre LNG Limited intends to perform additional remediation and restoration in the Project area. Plans for additional remediation include the removal of approximately 3,000 existing creosote-coated piles from the waterfront in the Project area and the creation of a Green Zone around Mill Creek. This work will be carried out in partnership with the local groups, where suitable, so that local conservation and restoration targets can be met (please refer to Section 2.6.7 Ecological Benefits of the Application).</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the <i>Fisheries Act</i>. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>For more information on the effects of the Project on marine water quality please refer to Section 5.10 Marine Water Quality. Additional components of the marine environment that have been assessed include Freshwater Fish and Fish Habitat (Section 5.15), Marine Benthic Habitat (Section 5.16), Forage Fish and Other Fish (Marine) (Section 5.18) and Marine Mammals (Section 5.19). A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that there were no Project-related significant adverse residual effects to the environment.</p> <p>Additional information on the seawater cooling system intake and discharge was provided to the EAO on April 23, 2015. Please also refer to the Seawater Cooling System and Marine Mammal Information Sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments.</p> <p>Also please note that potential Project-related effects on herring are included in the Section 5.18 Forage Fish and Other Fish (Marine) assessment.</p>	

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1318(iii)	March 23, 2015	Candace Maines - Squamish, British Columbia	The economic benefits are negligible, are people from town going to be hired and trained? Likely not, in fact they are outsourcing the jobs.	Employment	<p>From the very start, Woodfibre LNG has committed to building a Project that's right for Squamish. That means working closely with the community to ensure Woodfibre LNG hire a quality local workforce and contract with local businesses and suppliers wherever possible.</p> <p>The primary source of information for Labour Market information (Section 6.2 in the Application) were phone interviews with municipal and provincial departments responsible for labour, economic development and marine use; local and regional economic development corporations; chambers of commerce; and tourism associations and tourism operators.</p> <p>Baseline economic data were collected from a range of information sources, notably Statistics Canada.</p> <p>Woodfibre LNG anticipates sourcing the majority of its direct construction employment, approximately 60% (1,067 FTE jobs) from the local labour force (Metro Vancouver to Whistler). Squamish's labour force totaled 10,270 workers in 2011 (Statistics Canada), and the construction industry was the largest labour force sector in Squamish with 1,430 workers (14.0%). Given the large pool of workers in Metro Vancouver (1,363,300 workers in 2013), it is anticipated that Metro Vancouver would be the main source of construction workers, accounting for approximately 55% of direct construction employment.</p> <p>Woodfibre LNG will develop a Local Hiring Strategy, a Local Training Strategy and Local and Regional Procurement Strategy in order to ensure that the local workforce and economy can realize (to the maximum extent possible) the potential economic benefits of the Project. These strategies will ensure that the labour force is well-positioned to seek Project employment based on individual capacities to supply needed skills; maximize employment opportunities for residents in Squamish, Whistler and Metro Vancouver; and ensure that local and regional businesses can access the benefits of increased demand for goods and services from the Project.</p> <p>Woodfibre LNG also held a Business Information Session in Squamish in November 2014, where more than 100 local businesses and contractors came to hear what they could do to work on the Woodfibre Project.</p> <p>Woodfibre LNG also have an online Business Directory to help ensure local contractors and businesses have the latest information on upcoming contracts and opportunities.</p> <p>For more information, you can visit the website: (Link: <a href="http://www.woodfibrelng.ca/work-with-us/">http://www.woodfibrelng.ca/work-with-us/</a>)</p>	

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
1318 (iv)	March 23, 2015	Candace Maines - Squamish, British Columbia	I will do everything in my power to stop LNG from coming into such a highly populated area where the prevailing winds each day in summer blow up into Squamish at approximately 40-50 knots. Perfect for kiteboarding. If there were a tanker spill the results could be catastrophic, people in the water and one of the most important salmon fisheries left intact. Nevermind the eagles. There are alot reasons, animals, fish, birds, children and people to think about when putting a hugely polluting plant close to human habitation. I will fight through every legal channel possible to stop the LNG project.	Effects of the Project on Recreation Safety	<p>Liquefied natural gas has been shipped safely around the world for more than 50 years. There has never been a recorded incident involving a loss of containment of an LNG carrier at sea. LNG carriers are among the most modern and sophisticated ships in operation. These ships have robust containment systems, double-hull protection and are heavily regulated by international and federal standards.</p> <p>Woodfibre LNG will be designed for the safe and efficient handling of liquefied natural gas, both on land and on water. This includes standards set out in the BC Oil and Gas Activities Act and the associated Liquefied Natural Gas Facility Regulation, national and BC building codes, as well as national and international standards, guidelines and codes of practice where there are no applicable codes for BC.</p> <p>In the unlikely event there is a spill from an LNG carrier; LNG will never mix with water. Instead, it will quickly return to a gas state, and because methane is lighter than air, the gas will rise and dissipate into the air.</p> <p>The Accidents and Malfunctions section (Section 11.0) of the Application assessed the consequence and frequency of effects resulting from credible worst case scenarios for the Project. It showed that potential risks to the public were within the tolerable risk criteria regulated by the BC Oil and Gas Commission (OGC). The OGC will include a review of the quantitative risk assessment for this Project in the permit application review to confirm that the study and results meet the regulated requirements. Additional information on accidents and malfunctions was provided to the EAO on April 29, 2015. Please also refer to Public Safety, and Marine Transport information sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments</p>	
1318(v)	March 23, 2015	Candace Maines - Squamish, British Columbia	Nevermind the falling price that we will get for LNG, it likely isn't even worth it and won't be profitable with China selling LNG at such a cheap price.	Economic Benefits	<p>As LNG Projects involve significant capital investment, which is recovered over a long period of time, final investment decisions (FIDs) on LNG projects are not made lightly, nor are they based on the price of oil or gas on any given day, or even a given year. Rather, FIDs are made based on long-term forecasts and take into account numerous factors, many of which are specific to the project or the proponent(s).</p> <p>Current forecasts are that the global demand for energy will increase by 35% by 2035, and the specific demand for natural gas is expected to increase by 55%.</p> <p>The increasing standards of living and rapid economic growth in Asia (6-8% GDP growth annually) are the key triggers for the increase in demand. China's energy demand increases by 5% annually. Not only is Asia seeking new sources of energy to meet needs (diversify), Asia is looking for cleaner alternatives (e.g. China aims to reduce coal consumption to less than 65% total energy usage by 2017).</p>	
1319(i)	March 23, 2015	Personal Information Withheld - Brackendale, British Columbia	<p>I do not support the WLNG proposal. My concerns range from local to global, and include environmental and socio-economic impacts.</p> <p>ENVIRONMENT: Missing baseline studies</p> <p>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 project.</p>	Baseline Studies	<p>Thank you for the comments.</p> <p>For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 19.</p>	



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1319(ii)	March 23, 2015	Personal Information Withheld - Brackendale, British Columbia	<p>A couple of examples of inadequate baseline studies below:</p> <p>WLNG only reviewed the effects on a few 'representative species' of avifauna and even these were inadequately studied.</p> <p>Western screech-owl (provincially designated as blue-listed and federally as Special Concern under Schedule 1 of SARA ) was selected as a representative owl species.</p> <p>Field surveys during the owl breeding season need to be completed in the Project Area and LAA. (the LAA is anticipated to be affected by noise impacts).</p> <ul style="list-style-type: none"><li>Golder Associates used habitat suitability modelling to characterise potential suitable nesting habitat (but not foraging habitat) and were therefore unable to determine the potential number of breeding pairs that could inhabit the LAA and RAA.</li><li>Field-based habitat assessments were conducted on November 7, 2014 to better determine the amount and distribution of both nesting and foraging habitat for western screech. However, sample sites, and conclusions drawn from the surveys, were restricted to the Project Area – even though the models identified high and moderate value nesting and foraging habitats within the LAA (4.32% and 23.71% respectively).</li><li>No field-based surveys were conducted during owl breeding season.</li><li>Affects of noise on owl breeding success were not discussed.</li></ul> <p>Marine birds:</p> <p>Dedicated marine bird surveys need to be completed, during spring/fall migration and in winter.</p> <ul style="list-style-type: none"><li>Assessment of marine birds was limited to a review of the literature and incidental observations in spring and summer only. No surveys were undertaken during spring/fall migration or in winter, when many marine birds visit the Sound. Observers were incapable of identifying most of the encountered species.</li><li>Data from the incidental surveys is a joke. Sightings included, 'goldeneye (species not identified); goose (species not identified) ; loon (species not identified); shorebirds (unidentified) and 'large raft (several hundred individuals) of UNIDENTIFIED waterfowl'.</li><li>WLNG's proposal recognizes that their assessment is inadequate: 'Technical boundaries for the assessment of the Project on marine birds are defined based on the availability and validity of existing data (i.e., site-specific field data was collected by opportunistic observations during marine biophysical surveys conducted within the subtidal zone in spring and</li></ul>	Effect of the Project on Birds	<p>Avifauna:</p> <p>The effects of the Project on the avifauna VC and associated sub-components and representative species were accurately assessed using a combination of quantitative and qualitative tools. Habitat suitability for western screech-owl was assessed using habitat suitability modelling followed by verification field surveys. To be conservative, the assessment assumed that habitat predicted to be suitable for breeding could be occupied by western screech-owl. The effects of the Project were considered to occur in habitat predicted to be suitable for breeding regardless of species presence. Confirmatory surveys or assessment of the number of breeding pairs would have been a less conservative approach to the assessment.</p> <p>Potential effects to breeding western screech-owls from noise produced during Project construction and operation are discussed in Section 5.12.3.2.2 of the Application. Noise levels produced during the construction and operational phase are not predicted to exceed disturbance thresholds for owls.</p> <p>Follow-up surveys in 2014 have detected no breeding pairs of western screech owl in or around the Project area.</p> <p>Marine Birds:</p> <p>Dedicated marine bird surveys are not deemed necessary based on the conservative assumptions presented within the Application. The results of incidental field surveys combined with the use of extensive existing information were sufficient to inform an accurate and conservative assessment.</p> <p>Appendix 5.10-1 Marine Resources Baseline Study describes existing conditions for marine resources using the results of field surveys and existing information. Existing information was compiled through a variety of literature sources summarized in the Application (Section 5.17.2.2). Marine bird data were collected as incidental marine bird observations during marine biophysical surveys. It is well known that Howe Sound provides important overwintering and breeding habitat for a large variety of marine birds. However, within the LAA, there is limited habitat available for marine bird foraging and breeding. Sheltered bays and shallow water estuaries provide suitable conditions for overwintering marine birds. The Project will be located on a highly disturbed site with a shoreline that is lined with riprap. The offshore portion of the Project (i.e., LNG terminal) will be sited in deep water, which provides limited marine bird foraging habitat.</p> <p>The Marine Resources Baseline Study was produced using the results of field surveys conducted for the Project combined with available existing information, which is abundant. Field data were collected as incidental marine bird observations during marine biophysical surveys in July 2013 and April 2014.</p> <p>Predictions regarding the effects of the Project on marine birds were based on extensive background information that has been collected in this area over the past 40 years through many different sources (i.e., BC Christmas Bird Count data, BC Marine Conservation Analysis, BC Coastal Bird Surveys, EC baseline data, etc.). The available information related to marine birds was sufficient to inform the existing conditions for marine birds in the Project area. To be conservative given the inherent variability in biological communities, the assessment of effects of the Project on marine birds assumed the presence of species likely to occur in the Project area (the LAA) and in Howe Sound (the RAA). Please refer to section 2.7.2 of Appendix 5.10-1 "Marine Resources Baseline Study" for a list of marine bird species, bird counts, bird colonies and marine bird Species at risk (e.g., marbled murrelet) known to be found within or adjacent to the</p>	

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			<p>summer only; and available literature data was limited). Data limitations may affect the existing population estimates, seasonal variations in local and regional abundance, and habitat use, including potential critical habitat for species at risk.'</p> <ul style="list-style-type: none"><li>Species and population estimates are in part based on Christmas Bird Count data. The CBC is undertaken by skilled birders, but has its own technical boundaries, due to the large area that must be surveyed, the limited number of volunteer observers and daylight hours to cover the area, and access (a boat has not always been available to access the west side of Howe Sound).</li></ul> <p>Proposed mitigation measures are impractical, unclear, or inadequate:</p>		<p>LAA and RAA.</p> <p>Marbled murrelet is federally designated as Threatened under the Species at Risk Act, and WLNG conducted a field-based aerial assessment in the Project Area which confirmed the lack of marbled murrelet nesting habitat potential. WLNG will undertake radar counts as part of the pre- and post-construction surveys that will be completed for the Marine Bird Management Plan (M5.17-8), beginning June 2015. These radar surveys will meet or exceed the standard provincial survey protocol for marbled murrelet radar surveys.</p>	
1319(iii)	March 23, 2015	Personal Information Withheld - Brackendale, British Columbia	<p>Vessel Strikes</p> <ul style="list-style-type: none"><li>WLNG proposes to log vessel strikes by training 'all workers (contractors, staff, and employees) on how to report and record marine bird conflicts in the Project area, specifically vessel strikes (bird species, location of carcass on vessel, weather conditions).</li><li>It seems absurd to expect lay people to be able to identify the species of marine birds involved in collisions – given that field staff who were tasked with marine surveys were unable to identify most of the species they encountered.</li><li>Who will ensure that all vessel strikes are logged and that the data is accurate?</li></ul> <p>Lighting infrastructure and procedures need to anticipate, and take all steps to minimize, potential impacts to birds.</p> <ul style="list-style-type: none"><li>WLNG only proposes to mitigate impacts from lighting if there are HIGH levels of marine bird attraction and collision-related mortality.</li><li>Who and how impacts will be monitored, and the threshold for implementing mitigation are unclear: 'Survey methods may include stand watches during migratory periods (spring and fall) in an adaptive management approach.</li><li>The following mitigation measures suggested by WLNG should be implemented from the outset, if the project goes ahead: Mitigation measures include: 'turning off unnecessary lights (exterior and interior), especially during periods of high marine bird migratory flight activity in the area, wider light shut-down periods during migratory periods and inclement weather events (overcast, cloudy and/or hazy and foggy conditions), avoidance of continuous red or flashing red incandescent lights, use of blue jelly-jar LED lights on suspension cables and rectangular blue LED lights on bridge decks (Golder et al. 2010),</li></ul>	Effect of the Project on Birds	<p>During the operation phase, Woodfibre LNG Limited will hire an environmental manager. They will be responsible for implementing and reporting out on the environmental assessment conditions. Where appropriate, they will also be responsible for training staff. In addition, Woodfibre LNG Limited expects to submit compliance reports to the EAO.</p> <p>Many mitigation measures related to Project lighting are included in the Project design, including minimizing light in the Green Zone, directing light downwards, and managing lights from the Project control room. Based on these mitigation measures, there are not likely to be any significant adverse effects to marine birds.</p> <p>The Project has been assessed according to the methodology of both the BC Environmental Assessment Act and Canadian Environmental Assessment Act (2012). Section 4.0 Environmental Assessment Methods of the Application describes the assessment process.</p> <p>The scope of the environmental assessment for the Woodfibre LNG Project is as defined in the section 11 Order issued by the EAO. That scope does not include shipping activities beyond the mouth of Howe Sound.</p> <p>Please also refer to the Wildlife information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

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			<p>ENVIRONMENT: Cumulative Impacts</p> <p>Table 5.17-18 Potential Incremental Effects of Other Projects and Activities on Marine Birds</p> <ul style="list-style-type: none"><li>Only takes into account the incremental effects of marine shipping. It ignores the incremental effects of shoreline/foreshore habitat loss, increased recreational boat traffic, impacts to water quality, etc., from other potential projects in Howe Sound.</li></ul> <p>I am also concerned about the cumulative impacts of increased shipping in Juan de Fuca Straight, and its effect on southern resident killer whales.</p>			
1319(iv)	March 23, 2015	Personal Information Withheld - Brackendale, British Columbia	<p>ENVIRONMENT: The impacts on the marine ecosystem from a once-through seawater cooling system are unacceptable, given that alternative cooling systems are available.</p> <p>ECONOMY: No socio-economic study has been provided. The benefits to the District of Squamish and the province of BC are either unclear or speculative. Tax revenues to DOS have not been disclosed. Increased servicing costs to DOS have not been established (fire protection, other services?). Provincial revenue is based on WLNG net profit, while the market price of LNG is falling.</p> <p>ECONOMY: Impacts on Squamish, as a tourist destination have not been assessed. These might include degradation of views; reduced air quality, impacts on recreational boating, and even something as ephemeral as 'perception' of Squamish. Squamish has only just shed its image as an industrial backwater. The return of high profile 'heavy industry' could impact Squamish's appeal as a tourism destination.</p> <p>CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable</p> <p>Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year.</p> <p>ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life</p> <p>Woodfibre LNG has secured the water license 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.</p>	LNG Project	For a response to this comment, please refer to the “Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions”, comment # 12, 13, 15, 16 and 18.	

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1319(v)	March 23, 2015	Personal Information Withheld - Brackendale, British Columbia	<p>HEALTH: Impact of NO2, SO2, TSP, and other emissions</p> <ul style="list-style-type: none"><li>• The Sea-to-Sky airshed possess geographical features that have the potential to produce poor air circulation, leading to the build-up of pollutants, particularly during periods where high-pressure systems prevent pollutant dispersion</li><li>• WFLNG will release significant quantities of NO2, SO2 and TSP.</li></ul> <p>Overall. It seems crazy to me that we are rushing to sell our natural gas; using huge amounts of energy to compress and ship it abroad; without fully understanding the environmental impacts of fracking and without any certainty as to the economic benefit to the province and people of BC.</p>	Human Health	<p>The Woodfibre LNG Project will be powered by electricity from BC Hydro. By powering the plant with electricity, instead of natural gas, Woodfibre LNG will reduce its greenhouse gas emissions by about 80%. This will make Woodfibre LNG one of the cleanest LNG facilities in the world.</p> <p>The majority of Woodfibre LNG air emissions will come from elements removed from the natural gas prior to liquefaction, which are incinerated.</p> <p>Estimated emissions in tonnes per year for the LNG plant powered by electric drive vs. the plant powered by gas turbines:</p> <table><tr><th></th><th>Electric Drive</th><th>Gas Turbine</th></tr><tr><td>GHG</td><td>80,000</td><td>450,000</td></tr><tr><td>NOx</td><td>20</td><td>310</td></tr><tr><td>SOx</td><td>17</td><td>17</td></tr></table> <p>As part of the Application, air dispersion modelling based on planned activities and equipment use — including marine vessels and flaring — were undertaken to predict air emissions from the Project operation phase. Baseline air quality data from Langdale, Squamish, and Horseshoe Bay were used in the model. The results of the dispersion modelling were compared against federal and provincial ambient air quality criteria. All predicted concentrations were below the air quality criteria.</p> <p>Woodfibre LNG Limited expects that monitoring of plant air emissions will be required as part of the waste discharge permit under section 14 of the <i>Environmental Management Act</i>,</p> <p>At peak capacity, the Project will have a greenhouse gas intensity of 0.059 t CO2e per tonne LNG, which is well below the threshold of 0.16 t CO2e per tonne LNG in the Greenhouse Gas Industrial Reporting and Control Act.</p> <p>Section 9.2.2 Human Health Risk Assessment included an assessment of the potential effects on humans by Project-related emissions. The purpose of the human health risk assessment (HHRA) is to quantify the potential health risks to people from the baseline case (present-day) and application case (predicted using modelling) environmental quality in the Project area, and to determine any effects resulting from the Project. The Application concluded that there were no Project-related significant adverse effects to human health.</p> <p>Please also refer to the Air Quality information sheet that has been prepared as part of the Woodfibre LNG response to public comments.</p>		Electric Drive	Gas Turbine	GHG	80,000	450,000	NOx	20	310	SOx	17	17	
	Electric Drive	Gas Turbine																
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1320(i)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>hi, I'm opposed to the woddfibre lng plant for several reasons.</p> <p>this would be the only lng plant in the world located within a fjord. driving boats that large through the tight confines of howe sound does not seem reasonable or safe. even the Society of International Gas Tanker and Terminal Operators has standards stating that lng plants should not be placed within narrow inland waterways.</p>	Marine Transport	<p>Thank you for your comments.</p> <p>Siting of the Woodfibre LNG facility complies in every way with the Society of International Gas Tanker &amp; Terminal Operators Ltd's (SIGTTO) guidance as the location of the site is not within a narrow waterway as defined by SIGTTO and TERMPOL.</p> <p>TERMPOL specifies a body of navigable water of width four times the vessel's beam to be a one-way narrow channel, and seven times the beam to be a two-way narrow channel. So, for a characteristic 45 metre beam LNG carrier calling at the proposed Woodfibre LNG Terminal, this would imply a width of 180 meters for a one-way narrow channel and 315 metres for a two-way narrow channel. The US 5<sup>th</sup> Circuit court in its judgments has specified that under Rule 9 of the International Regulations for Preventing Collisions at Sea (COLREGS) and the U.S. Inland Navigation Rules, a "narrow channel" to be 1000 feet (305 metres) while other court judgments have considered any body of water with width less than 1060% the beam of the vessel, which would be 477 metres to be a narrow channel.</p> <p>The width of Howe Sound at the proposed Woodfibre LNG terminal is 5.2 km or 17,060 feet with nearest distance, to Darrell Bay, being 2.7 km or 8858 feet and 60 meters deep with no large vessel movements within 2.7 km or 8858 feet.</p> <p>Subject to the recommendations of Transport Canada's Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL) Review Committee, which includes Transport Canada, Pacific Pilotage Authority, BC Coast Pilots and Canadian Coast Guard, Woodfibre LNG has always maintained that it would deploy at least three tugs, at least one of which will be tethered, to provide a dynamic safety awareness zone for recreational and pleasure craft around the LNG carrier during its transit within Howe Sound. This dynamic safety awareness zone would extend up to 50 meters on either side of the vessel and up to 500 metres in front and, being dynamic in nature, would be transient with the movement of the LNG carrier. This arrangement of tugs also serves as an emergency provision to address contingencies that may require the vessel to stop or engage in manoeuvres at very short notice.</p> <p>Woodfibre LNG will develop a Squamish Harbour Vessel Traffic Plan to identify strategies to minimize displacement of marine-based recreational activities. As a component of the Squamish Harbour Vessel Traffic Plan, Woodfibre LNG will also work with Matthews Southwest and Bethel Lands Corporation, and District of Squamish, to minimize displacement of recreation activity by Project-associated ferry and water taxi traffic that travels to and from the Project site.</p> <p>Please also refer to Public Safety and Marine Transport information sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	



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1320(ii)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>Howe sound itself is only just recovering from past industrial uses. Dolphins, killer whales, seals and a host of other animals are now returning to the sound.</p> <p>Major releases of chlorinated water which is much warmer than the surrounding water in the sound. Again, the wildlife in the sound is just beginning rebound from past heavy industrial uses. The system they plan to use to do these discharges is outdated and has been banned in several places around the world.</p>	Effects of the Project on Marine Life	<p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the <i>Fisheries Act</i>. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>For more information on the effects of the Project on marine water quality please refer to Section 5.10 Marine Water Quality. Additional components of the marine environment that have been assessed include Freshwater Fish and Fish Habitat (Section 5.15), Marine Benthic Habitat (Section 5.16), Forage Fish and Other Fish (Marine) (Section 5.18) and Marine Mammals (Section 5.19). A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects.</p> <p>Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that there were no Project-related significant adverse residual effects to the environment.</p> <p>The assessment of potential effects of the Project on marine mammals in Howe Sound is described in Section 5.19 of the Application. The assessment indicated that vessel traffic may cause a short-term change in behaviour of marine mammals due to underwater noise. Woodfibre LNG Limited will develop and implement Underwater Noise Management Plan and a Marine Mammal Management Plan. These plans will include mitigation measures designed to address adverse effects and cumulative effects from underwater noise and monitoring programs.</p> <p>Woodfibre LNG Limited will retain a contractor to perform underwater acoustic monitoring for pre, during and post Project construction. The underwater monitoring will collect underwater sound levels and marine mammal presence (e.g., of those species present, their frequency and seasonality). This will contribute further to baseline information for both underwater sound levels and mammal presence in the Project area and in the vicinity of the Project site to monitor potential changes of marine mammals over time.</p> <p>Additional information on the seawater cooling system intake and discharge was provided to the EAO on April 23, 2015. Please also refer to the Seawater Cooling System and Marine Mammal information sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

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1320(iii)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	Howe sound is a major tourist draw for squamish and the other sea to sky communities. The woodfibre lng plant is dead center of the the main viewpoints from the sea to sky gondola. Tourists are not interested in seeing major industrial areas, they're interested in beautiful BC. Unspoiled with large untouched forests and wildlife. Squamish and the sea to sky area is obviously very dependent on tourism dollars.	Effects of the Project on Visual Quality	<p>The Project's visual effects are expected to be minor given their scale and the historical and current level of human-related disturbance within the regional assessment area.</p> <p>Woodfibre LNG is designing the facility to reduce the size of the disturbed area and to blend it into the environment as much as possible.</p> <p>Mitigation measures have been developed to avoid, minimize, restore onsite or offset the potential adverse effects of the Project. Mitigation measures that would be implemented to reduce the visibility of the facility would include the following:</p> <ul style="list-style-type: none"><li>• reducing the level of contrast of buildings by using external surface finishing that has low glare and natural colours</li><li>• monitoring and maintaining natural screening to ensure minimal visibility of infrastructure</li><li>• providing additional screening of land-based infrastructure through temporary or permanent plantings where possible and safe to do so</li></ul> <p>For more information, please see Section 7.5 Visual Quality of the Application, which includes an assessment of the potential effects of the Project on the viewscape, including from the Sea-to-Sky Gondola.</p>	
1320 (iv)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	The wind during the summer time in squamish is generally a strong onshore wind, which originates from the sound and will push any and all airborne pollutants from the plant into town.	Emissions	<p>The Woodfibre LNG Project will be powered by electricity provided by BC Hydro. By powering the plant with electricity, instead of natural gas, greenhouse gas emissions will be reduced by about 80%. This will make Woodfibre LNG one of the cleanest LNG facilities in the world.</p> <p>Woodfibre LNG undertook air dispersion modelling based on planned activities and equipment use — including marine vessels — to predict air emissions from the Project operation phase. The results of the dispersion modelling were compared against federal and provincial standards and guidelines; and all predicted concentrations were below these standards and guidelines.</p> <p>Woodfibre LNG characterized current climate and climate trends using the Squamish Airport climate station. At peak capacity, the Project will have a greenhouse gas intensity of 0.059 t CO2e per tonne LNG, which is below the threshold of 0.16 t CO2e per tonne LNG in the Greenhouse Gas Industrial Reporting and Control Act.</p> <p>For more information, please see:</p> <ul style="list-style-type: none"><li>• Section 9.2.2 Human Health Risk Assessment includes an assessment of the potential effects on humans by Project-related emissions. The Application concluded that there were no Project-related significant adverse effects.</li><li>• Section 5.2 Atmospheric Environment (Air Quality) of the Application includes an assessment of the potential Project-related effects to air quality. The Application concluded that the changes to air quality as a result of Project-related effects are below ambient air quality criteria for all indicator compounds and the residual effects are considered negligible or not significant.</li></ul> <p>Please also refer to Air Quality information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
1320(v)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	Any spills will be blown into town as well.	Accidents and Malfunctions	<p>Liquefied natural gas has been shipped safely around the world for more than 50 years. There has never been a recorded incident involving a loss of containment of an LNG carrier at sea. LNG carriers are among the most modern and sophisticated ships in operation. These ships have robust containment systems, double-hull protection and are heavily regulated by international and federal standards.</p> <p>In the unlikely event there is a spill from an LNG carrier, LNG will never mix with water. Instead, it will quickly return to a gas state, and because methane is lighter than air, the gas will rise and dissipate into the air.</p> <p>The Accidents and Malfunctions section (Section 11.0) of the Application assessed the consequence and frequency of effects resulting from credible worst case scenarios for the Project. It showed that potential risks to the public were within the tolerable risk criteria regulated by the BC Oil and Gas Commission (OGC). The OGC will include a review of the quantitative risk assessment for this Project in the permit application review to confirm that the study and results meet the regulated requirements. Additional information on accidents and malfunctions was provided to the EAO on April 29, 2015. Woodfibre LNG undertook air dispersion modelling based on planned activities and equipment use — including marine vessels — to predict air emissions from the Project operation phase. The results of the dispersion modelling were compared against federal and provincial standards and guidelines; and all predicted concentrations were below these standards and guidelines.</p> <p>Woodfibre LNG characterized current climate and climate trends using the Squamish Airport climate station. At peak capacity, the Project will have a greenhouse gas intensity of 0.059 t CO<sub>2</sub>e per tonne LNG, which is below the threshold of 0.16 t CO<sub>2</sub>e per tonne LNG in the Greenhouse Gas Industrial Reporting and Control Act.</p> <p>For more information, please see:</p> <ul style="list-style-type: none"><li>• Section 9.2.2 Human Health Risk Assessment includes an assessment of the potential effects on humans by Project-related emissions. The Application concluded that there were no Project-related significant adverse effects.</li><li>• Section 5.2 Atmospheric Environment (Air Quality) of the Application includes an assessment of the potential Project-related effects to air quality. The Application concluded that the changes to air quality as a result of Project-related effects are below ambient air quality criteria for all indicator compounds and the residual effects are considered negligible or not significant.</li></ul> <p>Please also refer to Air Quality information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	
1320(vi)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	There are still missing baseline reports in regards to environmental impacts.	Effects of the Project	<p>For a response to this comment, please refer to the “Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions”, comment #19.</p>	

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
1320(vii)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>The estimated co2 emmissions from the plant are estimated at 142 thousand tonnes. From estimates i've seen this is the same pollution as increasing the highway traffic six fold! Not to mention the nitrogen dioxide and sulfur diooxide which are both obviously well known pollutants.</p> <p>Also, when the world should be moving away from fossil fuels and moving towards renewable energy sources why are we embracing yet another fossil fuel plant? let alone one whose methods of production (for LNG) include pumping millions of gallons of polluted water into the earth (which ends up polluting our groundwater) to literally blow up the ground beneath our feet!! it's truly madness. we have one planet, we will never have another.</p> <p>The time is now to say no to these unneeded fossil fuel plants which have very little local benefits (or jobs) and mostly do harm to our environment.</p>	GHG Emissions	<p>Natural gas is the cleanest burning fossil fuel and has been identified as the best and most reliable way to help transition away from high-emission fuels such as oil and coal. This is particularly true in energy-hungry Asian markets, where Woodfibre LNG Limited plans to sell its product. In fact, replacing just one 500 Megawatt coal-fired power plant with natural gas fueled power generation for one year equates to taking 557,000 cars off the roads over the same time period<sup>8</sup>.</p> <p>Section 5.3 Greenhouse Gas Management of the Application includes an assessment of the potential Project-related effects to greenhouse gases. The influence of Project-related greenhouse gas emissions on climate change was evaluated by assessing whether any measurable change in climate could result from the Project-generated greenhouse gas emissions. The relatively minor increase in global emissions associated with the Project would correspond to a change in climate that is unlikely to be measurable.</p>	
1321	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>I am concerned about the safety of this proposed project.</p> <p>Siting an LNG facility in Howe Sound violates international safety standards and practices, putting 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.</p> <p>The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>Sources: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards</p>	Safety	<p>Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 11.</p>	

<sup>8</sup> Centre for Liquefied Natural Gas. [http://www.lngfacts.org/resources/CLNG-PACE\\_Study\\_one-pager.pdf](http://www.lngfacts.org/resources/CLNG-PACE_Study_one-pager.pdf).

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
1322	March 23, 2015	Laurie Parkinson - Bowyer Island, British Columbia	<p>Marine Mammals 5.19.3.2.2.2 Operation Pg 37</p> <p>"The increase in marine noise resulting from vessel traffic associated with the Project is not expected to exceed injury thresholds for marine mammals (Table 5.19-12); therefore this potential adverse effect is likely to be negligible."</p> <p>Why is WF using injury thresholds as a guideline? The intent should be not to bother the marine mammals, vs not to injure them. There is a big difference between the two concepts. What standard is required here? Please give references.</p>	Effect of the Project on Marine Mammals	<p>Thank you for your questions.</p> <p>The Application does consider both injury thresholds and disturbance thresholds for underwater noise impacts on marine mammals. The extracted statement identified by the reviewer in this case is in specific reference to injury effects. An assessment of behavioral effects is provided further in the Application chapter. The use of established acoustic thresholds is based on the following rationale:</p> <ul style="list-style-type: none"><li>• Assessment of the potential effects of underwater anthropogenic noise on marine mammals requires acoustic thresholds against which received sound levels can be compared. Currently, under Canadian legislation, there are no defined standard threshold criteria for assessing acoustic injury or disturbance effects on marine mammals;</li><li>• In absence of specific legislated underwater noise criteria in Canada, DFO bases its assessment for potential 'serious harm' to marine mammals from anthropogenic noise on best currently-available science including underwater noise threshold criteria employed by the National Marine Fisheries Service (NMFS) (NOAA 2014). The current NMFS acoustic threshold criteria (for injury and disturbance) consist of a single threshold for cetaceans and a single threshold for pinnipeds regardless of sound source. These thresholds represent broadband values based on the primary sound level metric of SPLrms as adapted for pulsive and non-pulsive sound sources, which involves averaging the sound pressure level over a period of time to determine the energy produced by the sound pressure wave. The current NMFS injury threshold for cetaceans and pinnipeds is 180 dB re 1 µPa (SPLrms) and 190 dB re 1µPa (SPLrms), respectively. The current NMFS disturbance (behavioral response) threshold for all marine mammals is 160 dB re 1µPa (SPLrms) for impulsive noise (e.g., impact pile driving) and 120 dB re 1 µPa (SPLrms) for non-pulsive noise (e.g., shipping) (NOAA 2014). The SPLrms noise threshold criteria are established as conservative values.</li></ul> <p>References: NOAA, (2014); NOAA Fisheries, West Coast Region. Interim Sound Threshold Guidance.</p>	



Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
1323	March 23, 2015	Personal Information Withheld - Caulfeild, British Columbia	NO LNG thank you ! The health of Howe Sound is much more important. NO fracking thank you ! Any fossil fuel still in the ground needs to stay there if we are to survive .	LNG Project Hydraulic Fracturing	<p>Thank you for your comment.</p> <p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p> <p>Woodfibre LNG acknowledges the expressed concern regarding hydraulic fracturing. Hydraulic fracturing activities are outside the EA scope of the Project.</p> <p>Woodfibre LNG Limited is not engaged in oil or gas extraction or production activities. The gas delivered to the Project site will be supplied to the Project from western Canadian market hubs through an expansion of the existing gas transmission system by Fortis BC, and is the same gas that is supplied to Squamish, Metro Vancouver, Whistler, the Sunshine Coast and Vancouver Island through the Fortis BC pipeline system.</p> <p>Like other customers along the pipeline route, Woodfibre LNG will buy its feed gas from third party suppliers, potentially including aggregators. This natural gas will be delivered in a co-mingled stream through the Fortis BC pipeline to the site.</p> <p>Natural gas liquefied in the Woodfibre LNG facilities will be produced and processed primarily in the northeastern region of BC, but may also originate from other wells connected to the Western Canadian Gas Transmission System. The Oil &amp; Gas Commission (OGC) regulates these extraction activities under the Oil &amp; Gas Activities Act and related regulations.</p>	
1324	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	I support the Woodfibre LNG export facility in Squamish. I trust the regulators will monitor the project on an ongoing basis to ensure it is adhering to the highest safety standards. This project will bring jobs and taxes to Squamish and the Province. The environment, tourism and industry can co-exist if managed properly.	LNG Project	Thank you, this comment is noted.	

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
1325	March 23, 2015	Michael Caines - Squamish, British Columbia	Will the LNG tankers use ballast systems? Will water from other ecosystems be dumped in Howe Sound? Could this have an affect on the ecosystems of the Squamish estuary and Howe sound?	Ballast Water	<p>Thank you for your comments.</p> <p>LNG carriers must comply with the <i>Canada Shipping Act 2011</i>, Ballast Water Control and Management Regulations. The regulations state that ballast taken onboard a vessel outside of waters under Canadian jurisdiction must be discharged at least 200 nautical miles from shore where water depth is at least 2000 m in order to avoid aquatic invasive species from foreign waters entering Canadian jurisdiction.</p> <p>In addition, all LNG carriers will comply with the International Maritime Organization (IMO) Regulations, MARPOL Annex IV (Prevention of Pollution by Sewage from Ships) and Annex V (Prevention of Pollution by Garbage from Ships). The LNG carriers will carry an International Sewage Pollution Prevention Certificate and Garbage Management Plan that prohibit the discharge of any wastewater or garbage within ports or offshore terminals.</p> <p>Further, as the LNG carriers proceeding to Squamish will initially enter US waters, they must comply with the US Environmental Protection Agency requirements for the National Pollutant Discharge Elimination System Vessel General Permit for Discharges Incidental to the Normal Operation of Vessels</p>	
1326	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>The once-through seawater cooling system proposed by Woodfibre LNG is outdated and would result in significant damage to the marine flora and fauna of Howe Sound.</p> <p>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.</p>	Seawater Cooling System	<p>Thank you for the comment. For a response to this comment, please refer to the "<i>Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions</i>", comment # 12.</p>	

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
1327	March 23, 2015	Personal Information Withheld - Roberts Creek, British Columbia	This is where my family and I live. We do not wish to experiment with the safety factor of LNG	Safety	<p>At Woodfibre LNG, safety is the number one priority.</p> <p>Woodfibre LNG will be designed for the safe and efficient handling of liquefied natural gas, both on land and on water. This includes standards set out in the BC Oil and Gas Activities Act and the associated Liquefied Natural Gas Facility Regulation, national and BC building codes, as well as national and international standards, guidelines and codes of practice where there are no applicable codes for BC.</p> <p>The Accidents and Malfunctions section (Section 11.0) of the Application assessed the consequence and frequency of effects resulting from credible worst case scenarios for the Project. It showed that potential risks to the public were within the tolerable risk criteria regulated by the BC Oil and Gas Commission (OGC). The OGC will include a review of the quantitative risk assessment for this Project in the permit application review to confirm that the study and results meet the regulated requirements. Additional information on accidents and malfunctions was provided to the EAO on April 29, 2015..</p> <p>During operation, major accidents at LNG facilities are very rare. LNG is not explosive in an unconfined environment. Two fire / vapour cloud explosions at LNG facilities are known to have occurred in the past 60 years. A vapour cloud and fire in Ohio occurred in 1944 because of leaks from an LNG tank constructed from inappropriate material, and in 2004 an explosion occurred in Algeria because of a steam boiler problem (boilers are not part of the Project design). Standards for modern LNG facilities have benefited from the lessons learned from these accidents, and include design requirements that avoid these accidents.</p> <p>Liquefied natural gas (LNG) has been shipped safely around the world for more than 50 years. There has never been a recorded incident involving a loss of containment of an LNG carrier at sea. LNG carriers are among the most modern and sophisticated ships in operation. These ships have robust containment systems, double-hull protection and are heavily regulated by international and federal standards.</p> <p>In the unlikely event there is a spill from an LNG carrier, LNG will never mix with water. Instead, it will quickly return to a gas state, and because methane is lighter than air, the gas will rise and dissipate into the air.</p> <p>The Accidents and Malfunctions section (Section 11.0) of the Application assessed the consequence and frequency of effects resulting from credible worst case scenarios for the Project. It showed that potential risks to the public were within the tolerable risk criteria regulated by the BC Oil and Gas Commission (OGC). The OGC will include a review of the quantitative risk assessment for this Project in the permit application review to confirm that the study and results meet the regulated requirements. Additional information on accidents and malfunctions was provided to the EAO on April 29, 2015. Please also refer to Public Safety and Marine Transport information sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments</p>	

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
1328	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>I suffer from asthma and I value the clean air we have in Squamish now. The proposed project would have a significantly detrimental effect on air quality.</p> <p>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.</p> <p>The study found that sulfur dioxide costs \$42,000 per tonne, and nitrous oxides cost \$67,000 per tonne.</p> <p>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</p>	Effects of the Project on Health	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 13	
1329	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>SITE SUITABILITY: The Woodfibre site 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. 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.</p> <p>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?</p> <p>Sources: <a href="http://www.cbc.ca/news/multimedia/every-fault-line-in-british-columbia-1.2919420">http://www.cbc.ca/news/multimedia/every-fault-line-in-british-columbia-1.2919420</a></p> <p>Bornhold, B.D., 1983, Fiords, GEOS, no. 1, p 1-4 B.C. Ministry of Energy and Mines</p>	LNG Project Siting	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 14.	

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
1330	March 23, 2015	Steve Dieter - Gibsons, British Columbia	I enjoy Howe Sound waters as a recreational sail-boater. The most hazardous channels are the ferry routes which are fairly focussed near the mouth of the Sound. Other than these ferry routes, Port Mellon traffic and a few boom tugs the bulk of Howe Sound feels safe for sailing. This goes doubly for the paddling groups I have been leading for 30 years in Howe Sound. A giant ship would dramatically alter that experience of the wild side of Gambier.	Outdoor Recreation	<p>Thank you for the comment.</p> <p>There will be three to four LNG carriers that transit to the Woodfibre Project per month. Each transit of an LNG carrier, between the entrance to Howe Sound and the Woodfibre LNG terminal, is anticipated to last 2.5 hours in duration. The loading of each LNG carrier is anticipated to be complete within 24 hours.</p> <p>Woodfibre LNG Limited is of the view that the Woodfibre site is the right fit for an LNG facility. It features: zoned industrial, more than 100 years of industrial use, deepwater port, access to established shipping routes, access to FortisBC pipeline, access to BC Hydro transmission grid, and access to labour force.</p> <p>Woodfibre LNG Limited is also of the view that tourism and industry can work together to create responsible economic development in Squamish. BC Ferries and Squamish Terminals have shown how industry can successfully coexist with local tourism and recreation, and Woodfibre LNG Limited is working hard to follow that example.</p> <p>An assessment of the potential effects of the Project on tourism is included in Section 6.2 Labour Market and Section 6.3 Sustainable Economy. The Application concluded that there were no Project-related significant adverse residual effects to the economy.</p> <p>The Application assesses the potential effects of the Project to outdoor recreation in Section 7.4 Land and Resource Use. With the proposed mitigation, it is not likely that there will be significant residual effects to outdoor recreation.</p> <p>Please also refer to the Marine Transport and Marine Recreation information sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	
1331	March 23, 2015	Andrew Erdely - Garibaldi Highlands, British Columbia	<p>This is really very simple. We live in a finite biosphere with limited resources. Oil and gas will run out. Fracking is dangerously stupid and harmful. We need clean air, pure water, healthy food, intact ecosystems and biological diversity to survive. Clearly, LNG is not the answer: it's development is short sighted, economically unviable and not sustainable. Solar energy, on the other hand, will likely be available for billions of years. As long as we have weather, we will have wind. While the Moon orbits the Earth, we will have tides. Solar, wind and tidal energy are just of few examples of sustainable energy sources. It's time to stop subsidising and giving tax breaks to Big Oil (and gas) and to separate these short-sighted, greedy interests from government so that we may enjoy democracy.</p> <p>There is only one correct choice: NO to WLNG and similar, insane endeavours. Future generations will inherit the Earth we leave behind, and you will have to live with your decisions for the rest of your lives. Will you be able to sleep at night?</p>	LNG Industry	<p>Thank you for the comment.</p> <p>Natural gas is the cleanest burning fossil fuel and has been identified as the best and most reliable way to help transition away from high-emission fuels such as oil and coal. This is particularly true in energy-hungry Asian markets, where Woodfibre LNG Limited plans to sell its product. In fact, replacing just one 500 Megawatt coal-fired power plant with natural gas fueled power generation for one year equates to taking 557,000 cars off the roads over the same time period<sup>9</sup>.</p>	

<sup>9</sup> Centre for Liquefied Natural Gas. [http://www.lngfacts.org/resources/CLNG-PACE\\_Study\\_one-pager.pdf](http://www.lngfacts.org/resources/CLNG-PACE_Study_one-pager.pdf).



Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
1332	March 23, 2015	Laurie Parkinson - Bowyer Island, British Columbia	Marine Mammals, M5.17-6 Underwater Noise Plan pg 5.19-38 First bullet: Vibrational pile driving will be used where practical as impact pile driving is associated with louder SPLs under water. Who decides when vibrational pile driving is practical and feasible?What standard is used for this decision? Who makes sure vibrational pile driving is used during this project? Please put this information in the EA.	Pile Driving	Thank you for the questions. The contractor will decide on the appropriate pile driving method in discussion with Woodfibre LNG Limited based on bottom substrate and other considerations. Vibratory pile driving is the preferred method but may not be possible based on bottom substrate or other logistical factors. If impact pile driving is required, Woodfibre LNG will be required to follow the measures outlined in Section 5.19.3.2.3 Proposed Measures to Mitigate Project Effects (M5.17-6 – Underwater Noise Management Plan), Best Management Practices for Pile Driving and Related Operations (BCMPDCA and DFO 2003). If the sound exceeds 30 kPa at a distance of 1 m to 2 m from pilings, measures will be taken to reduce either the intensity of the sound generated or the level of sound propagation through the water column.	
1333	March 23, 2015	Laurie Parkinson - Bowyer Island, British Columbia	Marine Mammals, pg 5.19-38 How many sound monitoring stations will there be during construction, and where will they be located? What level of authority does the Environmental Monitor have? How do we know they will be listened to? Are they paid by Woodfibre or by a neutral agency? How much of the time will they be on the job site?	Environmental Monitoring	Thank you for the questions. Woodfibre LNG Limited will retain a contractor to perform underwater acoustic monitoring for pre, during and post Project construction. The underwater monitoring will collect underwater sound levels and marine mammal presence (e.g., of those species present, their frequency and seasonality). This will contribute further to baseline information for both underwater sound levels and mammal presence in the project area and in the vicinity of the Project Site to monitor potential changes of marine mammals over time.	

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
1334(i)	March 23, 2015	Anne Clifford - Squamish, British Columbia	Hi, having gone through a lot of the EA documentation I have some major concerns about the effectiveness of the EA process with regard to the Woodfibre LNG project. For example, it appears that no proper studies have been carried out to assess the impact of the Woodfibre LNG project on the local flora & fauna (including the 9000 year old glass sponges thought to have been extinct for 60 million years) that inhabit the Howe Sound.	Effects of the Project on the Environment	<p>Thank you for the comment.</p> <p>Glass sponges are addressed in both the Application document (Section 5.16.2.4.1) and Marine Baseline Studies Report (Appendix 5.10).</p> <p>Woodfibre LNG expects that three to four LNG carriers will arrive at the site each month. The carriers will navigate through the established commercial shipping route in/out of Howe Sound (through Queen Charlotte Channel) to the Strait of Georgia and out to the Pacific Ocean. The carriers will be escorted by at least three tug boats, at least one of which will be tethered, and will be piloted by BC Coast Pilots who are experts with Howe Sound navigation.</p> <p>The minimum water depth along the shipping route is 60 metres, and the LNG carriers draft will sit approximately 12 metres to 15 metres below the water surface.</p> <p>The sailing line (shipping route) is a minimum of 1300 metres (and typically more than 1500 metres) from the location of the sponge reefs located at Halkett Point and Lost Reef between Pam rocks and Christie Islets. At depths ranging between 20 m and 40 m (i.e., associated depths where glass sponge reefs have been observed at these locations), the velocity produced by a propeller wash is considered negligible due to dissipation of the prop-wash with distance from sailing line.</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the Fisheries Act. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>For more information on the effects of the Project on marine water quality please refer to Section 5.10 Marine Water Quality. Additional components of the marine environment that have been assessed include Freshwater Fish and Fish Habitat (Section 5.15), Marine Benthic Habitat (Section 5.16), Forage Fish and Other Fish (Marine) (Section 5.18) and Marine Mammals (Section 5.19). A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. The Application concluded that there were no Project-related significant adverse residual effects to the environment.</p>	

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response												
1334(ii)	March 23, 2015	Anne Clifford - Squamish, British Columbia	Regarding emissions, other than Woodfibre's own 'estimates' there has been no proper study on the impacts to air quality, water quality, underwater & atmospheric noise pollution. The air pollution estimates are alarming for myself, a local resident with young active children. My youngest, 3 years old, is asthmatic. My children have a right to breathe clean air, & annual pollution levels estimated at 295 tonnes of NO2 combined with tonnes of SO2 and 142000 tonnes of CO2 is unacceptable. Additionally, what would happen if the Woodfibre plant went ahead & their estimates were incorrect by 50% or 100%? Would the local authority have any control to shut them down or force them to modify their operations to reduce emissions to within their estimated levels? Proper studies need to be completed before any decisions can be made regarding moving this project forward.	Effects of the Project on Air Quality, Water Quality, Underwater Noise	<p>The Woodfibre LNG Project will be powered by electricity from BC Hydro. By powering the plant with electricity, instead of natural gas, Woodfibre LNG will reduce its greenhouse gas emissions by about 80%. This will make Woodfibre LNG one of the cleanest LNG facilities in the world.</p> <p>The majority of Woodfibre LNG air emissions will come from elements removed from the natural gas prior to liquefaction, which are incinerated.</p> <p>Estimated emissions in tonnes per year for the LNG plant powered by electric drive vs. the plant powered by gas turbines:</p> <table><tr><th></th><th>Electric Drive</th><th>Gas Turbine</th></tr><tr><td>GHG</td><td>80,000</td><td>450,000</td></tr><tr><td>NOx</td><td>20</td><td>310</td></tr><tr><td>SOx</td><td>17</td><td>17</td></tr></table> <p>As part of the Application, air dispersion modelling based on planned activities and equipment use — including marine vessels and flaring — were undertaken to predict air emissions from the Project operation phase. Baseline air quality data from Langdale, Squamish, and Horseshoe Bay were used in the model. The results of the dispersion modelling were compared against federal and provincial ambient air quality criteria. All predicted concentrations were below the air quality criteria.</p> <p>Woodfibre LNG Limited expects that monitoring of plant air emissions will be required as part of the waste discharge permit under section 14 of the <i>Environmental Management Act</i>,</p> <p>At peak capacity, the Project will have a greenhouse gas intensity of 0.059 t CO2e per tonne LNG, which is well below the threshold of 0.16 t CO2e per tonne LNG in the Greenhouse Gas Industrial Reporting and Control Act.</p> <p>Section 9.2.2 Human Health Risk Assessment included an assessment of the potential effects on humans by Project-related emissions. The purpose of the human health risk assessment (HHRA) is to quantify the potential health risks to people from the baseline case (present-day) and application case (predicted using modelling) environmental quality in the Project area, and to determine any effects resulting from the Project. The Application concluded that there were no Project-related significant adverse effects to human health.</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the Fisheries Act. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>For more information on the effects of the Project on marine water quality please refer to Section 5.10 Marine Water Quality. Additional components of the marine environment that have been assessed include Freshwater Fish and Fish Habitat (Section 5.15), Marine Benthic Habitat (Section 5.16), Forage Fish and Other Fish (Marine) (Section 5.18) and Marine Mammals (Section 5.19). A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included</p>		Electric Drive	Gas Turbine	GHG	80,000	450,000	NOx	20	310	SOx	17	17	
	Electric Drive	Gas Turbine																
GHG	80,000	450,000																
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SOx	17	17																

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					<p>in Section 21.0 Summary of Project-related Residual Effects. The Application concluded that there were no Project-related significant adverse residual effects to the environment.</p> <p>The assessment of potential effects of the Project on marine mammals in Howe Sound is described in Section 5.19 of the Application. The most common marine mammal species reported in the upper reaches of Howe Sound, closest to the Project area, are harbour seals, Pacific white-sided dolphins, and killer whales. Additional marine mammals that are sighted in Howe Sound include humpback whales, minke whales, grey whales, harbour porpoises, sea lions, harbour seals and porpoises.</p> <p>The assessment indicated that vessel traffic may cause a short-term change in behaviour of marine mammals due to underwater noise. Woodfibre LNG Limited will develop and implement Underwater Noise Management Plan and a Marine Mammal Management Plan. These plans will include mitigation measures designed to address adverse effects and cumulative effects from underwater noise and monitoring programs.</p> <p>Woodfibre LNG Limited will retain a contractor to perform underwater acoustic monitoring for pre, during and post Project construction. The underwater monitoring will collect underwater sound levels and marine mammal presence (e.g., of those species present, their frequency and seasonality). This will contribute further to baseline information for both underwater sound levels and mammal presence in the Project area and in the vicinity of the Project site to monitor potential changes of marine mammals over time. Please also refer to the Air Quality and Marine Mammals information sheets that have been prepared as part of the Woodfibre LNG response to public comments.</p>	
1334(iii)	March 23, 2015	Anne Clifford - Squamish, British Columbia	<p>The other emission that I am very against is Woodfibre LNG's proposed cooling method - to extract 17000 tonnes of water from the Howe Sound every hour, and then return it back warmed &amp; chlorinated! FYI this cooling method has actually been BANNED in California because it is KNOWN to be damaging to marine life. We are just seeing herring, dolphins, orca &amp; humpbacks whales returning to the Howe Sound. It is unacceptable to damage their marine environment when it is clearly recovering from the toxic legacy of previous industrial activities.</p>	Seawater Cooling System	<p>In LNG facilities, seawater cooling is used primarily to remove waste heat generated from the main refrigerant compressors, which are used to cool the gas. Seawater cooling is used widely, including in about half of the LNG facilities currently in operation in the world. Seawater cooling is energy efficient, and produces less environmental noise and less visual effects than air cooling.</p> <p>California did not ban seawater cooling. Section 316(b) of the US Clean Water Act requires the Environmental Protection Agency (EPA) to issue regulations on the design and operation of intake structures, in order to minimize adverse environmental impacts<sup>10</sup>. The EPA brought regulations into force in 2014 that cover facilities that withdraw more than two million gallons per day (315 m<sup>3</sup>/h) of cooling water. These regulations govern the controls that must be in place at new and existing plants related to entrainment and impingement of marine organisms.</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the Fisheries Act. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>Additional information on the seawater cooling system intake and discharge was provided to the EAO on April 23, 2015. Please also refer to the Seawater Cooling System Information Sheet that has been prepared as part of the Woodfibre LNG Limited Response to Public</p>	

<sup>10</sup> Source: <http://water.epa.gov/lawsregs/lawguidance/cwa/316b/upload/Final-Regulations-to-Establish-Requirements-for-Cooling-Water-Intake-Structures-at-Existing-Facilities.pdf>

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
					Comments.	
1334(iv)	March 23, 2015	Anne Clifford - Squamish, British Columbia	<p>Other things that greatly concern me are we are in a zone of moderate to high earthquake risk. Plus the geography of our location - a narrow body of water with mountains either side. The LNG Terminal Siting Standards (SIGTTO) state that LNG terminals should NOT be located in narrow waterways with dense local populations and significant commercial, recreational, and ferry traffic. Does that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound, &amp; we have limited evacuation options (one road out &amp; one road in). Plus a lack of trained Haz Mat personnel in the event of an incident. It seems so unacceptably risky, and for what? Increase global warming, provide profits for off shore investors, save face for the BC liberals.</p> <p>This project is wrong on so many levels. You have to see that. And shut it down. Please.</p>	Seismic Hazard Safety Marine Transport	<p>Woodfibre LNG Limited looked at several sites for its Project before finding one that was the right fit for an LNG facility. Home to industry and shipping for more than 100 years, the Woodfibre site features: industrial zoning, a deepwater port, access to a FortisBC pipeline network, and access to BC Hydro electricity.</p> <p>The Project will be designed:</p> <ul style="list-style-type: none"><li>• For a one in 2,475 year earthquake.</li><li>• In accordance with CSAZ276, Liquefied Natural Gas Production, Storage and Handling, with respect to their specific requirements for seismic design of LNG plants.</li><li>• To address the potential for liquefaction, ground improvements will be undertaken as part of Project construction and if deemed necessary, critical infrastructure will be moved to other locations within the project site</li><li>• If a ship is at dock at the time of a seismic event, and the movement between the LNG carrier and the floating storage and offloading unit (FSO) is outside safe operating parameters, the LNG transfer will safely shutdown and release the LNG carrier from its mooring and allow it to naturally move away from the FSO with assistance from the tugs on standby.</li><li>• Project components, including bridges, will be designed for the 200-year instantaneous peak flows on Mill Creek and Woodfibre Creek.</li><li>• Buildings will be constructed at different elevations that correspond to their risk category in case of flooding.</li><li>• Qualified professionals will be engaged to conduct a debris flow and debris hazard assessment prior to construction.</li><li>• To address the potential effects associated with wildfire, a fuel hazard assessment will be conducted based on the Guide to Fuel Hazard Assessment and Abatement in British Columbia.</li><li>• Seismic monitors will be installed on critical process equipment and linked to the facility's ESD (Emergency Shutdown System). Should a seismic event occur, and the vibration experienced is outside the designed parameters of the seismic monitors, the facility (via the ESD) will automatically trip and place itself in fail-safe mode.</li><li>• Project components will be designed to accommodate a sea level rise of 0.5 metres.</li></ul> <p>LNG shipping is absolutely safe. In fact, LNG has been shipped for more than 50 years around the world without one incident of loss of containment.</p> <p>It's also important to know that Howe Sound has been an established shipping route for more than a century, and that it is well suited for the movement of LNG.</p> <p>The Accidents and Malfunctions section (Section 11.0) of the Application assessed the consequence and frequency of effects resulting from credible worst case scenarios for the Project. It showed that potential risks to the public were within the tolerable risk criteria regulated by the BC Oil and Gas Commission (OGC). The OGC will include a review of the quantitative risk assessment for this Project in the permit application review to confirm that the study and results meet the regulated requirements. Additional information on accidents and malfunctions was provided to the EAO on April 29, 2015. Siting of</p>	



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					<p>the Woodfibre LNG facility complies in every way with SIGTTO guidance as the location of the site is not within a narrow waterway as defined by SIGTTO and TERMPOL.</p> <p>Narrow channel/waterway</p> <p>TERMPOL specifies a body of navigable water of width four times the vessel's beam to be a one-way narrow channel, and seven times the beam to be a two-way narrow channel. SIGTTO specifies a body of navigable water of width five times the vessel's beam to be a one-way narrow channel. So, for a characteristic 45 metre beam LNG carrier calling at the proposed Woodfibre LNG Terminal, this would imply a width of 180 meters for a one-way narrow channel and 315 metres for a two-way narrow channel.</p> <p>The US 5th Circuit court in its judgments has specified that under Rule 9 of the International Regulations for Preventing Collisions at Sea (COLREGS) and the U.S. Inland Navigation Rules, a “narrow channel” to be 1000 feet (305 metres) while other court judgments have considered any body of water with width less than 1060% the beam of the vessel, which would be 488 metres for Woodfibre LNG, to be a narrow channel.</p> <p>SIGTTO's guidance principles also recommend turning circles to have a minimum diameter of twice the overall length of the largest LNG carrier (i.e., 600 m for Woodfibre LNG) and TERMPOL requires turning circle of 2.5 times the length, which equates to 750 m.</p> <p><i>LNG Carriers &amp; Howe Sound Shipping Channel / Route</i></p> <ul style="list-style-type: none"><li>• An LNG carrier needs a 180-metre (one way) wide channel for transit and 600 metre wide channel for turning with tugs.</li><li>• Howe Sound at its narrowest along the shipping route is 1440 metres, or 4725 feet.</li><li>• The width of Howe Sound at the proposed Woodfibre LNG terminal is 5.2km or 17,060 feet with nearest distance to Darrell Bay being 2.7 km or 8858 feet, and 60 meters deep with no large vessel movements within 2.7 km or 8858 feet.</li></ul> <p><i>Additional Information</i></p> <p>Subject to the recommendations of Transport Canada's TERMPOL Review Committee, which includes Transport Canada, Pacific Pilotage Authority, BC Coast Pilots and Canadian Coast Guard, Woodfibre LNG has always maintained that it would deploy at least three tugs in an escort pattern, at least one of which will be tethered, to provide a dynamic safety awareness zone for recreational and pleasure craft around the LNG carrier during its transit within Howe Sound. This dynamic safety awareness zone would extend up to 50 meters on either side of the vessel and up to 500 metres in front and, being dynamic in nature, would be transient with the movement of the LNG carrier. This arrangement of tugs also serves as an emergency provision to address contingencies that may require the vessel to stop or engage in manoeuvres at very short notice.</p> <p>Please also refer to the Public Safety and Marine Transport information sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

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1335	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>My wife and I are against the Woodfibre LNG along with most of the people we know in Squamish. Fossil Fuel is not the future for this world and certainly not for Howe Sound which has only recently started to return to what it must have been like before humans polluted it. Regardless of any arguments that the pollution from LNG isn't that bad, the fact is that there will be some pollution which is not acceptable for the very minimal gain to our community. The winds will blow towards town most days and any pollution is not acceptable. This region can and should thrive on tourism and recreation.</p> <p>Please don't green light this foul project.</p>	LNG Project	<p>Thank you for your comment.</p> <p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p>	
1336	March 23, 2015	Nicole Moore - Squamish, British Columbia	<p>REASON ONE - 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.</p> <p>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.</p> <p>REASON TWO - ENVIRONMENT: Missing baseline studies</p> <p>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 project.</p> <p>REASON THREE - ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life Woodfibre LNG has secured the water license to extract water from Mill Creek, which flows through the Woodfibre site. The</p>	LNG Project	<p>Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 12, 18, and 19.</p>	

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			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.			
1337	March 23, 2015	Colin Garritty - Squamish, British Columbia	Howe Sound is slowly returning to normal after a long period of environmental abuse. Plans for LNG in this area threaten that recovery, mar a signature tourism resource, and risk irreparable damage to the shared natural heritage of all British Columbians.	Recovery of Howe Sound Effects of the Project on Tourism	<p>The goal of Woodfibre LNG Limited is to develop a project that provides sustained economic growth while continuing to support the work that has been done to improve Howe Sound.</p> <p>Woodfibre LNG Limited is of the view that the Woodfibre site is the right fit for an LNG facility. It features: zoned industrial, more than 100 years of industrial use, deepwater port, access to established shipping routes, access to FortisBC pipeline, access to BC Hydro transmission grid, and access to labour force.</p> <p>Woodfibre LNG Limited is also of the view that tourism and industry can work together to create responsible economic development in Squamish. BC Ferries and Squamish Terminals have shown how industry can successfully coexist with local tourism and recreation, and Woodfibre LNG Limited is working hard to follow that example.</p> <p>An assessment of the potential effects of the Project on tourism is included in Section 6.2 Labour Market and Section 6.3 Sustainable Economy. The Application concluded that there were no Project-related significant adverse residual effects to the economy.</p> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p>	

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1338(i)	March 23, 2015	Magdalena Gronowska - Britannia Beach, British Columbia	<p>Please see attached PDF</p> <p>To: The Environmental Assessment Office, Ministry of the Environment CC: The Honourable Mary Polak</p> <p>I was drawn to the community of Britannia Beach for its breathtaking natural beauty and my ability to access snow-capped mountains, lush coastal rainforests and ocean recreation right from my doorstep. This area also boasts a plethora of land and marine wildlife, and our community has witnessed a resurgence of Orcas, dolphins and whales in the Sound. Our growing Britannia Beach community is also the closest residential neighbour to the proposed Woodfibre LNG plant (WLNG), which will have direct impacts on our community.</p> <p>I am originally from Ontario, where I've worked for the Ministry of Environment and the Ministry of Energy in the areas of climate change policy, air policy, water policy, air and GHG mitigation technologies, and electricity rate mitigation policy. After reviewing Woodfibre Ltd's proposal from the perspectives of a policy maker, environmental scientist, and affected resident, there are several elements of the WLNG EA proposal that have motivated me to participate in the EA process as a member of the public for the first time.</p> <p><b><u>Human Safety and Project Siting Concerns</u></b></p> <p>Given our communities' close proximity to the proposed LNG facility (Britannia Beach is approximately 5 km distance), I am very concerned about potential health and safety impacts in the event of upset conditions, an industrial accident, or an explosion at the proposed plant / LNG tankers / LNG storage facility. Given that Canada, and British Columbia, are lacking in adequate legislative frameworks that define where specifically LNG plants can be safely situated (a major legislative/regulatory gap for both jurisdictions), I request that Woodfibre LNG be required to comply with accepted international standards for the siting of LNG plants.</p> <p>According to the Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards, LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic — a contradictory situation in this case. The proposed siting of the Woodfibre LNG (WLNG) terminal, and associated transit of LNG tankers through Howe Sound, contravenes international safety standards and practice, and therefore poses an unacceptable risk to the safety of the communities situated along the shores of Howe Sound (West Vancouver, Bowen Island, Bowyer Island, Anvil Island, Passage Island, Porteau Cove, and other communities along the Sea to Sky highway, including Britannia Beach). Thus, in the event of a major accident or terrorist attack, people along the shipping route are at risk of death by</p>	LNG Siting	<p>Thank you for your suggestions.</p> <p>Siting of the Woodfibre LNG facility complies in every way with the Society of International Gas Tanker &amp; Terminal Operators Ltd's (SIGTTO) guidance as the location of the site is not within a narrow waterway as defined by SIGTTO and TERMPOL (Technical Review Process of Marine Terminal Systems and Transshipment Sites).</p> <p><i>Narrow channel/waterway</i></p> <p>TERMPOL specifies a body of navigable water of width four times the vessel's beam to be a one-way narrow channel, and seven times the beam to be a two-way narrow channel. SIGTTO specifies a body of navigable water of width five times the vessel's beam to be a one-way narrow channel. So, for a characteristic 45 metre beam LNG carrier calling at the proposed Woodfibre LNG Terminal, this would imply a width of 180 meters for a one-way narrow channel and 315 metres for a two-way narrow channel.</p> <p>The US 5th Circuit court in its judgments has specified that under Rule 9 of the International Regulations for Preventing Collisions at Sea (COLREGS) and the U.S. Inland Navigation Rules, a "narrow channel" to be 1000 feet (305 metres) while other court judgments have considered any body of water with width less than 1060% the beam of the vessel, which would be 488 metres for Woodfibre LNG, to be a narrow channel.</p> <p>SIGTTO's guidance principles also recommend turning circles to have a minimum diameter of twice the overall length of the largest LNG carrier (i.e., 600 m for Woodfibre LNG) and TERMPOL requires turning circle of 2.5 times the length, which equates to 750 m.</p> <p><i>LNG Carriers &amp; Howe Sound Shipping Channel / Route</i></p> <ul style="list-style-type: none"> <li>• An LNG carrier needs a 180-metre (one way) wide channel for transit and 600 metre wide channel for turning with tugs.</li> <li>• Howe Sound at its narrowest along the shipping route is 1400 metres, or 4593 feet.</li> <li>• The width of Howe Sound at the proposed Woodfibre LNG terminal is 5.2 km or 17,060 feet with nearest distance to Darrell Bay being 2.7 km or 8858 feet and 60 meters deep with no large vessel movements within 2.7 km or 8858 feet.</li> </ul> <p><i>Additional Information</i></p> <p>Subject to the recommendations of Transport Canada's TERMPOL Review Committee, which includes Transport Canada, Pacific Pilotage Authority, BC Coast Pilots and Canadian Coast Guard, Woodfibre LNG has always maintained that it would deploy at least three tugs in an escort pattern, at least one of which will be tethered, to provide a dynamic safety awareness zone for recreational and pleasure craft around the LNG carrier during its transit within Howe Sound. This dynamic safety awareness zone would extend up to 50 meters on either side of the vessel and up to 500 metres in front and, being dynamic in nature, would be transient with the movement of the LNG carrier. This arrangement of tugs also serves as an emergency provision to address contingencies that may require the vessel to stop or engage in manoeuvres at very short notice.</p> <p>Woodfibre LNG will develop a Squamish Harbour Vessel Traffic Plan to identify strategies to minimize displacement of marine-based recreational activities. As a component of the Squamish Harbour Vessel Traffic Plan, Woodfibre LNG will also work with Matthews Southwest and Bethel Lands Corporation, and District of Squamish, to minimize displacement of recreation activity by Project-associated</p>	



Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
			<p>asphyxiation or death/injury by fire or explosion. Therefore, I would like to request that the province deny WLNG proposal on the grounds of non-compliance with international LNG siting standards. There are alternative LNG proposals being considered in your province that are a better fit with SIGTTO LNG Terminal Siting Standards, and which would provide lower health, safety and environmental risks.</p> <p>If the province disregards internationally safety standards (thereby accepting responsibility for these risks by allowing this project to proceed), I ask that your government mitigate the serious and life threatening risks posed by this project at the proposed site by requesting the following from the proponent:</p>		<p>ferry and water taxi traffic that travels to and from the Project site.</p> <p>Please also refer to the Marine Transport information sheet that has been developed as part of the Woodfibre LNG Limited response to public comments.</p>	
1338(ii)	March 23, 2015	Magdalena Gronowska - Britannia Beach, British Columbia	<p><b>1. Require an Operational ERP</b> — In their EA submission, the proponent is missing an Emergency Response Plan (ERP) for the operational phase of the project in the event of a large scale disaster (such as an explosion of several / all tankers in a transport carrier). The proponent has deemed such an event to be a low risk' scenario as a means to justify the absence of an operational ERP in their submission. However, as a resident of Howe Sound, in close proximity to facility and tanker operations, I feel that the development of appropriate emergency response / contingency plans, including advanced coordination and planning with appropriate response personnel, should be a requirement for the proponent.</p> <p><b>2. Assess emergency response regional capacity and provide mitigation measures for catastrophic events</b> — I have significant concerns that WLNG and municipal/provincial/federal emergency response teams will not be suitably equipped (re infrastructure), trained, or sufficiently staffed to handle a catastrophic emergency from the LNG sector. Therefore, I ask that your government require the proponent to conduct additional work assessing facility-level, local and regional emergency response capacity, the response coordination required between various private-public sector agents (e.g. WLNG, local municipalities, Coast Guard etc.), and to identify gaps/needs for safe LNG operations in the greater Vancouver area. The province may also wish to consider imposing additional conditions for project approval, such as requiring the proponent to set up a contingency fund for response training, facilities, personnel, and environmental clean up to help manage and mitigate future LNG related emergencies/disasters (note, this could take the form of a private-public partnership). I'd like to add that the rationale behind these safety request is that, as fellow civil servants, we have both experienced the federal governments' substantial reductions in environmental oversight through funding cuts (e.g., the recent closure of the Kitsilano Coast Guard base, which could have provided assistance in an WLNG</p>	Emergency Response Terrorism	<p>At Woodfibre LNG, safety is the number one priority. Woodfibre LNG will be designed for the safe and efficient handling of liquefied natural gas, both on land and on water. This includes standards set out in the BC Oil and Gas Activities Act and the associated Liquefied Natural Gas Facility Regulation, national and BC building codes, as well as national and international standards, guidelines and codes of practice where there are no applicable codes for BC.</p> <p>Please also refer to Section 2.2.5.2 Project Design Legislation and Standards. The Project must comply with the CSA Z276 Liquefied Natural Gas – Production, Storage and Handling standard. This program will include a detailed Emergency Response Plan including documented emergency response procedures, required equipment, training requirements, identification of trained personnel and plans for emergency drills and exercises.</p> <p>It is Woodfibre LNG Limited's intention to be self-sufficient for all possible emergency situations and it is not anticipated that Woodfibre LNG Limited would require First Responder emergency services. In addition, Woodfibre LNG Limited will continue discussions with local government and other emergency service providers in the LAA to ensure a robust communications plan in the unlikely event of an emergency related to the Woodfibre LNG Project.</p> <p>The Accidents and Malfunctions section (Section 11.0) of the Application assessed the consequence and frequency of effects resulting from credible worst case scenarios for the Project. It showed that potential risks to the public were within the tolerable risk criteria regulated by the BC Oil and Gas Commission (OGC). The OGC will include a review of the quantitative risk assessment for this Project in the permit application review to confirm that the study and results meet the regulated requirements. Additional information on accidents and malfunctions was provided to the EAO on April 29, 2015. During operation, major accidents at LNG facilities are very rare. LNG is not explosive in an unconfined environment. Two fire / vapour cloud explosions at LNG facilities are known to have occurred in the past 60 years. A vapour cloud and fire in Ohio occurred in 1944 because of leaks from an LNG tank constructed from inappropriate material, and in 2004 an explosion occurred in Algeria because of a steam boiler problem (boilers are not part of the Project design). Standards for modern LNG facilities have benefited from the lessons learned from these accidents, and include design requirements that avoid these accidents. Transport Canada's marine security programs, including</p>	



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			<p>emergency), regulatory/legislative changes, and the offloading of federal environmental oversight to overstretched provincial/local governments.</p> <p>3. <b>Additional analysis re a terrorist attack</b> — The proponent excluded a terrorist attack from the scope of the EA. I would ask that WLNG consider potential implications in a follow up report (despite WLNGs perception of such a "low risk"/out of scope event) due to the severity of potential impacts.</p> <p>To the proponent, I would encourage that Woodfibre LNG consider creating a local Community Advisory Panel (e.g., see Holcim Canada's Community Advisory Panel initiatives for reference as a successful Canadian model), to provide, encourage and facilitate two-way communication between local residents, regional stakeholders such as the SLRD, and the proposed facility (e.g., to inform local communities about daily plant operations and emergency management plans; to keep local stakeholders involved in decision making).</p>		<p>strategies, programs and regulations, protect and preserve the efficiency of Canada's marine transportation system against unlawful interference, terrorist attacks or use as a means to attack our allies. (see <a href="http://www.tc.gc.ca/eng/marinesecurity/menu.htm">http://www.tc.gc.ca/eng/marinesecurity/menu.htm</a>)</p> <p>As part of the OGC permitting process, Woodfibre LNG Limited will be required to prepare a Safety and Loss Management Plan, which will include an emergency response plan and a security management plan. In addition, the site will be fenced and a control zone around the marine portion of the Project area will be established. The objective for the control zone and fencing is for public safety reasons, but will also be designed to prevent access by saboteurs.</p> <p>Security for LNG carriers in transit will be addressed by the Canadian Coast Guard and Transport Canada. It is unlikely that an attack on a LNG carrier would successfully penetrate an LNG container and result in loss of containment, given the multiple layers of steel that would need to be penetrated. The consequence and frequency for a worst case scenario for potential loss of containment of LNG on an LNG carrier due to grounding and collision with another vessel is considered in Appendix 11-1 of the Application.</p> <p>Is it not anticipated that penetration of an LNG container on an LNG carrier would result in an explosion. It is not anticipated that a collision can result in damage to more than one container. Additional analysis for marine risks will be carried out during the TERMPOL assessment for the Project.</p> <p>Please also refer to the Public Safety information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	
1338(iii)	March 23, 2015	Magdalena Gronowska - Britannia Beach, British Columbia	<p><b><u>Additional Comments on Select Impacts and Proposed Mitigation Measures</u></b></p> <p><b>Land Resource Use / Marine Transport / Sustainable Economy</b> — As a Britannia Beach resident, I value access to the ocean for recreation. I regularly kiteboard from the Squamish spit and boat and fish, thus, I am concerned that the proposed LNG facility and LNG tankers will lead to restrictions to the recreational boating that residents enjoy within Howe Sound. I am pleased to see that the proponent plans to consult with recreational stakeholder groups and I request that, additionally, WLNG provide sufficient opportunities to the general pubic (including Britannia Beach residents — and not just select advocacy groups/marine clubs) to identify options for mitigating impacts to recreational boating access (e.g., tankers traversing the Sound in morning hours, on weekdays only).</p>	Effect of the Project on Recreation	<p>Woodfibre LNG Limited is of the view that the Woodfibre site is the right fit for an LNG facility. It features: zoned industrial, more than 100 years of industrial use, deepwater port, access to established shipping routes, access to FortisBC pipeline, access to BC Hydro transmission grid, and access to labour force.</p> <p>Woodfibre LNG Limited is also of the view that tourism and industry can work together to create responsible economic development in Squamish. BC Ferries and Squamish Terminals have shown how industry can successfully coexist with local tourism and recreation, and Woodfibre LNG Limited is working hard to follow that example.</p> <p>The Application assesses the potential effects of the Project to outdoor recreation in Section 7.4 Land and Resource Use. With the proposed mitigation, it is not likely that there will be significant residual effects to outdoor recreation.</p> <p>Please also refer to the Marine Recreation information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

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1338(iv)	March 23, 2015	Magdalena Gronowska - Britannia Beach, British Columbia	<b>Light impacts on wildlife and humans —</b> Regarding the mitigation of light impacts on birds, bats, and mammals (i.e., 5.12, 5.13, 5.17, I ask your government to hold WLNG accountable to their proposed mitigation measures as conditions of its licenses/EA certificate (e.g., downward pointing lights, minimizing UV technology, minimizing lights during breeding/migration season). I value dark skies at night and am concerned about deleterious light pollution emitted from the facility. I appreciate that the proponent conducted a light study that included my community (i.e., POR1) and that cumulative light impacts were also assessed.	Effect of the Project on Light	<p>Should an Environmental Assessment Certificate be granted for the Project, a Table of Conditions will be developed that outlines all of the requirements with which the Project will have to comply. Woodfibre LNG Limited will be legally responsible for ensuring all conditions are met.</p> <p>The Project's light effects are expected to be minor given their scale and the historical and current level of human-related disturbance within the regional assessment area.</p> <p>Woodfibre LNG is designing the facility to reduce the disturbance due to light emissions as much as possible.</p> <p>Mitigation measures have been developed to avoid and minimize the potential adverse effects of the Project. Mitigation measures that would be implemented to reduce light emissions of the facility would include the following:</p> <ul style="list-style-type: none"><li>• Lighting fixtures will be fully shielded to minimize uplight to the atmosphere.</li><li>• Lighting for the Project will be designed to achieve the required light levels to ensure worker health and safety onsite while minimizing luminous flux, within the guidelines outlined by the engineering team.</li><li>• Where possible and subject to safety requirements, onsite structures will be dark in colour to absorb most of the incident light.</li></ul> <p>For more information, please see Section 5.5 Light of the Application, which includes an assessment of the potential effects of the Project.</p>	
1338(v)	March 23, 2015	Magdalena Gronowska - Britannia Beach, British Columbia	<b>Visual Quality (7.5) —</b> As part of their permitting/EA approval, I request that the EAO require the proponent be held accountable to the mitigation measures proposed in the EA submission for minimizing visual impacts; in particular, these include painting facilities with non-glare paint in natural colours and screening land-based infrastructure with vegetation.	Effect of the Project on Visual Amenities	<p>Should an Environmental Assessment Certificate be granted for the Project, a Table of Conditions will be developed that outlines all of the requirements with which the Project will have to comply. Woodfibre LNG Limited will be legally responsible for ensuring all conditions are met.</p> <p>The Project's visual effects are expected to be minor given their scale and the historical and current level of human-related disturbance within the regional assessment area.</p> <p>Woodfibre LNG is designing the facility to reduce the size of the disturbed area and to blend it into the environment as much as possible.</p> <p>Mitigation measures have been developed to avoid, minimize, restore onsite or offset the potential adverse effects of the Project. Mitigation measures that would be implemented to reduce the visibility of the facility would include the following:</p> <ul style="list-style-type: none"><li>• reducing the level of contrast of buildings by using external surface finishing that has low glare and natural colours</li><li>• monitoring and maintaining natural screening to ensure minimal visibility of infrastructure</li><li>• providing additional screening of land-based infrastructure through temporary or permanent plantings where possible and safe to do so</li></ul> <p>For more information, please see Section 7.5 Visual Quality of the Application, which includes an assessment of the potential effects of the Project on the viewscape, including from the Sea-to-Sky Gondola.</p>	

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1338(vi)	March 23, 2015	Magdalena Gronowska - Britannia Beach, British Columbia	<b>Atmospheric Sound (5.4)</b> — A number of Britannia Beach residents run small businesses / technology companies (including my partner) from their home or telecommute and nearby tourist attractions like the Britannia Mine Museum attract the public to the area during the day. I appreciate that the proponent has proposed several mitigation methods to reduce the levels of noise emitted, particularly during the construction phase. Given that sound travels considerable distances across open water, and that Britannia Beach has a direct line of sight (and noise) to the facility, I ask that WLNG erects adequate acoustical screening to shield our community from high-noise activities during the work-day.	Effect of the Project on Noise	<p>The potential Project-related effects on sound were assessed in Section 5.4 Atmospheric sound of the Application. The assessment used a predictive sound model, and included construction and operation sounds, including sound from the LNG carriers. The sound assessment concluded that sound from the Project met OGC guidance as well as Health Canada guidance for sound levels.</p> <p>In addition, two of the factors that Woodfibre LNG Limited took into consideration when assessing alternatives and choosing a seawater cooling system over an air cooling system was public concern about noise and visual effects from using air cooling.</p>	
1338(vii)	March 23, 2015	Magdalena Gronowska - Britannia Beach, British Columbia	<b>Decommissioning activities and site remediation</b> — The environmental impacts to the sound are of particular concern to myself and numerous Howe Sound residents. The area around Britannia Beach, near the currently proposed LNG site, had been in the past officially recognized as the "worst point source of mineral contamination in North America" by the Federal government. Remediation efforts from previous industrial activities in this region (e.g., the Britannia copper mine) have cost tens of millions of taxpayer dollars and continue to this day. I ask the EAO reviewers to please ensure that sufficient remediation plans and contingency funds have been proposed by WLNG (as this area is not one that I have sufficient experience in to provide specific recommendations) to prevent further environmental degradation and taxpayer burden at this project's end of life.	Industrial Legacy Decommissioning	<p>An LNG permit holder who no longer intends to operate the LNG facility is required: a) to comply with s. 19 of the Environmental Protection and Management Regulation as soon as practicable if the facility is on private land; and to decommission the site as soon as practicable (including removal of structures and undertaking and reporting on environmental testing to determine the extent of any contamination testing). The LNG permit holder is responsible for preparing an action plan to mitigate any contamination and to implement the same to the satisfaction of the BC Oil &amp; Gas Commission (OGC). (Liquefied Natural Gas Facility Regulation, BC Reg. 146/2014, s. 21)</p> <p>If an operator becomes insolvent and measures to keep it operating through another party are unsuccessful, the BC Oil &amp; Gas Activities Act, SBC 2008, c. 36, empowers the OGC to designate a site an orphan site and to restore an orphan site using funds collected into an orphan site fund. This fund is built from contributions by oil and gas operators in the province. If the commission uses money from this fund to restore an orphan site, the amount used remains a debt as against the bankrupt party.</p>	
1338(viii)	March 23, 2015	Magdalena Gronowska - Britannia Beach, British Columbia	<b>Economic Effects (Real Estate)</b> — I disagree with the proponent's assessment that there are no residential developments / private properties in close proximity to the project site as the expanding Britannia Beach community resides in close proximity to the project site (between 5 and 8 km distance, in a line of sight across the Sound). Our real estate values will be directly impacted by the noise, light and air emissions generated by the facility and tanker traffic. Therefore, I also ask that the proponent assess real estate impacts on the Britannia Beach community.	Effects of the Project on Real Estate	<p>Woodfibre LNG offers the following information about the Woodfibre LNG Project. The Project site is accessible by water only, and there are no permanent residences or private property adjacent to or within several kilometres of the Project site. Real Estate Value was not selected as a valued component as the Project site is zoned for industrial use and a change of land use designation and zoning is not required.</p>	

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1338(ix)	March 23, 2015	Magdalena Gronowska - Britannia Beach, British Columbia	<p>I, along with the thousands of residents along Howe Sound, recognize that a pristine and natural Howe Sound is both an environmental asset, which provides valuable ecosystem services, and a world class tourist destination for BC. Therefore, on behalf of my neighbours, I ask that your Ministry and its partner Ministries conduct a thorough analysis of the proposed project to ensure that any future impacts to this beautiful area are mitigated and managed.</p> <p>Sincerely, Magdalena Gronowska MASc, Environmental Engineering, University of Toronto HBSc, Environmental Analysis and Monitoring, University of Toronto</p>	EA Process	Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.	
1339(i)	March 23, 2015	Eoin Finn - Bowyer Island, British Columbia	<p>MARINE WATER QUALITY: Some comments and questions</p> <p>1. Management Plans</p> <ul style="list-style-type: none"><li>• 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?</li><li>• 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?</li><li>• Eg. 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.</li></ul>	Environmental Management Plans	<p>Should an Environmental Assessment Certificate be granted for the Project, a Table of Conditions will be developed that outlines all of the requirements with which the Project will have to comply. Woodfibre LNG Limited will be legally responsible for ensuring all conditions are met.</p> <p>Woodfibre LNG Limited will develop safety, environmental, operational plans that will meet all regulations. The plans will include mitigation measures designed to address adverse effects and cumulative effects. Regulatory agencies and Aboriginal groups will have the opportunity to provide input into plans as they are developed. For example, Squamish Emergency Services will play a key role in the Project's emergency and safety planning.</p>	

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1339(ii)	March 23, 2015	Eoin Finn - Bowyer Island, British Columbia	<p>2. Dechlorination of Output Water</p> <ul style="list-style-type: none"><li>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.</li><li>Please define what 'as required' encompasses.</li><li>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?</li><li>How would this dechlorination process be implemented?</li><li>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.</li><li>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?</li></ul>	Seawater Cooling System	<p>Additional information on the seawater cooling system intake and discharge (including dechlorination) was provided to the EAO on April 23, 2015.</p> <p>The term “as required” refers to the implementation of applicable mitigation measures in unique situations that require an adaptive management response. Woodfibre LNG Limited is committed to environmental stewardship and protection and will implement a situation-specific mitigation measure for each and every situation that requires mitigation. For example, residual chlorine in seawater discharge will be managed to meet BC and Canadian water quality guidelines (Canadian Council of Ministers of the Environment) at the discharge point and at the edge of the initial dilution zone. The exact concentration of chlorine required in order to prevent biofouling will be further developed as the project design moves forward. If the situation arises where the concentration of residual chlorine will not meet applicable water quality guidelines, a de-chlorination process will be implemented such that all discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the Fisheries Act.</p> <p>To prevent biofouling of the seawater cooling system intake lines, the use of a biofouling agent such as sodium hypochlorite is intended to discourage the growth of oysters, mussels, and barnacles. The biofouling agent will be applied before the heat exchangers. Instrumentation will be installed to determine and adjust the optimum dosage of hypochlorite solution to the seawater so the minimum required amount of chemical is used. Hypochlorite will be produced on site in a modular electro-chlorination process using seawater as the feed stock. The hypochlorite strength will be less than 1 percent as active chlorine.</p> <p>Prior to discharge, the seawater will pass through a de-aeration tank, and if required, a de-chlorination system will be added to the process for removal of residual chlorine before the seawater is returned to Howe Sound. Studies will be undertaken during detail design to determine the appropriate de-chlorination system, the optimal dosing, and the dosing regimen (most likely pulse dosing). It is anticipated that the de-chlorination system will be an enclosed skid mounted unit requiring minimal operator attention and utilise a de-chlorination agent that does not require extensive site handling.</p> <p>Several de-chlorination agents are commercially available and widely used by municipalities on water and wastewater utilities. Sodium bisulfite, sodium sulfite, sodium thiosulfate and ascorbic acid are most frequently used by water utilities for de-chlorination. The choice of a particular de-chlorination agent is dictated by site-specific issues such as the nature of water release, strength of chlorine, volume of water release, and distance from receiving waters.</p> <p>Concentration of residual chlorine in the water discharged to the marine environment in Howe Sound will be below the Canadian water quality guideline of 0.5 µg/L (CCME 2014) at the edge of the initial dilution zone. The concentration of residual chlorine within the initial dilution zone cannot be acutely toxic and therefore must be 0.02 mg/L or less. Canadian water quality guidelines are science-based targets of water quality that are intended to provide protection of freshwater and marine life from anthropogenic stressors such as chemical inputs or changes to physical components (e.g., pH, temperature, and debris) (CCME 1999). The Canadian water quality guidelines are numerical limits based on the most current, scientifically defensible</p>	



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					<p>toxicological data available for parameter of interest (including chlorine) (CCME 1999). Guideline values are developed in order to protect all forms of aquatic life, including the most sensitive life stage of the most sensitive species over the long term (CCME 1999). Since residual chlorine levels will be within science-based water quality guidelines designed to be protective of aquatic life, there is not likely to be an impact to brown algae species in the intertidal and sub tidal zones of the Howe Sound.</p> <p>Environment monitoring plans will be developed and implemented to confirm that the recommended mitigation measures are effective. Baseline water quality data (e.g., temperature, salinity) was collected as part of the environmental assessment.</p> <p>Additional information on the seawater cooling system intake and discharge was provided to the EAO on April 23, 2015. Please also refer to the Seawater Cooling System information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	
1339(iii)	March 23, 2015	Eoin Finn - Bowyer Island, British Columbia	<p>3. Self-Assessment pg 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"</p> <ul style="list-style-type: none"><li>• Please define the term "self-assessment"?</li><li>• What does it involve?<ul style="list-style-type: none"><li>▫ What parameters will be measured and assessed?</li><li>▫ What guidelines will be followed?</li><li>▫ What oversight is there to the process and assessed results?</li><li>▫ o Does this self-assessment caveat allow the proponent to overrule DFO guidelines?</li></ul></li></ul>	Regulatory Requirements	<p>Under the Fisheries Act, an authorization is only required if the work, undertaking or activity will result in serious harm to a commercial, recreational or Aboriginal fishery. The least-risk fisheries work windows are intended to guide proponents and help avoid causing serious harm; however, work can be conducted outside of these windows if it does not result in serious harm. The term self-assessment refers to the process that Woodfibre LNG Limited's qualified independent environmental professionals would undertake in order to determine whether the removal of the creosote piles is likely to result in serious harm and the mitigation measures that would be required to avoid this harm.</p>	

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1339(iv)	March 23, 2015	Eoin Finn - Bowyer Island, British Columbia	<p>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.</p> <ul style="list-style-type: none"><li>• I feel that this is very narrow is focus and scope, as impacts from the project can expand well beyond the defined immediate project geographic area, which, according to recent surveys conducted by Islands Trust, is well populated with eel-grass</li><li>• Both eelgrass and sponge species are negativity affected by increased sedimentation and decreased photo availability.</li><li>• Eelgrass in particular is critical habitat for juvenile fish</li><li>• 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.</li><li>• Failure to account for this as a potential or even likely impact evokes a sense of irresponsibility on the part of the proponent.</li></ul> <p>References: Dolf J. van Wijk, Sander G.M. Kroon, Irmgard C.M. Gattener-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, <a href="http://dx.doi.org/10.1006/eesa.1998.1685">http://dx.doi.org/10.1006/eesa.1998.1685</a>. (<a href="http://www.sciencedirect.com/science/article/pii/S0147651398916852">http://www.sciencedirect.com/science/article/pii/S0147651398916852</a>) 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, <a href="http://dx.doi.org/10.1016/j.scitotenv.2010.01.029">http://dx.doi.org/10.1016/j.scitotenv.2010.01.029</a>. (<a href="http://www.sciencedirect.com/science/article/pii/S0048969710000549">http://www.sciencedirect.com/science/article/pii/S0048969710000549</a>)</p>	Effect of the Project on Marine Water Quality	Since submitting the Application, Woodfibre LNG Limited has continued baseline data collection to supplement the information collected in support of the environmental assessment. This work includes SCUBA surveys of the Project area, and it supports the underwater video surveys previously conducted.	

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1340	March 23, 2015	Daniel - Squamish, British Columbia	<p>SAFETY: Siting an LNG facility in Howe Sound violates international safety standards and practices, putting 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.</p> <p>The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards</p> <p>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.</p> <p>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.</p> <p>HEALTH: Social costs and health impacts of air pollution Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrous oxides (NOx) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Emissions of NOx and SO2 interact with other compounds to form fine particles, which can affect both the lungs and the heart. Exposure to</p>	LNG Project	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 11-21, 46.	

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			<p>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.</p> <p>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.</p> <p>Sources:</p> <p>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</p> <p>SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility</p> <p>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. 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?</p> <p>Source: B.C. Ministry of Energy and Mines</p> <p>ECONOMY: The requested socio-economic study has not been provided</p> <p>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. 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?</p>			

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			<p>CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable</p> <p>Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year. These annual emissions of CO2 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.</p> <p>GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues</p> <p>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.</p> <p>ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life</p> <p>Woodfibre LNG has bought the water license to take water from Mill Creek. 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.</p> <p>ENVIRONMENT: Missing baseline studies</p> <p>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 project.</p> <p>VIEWSCAPES: BC Hydro clearcut of two 64 metre swaths of forest at the Woodfibre site will impact viewscapes from the Sea to Sky highway and the gondola</p> <p>BC Hydro is proposing to clearcut two 64 metre swaths of forest at the Woodfibre site which will create visible scars in the Howe Sound viewscapes which will be very visible from the highway and the gondola. This information was only made available</p>			



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			<p>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 is unsatisfactory.</p> <p>ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?</p> <p>Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Nitrogen Dioxide (NO2) 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.</p> <p>In combination with either ozone (O3) or sulphur dioxide (SO2), nitrogen dioxide may cause injury at even lower concentration levels.Sulphur Dioxide (SO2) is a toxic gas with a pungent, irritating, and rotten smell. Current scientific evidence links short-term exposures to SO2, 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).</p> <p>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 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.</p> <p>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 are of particular concern for infants, the elderly, and is directly linked to health issues such as lung or heart disease and asthma.</p>			

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1341	March 23, 2015	Personal Information Withheld - West Vancouver, British Columbia	The Sea to Sky Gondola is a 10 out of 10 tourism draw. With its pristine views, it promises to attract huge tourism \$. It, along with all of Howe Sound, will suffer as a result of an LNG industry. It reminds me of the trophy bear hunt which hurts ecotourism ,and brings in far less \$. Both the LNG plan and the bear hunt are WRONG.	Tourism	<p>Thank you for your comment.</p> <p>Woodfibre LNG Limited is of the view that the Woodfibre site is the right fit for an LNG facility. It features: zoned industrial, more than 100 years of industrial use, deepwater port, access to established shipping routes, access to FortisBC pipeline, access to BC Hydro transmission grid, and access to labour force.</p> <p>Woodfibre LNG Limited is also of the view that tourism and industry can work together to create responsible economic development in Squamish. BC Ferries and Squamish Terminals have shown how industry can successfully coexist with local tourism and recreation, and Woodfibre LNG Limited is working hard to follow that example.</p> <p>An assessment of the potential effects of the Project on tourism is included in Section 6.2 Labour Market and Section 6.3 Sustainable Economy. The Application concluded that there were no Project-related significant adverse residual effects to the economy.</p> <p>The Application assesses the potential effects of the Project to outdoor recreation in Section 7.4 Land and Resource Use. With the proposed mitigation, it is not likely that there will be significant residual effects to outdoor recreation.</p> <p>Please also refer to the Sustainable Economy information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	
1342	March 23, 2015	Personal Information Withheld - Ott Wilding, British Columbia	Please see the attached comments and questions. There was insufficient time to fully review all the documents given.		Thank you for the comment; however, Woodfibre LNG is not able to locate an attachment for this comment.	
1343	March 23, 2015	Laurie Parkinson - Bowyer Island, British Columbia	<p>Marine Mammals pg 5.19-39 Marine Mammal Management Plan, 3rd bullet "Under no circumstances, other than in the case of emergency, will vessels approach within 100m of any marine mammal." LNG tankers move through the water far faster than a marine mammal swims. How will the captain know it is getting close to a marine mammal? The marine mammal won't be visible on radar because marine mammals are mostly made of water, and so won't show up easily against the water, except if very high quality radar is used and the water is always very calm. The LNG tankers will be leased - radar quality will probably be very variable. These LNG carriers are so big the captain can't see for over 1 km ahead of the ship. Please explain the logic of this plan again - in a different more meaningful way.</p>	Effects of the Project on Marine Mammals	<p>Thank you for your questions.</p> <p>The majority of the Project-related vessels will be far smaller than the LNG carriers referenced in the comment (e.g., worker ferry, water taxi). The mitigation measure will also apply to these vessels.</p> <p>The LNG carriers will be piloted by two BC Coast Pilots and escorted by three tugs. The BC Coast Pilots know Howe Sound well and will be accustomed to watching for marine mammals. The tug operators will help the LNG carrier to watch for marine mammals and to avoid approaching within 100 m. The tugboats will be up to 50 meters on either side of the vessel and up to 500 metres in front.</p>	

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1344	March 23, 2015	Colin McCarthy - Squamish, British Columbia	<p>This project and this industry gives some hope as a beginning of some revenue being really generated in this community again.Real estate sales are not an industry. In the past, we have had industry and there have been mistakes made but now we are in a new era with new standards. I have lived in this community for my entire life. I have seen this community get more and more difficult to live in due to cost of living and lack of good paying jobs. I believe that for a community to exist, log term that there needs to be a mix of economic drivers. I believe that industry and tourism can co exist. I believe that it has to. Vancouver is a tourist mecca and it would not exist without industry.</p> <p>I do not want to trade our environment for industry but I don't believe that we have to. I hope that those who believe in the project will speak up and be heard.</p>	Economic Benefits	<p>Thank you, your comment is noted.</p> <p>The goal of Woodfibre LNG Limited is to develop a project that provides sustained economic growth while continuing to support the work that has been done to improve Howe Sound.</p> <p>Woodfibre LNG Limited is also of the view that tourism and industry can work together to create responsible economic development in Squamish. BC Ferries and Squamish Terminals have shown how industry can successfully coexist with local tourism and recreation, and Woodfibre LNG Limited is working hard to follow that example.</p> <p>An independent third party economic impact assessment of the proposed Woodfibre LNG project is included in the Application. Accounting and Consulting firm MNP found the following economic benefits of the project (2014 CAD):</p> <p>CONSTRUCTION JOBS</p> <ul style="list-style-type: none"><li>• Create 650+ jobs each year of construction.</li><li>• Create an additional 1,080+ jobs (indirect* and induced** employment) during the construction phase of the Project.</li></ul> <p>LONG-TERM OPERATION JOBS</p> <ul style="list-style-type: none"><li>• Create 100+ local jobs during operation.</li><li>• Create an additional 330+ local jobs (indirect* and induced**) during operation.</li></ul> <p>*Indirect impacts arise from changes in activity for suppliers.</p> <p>**Induced impacts arise from shifts in spending on goods and services as a consequence of changes to the payroll of the directly and indirectly affected businesses.</p> <ul style="list-style-type: none"><li>• \$83.7 MILLION: Estimated in tax revenue for all three levels of government during the construction phase of the Project.</li><li>• \$86.5 MILLION: Estimated in tax revenue for all three levels of government per year of operation.</li><li>• \$243.3 MILLION: Estimated to the District of Squamish, Resort Municipality of Whistler, Electoral Area D of Squamish-Lillooet Regional District, Squamish First Nation communities, and Metro Vancouver gross domestic product (GDP) during construction and more than</li><li>• \$122.8 MILLION in GDP per year during operation.</li><li>• For more information, please refer to Section 2.6 Project Benefits of the Application. Additional benefits from the Project are described in greater detail in Section 6.2 Labour Market, Section 6.3 Sustainable Economy and Section 7.2 Infrastructure and Community Services.</li></ul>	

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1345	March 23, 2015	Emily McCullum - Bowen Island, British Columbia	<p>I am very concerned about the Woodfibre LNG plant for the following reasons:</p> <p>-use of seawater for the cooling system -air, light, sound and water pollution from the plant -effect of increased tanker traffic on: marine life, tourism, and recreational boat traffic</p> <p>Howe Sound is one of southern British Columbia's prime natural assets. Now that pollutants have been reduced, the Sound is finally coming back to life, with larger mammals like dolphins, porpoises and whales coming in to feed on recovering populations of food fish -- and the tourists are following too, and writing home about it. To jeopardize this natural resource that benefits all for an industrial plant that benefits few seems to be the height of... well, words fail me here. I certainly will not be voting for those politicians who support this project.</p>	Seawater Cooling System Effects of the Project on the Environment	<p>Thank you for your comment.</p> <p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p> <p>All discharges to the marine environment will comply with applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the Fisheries Act. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p> <p>The assessment of potential effects of the Project on marine mammals in Howe Sound is described in Section 5.19 of the Application. The assessment indicated that vessel traffic may cause a short-term change in behaviour of marine mammals due to underwater noise. Woodfibre LNG Limited will develop and implement Underwater Noise Management Plan and a Marine Mammal Management Plan. These plans will include mitigation measures designed to address adverse effects and cumulative effects from underwater noise and monitoring programs.</p> <p>Woodfibre LNG Limited will retain a contractor to perform underwater acoustic monitoring for pre, during and post Project construction. The underwater monitoring will collect underwater sound levels and marine mammal presence (e.g., of those species present, their frequency and seasonality). This will contribute further to baseline information for both underwater sound levels and mammal presence in the Project area and in the vicinity of the Project site to monitor potential changes of marine mammals over time.</p> <p>Please also refer to the Marine Mammals information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

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					Woodfibre LNG Limited is of the view that tourism and industry can work together to create responsible economic development in Squamish. BC Ferries and Squamish Terminals have shown how industry can successfully coexist with local tourism and recreation, and Woodfibre LNG Limited is working hard to follow that example.  Additional information on the seawater cooling system intake and discharge was provided to the EAO on April 23, 2015. Please also refer to the Seawater Cooling System, Marine Mammals and Air Quality information sheet that has been prepared as part of the Woodfibre LNG Response to Public Comments.	
1346	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	This project should be supported by government. The proponent has done a significant amount of study and made design choices that consider environmental, economic and social impacts. Those making wild predictions about six-foot vessel wake, catastrophic incidents involving explosions, deadly earthquakes, the risks of hydraulic fracturing, the dangers of the sea water cooling system and the supposed impacts on tourism clearly haven't looked at all the available information and data. This is a good project that won't disrupt life as it is known now in the Howe Sound region.	LNG Project	Thank you, your comment is noted.	
1347	March 23, 2015	Dan Rogers - Gambier Islands Trustee, British Columbia	My comments are contained in the attached correspondence. Please confirm you received the attachments		Thank you for your letter. Woodfibre LNG Limited has prepared a response to this letter, which has been delivered to Dan Rogers, Gambier Island Trustee. This letter has also been posted on the EAO website as 'Woodfibre LNG Limited Response to the Dan Rogers, Gambier Island Trustee Public Comment Submission'.	
1348(i)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>The economics of this project are very unfavourable for our community.</p> <p>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?</p> <p>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. What are the benefits to Squamish? What are the costs?</p> <p>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?</p>	Employment	Thank you for your comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 15.	



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1348(ii)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	oil and gas industry is vastly disproportionate in its employment of men versus women. I want industry that provides equal opportunity for all genders. This project does not fit that bill.	Employment	<p>Woodfibre LNG Limited is an equal opportunity employer.</p> <p>Under the <i>Industry Training Authority Act</i>, the Industry Training Authority (ITA) administers BC's skilled trades system, working with employers, employees, industry, training providers and government to manage apprenticeships and credentials, set program standards and increase opportunities in the trades (see also ITA 2012).</p> <p>Woodfibre LNG Limited supports ITA developed strategies to remove barriers to employment and increase participation in the trades for under-represented groups (e.g., women, immigrants, and Aboriginal peoples). These strategies include funding for school enrolment, childcare, transportation, work tools and equipment; mentorship; on the job training; high school graduation equivalency training, mobile training; pre-apprenticeship exposure to the trades, and the development of training partnerships with employers and industries all aim to diversify the sector.</p>	
1349(i)	March 23, 2015	Cindy Brule - Squamish, British Columbia	Along with comments listed below, I've seen Squamish become one of the most desired place to live after cleaning itself from the Woodfiber pulp mill. Squamish thrives on tourism more than ever and a LNG plant at our doorstep is just not what we want. Truly clean energy (LNG is not clean) related jobs is what we need to build a work force.	Tourism LNG Project	<p>Thank you for your comments.</p> <p>Woodfibre LNG Limited is of the view that the Woodfibre site is the right fit for an LNG facility. It features: zoned industrial, more than 100 years of industrial use, deepwater port, access to established shipping routes, access to FortisBC pipeline, access to BC Hydro transmission grid, and access to labour force.</p> <p>Woodfibre LNG Limited is also of the view that tourism and industry can work together to create responsible economic development in Squamish. BC Ferries and Squamish Terminals have shown how industry can successfully coexist with local tourism and recreation, and Woodfibre LNG Limited is working hard to follow that example.</p> <p>An assessment of the potential effects of the Project on tourism is included in Section 6.2 Labour Market and Section 6.3 Sustainable Economy. The Application concluded that there were no Project-related significant adverse residual effects to the economy.</p> <p>The Application assesses the potential effects of the Project to outdoor recreation in Section 7.4 Land and Resource Use. With the proposed mitigation, it is not likely that there will be significant residual effects to outdoor recreation.</p> <p>Natural gas is the cleanest burning fossil fuel and has been identified as the best and most reliable way to help transition away from high-emission fuels such as oil and coal. This is particularly true in energy-hungry Asian markets, where Woodfibre LNG Limited plans to sell its product. In fact, replacing just one 500 Megawatt coal-fired power plant with natural gas fueled power generation for one year equates to taking 557,000 cars off the roads over the same time period<sup>11</sup>.</p> <p>Please also refer to the Sustainable Economy information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

<sup>11</sup> Centre for Liquefied Natural Gas. [http://www.lngfacts.org/resources/CLNG-PACE\\_Study\\_one-pager.pdf](http://www.lngfacts.org/resources/CLNG-PACE_Study_one-pager.pdf).

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1349(ii)	March 23, 2015	Cindy Brule - Squamish, British Columbia	<p>SAFETY: Siting an LNG facility in Howe Sound violates international safety standards and practices, putting 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.</p> <p>The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards</p> <p>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.</p> <p>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.</p> <p>HEALTH: Social costs and health impacts of air pollution Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrous oxides (NOx) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Emissions of NOx and SO2 interact with other compounds to form fine particles, which can affect both the lungs and the heart. Exposure to</p>	LNG Project	For a response to this comment, please refer to the “Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions”, comment # 11-21, 46.	

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			<p>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.</p> <p>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.</p> <p>Sources:</p> <p>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</p> <p>SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility</p> <p>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. 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?</p> <p>Source: B.C. Ministry of Energy and Mines</p> <p>ECONOMY: The requested socio-economic study has not been provided</p> <p>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. 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?</p>			

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			<p>CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable</p> <p>Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year. These annual emissions of CO2 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.</p> <p>GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues</p> <p>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.</p> <p>ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life</p> <p>Woodfibre LNG has bought the water license to take water from Mill Creek. 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.</p> <p>ENVIRONMENT: Missing baseline studies</p> <p>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 project.</p> <p>VIEWSCAPES: BC Hydro clearcut of two 64 metre swaths of forest at the Woodfibre site will impact viewscapes from the Sea to Sky highway and the gondola</p> <p>BC Hydro is proposing to clearcut two 64 metre swaths of forest at the Woodfibre site which will create visible scars in the Howe Sound viewscapes which will be very visible from the highway and the gondola. This information was only made available</p>			

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			<p>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 is unsatisfactory.</p> <p>ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?</p> <p>Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Nitrogen Dioxide (NO2) 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.</p> <p>In combination with either ozone (O3) or sulphur dioxide (SO2), nitrogen dioxide may cause injury at even lower concentration levels.Sulphur Dioxide (SO2) is a toxic gas with a pungent, irritating, and rotten smell. Current scientific evidence links short-term exposures to SO2, 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).</p> <p>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 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.</p> <p>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 are of particular concern for infants, the elderly, and is directly linked to health issues such as lung or heart disease and asthma.</p>			



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1350	March 23, 2015	Personal Information Withheld - Sunshine Coast, British Columbia	this is too risky & is reckless endangerment	Safety	<p>At Woodfibre LNG, safety is the number one priority.</p> <p>Woodfibre LNG will be designed for the safe and efficient handling of liquefied natural gas, both on land and on water. This includes standards set out in the BC Oil and Gas Activities Act and the associated Liquefied Natural Gas Facility Regulation, national and BC building codes, as well as national and international standards, guidelines and codes of practice where there are no applicable codes for BC.</p> <p>During operation, major accidents at LNG facilities are very rare. LNG is not explosive in an unconfined environment. Two fire / vapour cloud explosions at LNG facilities are known to have occurred in the past 60 years. A vapour cloud and fire in Ohio occurred in 1944 because of leaks from an LNG tank constructed from inappropriate material, and in 2004 an explosion occurred in Algeria because of a steam boiler problem (boilers are not part of the Project design). Standards for modern LNG facilities have benefited from the lessons learned from these accidents, and include design requirements that avoid these accidents.</p> <p>Liquefied natural gas (LNG) has been shipped safely around the world for more than 50 years.</p> <p>There has never been a recorded incident involving a loss of containment of an LNG carrier at sea. LNG carriers are among the most modern ships in operation. These ships have complex containment systems, double-hull protection and are heavily regulated by international and federal standards.</p> <p>In the unlikely event there is a spill from an LNG carrier, LNG will never mix with water. Instead, it will quickly return to a gas state, and because methane is lighter than air, the gas will rise and dissipate into the air.</p> <p>The Accidents and Malfunctions section (Section 11.0) of the Application assessed the consequence and frequency of effects resulting from credible worst case scenarios for the Project. It showed that potential risks to the public were within the tolerable risk criteria regulated by the BC Oil and Gas Commission (OGC). The OGC will include a review of the quantitative risk assessment for this Project in the permit application review to confirm that the study and results meet the regulated requirements. Additional information on accidents and malfunctions was provided to the EAO on April 29, 2015. Please also refer to Public Safety and Marine Transport information sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments</p>	
1351	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year. These annual emissions of CO2 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.	Greenhouse Gas Emissions	<p>Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 16.</p>	

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1352	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	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.	Regulatory Requirements	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 17.	
1353	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	Woodfibre LNG has secured the water license 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.	Mill Creek	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 18.	
1354	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	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 project.	Baseline Studies	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 19.	
1355	March 23, 2015	Laurie Parkinson - Bowyer Island, British Columbia	Marine Mammals Marine Mammal Management Plan pg 5.19-39, 4th bullet  "If marine mammals approach within 100m of a vessel, the vessel will reduce its speed, and cautiously move away from the animal. If it is not possible for the vessel to move away from or detour around a stationary marine mammal or group of marine mammals, the vessel will reduce its speed and wait until the animal(s) moves at least 100 m from the vessel prior to resuming its speed. How will you know the marine mammals is nearby? The captain can't see for over 1 km ahead of the ship. Radar won't show marine mammals, which are mostly made of water - they will blend in with the waves. If a marine mammal is seen, who will be on the ship to ensure the above plan is carried out? If crew is to be depended on for this, will they speak English? The LNG tankers WF will lease probably won't come from English speaking ports.	Effects of the Project on Marine Mammals	Thank you for the questions. The majority of the Project-related vessels will be far smaller than the LNG carriers referenced in the comment (e.g., worker ferry, water taxi). The mitigation measure will also apply to these vessels. The LNG carriers will be piloted by two BC Coast Pilots and escorted by three tugs. The BC Coast Pilots know Howe Sound well and will be accustomed to watching for marine mammals. The tug operators will help the LNG carrier to watch for marine mammals and to avoid approaching within 100 m. The tugboats will be up to 50 meters on either side of the vessel and up to 500 metres in front. All foreign vessels calling Canada must be able to communicate adequately with Marine Communication Traffic Service (MCTS) in English. Prior arrival and pilotage of these vessels within Canadian waters is mandatory and undertaken by the BC Coast Pilots.	

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1356	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	BC Hydro is proposing to clearcut 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 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 is unsatisfactory.	Visual Quality	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 20.	
1357	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>Along with comments listed below, I've seen Squamish become one of the most desired place to live after cleaning itself from the Woodfiber pulp mill. Squamish thrives on tourism more than ever and a LNG plant at our doorstep is just not what we want. Truly clean energy (LNG is not clean) related jobs is what we need to build a work force.</p> <p>SAFETY: Siting an LNG facility in Howe Sound violates international safety standards and practices, putting 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.</p> <p>The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards</p> <p>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</p>	Safety	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 11-22, 46.	

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			<p>life such as juvenile salmon, herring, and plankton which are the building blocks for all other life in Howe Sound.</p> <p>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.</p> <p>HEALTH: Social costs and health impacts of air pollution Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrous oxides (NOx) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Emissions of NOx and SO2 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.</p> <p>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.</p> <p>Sources:</p> <p>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</p> <p>SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility</p> <p>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. 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</p>			

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			<p>may increase landslide initiation. Why hasn't the geotechnical study by Knight Piesold been released?</p> <p>Source: B.C. Ministry of Energy and Mines</p> <p>ECONOMY: The requested socio-economic study has not been provided</p> <p>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. 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?</p> <p>CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable</p> <p>Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year. These annual emissions of CO2 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.</p> <p>GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues</p> <p>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.</p> <p>ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life</p> <p>Woodfibre LNG has bought the water license to take water from Mill Creek. 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</p>			



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			<p>this project from somewhere else.</p> <p>ENVIRONMENT: Missing baseline studies</p> <p>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 project.</p> <p>VIEWSCAPES: BC Hydro clearcut of two 64 metre swaths of forest at the Woodfibre site will impact views from the Sea to Sky highway and the gondola</p> <p>BC Hydro is proposing to clearcut 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 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 is unsatisfactory.</p> <p>ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?</p> <p>Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Nitrogen Dioxide (NO2) 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.</p> <p>In combination with either ozone (O3) or sulphur dioxide (SO2), nitrogen dioxide may cause injury at even lower concentration levels. Sulphur Dioxide (SO2) is a toxic gas with a pungent, irritating, and rotten smell. Current scientific evidence links short-term exposures to SO2, 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).</p> <p>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 has shown that the Howe</p>			

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			<p>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.</p> <p>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 are of particular concern for infants, the elderly, and is directly linked to health issues such as lung or heart disease and asthma.</p>			
1358	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>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.</p> <p>Sources: <a href="http://news.nationalgeographic.com/news/2013/10/13-1018-glass-sponge-reef-canada-ocean-science/">http://news.nationalgeographic.com/news/2013/10/13-1018-glass-sponge-reef-canada-ocean-science/</a> <a href="http://jordansturdymla.ca/bcltv_videos/mla-sturdy-halkett-bays-glass-sponges/">http://jordansturdymla.ca/bcltv_videos/mla-sturdy-halkett-bays-glass-sponges/</a></p>	Glass Sponge Reefs	<p>Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 45.</p>	

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1359	March 23, 2015	Jessamy Freese - Brackendale, British Columbia	<p>My concerns are as follows:</p> <p><b>SAFETY:</b> Siting an LNG facility in Howe Sound violates international safety standards and practices, putting 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.</p> <p>The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards</p> <p><b>ENVIRONMENT:</b> 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.</p> <p>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.</p> <p><b>HEALTH:</b> Social costs and health impacts of air pollution Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrous oxides (NOx) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Emissions of NOx and SO2 interact with other compounds to form fine particles, which can</p>	LNG Project	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 11-21, 46.	

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			<p>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.</p> <p>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.</p> <p>Sources:</p> <p>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</p> <p>SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility</p> <p>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. 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?</p> <p>Source: B.C. Ministry of Energy and Mines</p> <p>ECONOMY: The requested socio-economic study has not been provided</p> <p>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. 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?</p>			

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			<p>CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable</p> <p>Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year. These annual emissions of CO2 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.</p> <p>GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues</p> <p>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.</p> <p>ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life</p> <p>Woodfibre LNG has bought the water license to take water from Mill Creek. 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.</p> <p>ENVIRONMENT: Missing baseline studies</p> <p>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 project.</p> <p>VIEWSCAPES: BC Hydro clearcut of two 64 metre swaths of forest at the Woodfibre site will impact views from the Sea to Sky highway and the gondola</p> <p>BC Hydro is proposing to clearcut 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 highway and the gondola. This information was only made available during the recent BC Hydro open house held on 19th</p>			



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			<p>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 is unsatisfactory.</p> <p>ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?</p> <p>Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Nitrogen Dioxide (NO2) 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.</p> <p>In combination with either ozone (O3) or sulphur dioxide (SO2), nitrogen dioxide may cause injury at even lower concentration levels. Sulphur Dioxide (SO2) is a toxic gas with a pungent, irritating, and rotten smell. Current scientific evidence links short-term exposures to SO2, 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).</p> <p>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 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.</p> <p>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 are of particular concern for infants, the elderly, and is directly linked to health issues such as lung or heart disease and asthma.</p>			

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1360	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application).</p> <p>Nitrogen Dioxide (NO2) 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 (O3) or sulphur dioxide (SO2), nitrogen dioxide may cause injury at even lower concentration levels.</p> <p>Sulphur Dioxide (SO2) is a toxic gas with a pungent, irritating, and rotten smell. Current scientific evidence links short-term exposures to SO2, 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.</p> <p>Emissions from Woodfibre LNG will add to the pollution in Howe Sound, exacerbating the existing air quality conditions, particularly in the Squamish-Brackendale corridor.</p> <p>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 are of particular concern for infants, the elderly, and is directly linked to health issues such as lung or heart disease and asthma.</p>	Effects of the Project on Air Quality	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 13 and 46.	
1361	March 23, 2015	Personal Information Withheld - Vancouver, British Columbia	I definitely support the project. Woodfibre looks at the environment aspects seriously. This project will bring economic benefit for Squamish, for BC.	LNG Project	Thank you, your comment is noted.	

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1362	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>SAFETY: Siting an LNG facility in Howe Sound violates international safety standards and practices, putting 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.</p> <p>The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards</p> <p>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.</p> <p>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.</p> <p>HEALTH: Social costs and health impacts of air pollution Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrous oxides (NOx) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Emissions of NOx and SO2 interact with other compounds to form fine particles, which can affect both the lungs and the heart. Exposure to</p>	LNG Project	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 11-21, 46.	

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			<p>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.</p> <p>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.</p> <p>Sources:</p> <p>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</p> <p>SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility</p> <p>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. 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?</p> <p>Source: B.C. Ministry of Energy and Mines</p> <p>ECONOMY: The requested socio-economic study has not been provided</p> <p>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. 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?</p>			

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			<p>CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable</p> <p>Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year. These annual emissions of CO2 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.</p> <p>GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues</p> <p>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.</p> <p>ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life</p> <p>Woodfibre LNG has bought the water license to take water from Mill Creek. 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.</p> <p>ENVIRONMENT: Missing baseline studies</p> <p>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 project.</p> <p>VIEWSCAPES: BC Hydro clearcut of two 64 metre swaths of forest at the Woodfibre site will impact viewscapes from the Sea to Sky highway and the gondola</p> <p>BC Hydro is proposing to clearcut two 64 metre swaths of forest at the Woodfibre site which will create visible scars in the Howe Sound viewscapes which will be very visible from the highway and the gondola. This information was only made available</p>			



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			<p>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 is unsatisfactory.</p> <p>ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?</p> <p>Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Nitrogen Dioxide (NO2) 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.</p> <p>In combination with either ozone (O3) or sulphur dioxide (SO2), nitrogen dioxide may cause injury at even lower concentration levels.Sulphur Dioxide (SO2) is a toxic gas with a pungent, irritating, and rotten smell. Current scientific evidence links short-term exposures to SO2, 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).</p> <p>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 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.</p> <p>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 are of particular concern for infants, the elderly, and is directly linked to health issues such as lung or heart disease and asthma.</p>			

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1363	March 23, 2015	Jacob Freese - Brackendale, British Columbia	<p>I am strongly against the proposed Woodfibre LNG project. My concerns include the following:</p> <p>SAFETY: Siting an LNG facility in Howe Sound violates international safety standards and practices, putting 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.</p> <p>The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards</p> <p>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.</p> <p>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.</p> <p>HEALTH: Social costs and health impacts of air pollution Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrous oxides (NOx) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Emissions of NOx and SO2 interact with</p>	LNG Project	<p>Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 11-2, 46.</p>	

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			<p>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.</p> <p>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.</p> <p>Sources:</p> <p>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</p> <p>SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility</p> <p>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. 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?</p> <p>Source: B.C. Ministry of Energy and Mines</p> <p>ECONOMY: The requested socio-economic study has not been provided</p> <p>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. 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</p>			

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1364	March 23, 2015	Personal Information Withheld - Gibsons, British Columbia	I live in a community on the shores of where these tankers are going to go.that there wasn't even a public hearing scheduled here in Gibsons is appalling.	Public Consultation	Thank you for the comment. Public participation in the Environmental Assessment (EA) process helps to ensure that community values and public goals for community development are considered in project planning and decision-making. The location of the EAO Open Houses are determined by the EAO. The Proponent defers to the EAO to answer this question.	For more information related to comments on the Environmental Assessment process please see "EAO Response to Public Comments – Application Review Public Comment Period for Woodfibre LNG, January 22 – March 23, 2015" under the Application Review EAO Generated Documents <a href="#">[Link]</a> .
1365	March 23, 2015	Laurie Parkinson - Bowyer Island, British Columbia	When the LNG is loaded onto a leased tanker at Woodfibre LNG, for liability purposes, who owns/has responsibility for the LNG? We have heard different things re this over the last year.	Liability	Thank you for the question. Both Woodfibre LNG Limited and the LNG carriers will carry appropriate levels of insurance, including coverage for any accidents, potential spills or discharge of pollutants, both marine and on-land. Every vessel that is employed for Woodfibre LNG Limited will carry compulsory insurance for \$1 billion under the Civil Liability Convention (CLC) for oil pollution. In event of a pollution event, and after all reasonable steps have been taken to recover payment of compensation from the owner of the ship or if the owner of the ship is not liable by reason of any of the defenses described in subsection 77(3), Article III of the Civil Liability Convention or Article 3 of the Bunkers Convention, and neither the International Fund or the Supplementary Fund are liable or in the event the claim exceeds the owners maximum liability under the CLC Convention the liability will be covered by the Canadian Ship-source Oil Pollution Fund. Every vessel destined to a Canadian Port will hold a valid contractual arrangement with the Western Canada Marine Response Corporation under the <i>Canada Shipping Act 2001</i> Part I – Pollution Prevention and Response.	
1366	March 23, 2015	Personal Information Withheld - Brackendale, British Columbia	Please do not allow LNG tankers to be fuelled in Howe Sound as this could create fuel spills in the water.	Refuelling	Thank you for the comment. LNG carriers are typically dual fuel, and run on the boil off gas i.e. methane from their storage tanks. Bunker fuel is typically used only as a backup fuel, and LNG carriers on average carry between 2,000 and 3,000 tonnes of bunker fuel. All oil tanks such as fuel oil tanks and lube oil tanks are protected by double hull construction on LNG carriers. LNG carriers travelling to and from the Woodfibre LNG terminal will not be refueled with bunker fuel at the Woodfibre Terminal in Squamish or within Howe Sound. LNG carrier operators will determine a suitable and safe refueling location or anchorage for their LNG carriers subject to fuel availability and local regulations.	
1367	March 23, 2015	Personal Information Withheld - Tsawwassen, British Columbia	We do not need this facility. Long term, we could use the gas in Canada.	Energy Policy	Thank you for the comment. Current forecasts are that the global demand for energy will increase by 35% by 2035, and the specific demand for natural gas is expected to increase by 55%. The increasing standards of living and rapid economic growth in Asia (6-8% GDP growth annually) are the key triggers for the increase in demand. China's energy demand increases by 5% annually. Not only is Asia seeking new sources of energy to meet needs (diversify), Asia is looking for cleaner alternatives (e.g. China aims to reduce coal consumption to less than 65% total energy usage by 2017).	

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1368(i)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	In section 2.4.1 the proponent states that "The initial search for suitable Project locations focused on sites suitable for a large-scale LNG facility and potential for future expansion." I request that the proponent clearly identify what future expansion is possible at the Woodfibre site in terms of just how big the operation can get. What would be the impact of the full capacity of the plant in an expansion scenario in terms of volume of gas processed, NOx and SOx emissions, Greenhouse Gas emissions if this growth is attained, the number of tankers that would enter Howe Sound under an expansion scenario. All mitigation strategies imposed on the project should consider possible expansion and also the impact on the cumulative effects.	Project Expansion	The Woodfibre LNG Project is licensed to export approximately 2.1 million tonnes of liquefied natural gas (LNG) per year for 25 years. This is the LNG facility assessed in the Application	
1368(ii)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	The Proponent lists in its Executive Summary that it will need various building and development permits from the District of Squamish. This requirement should be mandated as a condition of the project.	Local Government	Woodfibre LNG Limited will comply with applicable legislation and guidelines, including the municipal building and development regulations and guidelines administered by the District of Squamish.	
1368(iii)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	With regard to Sustainable Economy, section 6.3, various large LNG projects up north have been required to produce a much more detailed socio-economic study than what is currently provided in the submission by the proponent. A condition of the project should be a much more in depth social/economic study. There is insufficient detail in the submission to understand the net impact for the District of Squamish, including local (as in Sea-to-Sky region, not including Metro Vancouver) jobs, any possible supply shortages during construction, impact on housing and rental housing given our rental market vacancy is below 1%.	Local/Provincial Economy	<p>An independent third party economic impact assessment of the proposed Woodfibre LNG project is included in the Application. Accounting and Consulting firm MNP found the following economic benefits of the project (2014 CAD):</p> <p><b>CONSTRUCTION JOBS</b></p> <ul style="list-style-type: none"> <li>• Create 650+ jobs each year of construction.</li> <li>• Create an additional 1,080+ jobs (indirect* and induced** employment) during the construction phase of the Project.</li> </ul> <p><b>LONG-TERM OPERATION JOBS</b></p> <ul style="list-style-type: none"> <li>• Create 100+ local jobs during operation.</li> <li>• Create an additional 330+ local jobs (indirect* and induced**) during operation.</li> </ul> <p>*Indirect impacts arise from changes in activity for suppliers.</p> <p>**Induced impacts arise from shifts in spending on goods and services as a consequence of changes to the payroll of the directly and indirectly affected businesses.</p> <p>For more information, please refer to Section 2.6 Project Benefits of the Application. Additional benefits from the Project are described in greater detail in Section 6.2 Labour Market, Section 6.3 Sustainable Economy and Section 7.2 Infrastructure and Community Services.</p> <p>An assessment of the potential effects of the Project on community resources is included in Section 7.2 Infrastructure and Community Services, and including housing and accommodation, community infrastructure and services, and emergency services. The Application concluded that, with the implementation of mitigation measures, there will be no Project-related adverse effects to infrastructure and community services.</p> <p>Please also refer to the Sustainable Economy information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
1368(iv)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>We need to understand the impact on our growing tourism sector including our existing service providers like the Sea-to-Sky gondola, people migrating to Squamish for lifestyle reasons to buy homes, burgeoning rec-tech and high tech sector.</p> <p>Also under Sustainable Economy, workers are to be housed in temporary accommodation or rental accommodation or their own homes. We need to understand the impact on our highway from metro Vancouver workers commuting back and forth to Squamish during peak tourism times as there are already severe bottlenecks between Britannia Beach and Squamish during peak drive times.</p>	Effects of the Project on Tourism	<p>Woodfibre LNG Limited is of the view that the Woodfibre site is the right fit for an LNG facility. It features: zoned industrial, more than 100 years of industrial use, deepwater port, access to established shipping routes, access to FortisBC pipeline, access to BC Hydro transmission grid, and access to labour force.</p> <p>Woodfibre LNG Limited is also of the view that tourism and industry can work together to create responsible economic development in Squamish. BC Ferries and Squamish Terminals have shown how industry can successfully coexist with local tourism and recreation, and Woodfibre LNG Limited is working hard to follow that example.</p> <p>An assessment of the potential effects of the Project on tourism is included in Section 6.2 Labour Market and Section 6.3 Sustainable Economy. The Application concluded that there were no Project-related significant adverse residual effects to the economy.</p>	
1368(v)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>What are the impacts of all of those workers driving to work up the sea to sky – what is the cumulative GHG emissions? Woodfibre should have to offset the GHG emissions of their construction staff who are commuting up the sea to sky highway during construction, and also provide ride share vehicles or bussing to reduce the number of vehicles travelling on the highway.</p>	Traffic Management	<p>A Traffic Management Plan will be developed for the Project. This Plan will include guidance for the management of Project associated traffic, including potential for car-pooling and commuter bus service initiatives to reduce the number of vehicles on the road each day. For example, during Project construction and operation, Woodfibre LNG Limited will consider the use of employee buses and vans from designated locations in Metro Vancouver and Squamish to decrease the number of cars on the road at shift change, Woodfibre LNG Limited will consult with the District of Squamish and the SLRD in developing the Traffic Management Plan.</p>	
1368(vi)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>In addition, if these workers try to live in Squamish, what will be the impact on our tourism if hotel rooms are booked in advance by workers and people can't come to Squamish and find hotel accommodation? Their construction plan does not sufficiently contemplate the current market situation. Affordable housing is also a critical issue in Squamish at this time, workers competing for limited rentals and/or housing will drive up prices artificially during construction and put undue pressure on Squamish residents already struggling with affordability. Woodfibre LNG needs to produce a better plan for the construction phase that will not damage Squamish's tourism industry and limit impacts on affordable housing and the impact to our highway system.</p>	Infrastructure and Community Services Tourism	<p>An assessment of the potential effects of the Project on community resources is included in Section 7.2 Infrastructure and Community Services, and including housing and accommodation, community infrastructure and services, and emergency services. The Application concluded that, with the implementation of mitigation measures, there will be no Project-related adverse effects to infrastructure and community services.</p> <p>An assessment of the potential effects of the Project on tourism is included in Section 6.2 Labour Market and Section 6.3 Sustainable Economy. The Application concluded that there were no Project-related significant adverse residual effects to the economy.</p>	

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1368(vii)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	Squamish benefits from recreational users on the waterfront. Marine traffic during construction is expected to increase significantly than current levels. As per the District of Squamish submission to the working group: "Negative effects are predicted on maritime recreation in Howe Sound. Conflict between recreational water uses and maritime traffic between Darrel Bay to the Project site maritime traffic are anticipated and are described as acute in the construction phase. If approved there should be a plan in place that is approved by the District and user groups and acceptance of that plan should be a condition. " In terms of Marine Habitat in section 5, best practices to reduce marine acoustic noise would require the use of vibratory hammers instead of driving hammers to install any pilings for the wharf/jetty at the site. This should be a condition of the project.	Effects of the Project on Recreation	<p>The Application assesses the potential effects of the Project to outdoor recreation in Section 7.4 Land and Resource Use. With the proposed mitigation, it is not likely that there will be significant residual effects to outdoor recreation.</p> <p>Woodfibre LNG will develop a Squamish Harbour Vessel Traffic Plan to identify strategies to minimize displacement of marine-based recreational activities. As a component of the Squamish Harbour Vessel Traffic Plan, Woodfibre LNG will also work with Matthews Southwest and Bethel Lands Corporation, and District of Squamish, to minimize displacement of recreation activity by Project-associated ferry and water taxi traffic that travels to and from the Project site.</p> <p>In addition, Woodfibre LNG Limited has committed to continued consultation with recreational stakeholder groups in Howe Sound to identify areas of concern and, where practicable, to identify additional mitigation that can be implemented to reduce effects.</p> <p>Vibratory pile driving is the preferred method but may not be possible based on bottom substrate or other logistical factors. If impact pile driving is required, Woodfibre LNG will be required to follow the measures outlined in Section 5.19.3.2.3 Proposed Measures to Mitigate Project Effects (M5.17-6 – Underwater Noise Management Plan), Best Management Practices for Pile Driving and Related Operations (BCMPDCA and DFO 2003). If the sound exceeds 30 kPa at a distance of 1 m to 2 m from pilings, measures will be taken to reduce either the intensity of the sound generated or the level of sound propagation through the water column.</p>	
1368(viii)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	Baseline studies should be a condition of the project for the sediment around WLNG to ensure we understand the signature of contaminants from prior industry at the sight and so that we can do comparison studies during the lifetime of the project and determine, what if any contaminants have appeared as a result of LNG tankers or WLNG. Hatfield Consultants after the dioxin and furan issue did a big study in the mid 1990s on the whole Strait of Georgia including the two mills in Howe Sound. So even though it might be almost twenty years ago some baselines do exist, but they should be updated.	Industrial Legacy	<p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>The Woodfibre site has been used for industrial purposes for 100 years and is zoned for industrial use. Woodfibre LNG's purchase of the property was contingent on its former owner, Western Forest Products (WFP), obtaining a Certificate of Compliance (COC) from the BC Ministry of Environment (MOE). On December 22, 2014, the MOE issued two COCs for the Woodfibre property. The COCs confirm that WFP has cleaned up the site to acceptable contaminant levels and existing site contamination does not pose an ecological or human health risk. These COCs include conditions related to monitoring and management of residual contamination, and reporting requirements that must be undertaken by a BC MOE Approved Professional.</p> <p>Woodfibre LNG Limited intends to perform additional remediation and restoration in the Project area. Plans for additional remediation include the removal of approximately 3,000 existing creosote-coated piles from the waterfront in the Project area and the creation of a Green Zone around Mill Creek. This work will be carried out in partnership with the local groups, where suitable, so that local conservation and restoration targets can be met (please refer to Section 2.6.7 Ecological Benefits of the Application).</p> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects.</p>	



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					Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.	
1368(ix)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>The once-through cooling system is especially problematic for this project. These types of cooling systems are being phased out in other jurisdictions due to their impact on the fisheries and marine life due to the indiscriminate nature of the intake process which collects all forms of juvenile fish, phytoplankton, larva etc that make up the bottom of the food chain. The drawings provided by WLNG are not to scale, lack detail and do not describe how minute life forms will be prevented from going through the plant or how they might survive. WLNG should consider other forms of cooling, not simply the cheapest. We need to be meeting international best practices not just the bare minimum.</p> <p>The warm water emanating from the plant is also a concern due to current flow. Anecdotaly, when the pulp mill at the Woodfibre sight was given permission to raise their effluent by 2 degrees, this coincided with the disappearance of the herring. WLNG has not produced sufficient documentation on how the heated water will move once it is in the sound. Past tidal and current studies of Howe Sound suggest that much of it will flow towards Squamish and the estuarine habitat that is so important to juvenile salmon. Can the Sound be a 25 year heat sink for this plant without any undue impacts? There is insufficient study on the current flow at various depths within the Sound from the top of the Sound to below the Woodfibre sight. These studies should be a condition of the project and the cumulative effects of the warm water entering the sound should be considered over the lifespan of the project.</p> <p>Baseline marine acoustic studies should be a condition of the project before construction starts so that we have a clear idea of the impact on marine mammals during construction and operation. The staff at the Vancouver Aquarium noted that "The herring respond to sounds and they are not like salmon, they don't have rigorous homing. They are more roaming." When it gets too loud, the herring go elsewhere. If this occurs due to the increase in marine traffic, we will loose a major link in the marine food chain again and larger marine mammals that have returned to the sound will also leave. We need the sound to stay as quiet as possible. We should have ongoing monitoring so that we can determine if the LNG carriers are being well maintained and producing as minimal noise as possible.</p>	Effects of the Project on Marine Life	<p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the <i>Fisheries Act</i>. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>The seawater cooling system will be designed to meet BC water quality guidelines. The release temperature of the seawater will be less than 21°C or 10°C above ambient water temperature of Howe Sound, whichever is less. Near-field simulation modeling shows that, with a release temperature of 10°C greater than the ambient temperature, the total volume of water that would have a temperature greater than 1°C above ambient is 125 m<sup>3</sup> (for context, this volume is approximately 5% of an Olympic-size pool). This volume will not increase over time.</p> <p>For more information on the effects of the Project on marine water quality please refer to Section 5.10 Marine Water Quality. Additional components of the marine environment that have been assessed include Freshwater Fish and Fish Habitat (Section 5.15), Marine Benthic Habitat (Section 5.16), Forage Fish and Other Fish (Marine) (Section 5.18) and Marine Mammals (Section 5.19). A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that there were no Project-related significant adverse residual effects to the environment.</p> <p>Woodfibre LNG Limited will retain a contractor to perform underwater acoustic monitoring for pre, during and post Project construction. The underwater monitoring will collect underwater sound levels and marine mammal presence (e.g., of those species present, their frequency and seasonality). This will contribute further to baseline information for both underwater sound levels and mammal presence in the Project area and in the vicinity of the Project site to monitor potential changes of marine mammals over time.</p> <p>Additional information on the seawater cooling system intake and discharge was provided to the EAO on April 23, 2015. Please also refer to the Seawater Cooling System information sheet that have been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	



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1368(x)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	Since the LNG carriers are all contracted, WLNG should require certain standards of the ships arriving at their terminal in terms of maintenance to avoid cavitation of the propeller.	LNG Carriers	<p>Through a diligent and comprehensive vetting regime, Woodfibre LNG will verify that the LNG carriers meet the requirements for purpose, regulatory compliance and quality ship management prior to issuing an acceptance for the vessel to call the terminal. This will be accomplished through a multi-tiered system of vessel inspections, review of inspection reports including Port State and Sires, review of performance from previous terminal calls and the Tanker Manager's self-assessment, as posted to the Oil Companies International Marine Forum. The LNG carriers calling at the Woodfibre LNG terminal will also be subject to inspections from Transport Canada.</p> <p>Every vessel destined to a Canadian Port will hold a valid contractual arrangement with the Western Canada Marine Response Corporation under the Canada Shipping Act 2001 Part I – Pollution Prevention and Response.</p>	
1368(xi)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	As well, in section 5.6, geotechnical and natural hazards, there should be additional studies required as a condition of the project on the Henriette Lake Dam because it is known to be seismically deficient. Debris flow hazards should be examined more carefully as well as coastal flooding impacts due to climate change, which predicts more intense and greater rain storms as well as sea-level rise.	Seismic Hazard Henriette Lake Dam	<p>At Woodfibre LNG, safety is our number one priority. This includes designing and building a facility that prevents or minimizes the potential effects of geotechnical and natural hazards. Third party independent experts have conducted a detailed investigation and review of geotechnical and natural hazards of the Woodfibre site.</p> <p>As noted in Section 5.6, studies of Henriette Lake Dam are outside the scope of the environmental assessment.</p> <p>The following mitigation measures related to natural hazards will be implemented as part of the Project:</p> <ul style="list-style-type: none"> <li>• Qualified professionals will be engaged to conduct a debris flow and debris hazard assessment prior to construction.</li> <li>• Project components, including bridges, will be designed for the 200-year instantaneous peak flows on Mill Creek and Woodfibre Creek.</li> <li>• Buildings will be constructed at different elevations that correspond to their risk category in case of flooding.</li> <li>• Project components will be designed to accommodate a sea level rise of 0.5 m.</li> </ul>	
1368(xii)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	Section 5.2 on air quality. There needs to be an upgraded monitoring station in Squamish. The plant will produce significant amounts of NOx and SOx and since the winds will push this towards the townsite, we need to ensure that they are using international best standards for limiting emissions.	Air Quality Monitoring Station	<p>Section 5.2 Atmospheric Environment (Air Quality) includes the baseline air quality for the region. Air quality monitoring stations from Squamish, Langdale and West Vancouver are used to establish the baseline air quality.</p> <p>Woodfibre LNG Limited will support the MOE if the decision to add additional air quality monitoring stations is made.</p>	

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1368(xiii)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>With regard to section 11 (Accident &amp; Malfunctions) the District of Squamish LNG committee noted severe concerns about the ability of senior levels of government to provide reasonable ongoing monitoring and inspection as well as to respond quickly and appropriately in case of an incident. Budget cut backs have impaired the function of Federal DFO, Transport Canada, Coast Guard, Ministry of Environment; and at the Provincial level the lack of an OGC presence in this region. This may increase the safety risk to citizens. The EAO should require as a condition, required monitoring and inspection timeframes and by which government agency, and upgrading to international best practices for monitoring and response.</p> <p>Also in section 11, the proponent should be required as a condition of the project to be self-sufficient in all aspects of emergency management at the site. They should also fund disaster training (with Fortis) for our emergency services in the event of a massive industrial accident at the site or with the pipeline servicing the plant that may impact the Squamish town site. No one has described a worse case scenario for Squamish and so while the proponent may be required to take care of things at Woodfibre, what would be the impact on our hospital for injured, would our fire department be called in for back-up.</p>	Regulatory Requirements Emergency Response	<p>Woodfibre LNG will be designed for the safe and efficient handling of liquefied natural gas, both on land and on water. This includes standards set out in the BC Oil and Gas Activities Act and the associated Liquefied Natural Gas Facility Regulation, national and BC building codes, as well as national and international standards, guidelines and codes of practice where there are no applicable codes for BC.</p> <p>In order to prevent accidents and malfunctions from happening, prior to operation of the Project, the Liquefied Natural Gas Facility Regulation requires that Woodfibre LNG Limited prepare a Safety Loss and Management Program that complies with CSA Z276. This program includes a detailed Emergency Response Plan that includes documented emergency response plans, required equipment, training requirements, identification of trained personnel and plans for emergency drills and exercises.</p> <p>The Accidents and Malfunctions section (Section 11.0) of the Application assessed the consequence and frequency of effects resulting from credible worst case scenarios for the Project. It showed that potential risks to the public were within the tolerable risk criteria regulated by the BC Oil and Gas Commission (OGC). The OGC will include a review of the quantitative risk assessment for this Project in the permit application review to confirm that the study and results meet the regulated requirements. Additional information on accidents and malfunctions was provided to the EAO on April 29, 2015. It is Woodfibre LNG Limited's intention to be self-sufficient for all possible emergency situations and it is not anticipated that Woodfibre LNG Limited would require First Responder emergency services. In addition, Woodfibre LNG Limited will continue discussions with local government and other emergency service providers in the LAA to ensure a robust communications plan in the unlikely event of an emergency related to the Woodfibre LNG Project.</p> <p>Please also refer to the Public Safety and Marine Transport information sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

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1368(xiv)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>In general, throughout the submission the proponent has used vague language, like "Limit" or "minimize", the EAO should require the proponent to describe in real terms what these limits are and what they mean. I'm thinking here of things like flaring, minimizing light impacts. Frequently they do not list what their baseline measure is so it is difficult to know what "minimize" means when we can't compare it to anything that exists today.</p> <p>Baseline studies are important to understand how this proponent will impact Squamish and Howe Sound in general. After decades of industry using the Sound as its dumping ground, nature has shown its resiliency when humans begin to clean things up and show a little respect. There is a lack of baseline studies on air, water, noise, fisheries, etc in this submission that will make it difficult to see if we notice a difference during construction and operation on all the things that matter most to quality of life and enjoyment here in Squamish.</p>	Venting and Flaring Baseline Studies	<p>Should an Environmental Assessment Certificate be granted for the Project, a Table of Conditions will be developed that outlines all of the requirements with which the Project will have to comply. Woodfibre LNG Limited will be legally responsible for ensuring all conditions are met.</p> <p>The Project will also require a Facility Permit, Leave to Commence Construction and Leave to Operate from the OGC, as well as numerous other environmental permits. As part of the Facility Permit application, Woodfibre LNG must submit a summary of their flaring, venting and relief system design basis to the OGC for approval. The summary will include the following information;</p> <ul style="list-style-type: none"><li>• The best practices, standards and guidelines for flaring and venting the proponent will apply to the design of the project</li><li>• The alternatives considered to minimise flaring and venting with particular emphasis on normal operations, planned shutdowns, maintenance and start-ups</li><li>• The design elements relating to measurement and reporting</li></ul> <p>The OGC also refers proponents to their Flaring and Venting Reduction Guideline<sup>12</sup> as well as the Canadian Association of Petroleum Producers' "Best Management Practices for Facility Flare Reduction" (CAPP 2006).</p> <p>With respect to potential effects of light on marine life, the mitigation measures below will be incorporated into the Project design to manage lighting effects on marine biota:</p> <ul style="list-style-type: none"><li>• Where possible and subject to safety requirements, lights on marine infrastructure at night will be shielded and/or directed away from adjacent marine areas with the exception of mandatory navigational lighting; and</li><li>• Infrastructure night-time lighting will be angled such that it minimizes direct illumination and reflection off the sea surface.</li><li>• Lighting will be controlled from the control room, and only the required amount of lighting for the tasks being performed will be used. Safety lights will be permanently lit while non-essential lights will be illuminated as needed.</li></ul> <p>Based on the above information and suggested mitigation measures, the effects of infrastructure lighting at night on marine prey species and their predators is considered to be negligible.</p> <p>For a further response to the comment about baseline studies, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 19.</p>	
1368(xv)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>Finally, similar to the District of Squamish community committee that helped our Council to understand the risks and benefits of the project, a condition of the project, should be the creation of a citizen advisory/scientific group that develops ongoing monitoring and reporting guidelines with the proponent and then works with the proponent on an ongoing basis to ensure that WLNG remains committed to best practices and protecting the sound from their intrusion for generations to come.</p>	Advisory Group	<p>Thank you for the suggestion. Woodfibre LNG Limited is continuing to work with the District of Squamish and will consider this idea further.</p>	

<sup>12</sup> BC Oil & Gas Commission. 2015. Flaring and Venting Reduction Guideline Version 4.4. Available online at <http://www.bcogc.ca/node/5916/download>

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1369	March 23, 2015	Mike MacWilliams - Sea to sky, British Columbia	<p>SAFETY: Siting an LNG facility in Howe Sound violates international safety standards and practices, putting 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.</p> <p>The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards</p> <p>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.</p> <p>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.</p> <p>HEALTH: Social costs and health impacts of air pollution Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrous oxides (NOx) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Emissions of NOx and SO2 interact with other compounds to form fine particles, which can affect both the lungs and the heart. Exposure to</p>	LNG Project	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 11-21, 46.	

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			<p>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.</p> <p>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.</p> <p>Sources:</p> <p>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</p> <p>SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility</p> <p>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. 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?</p> <p>Source: B.C. Ministry of Energy and Mines</p> <p>ECONOMY: The requested socio-economic study has not been provided</p> <p>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. 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?</p>			



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1370	March 23, 2015	Personal Information Withheld - Gibsons, British Columbia	I am 100% opposed to the Woodfibre LNG project. The environmental risks are numerous. The health of Howe Sound is just starting to rebound and before it even recovers, it is being threatened by this project. In particular the "once through" seawater cooling system is clearly a serious threat. How can we even consider implementing a process which is a known threat to marine life. Ludicrous it is even being considered. UNACCEPTABLE .	Effect of the Project on the Environment	<p>Thank you for your comment.</p> <p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>In LNG facilities, seawater cooling is used primarily to remove waste heat generated from the main refrigerant compressors, which are used to cool the gas. Seawater cooling is used widely, including in about half of the LNG facilities currently in operation in the world. Seawater cooling is energy efficient, and produces less environmental noise and less visual effects than air cooling.</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the <i>Fisheries Act</i>. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>For more information on the effects of the Project on marine water quality please refer to Section 5.10 Marine Water Quality. Additional components of the marine environment that have been assessed include Freshwater Fish and Fish Habitat (Section 5.15), Marine Benthic Habitat (Section 5.16), Forage Fish and Other Fish (Marine) (Section 5.18) and Marine Mammals (Section 5.19). A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that there were no Project-related significant adverse residual effects to the environment.</p> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p> <p>Additional information on the seawater cooling system intake and discharge was provided to the EAO on April 23, 2015. Please also refer to the Seawater Cooling System and Marine Mammal Information Sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

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1371	March 23, 2015	Kimberly Sapruncoff - Squamish, British Columbia	<p>I am a Squamish Resident, born and raised in Vancouver. I moved to Whistler in 98. I moved to Squamish in 2012. This is the first time in my life, that the Howe Sound has seen this type of Marine life return since the 70's. The Tourism in the Sea to Sky Corridor is at an all time high. The Olympics of 2010 Put this area on the World Stage. The growth potential for the area is undeniable. The potential for financial gain, through green energy and renewable resources need to be addressed and considered. There are constantly evolving technologies that can be adopted here, to contribute to the Economic stability both for the Municipalities of the Corridor and the People of the Province of BC.</p> <p>There is room for long term financial success without the need for harmful hazardous LNG Compressors, and Tankers through these pristine waters. This Amazing Fjord of Western Canada is Proof, It is what National Geographic loves to do a story on. Everyone wants to see nature in her glory. That is the Howe Sound and the Sea to Sky corridor. I always say to all my friends,... I live in Paradise. I pray that it stays that way. Thank You.</p>	Effect of the Project on the Environment	<p>Thank you for your comment.</p> <p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p>	
1372	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>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.</p> <p>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.</p>	Seawater Cooling System	<p>Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 12.</p>	

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1373	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>SAFETY: Siting an LNG facility in Howe Sound violates international safety standards and practices, putting 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.</p> <p>The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards</p> <p>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.</p> <p>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.</p> <p>HEALTH: Social costs and health impacts of air pollution Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrous oxides (NOx) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Emissions of NOx and SO2 interact with other compounds to form fine particles, which can affect both the lungs and the heart. Exposure to</p>	LNG Project	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 11-21, 46.	



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			<p>CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable</p> <p>Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year. These annual emissions of CO2 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.</p> <p>GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues</p> <p>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.</p> <p>ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life</p> <p>Woodfibre LNG has bought the water license to take water from Mill Creek. 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.</p> <p>ENVIRONMENT: Missing baseline studies</p> <p>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 project.</p> <p>VIEWSCAPES: BC Hydro clearcut of two 64 metre swaths of forest at the Woodfibre site will impact viewscapes from the Sea to Sky highway and the gondola</p> <p>BC Hydro is proposing to clearcut two 64 metre swaths of forest at the Woodfibre site which will create visible scars in the Howe Sound viewscapes which will be very visible from the highway and the gondola. This information was only made available</p>			

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1374	March 23, 2015	Lindsey Webster - Maple Ridge, British Columbia	This is a terrible idea. British Columbia bears the slogan "Beautiful British Columbia" but the government of BC is failing to preserve the natural beauty of this province. Instead they are selling us out. We are no longer represented by our government who constantly goes through with these projects and ventures against the wishes of BC residents. This is ANOTHER example of that. I am absolutely against this project. It is going to worsen the environmental situation and add to the destruction of natural beautiful BC that the government is hastening. Stop now. Stop destroying our province and take accountability. Do not let this project go ahead. Preserve the natural British Columbia and listen to those you are supposed to represent. I have lived here my whole life and Your government is disgraceful.	Public Consultation Effect of the Project on the Environment	<p>Thank you for your comment.</p> <p>Woodfibre LNG understands that both the federal and provincial environmental assessment processes are substantive processes to evaluate the potential impact of a project on the environment, to ensure that the project has been well-conceived given consideration to alternative designs and input from government agencies, regulators, municipalities and First Nations, as well as the public, and to ensure that appropriate mitigation strategies are in place to manage any such impacts. As a proponent, Woodfibre LNG takes this process seriously.</p> <p>Woodfibre LNG has undertaken public consultation in the form of more than 300 community meetings, two telephone town halls, three rounds of formal public consultations, and has opened a Community Office in Squamish to respond to questions. Woodfibre LNG also regularly engages the public through its web site (woodfibrelng.ca), email, and Facebook page.</p> <p>A public consultation report will be filed with the EAO in accordance with the environmental assessment (EA) process.</p> <p>In response to public consultation, Woodfibre LNG has made meaningful changes to the Project. For example, in response to concerns about the possibility that the LNG facility would run on a gas turbine, Woodfibre LNG committed to powering the facility plant using electricity from BC Hydro. This decision will reduce greenhouse gas emissions by about 80 per cent, and will help make Woodfibre one of the cleanest LNG plants in the world.</p> <p>Public participation in the EA process helps to ensure that community values and public goals for community development are considered in project planning and decision-making.</p> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p>	
1375(i)	March 23, 2015	Personal Information Withheld - Gibsons, British Columbia	Access to shoreline around terminal for paddle craft. How about a tunnel under the dock to bypass the dangers of the shipping. The transcanada trail is being routed through the project and this is a tourism magnet.	Site Access	<p>Thank you for your comments.</p> <p>Due to safety requirements, the Woodfibre property will be fenced and will not be open for public access; however, Woodfibre LNG Limited has committed to developing and implementing an Access Management Plan during construction and operation to address recreational backcountry opportunities while ensuring the safety and security of the public and of Woodfibre LNG Limited workers and facilities.</p>	
1375(ii)	March 23, 2015	Personal Information Withheld - Gibsons, British Columbia	The Hydro cuts for transmission lines is not in the view analysis.	Visual Quality	<p>Potential effects from FortisBC pipeline and BC Hydro substation projects are acknowledged and considered in the cumulative effects section for Visual Quality (Section 7.5), based on the information that was available at the time of the assessment. It is important to note that discussions continue between BC Hydro and Woodfibre LNG Limited; a number of different scenarios are being looked at, and no final decision has been made.</p>	

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1375(iii)	March 23, 2015	Personal Information Withheld - Gibsons, British Columbia	Forage fish and invertebrates are the basis of the food web and is critical to the food supply of higher life forms.	Effects of the Project on Marine Life	<p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the <i>Fisheries Act</i>. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>For more information on the effects of the Project on marine water quality please refer to Section 5.10 Marine Water Quality. Additional components of the marine environment that have been assessed include Freshwater Fish and Fish Habitat (Section 5.15), Marine Benthic Habitat (Section 5.16), Forage Fish and Other Fish (Marine) (Section 5.18) and Marine Mammals (Section 5.19). A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that there were no Project-related significant adverse residual effects to the environment.</p> <p>Additional information on the seawater cooling system intake and discharge was provided to the EAO on April 23, 2015. Please also refer to the Seawater Cooling System information sheet that have been prepared as part of the Woodfibre LNG Limited response to public comments.</p> <p>Also please note that potential Project-related effects on forage fish and invertebrates are included in Section 5.18 Forage Fish and Other Fish (Marine) and Section 5.16 Marine Benthic Habitat assessments, respectively.</p>	



Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
1375(iv)	March 23, 2015	Personal Information Withheld - Gibsons, British Columbia	The GHG emissions from the extraction to delivery needs addressing as related to Canada's international commitments. The benefits do not out way the risks and long term costs. The profit for the proponent is much too great for the benefit received.	GHG Emissions Project Benefits	<p>Natural gas is the world's cleanest burning fossil fuel, and plays an important role in reducing GHG emissions globally. However, assessing either the upstream or the downstream effects of the Project on climate change or greenhouse gas emissions is outside the scope of the environmental assessment, as defined in the section 11 order.</p> <p>Section 5.3 Greenhouse Gas Management of the Application includes an assessment of the potential Project-related effects to greenhouse gases. The influence of Project-related greenhouse gas emissions on climate change was evaluated by assessing whether any measurable change in climate could result from the Project-generated greenhouse gas emissions. The relatively minor increase in global emissions associated with the Project would correspond to a change in climate that is unlikely to be measurable.</p> <p>Woodfibre LNG will comply with all applicable regional, provincial and federal laws, regulations, guidelines and standards including but not limited to: employment standards; health and environmental regulations and standards; taxation; and, First Nations agreements. Woodfibre LNG Limited will pay a variety of taxes, including income tax, LNG tax, and municipal property tax</p> <p>An independent third party economic impact assessment of the proposed Woodfibre LNG project is included in the Application. Accounting and Consulting firm MNP found the following economic benefits of the Project (2014 CAD):</p> <p>CONSTRUCTION JOBS</p> <ul style="list-style-type: none"><li>• Create 650+ jobs each year of construction.</li><li>• Create an additional 1,080+ jobs (indirect* and induced** employment) during the construction phase of the Project.</li></ul> <p>LONG-TERM OPERATION JOBS</p> <ul style="list-style-type: none"><li>• Create 100+ local jobs during operation.</li><li>• Create an additional 330+ local jobs (indirect* and induced**) during operation.</li></ul> <p>*Indirect impacts arise from changes in activity for suppliers.</p> <p>**Induced impacts arise from shifts in spending on goods and services as a consequence of changes to the payroll of the directly and indirectly affected businesses.</p> <p>For more information, please refer to Section 2.6 Project Benefits of the Application. Additional benefits from the Project are described in greater detail in Section 6.2 Labour Market, Section 6.3 Sustainable Economy and Section 7.2 Infrastructure and Community Services.</p>	

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
1375(v)	March 23, 2015	Personal Information Withheld - Gibsons, British Columbia	Time frame for cumulative effects is too short. Air quality and related health effects are already to much with the mill and transportation - this is too much. Scope does not include to the mouth of Howe Sound	Environmental Assessment Methodology Effects of the Project on Air Quality, Health	<p>The Woodfibre LNG Project will be powered by electricity provided by BC Hydro. By powering the plant with electricity, instead of natural gas, greenhouse gas emissions will be reduced by about 80%. This will make Woodfibre LNG one of the cleanest LNG facilities in the world.</p> <p>The Project has been assessed in accordance with the British Columbia <i>Environmental Assessment Act</i>, <i>Canadian Environmental Assessment Act, 2012</i>, and the approved Application Information Requirements (AIR). The timeframes used in the Application are consistent with the BC EAO Guidelines for the Selection of Valued Components and Assessment of Potential Effects<sup>13</sup> and the approved AIR.</p> <p>Woodfibre LNG undertook air dispersion modelling based on planned activities and equipment use — including marine vessels — to predict air emissions from the Project operation phase. The results of the dispersion modelling were compared against federal and provincial standards and guidelines; and all predicted concentrations were below these standards and guidelines.</p> <p>Woodfibre LNG characterized current climate and climate trends using the Squamish Airport climate station. At peak capacity, the Project will have a greenhouse gas intensity of 0.059 t CO2e per tonne LNG, which is below the threshold of 0.16 t CO2e per tonne LNG in the Greenhouse Gas Industrial Reporting and Control Act.</p> <p>For more information, please see:</p> <ul style="list-style-type: none"><li>• Section 9.2.2 Human Health Risk Assessment includes an assessment of the potential effects on humans by Project-related emissions. The Application concluded that there were no Project-related significant adverse effects.</li><li>• Section 5.2 Atmospheric Environment (Air Quality) of the Application includes an assessment of the potential Project-related effects to air quality. The Application concluded that the changes to air quality as a result of Project-related effects are below ambient air quality criteria for all indicator compounds and the residual effects are considered negligible or not significant.</li></ul> <p>Please also refer to Air Quality information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

<sup>13</sup> British Columbia Environmental Assessment Office (EAO). 2013. Guidelines for the Selection of Valued Components and Assessment of Potential Effects. Available at: [http://www.eao.gov.bc.ca/pdf/EAO\\_Valued\\_Components\\_Guideline\\_2013\\_09\\_09.pdf](http://www.eao.gov.bc.ca/pdf/EAO_Valued_Components_Guideline_2013_09_09.pdf)

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
1376	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>I have a few additional comments I would like to make with respect to the WLNG project. I concur with the rest of the Squamish LNG committee that I am not at all confident in the capacity of various regulatory agencies, and sufficiency of LNG regulations to ensure this project is safe. Some agencies were unable or unwilling to speak to our committee about the project, and others were not able to answer reasonable technical questions. I am also not satisfied with the evasive responses to direct questions about capacity to adequately monitor the industry. We have seen a long chain of cuts to regulatory bodies. The loss of Coast Guard stations on our coast is a key example.</p> <p>The difficulty in dealing with derelict vessels on our coast does not inspire confidence. We were told that LNG will be treated differently, but the finger-pointing and bureaucracy that has stalled derelict vessels solutions seems all-too-typical. The Mt. Polley Mine and saw mill explosions over the last few years are additional examples where enforcement and/or regulations seem to be seriously lacking. A significant investment in regulatory and enforcement bodies is necessary to make sure this project stays safe. If the Province and Federal governments don't have the budgets for adequate regulation and enforcement, then this sort of project is likely not appropriate at this point in time.</p> <p>Although it was not an in depth study, my own research seems to suggest that BC's LNG regulations fall short of regulations in many other jurisdictions. The premier has said she expects BC's LNG to be the cleanest in the world – doesn't Squamish also deserve the safest? If this project in fact doesn't need to meet higher standards from other jurisdictions, I would appreciate a justification about why lower standards here are appropriate, and how Squamish will be protected economically and environmentally consequences of lower standards. I note that in its video at: <a href="http://www.imw.ca/en/europes-largest-lng-terminal-interesting-lng-facts/">http://www.imw.ca/en/europes-largest-lng-terminal-interesting-lng-facts/</a> Linde (who is the proposed builder for the WLNG plant) claims their Hammerfest, Norway terminal was built under some of the, "strictest environmental regulations". So are the regulations strictest in Norway or here?</p> <p>Our committee heard from the OGC that regulations related to LNG in Canada and BC are still under development. How can we then adequately assess the necessary mitigations and appropriateness of the project when those regulations are not yet complete?</p>	Regulatory Requirements	<p>Thank you for your comment.</p> <p>Although there are no LNG export facilities currently in Canada, Canada has been safely operating LNG facilities for more than 40 years. In British Columbia, the FortisBC Tilbury LNG Facility in Delta has been in operation since 1971, and the Mt. Hayes Storage Facility on Vancouver Island came into service in 2011. The Canaport LNG receiving and regasification terminal in St John, New Brunswick has been operating as an LNG import terminal since 2009 and has the capacity to distribute 1.2 billion cubic feet of LNG per day.</p> <p>Woodfibre LNG Limited will be designed for the safe and efficient handling of LNG, both on land and on water. This includes standards set out in the BC Oil and Gas Activities Act and the associated Liquefied Natural Gas Facility Regulation, national and BC building codes, as well as national and international standards, guidelines and codes of practice where there are no applicable codes for BC.</p> <p>The Project will also require a Facility Permit from the Oil and Gas Commission (OGC) as well as numerous other environmental permits. The construction and operation of the Project will be regulated by the OGC and the BC Safety Authority, and Woodfibre LNG Limited anticipates that the appropriate government agencies will inspect the facility as required.</p> <p>The two LNG vessels that form the floating storage and offloading unit (FSO) are equipped with self-supporting Moss Rosenberg tanks. These vessels are and will continue to be maintained in class by the Classification Society during their lifecycle, with tests and inspections conducted at regular intervals as part of the survey process. At the time of modification, surveys will be conducted by the Classification Society, with further audits conducted by OGC and Transport Canada as applicable on arrival into Canada.</p> <p>Within Canada, the OGC and Transport Canada will inspect the FSO to ensure the FSO and equipment are safely operated and maintained, and comply with the prevailing rules for the safe handling of LNG. The FSO will undergo extensive surveys and maintenance to ensure the integrity of the tanks, including the primary and secondary barriers, are fit for purpose.</p> <p>Should an Environmental Assessment Certificate be granted for the Project, a Table of Conditions will be developed that outlines all of the requirements with which the Project will have to comply. Woodfibre LNG Limited will be legally responsible for ensuring all conditions are met.</p>	For more information related to comments on the Environmental Assessment process please see “EAO Response to Public Comments – Application Review Public Comment Period for Woodfibre LNG, January 22 – March 23, 2015” under the Application Review EAO Generated Documents <a href="#">[Link]</a> .

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1377	March 23, 2015	Personal Information Withheld - British Columbia	I am deeply concerned. Woodfibre LNG would be a huge step in the wrong direction both economically and environmentally. I feels like a terrible injustice to humanity and to creation and it violates what we love and value as British Columbians.	LNG Project	<p>Thank you for your comment.</p> <p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p>	
1378(i)	March 23, 2015	Sean Lumb - Squamish, British Columbia	<p>Please see the attached pdf for commentary.</p> <p>GENERAL COMMENTS:</p> <ul style="list-style-type: none"> <li>Throughout the document the proponent uses language that minimizes potential impact in the absence of any quantitative information to support such language; e.g. using such terms as “unlikely” or “the likelihood is low”. There are many instances in the document where the proponent has no information to support such statements: the proponent is simply editorializing.</li> <li>Furthermore, there are many references to “minimizing” impacts, again, where there is no baseline information with which to scale.</li> <li>Finally, there is a woeful lack of baseline studies proposed by the proponent against which the in situ measures will be compared if/when the plant is built and becomes operational. In the absence of meaningful baseline studies for the valued components, how will the performance of the plant, compliance during operation, and decommissioning of the obsolete plant in 25 years be measured? There must be meaningful longitudinal studies completed (at least 18-24 months duration, if not greater) to establish baseline measures for the valued components related to the environmental state of the Sound.</li> </ul>	Environmental Assessment	<p>Thank you for your comments.</p> <p>The Project has been assessed in accordance with the British Columbia <i>Environmental Assessment Act</i>, <i>Canadian Environmental Assessment Act, 2012</i>, and the approved Application Information Requirements. The terms used in the Application are consistent with the BC EAO Guidelines for the Selection of Valued Components and Assessment of Potential Effects<sup>14</sup>.</p>	

<sup>14</sup> British Columbia Environmental Assessment Office (EAO). 2013. Guidelines for the Selection of Valued Components and Assessment of Potential Effects. Available at: [http://www.eao.gov.bc.ca/pdf/EAO\\_Valued\\_Components\\_Guideline\\_2013\\_09\\_09.pdf](http://www.eao.gov.bc.ca/pdf/EAO_Valued_Components_Guideline_2013_09_09.pdf)

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1378(ii)	March 23, 2015	Sean Lumb - Squamish, British Columbia	<p>SPECIFIC CONCERNS:</p> <p>1 SAFETY: Siting an LNG facility in Howe Sound violates international safety standards and practices, putting 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. The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound. Sources: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards</p> <p>2 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 may 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.</p> <p>A number of studies, starting with Buckley in 1977 and followed by Stronach in 1993 reveal the complex stratified currents that exist in the northern basin of Howe Sound, bounded at its southern end by the glacial sill at the level of Porteau Cove and at its north end by the Squamish River estuary. What is particularly troubling is the clockwise gyre that results from the Squamish River current travelling across the head of the sound and down to Watts Point where it turns sharply to the west and crosses the sound to</p>	LNG Project	Thank you for your comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 11-21, 45 and 46.	



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			<p>the western side, splitting north and south. The northerly current completes the gyre and is clearly evident in aerial photography of the northern sound. As a result, I'm troubled by the lack of consideration of the effect of pumping such vast amounts of heat energy from the cooling system into what appears to be a relatively closed system. While the proponent has modelled the effect of the much---touted diffuser on the outfall cooling water temperature, there has been no consideration of the long---term, cumulative effect of continuously adding this heat energy to the northern basin of the Sound: the proponent has simply assumed that the basin is an infinite heat sink. There is no support in the application or the appendices for the veracity of this assumption. The proponent needs to model this and provide support for this assumption.</p> <p>Buckley, J.R. 1977. The currents, winds and tides of northern Howe Sound, Ph.D. Thesis, Department of Physics and the Institute of Oceanography, University of British Columbia, 228 p.)</p> <p>(J.A. Stronach , A.J. Webb , T.S. Murty &amp; W.J. Cretney (1993) A three-dimensional numerical model of suspended sediment transport in Howe sound, British Columbia, Atmosphere---Ocean, 31:1, 73---97, DOI: 10.1080/07055900.1993.9649463)</p> <p>3 HEALTH: Social costs and health impacts of air pollution Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2---14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Emissions of NOx and SO2 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.</p> <p>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</p> <p>5 ECONOMY: The requested socio---economic study</p>			

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			<p>has not been provided 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. 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?</p> <p>6 CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year. These annual emissions of CO2 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.</p> <p>7 GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues There are no regulations adopted to regulate this LNG 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. Note that the Mount Polley Independent Engineering and Expert Review Panel Final Report published in January 2015 indicated that there were no geotechnical inspections of the tailings dam site for a three year period 2009---2011. Can we expect the same level of oversight with theLNG terminals proposed across the Province?</p> <p>8 ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish</p> <p>life Woodfibre LNG has secured the water license 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.</p>			

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			<p>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.</p> <p>9 ENVIRONMENT: Missing 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 project.</p> <p>10 VIEWSCAPES: BC Hydro clearcut of two 64 metre swaths of forest at the Woodfibre site will impact views from the Sea to Sky highway and the gondola BC Hydro is proposing to clearcut two 64 metre swaths of forest at the Woodfibre site which will create visible scars in the Howe Sound view which will be very visible from the 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 is unsatisfactory.</p> <p>11 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 over60 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.</p> <p><a href="http://news.nationalgeographic.com/news/2013/10/13/1018---glass---sponge---reef---canada---ocean---science/">http://news.nationalgeographic.com/news/2013/10/13/1018---glass---sponge---reef---canada---ocean---science/</a> <a href="http://jordansturdymla.ca/bcltv_videos/mla---sturdy---halkett---bays---glass---sponges/">http://jordansturdymla.ca/bcltv_videos/mla---sturdy---halkett---bays---glass---sponges/</a></p> <p>12 ENVIRONMENT: Will there be smog? Will there be a smell? Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2---14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Nitrogen Dioxide (NO2) 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 (O3) or sulphur dioxide (SO2), nitrogen dioxide may cause injury at even lower concentration levels. Sulphur Dioxide (SO2) is a toxic gas with a pungent, irritating,</p>			

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
			<p>and rotten smell. Current scientific evidence links short-term exposures to SO2, 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.</p> <p>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 are of particular concern for infants, the elderly, and is directly linked to health issues such as lung or heart disease and asthma.</p>			

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1379	March 23, 2015	Laurie Parkinson - Bowyer Island, British Columbia	<p>Woodfibre has no disaster plan for any/each community up and down Howe Sound, and for motorists on Sea to Sky Highway. Woodfibre said they would write one later. This timing is neither appropriate nor fair. The public comment period is over and how can the public critique this if not supplied with it? This info needs to be given to the public soon.</p> <p>LNG vapours (methane) are flammable at 5-15% in air. Various kinds of emergencies can happen, and the co below is being open and helpful with local people re this. Woodfibre needs to do the same.</p> <p>I suggest one like the following from Freeport LNG in Texas - if they have type of plan, why not Woodfibre?:</p> <p><a href="http://www.freeportlng.com/PDFs/FLNGSafety.pdf">http://www.freeportlng.com/PDFs/FLNGSafety.pdf</a></p> <p>The public deserves to know there is a real potential for a variety of kinds of emergency. Please come forward with a plan like this.</p>	Emergency Response	<p>At Woodfibre LNG, safety is the number one priority.</p> <p>Woodfibre LNG will be designed for the safe and efficient handling of liquefied natural gas, both on land and on water. This includes standards set out in the BC Oil and Gas Activities Act and the associated Liquefied Natural Gas Facility Regulation, national and BC building codes, as well as national and international standards, guidelines and codes of practice where there are no applicable codes for BC.</p> <p>Please also refer to Section 2.2.5.2 Project Design Legislation and Standards. The Project must comply with the CSA Z276 Liquefied Natural Gas – Production, Storage and Handling standard. This program will include a detailed Emergency Response Plan including documented emergency response procedures, required equipment, training requirements, identification of trained personnel and plans for emergency drills and exercises.</p> <p>The Accidents and Malfunctions section (Section 11.0) of the Application assessed the consequence and frequency of effects resulting from credible worst case scenarios for the Project. It showed that potential risks to the public were within the tolerable risk criteria regulated by the BC Oil and Gas Commission (OGC). The OGC will include a review of the quantitative risk assessment for this Project in the permit application review to confirm that the study and results meet the regulated requirements. Additional information on accidents and malfunctions was provided to the EAO on April 29, 2015. It is Woodfibre LNG Limited's intention to be self-sufficient for all possible emergency situations and it is not anticipated that Woodfibre LNG Limited would require First Responder emergency services. In addition, Woodfibre LNG Limited will continue discussions with local government and other emergency service providers in the LAA to ensure a robust communications plan in the unlikely event of an emergency related to the Woodfibre LNG Project. Please also refer to the Public Safety and Marine Transport information sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	



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1380	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>The research below has shown me a few major points as to why this project is not a good idea for Squamish I do pray that you will answer some of these concerns and do what's best for canada , this amazing land natural and protected.</p> <p>I hope that government has the insight to see beyond (unlikely) monetary gains and follows a passionate heart to true facts. I hope that I can keep living in one of the best places on earth and not be driven out by the LNG as I would sadly have to leave this place. It's a sanctuary and a place of connection to nature please don't take this away from my children.</p> <p>SAFETY: Siting an LNG facility in Howe Sound violates international safety standards and practices, putting 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.</p> <p>The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards</p> <p>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.</p> <p>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</p>	LNG Project	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 11-21, 46.	

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			<p>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.</p> <p>HEALTH: Social costs and health impacts of air pollution Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrous oxides (NOx) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Emissions of NOx and SO2 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.</p> <p>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.</p> <p>Sources:</p> <p>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</p> <p>SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility</p> <p>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. 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?</p> <p>Source: B.C. Ministry of Energy and Mines</p> <p>ECONOMY: The requested socio-economic study has not been provided</p> <p>During construction, only 4.3% of jobs (=38.5 out of 895) will be for locals living in the Squamish/Whistler</p>			

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			<p>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. 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?</p> <p>CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable</p> <p>Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year. These annual emissions of CO2 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.</p> <p>GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues</p> <p>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.</p> <p>ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life</p> <p>Woodfibre LNG has bought the water license to take water from Mill Creek. 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.</p> <p>ENVIRONMENT: Missing baseline studies</p> <p>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</p>			

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			<p>Woodfibre site, and the cumulative impact assessment. Proper studies need to be completed before any decisions can be made regarding this project.</p> <p>VIEWSCAPES: BC Hydro clearcut of two 64 metre swaths of forest at the Woodfibre site will impact viewscapes from the Sea to Sky highway and the gondola</p> <p>BC Hydro is proposing to clearcut 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 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 is unsatisfactory.</p> <p>ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?</p> <p>Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Nitrogen Dioxide (NO2) 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.</p> <p>In combination with either ozone (O3) or sulphur dioxide (SO2), nitrogen dioxide may cause injury at even lower concentration levels.Sulphur Dioxide (SO2) is a toxic gas with a pungent, irritating, and rotten smell. Current scientific evidence links short-term exposures to SO2, 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).</p> <p>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 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.</p> <p>Recent research (by MSc student Annie Seagram, studying under Professor Douw Steyn, Department of</p>			

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			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 are of particular concern for infants, the elderly, and is directly linked to health issues such as lung or heart disease and asthma.			
1381	March 23, 2015	Personal Information Withheld - Bowen Island, British Columbia	<p>I would like to register my strong opposition to this project as a resident of Bowen Island. The risk assessment of this facility needs to accurately place a value on the ecological and social consequences of an unanticipated event where the environment and human lives and livelihoods are at stake. I would argue that to assess these risks as acceptable is to place an irresponsibly low value on such things for the benefit of economic gain. I urge those charged with such an assessment and the decision makers charged with the approval/denial of this project to be very critical of the parameters by which risks are assessed.</p> <p>Howe Sound is an ecologically sensitive area that is already struggling to balance an increasing human population with environmental restoration after many decades of industrial abuse. This project will only make this balance more challenging and the potentially catastrophic outcomes in the event of a major mishap are simply not worth the real and potential economic benefit. This is even more true considering the fact we live in a geographically volatile area due to earthquakes. For the sake of protection of this unique, populated and sensitive area, please assess the damage from a major mishap accordingly and deny this application. Some dangers simply are not worth economic benefits.</p>	Safety	<p>Thank you for your comment.</p> <p>At Woodfibre LNG, safety is the number one priority. Woodfibre LNG will be designed for the safe and efficient handling of liquefied natural gas, both on land and on water. This includes standards set out in the BC Oil and Gas Activities Act and the associated Liquefied Natural Gas Facility Regulation, national and BC building codes, as well as national and international standards, guidelines and codes of practice where there are no applicable codes for BC.</p> <p>The Accidents and Malfunctions section (Section 11.0) of the Application assessed the consequence and frequency of effects resulting from credible worst case scenarios for the Project. It showed that potential risks to the public were within the tolerable risk criteria regulated by the BC Oil and Gas Commission (OGC). The OGC will include a review of the quantitative risk assessment for this Project in the permit application review to confirm that the study and results meet the regulated requirements. Additional information on accidents and malfunctions was provided to the EAO on April 29, 2015. During operation, major accidents at LNG facilities are very rare. LNG is not explosive in an unconfined environment. Two fire / vapour cloud explosions at LNG facilities are known to have occurred in the past 60 years. A vapour cloud and fire in Ohio occurred in 1944 because of leaks from an LNG tank constructed from inappropriate material, and in 2004 an explosion occurred in Algeria because of a steam boiler problem (boilers are not part of the Project design). Standards for modern LNG facilities have benefited from the lessons learned from these accidents, and include design requirements that avoid these accidents.</p> <p>Liquefied natural gas (LNG) has been shipped safely around the world for more than 50 years. There has never been a recorded incident involving a loss of containment of an LNG carrier at sea. LNG carriers are among the most modern ships in operation. These ships have complex containment systems, double-hull protection and are heavily regulated by international and federal standards.</p> <p>The Project will be designed:</p> <ul style="list-style-type: none"><li>• for a one in 2,475 year earthquake.</li><li>• in accordance with CSAZ276, Liquefied Natural Gas Production, Storage and Handling, with respect to their specific requirements for seismic design of LNG plants.</li><li>• To address the potential for liquefaction, ground improvements will be undertaken as part of Project construction and if deemed necessary, critical infrastructure will be moved to other locations within the project site</li></ul>	



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					<ul style="list-style-type: none"><li>If a ship is at dock at the time of a seismic event, and the movement between the LNG carrier and the floating storage and offloading unit (FSO) is outside safe operating parameters, the LNG transfer will safely shutdown and release the LNG carrier from its mooring and allow it to naturally move away from the FSO with assistance from the tugs on standby.</li><li>We will engage qualified professionals to conduct a debris flow and debris hazard assessment prior to construction.</li></ul> <p>Seismic monitors will be installed on critical process equipment and linked to the facility's ESD (Emergency Shutdown System). Should a seismic event occur, and the vibration experienced is outside the designed parameters of the seismic monitors, the facility (via the ESD) will automatically trip and place itself in fail-safe mode. Please also refer to Public Safety and Marine Transport information sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	
1382	March 23, 2015	Sarah Weber and Adrian Litz - Squamish, British Columbia	We have many concerns with the proposed WLNG project and the EA application. Please see attachment for details.		Thank you for the comment; however, Woodfibre LNG is not able to locate an attachment for this comment.	
1383	March 23, 2015	Personal Information Withheld - Bowen Island, British Columbia	I am a resident of Bowen island and am concerned about multiple aspects of the proposed site and operations including increased transit along the sound, the possibility of discharges into the environment and the protection of the environmental heritage of our coastlines.	Effects of the Project on the Environment	<p>Thank you for the comment.</p> <p>According to the Canadian Coast Guard, there were a total of 12,909 large vessel movements in Howe Sound in 2013, all enabled by existing navigational aids along the route. The Woodfibre LNG Project will bring three to four LNG carriers to the site each month. Each transit of an LNG carrier, between the entrance to Howe Sound and the Woodfibre LNG terminal, is anticipated to last 2.5 hours in duration. The loading of each LNG carrier is anticipated to be complete within 24 hours.</p> <p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the <i>Fisheries Act</i>. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>For more information on the effects of the Project on marine water quality please refer to Section 5.10 Marine Water Quality. Additional components of the marine environment that have been assessed include Freshwater Fish and Fish Habitat (Section 5.15), Marine Benthic Habitat (Section 5.16), Forage Fish and Other Fish (Marine) (Section 5.18) and Marine Mammals (Section 5.19). A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that there were no Project-</p>	

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					<p>related significant adverse residual effects to the environment.</p> <p>Additional information on the seawater cooling system intake and discharge was provided to the EAO on April 23, 2015. Please also refer to the Seawater Cooling System information sheet that have been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	
1384(i)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	I would like to see a socio economic study that incorporates health effects of air quality, water quality, ecosystem function.	Effects of the Project on Human Health	<p>Thank you for your comments.</p> <p>Woodfibre LNG Limited is committed to building a project that is right for Squamish and right for BC – and this includes protecting the human health in the communities of Howe Sound.</p> <p>Section 5.2 Atmospheric Environment (Air Quality) of the Application includes an assessment of the potential Project-related effects to air quality. The Application concluded that the changes to air quality as a result of Project-related effects are below ambient air quality criteria for all indicator compounds and the residual effects are considered negligible or not significant.</p> <p>The effects of the Project on marine water quality is assessed in Section 5.10 Marine Water Quality, and the potential effects to surface water quality are assessed in Section 5.8 Surface Water Quality and Section 5.9 Surface Water Quantity.</p> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p> <p>Woodfibre LNG Limited conducted a human health risk assessment that quantifies potential health risks associated with the Project, such as those associated with air emissions. The conclusion of the risk assessment as set forth in Section 9.2.2 was that the Project will have negligible or not significant residual effects to human health.</p>	

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1384(ii)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>I have many concerns with this project, such as:</p> <p><b>SAFETY:</b> Siting an LNG facility in Howe Sound violates international safety standards and practices, putting 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.</p> <p>The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards</p> <p><b>ENVIRONMENT:</b> 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.</p> <p>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.</p> <p><b>HEALTH:</b> Social costs and health impacts of air pollution Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrous oxides (NOx) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Emissions of NOx and SO2 interact with other compounds to form fine particles, which can</p>	LNG Project	For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 11-21, 46.	

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			<p>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.</p> <p>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.</p> <p>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</p> <p>SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility</p> <p>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. 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?</p> <p>Source: B.C. Ministry of Energy and Mines</p> <p>ECONOMY: The requested socio-economic study has not been provided</p> <p>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. 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?</p>			

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			<p>CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable</p> <p>Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year. These annual emissions of CO2 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.</p> <p>GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues</p> <p>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.</p> <p>ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life</p> <p>Woodfibre LNG has bought the water license to take water from Mill Creek. 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.</p> <p>ENVIRONMENT: Missing baseline studies</p> <p>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 project.</p> <p>VIEWSCAPES: BC Hydro clearcut of two 64 metre swaths of forest at the Woodfibre site will impact viewscapes from the Sea to Sky highway and the gondola</p> <p>BC Hydro is proposing to clearcut two 64 metre swaths of forest at the Woodfibre site which will create visible scars in the Howe Sound viewcape which will be very visible from the highway and the gondola. This information was only made available during the recent BC Hydro open house held on 19th</p>			



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			<p>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 is unsatisfactory.</p> <p>ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?</p> <p>Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Nitrogen Dioxide (NO2) 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.</p> <p>In combination with either ozone (O3) or sulphur dioxide (SO2), nitrogen dioxide may cause injury at even lower concentration levels.Sulphur Dioxide (SO2) is a toxic gas with a pungent, irritating, and rotten smell. Current scientific evidence links short-term exposures to SO2, 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).</p> <p>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 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.</p> <p>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 are of particular concern for infants, the elderly, and is directly linked to health issues such as lung or heart disease and asthma.</p>			

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1385(i)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>Micheal Sheppard,</p> <p>I'm In Opposition to the Proposed Woodfiber LNG and Fortis Pipeline in the Squamish Estuary. I've been enjoying and exploring the Sea to Sky Corridor with over Forty years of activities that include skiing, hiking, dirt-biking, mountain biking,kite-boarding, canoeing, kayaking and climbing and camping . These unique activities have put us on the International Map and Global scene as an outdoor sports mecca. With easy access to The G.V.R.D. on the new Sea to Sky highway ,Squamish gets busier and more vibrant every year.</p> <p>The Biggest Environmental disasters I have seen are the Former Woodfiber pulp mill , Britannia mines, the Numerous oil spills, and the CN Cheakamus River derailment spilling 40,000 liters of caustic soda killing , killing more than 500,000 fish from 10 different species as well as past and current Forest practices which have failed to provide enough jobs and seem to be and have been unsustainable.</p> <p>Major Positive Turning points I have witnessed in Howe Sound in recent years are the closing of Woodfiber Pulp Mill in 2006 and the Britannia Mine clean up 2001-2008 preventing acid mine drain off and discharge resulting in massive returns of: Salmon, herring, Pacific White sided Dolphins a Pods of Orcas, edible Shell fish and abundant Marine life In all the Industrial activities Ive witnessed there have been environmental disasters due to Human and Mechanical error, as well as Major air and water pollution. Woodfiber LNG will be no different from what we have seen in the past there WILL be an environmental impact to the project, and at some point there will be a major problem and accident. There is too much good going on here to risk it all again. The Sea to Sky region is a Beautiful unique Area , its residents and Guests bring in over a Millions Dollars daily to three levels of Government. This Is an area which is prospering on its own with relatively low unemployment rates.</p>	Industrial Legacy	<p>Thank you for your comment.</p> <p>The goal of Woodfibre LNG Limited is to develop a project that provides sustained economic growth while continuing to support the work that has been done to improve Howe Sound.</p> <p>The Woodfibre site has been used for industrial purposes for 100 years and is zoned for industrial use. Woodfibre LNG's purchase of the property was contingent on its former owner, Western Forest Products (WFP), obtaining a Certificate of Compliance (COC) from the BC Ministry of Environment (MOE). On December 22, 2014, the MOE issued two COCs for the Woodfibre property. The COCs confirm that WFP has cleaned up the site to acceptable contaminant levels and existing site contamination does not pose an ecological or human health risk. These COCs include conditions related to monitoring and management of residual contamination, and reporting requirements that must be undertaken by a BC MOE Approved Professional.</p> <p>Woodfibre LNG Limited intends to perform additional remediation and restoration in the Project area. Plans for additional remediation include the removal of approximately 3,000 existing creosote-coated piles from the waterfront in the Project area and the creation of a Green Zone around Mill Creek. This work will be carried out in partnership with the local groups, where suitable, so that local conservation and restoration targets can be met (please refer to Section 2.6.7 Ecological Benefits of the Application).</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the <i>Fisheries Act</i>. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p> <p>Woodfibre LNG will be designed for the safe and efficient handling of liquefied natural gas, both on land and on water. This includes standards set out in the BC Oil and Gas Activities Act and the associated Liquefied Natural Gas Facility Regulation, national and BC building codes, as well as national and international standards, guidelines and codes of practice where there are no applicable codes for BC.</p> <p>The Accidents and Malfunctions section (Section 11.0) of the Application assessed the consequence and frequency of effects resulting from credible worst case scenarios for the Project. It showed that potential risks to the public were within the tolerable risk criteria regulated by the BC Oil and Gas Commission (OGC). The OGC will include a review of the quantitative risk assessment for this Project in the permit application review to confirm that the study and results meet the regulated requirements. Additional information on accidents and malfunctions was provided to the EAO on April 29, 2015.</p>	

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1385(ii)	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	I'm not aware of any independent studies of Woodfibre LNG's economic impact particularly in tourism, recreation and and Real-estate development. Perhaps sustainable environmentally sound solutions could be look at as an alternative.	Effects of the Project on Tourism, Recreation and Real Estate	<p>Woodfibre LNG Limited is of the view that the Woodfibre site is the right fit for an LNG facility. It features: zoned industrial, more than 100 years of industrial use, deepwater port, access to established shipping routes, access to FortisBC pipeline, access to BC Hydro transmission grid, and access to labour force.</p> <p>Woodfibre LNG Limited is also of the view that tourism and industry can work together to create responsible economic development in Squamish. BC Ferries and Squamish Terminals have shown how industry can successfully coexist with local tourism and recreation, and Woodfibre LNG Limited is working hard to follow that example.</p> <p>An assessment of the potential effects of the Project on tourism is included in Section 6.2 Labour Market and Section 6.3 Sustainable Economy. The Application concluded that there were no Project-related significant adverse residual effects to the economy.</p> <p>The Application assesses the potential effects of the Project to outdoor recreation in Section 7.4 Land and Resource Use. With the proposed mitigation, it is not likely that there will be significant residual effects to outdoor recreation.</p> <p>The Project site is accessible by water only, and there are no permanent residences or private property adjacent to or within several kilometres of the Project site. Real Estate Value was not selected as a valued component as the Project site is zoned for industrial use and a change of land use designation and zoning is not required.</p> <p>Please also refer to the Sustainable Economy information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	
1386(i)	March 23, 2015	Personal Information Withheld - West Vancouver, British Columbia	Howe Sound is the WRONG location for LNG tankers, and Squamish is the WRONG location for an LNG plant. One of the many reasons is that the Howe Sound area is one of the world's foremost eco-tourism destinations. The potential revenue from this industry outweighs any revenue gain from LNG that can come from this location. In fact, across the world major players are bailing out of LNG because it is NOT a cost-effective technology, and its proven environmental risks outweigh all benefits.	Tourism	<p>Thank you for your comments.</p> <p>Woodfibre LNG Limited is of the view that the Woodfibre site is the right fit for an LNG facility. It features: zoned industrial, more than 100 years of industrial use, deepwater port, access to established shipping routes, access to FortisBC pipeline, access to BC Hydro transmission grid, and access to labour force.</p> <p>Woodfibre LNG Limited is also of the view that tourism and industry can work together to create responsible economic development in Squamish. BC Ferries and Squamish Terminals have shown how industry can successfully coexist with local tourism and recreation, and Woodfibre LNG Limited is working hard to follow that example.</p> <p>An assessment of the potential effects of the Project on tourism is included in Section 6.2 Labour Market and Section 6.3 Sustainable Economy. The Application concluded that there were no Project-related significant adverse residual effects to the economy.</p> <p>Please also refer to the Sustainable Economy information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

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1386(ii)	March 23, 2015	Personal Information Withheld - West Vancouver, British Columbia	The risks posed by the tankers also were not sufficiently addressed in the documents and testimony provided by Woodfibre LNG. Howe Sound is the home to endangered, prehistoric Glass Sponge reefs which would be destroyed by the massive amount of heated chlorinated water that would be pumped into Howe Sound by Woodfibre LNG. There was no mention of a valid scientific study that definitively proves all marine life, including the rare endangered sponges and the Octopus breeding ground, in Howe Sound will experience NO detrimental effects from tankers or the Squamish Woodfibre plant.	Effects of the Project on Marine Life	<p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>Thank you for your comment.</p> <p>Glass sponges are addressed in both the Application document (Section 5.16.2.4.1) and Marine Baseline Studies Report (Appendix 5.10).</p> <p>Woodfibre LNG expects that three to four LNG carriers will arrive at the site each month. The carriers will navigate through the established commercial shipping route in/out of Howe Sound (through Queen Charlotte Channel) to the Strait of Georgia and out to the Pacific Ocean. The carriers will be escorted by at least three tug boats, at least one of which will be tethered, and will be piloted by BC Coast Pilots who are experts with Howe Sound navigation.</p> <p>The minimum water depth along the shipping route is 60 metres, and the LNG carriers draft will sit approximately 12 metres to 15 metres below the water surface.</p> <p>The sailing line (shipping route) is a minimum of 1300 metres (and typically more than 1500 metres) from the location of the sponge reefs located at Halkett Point and Lost Reef between Pam rocks and Christie Islets. At depths ranging between 20 m and 40 m (i.e., associated depths where glass sponge reefs have been observed at these locations), the velocity produced by a propeller wash is considered negligible due to dissipation of the prop-wash with distance from sailing line.</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the <i>Fisheries Act</i>. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>For more information on the effects of the Project on marine water quality please refer to Section 5.10 Marine Water Quality. Additional components of the marine environment that have been assessed include Freshwater Fish and Fish Habitat (Section 5.15), Marine Benthic Habitat (Section 5.16), Forage Fish and Other Fish (Marine) (Section 5.18) and Marine Mammals (Section 5.19). A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that there were no Project-related significant adverse residual effects to the environment.</p> <p>Additional information on the seawater cooling system intake and discharge was provided to the EAO on April 23, 2015. Please also refer to the Seawater Cooling System information sheet that have been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

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1386(iii)	March 23, 2015	Personal Information Withheld - West Vancouver, British Columbia	Recent pipeline breaks under the Yellowstone River in the US also underscore that LNG or oil pipelines should not be run in an estuary. The risk to the water supplies of local communities is unacceptable, and the importance of preserving precious freshwater is made all the more clear given the extreme drought and water shortages in California -- this is a scenario that can happen here in time, as climate change causes more and more retreat in the snowpack that feeds mountain streams and feeds BC's freshwater. Existing freshwater sources must be protected both here in Southern BC and in Northern BC, where the process of hydraulic fracturing itself is causing water pollution. Again recent events with California aquifers being hopelessly contaminated by Fracking wastewater underscore the need to protect freshwater supplied throughout BC.	Pipeline Hydraulic Fracturing	<p>Woodfibre LNG notes that the comment is directed to the Fortis BC Eagle Mountain Pipeline Expansion Project. FortisBC's Eagle Mountain – Woodfibre Gas Pipeline Project is undergoing a separate environmental assessment certificate application review process. Please see EAO and FortisBC web sites for more information.</p> <p>Woodfibre LNG acknowledges the expressed concern regarding hydraulic fracturing. Hydraulic fracturing activities are outside the EA scope of the Project.</p> <p>Woodfibre LNG Limited is not engaged in oil or gas extraction or production activities. The gas delivered to the Project site will be supplied to the Project from western Canadian market hubs through an expansion of the existing gas transmission system by Fortis BC, and is the same gas that is supplied to Squamish, Metro Vancouver, Whistler, the Sunshine Coast and Vancouver Island through the Fortis BC pipeline system.</p> <p>Like other customers along the pipeline route, Woodfibre LNG will buy its feed gas from third party suppliers, potentially including aggregators. This natural gas will be delivered in a co-mingled stream through the Fortis BC pipeline to the site.</p> <p>Natural gas liquefied in the Woodfibre LNG facilities will be produced and processed primarily in the northeastern region of BC, but may also originate from other wells connected to the Western Canadian Gas Transmission System. The Oil &amp; Gas Commission (OGC) regulates these extraction activities under the Oil &amp; Gas Activities Act and related regulations.</p>	
1386(iv)	March 23, 2015	Personal Information Withheld - West Vancouver, British Columbia	<p>In addition, no real study on the potential drop in real estate values in Howe Sound has been done, and no reliable figures released to gauge potential gain over the loss in both tourism revenue and real estate values.</p> <p>This project must be relocated elsewhere, and Howe Sound and Squamish allowed to flourish as thriving tourism destinations for future generations to also cherish.</p>	Effects of the Project on Real Estate	Woodfibre LNG offers the following information about the Woodfibre LNG Project. The Project site is accessible by water only, and there are no permanent residences or private property adjacent to or within several kilometres of the Project site. Real Estate Value was not selected as a valued component as the Project site is zoned for industrial use and a change of land use designation and zoning is not required.	



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1387	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>1. SAFETY: Siting an LNG facility in Howe Sound violates international safety standards and practices, putting 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. The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards</p> <p>2. 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.</p> <p>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.</p> <p>3. HEALTH: Social costs and health impacts of air pollution. Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrous oxides (NOx) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment).</p>	LNG Project	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 11-21, 46.	

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			<p>application). Emissions of NOx and SO2 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.</p> <p>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.</p> <p>Sources:</p> <p>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</p> <p>4. SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility</p> <p>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. 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?</p> <p>Source: B.C. Ministry of Energy and Mines</p> <p>5. ECONOMY: The requested socio-economic study has not been provided</p> <p>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</p>			

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			<p>Sound once the LNG terminal is operational. 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?</p> <p>6. CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year. These annual emissions of CO2 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.</p> <p>7. 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.</p> <p>8. ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life Woodfibre LNG has bought the water license to take water from Mill Creek. 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.</p> <p>9. ENVIRONMENT: Missing 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 project.</p>			

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			<p>10. VIEWSCAPES: BC Hydro clearcut of two 64 metre swaths of forest at the Woodfibre site will impact views from the Sea to Sky highway and the gondola</p> <p>BC Hydro is proposing to clearcut 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 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 is unsatisfactory.</p> <p>11. ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?</p> <p>Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Nitrogen Dioxide (NO2) 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.</p> <p>In combination with either ozone (O3) or sulphur dioxide (SO2), nitrogen dioxide may cause injury at even lower concentration levels. Sulphur Dioxide (SO2) is a toxic gas with a pungent, irritating, and rotten smell. Current scientific evidence links short-term exposures to SO2, 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).</p> <p>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 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.</p>			

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			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 are of particular concern for infants, the elderly, and is directly linked to health issues such as lung or heart disease and asthma.			
1388(i)	March 23, 2015	E. Cecill - Gibsons, British Columbia	<p>To whom it may concern:</p> <p>There are a number of difficulties with the the proposed Woodfibre LNG Project.</p> <p>The Sound is narrow and densely populated; an accident could be deadly.</p> <p>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. The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound?</p> <p>Sources: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards The projected impacts of the Woodfibre project on the Howe Sound marine ecosystem would be significant. The sound has only recently started to recover from precious industrial impacts. The proposed project very clearly places the ecological abundance of Howe Sound in jeopardy. Woodfibre LNG is proposing an outdated and damaging cooling method to help cool the LNG facility. They propose to extract 17,000 tonnes, 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.</p>	Safety Seawater Cooling System Mill Creek	Thank you for the comment. For a response to this comment, please refer to the “Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions”, comment # 11, 12, and 18.	



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			<p>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.</p> <p>There are also problems with obtaining water from Mill Creek for their operations. The Department of Fisheries and Oceans has objected to the proposal: the proposed rates would reduce water levels in Mill Creek to levels that will no longer support fish life, especially in the summer months. This important stream habitat is home to several native fish species.</p>			
1388(ii)	March 23, 2015	E. Cecill - Gibsons, British Columbia	<p>This project also contributes t climate change. From a climate perspective, shale gas is one of the dirtiest fossil fuels on the market.We cannot continue to accept the expansion of industries and infrastructures that tie local and global economies to unconventional fossil fuel sources like shale gas. The bulk of the gas that would arrive and depart from Woodfibre LNG would come from hydraulic fracturing operations in this province. Even aside from the completely unacceptable impacts of these operations on groundwaters and surface waters - each well uses and contaminates up to 10 million gallons of water - shale gas extraction has a greenhouse gas footprint up to %20 larger than coal because of the methane released during the extraction process. Approval for the Woodfibre LNG plant would thus tie this region firmly to an absolutely outdated and inappropriate industry.</p> <p>Sources: Robert W. Howarth · Renee Santoro · Anthony Ingraffea."Methane and the greenhouse-gas footprint of natural gas from shale formations," Climatic Change (2011) 106:679–690 David Hughes. "BC LNG Reality Check," Watershed Sentinel. Vol. 24. No. 2 March-April, 2014</p>	Hydraulic Fracturing	<p>Woodfibre LNG acknowledges the expressed concern regarding hydraulic fracturing. Hydraulic fracturing activities are outside the EA scope of the Project.</p> <p>Woodfibre LNG Limited is not engaged in oil or gas extraction or production activities. The gas delivered to the Project site will be supplied to the Project from western Canadian market hubs through an expansion of the existing gas transmission system by Fortis BC, and is the same gas that is supplied to Squamish, Metro Vancouver, Whistler, the Sunshine Coast and Vancouver Island through the Fortis BC pipeline system.</p> <p>Like other customers along the pipeline route, Woodfibre LNG will buy its feed gas from third party suppliers, potentially including aggregators. This natural gas will be delivered in a co-mingled stream through the Fortis BC pipeline to the site.</p> <p>Natural gas liquefied in the Woodfibre LNG facilities will be produced and processed primarily in the northeastern region of BC, but may also originate from other wells connected to the Western Canadian Gas Transmission System. The Oil &amp; Gas Commission (OGC) regulates these extraction activities under the Oil &amp; Gas Activities Act and related regulations.</p>	

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1388(iii)	March 23, 2015	E. Cecill - Gibsons, British Columbia	<p>LNG tankers do not have enough clearance to get over the 9000 year old glass sponge reefs if they go off course. They have been called "Living Fossils" as until recently this species was thought to have gone extinct over 60 million years ago.</p> <p>Sources:  <a href="http://news.nationalgeographic.com/.../131018-glass-sponge-r.../">http://news.nationalgeographic.com/.../131018-glass-sponge-r.../</a></p> <p>The plant itself would generate significant greenhouse gas emissions. Woodfibre LNG's own estimates predict greenhouse gas emissions equal to adding over 18,000 cars to the highway, driving to Vancouver and back, every day. 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.</p> <p>Given the very deadly implications of climate change around the world, there are human lives gravely affected by the decisions under consideration. Massive droughts, violent storms, devastating floods,, collapse of food systems and millions forced to migrate are some of the consequences of our refusal to act on climate change.. For this reason alone, the Woodfibre LNG proposal should be rejected. We must instead put our time and resources towards developing alternatives to our current overuse of fossil fuels.</p> <p>Thank you for your time and consideration</p>	Glass Sponge Reefs GHG Emissions	For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 16 and 45.	
1389	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	<p>1. SAFETY: Siting an LNG facility in Howe Sound violates international safety standards and practices, putting 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.</p> <p>The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>Source: Sandia Report, 2004 and SIGTTO LNG</p>	LNG Project	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 11-21, 46.	

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
			<p>Terminal Siting Standards</p> <p>2. 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.</p> <p>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.</p> <p>3. HEALTH: Social costs and health impacts of air pollution Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrous oxides (NOx) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Emissions of NOx and SO2 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.</p> <p>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.</p> <p>Sources:</p> <p>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</p> <p>4. SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility</p> <p>On February 15th, 2015, a 3.4 magnitude</p>			

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			<p>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. 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?</p> <p>Source: B.C. Ministry of Energy and Mines</p> <p>5. ECONOMY: The requested socio-economic study has not been provided</p> <p>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. 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?</p> <p>6. CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable</p> <p>Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year. These annual emissions of CO2 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.</p> <p>7. GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues</p> <p>There are no regulations adopted to regulate this LNG industry from a technical standpoint. Any of</p>			

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			<p>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.</p> <p>8. ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life</p> <p>Woodfibre LNG has bought the water license to take water from Mill Creek. 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.</p> <p>9. ENVIRONMENT: Missing baseline studies</p> <p>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 project.</p> <p>10. VIEWSCAPES: BC Hydro clearcut of two 64 metre swaths of forest at the Woodfibre site will impact views from the Sea to Sky highway and the gondola</p> <p>BC Hydro is proposing to clearcut two 64 metre swaths of forest at the Woodfibre site which will create visible scars in the Howe Sound viewshed which will be very visible from the 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 is unsatisfactory.</p> <p>11. ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?</p> <p>Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Nitrogen Dioxide (NO2) is a reddish-brown gas with a pungent, irritating</p>			



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			<p>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.</p> <p>In combination with either ozone (O3) or sulphur dioxide (SO2), nitrogen dioxide may cause injury at even lower concentration levels.Sulphur Dioxide (SO2) is a toxic gas with a pungent, irritating, and rotten smell. Current scientific evidence links short-term exposures to SO2, 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).</p> <p>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 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.</p> <p>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 are of particular concern for infants, the elderly, and is directly linked to health issues such as lung or heart disease and asthma.</p>			

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1390	March 23, 2015	Personal Information Withheld - Lions Bay, British Columbia	<p>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.</p> <p>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.</p>	Seawater Cooling	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 12.	
1391	March 23, 2015	Personal Information Withheld - Lions Bay, British Columbia	<p>HEALTH: Social costs and health impacts of air pollution. Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Emissions of NOx and SO2 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.</p> <p>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.</p> <p>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</p>	Effects of the Project on Air Quality	Thank you for the comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 13.	

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1392(i)	March 23, 2015	Personal Information Withheld - Sechelt, British Columbia	<p>Please do not go through with this project. It will only kill the beautiful environment of the Howe Sound and take away from the First Nations culture. I believe we can come up with sustainable and renewable resources for a better future for all of the citizens living in this area. We can also set precedence for more renewable resources. I would highly recommend not entering an agreement with a corporation who is owned by a dodgy businessman. Please please please be creative in your ways of generating energy: Squamish is known for its wind so why not place windmills in the ocean like the Netherlands? Squamish is also known for its outdoor recreation so why not look into ecotourism and build something similar to what Costa Rica has going on? I truly believe there is a better way.</p> <p>Thanks for considering my comment. I hope you change your plans for the Howe Sound and go for a more sustainable resource of energy and generating industry within BC. Think of you citizens the animals and th environment the world depends on you.</p>	Effects of the Project on the Environment First Nations Corporate Ownership	<p>Thank you for your comment.</p> <p>The Woodfibre LNG Project is owned by Woodfibre LNG Limited, a privately held Canadian company based in Vancouver with a Community Office in Squamish.</p> <p>Woodfibre LNG Limited is a subsidiary of Pacific Oil and Gas (PO&amp;G) which develops, builds, owns and operates projects throughout the energy supply chain.</p> <p>Woodfibre LNG Limited intends to operate in a manner consistent with its core values of a triple bottom line approach, where results benefit the community, the country and the company.</p> <p>Woodfibre LNG will comply with all applicable regional, provincial and federal laws, regulations, guidelines and standards including but not limited to: employment standards; health and environmental regulations and standards; taxation; and, First Nations agreements.</p> <p>Woodfibre LNG Limited is of the view that the Woodfibre site is the right fit for an LNG facility. It features: zoned industrial, more than 100 years of industrial use, deepwater port, access to established shipping routes, access to FortisBC pipeline, access to BC Hydro transmission grid, and access to labour force.</p> <p>Woodfibre LNG Limited is also of the view that tourism and industry can work together to create responsible economic development in Squamish. BC Ferries and Squamish Terminals have shown how industry can successfully coexist with local tourism and recreation, and Woodfibre LNG Limited is working hard to follow that example.</p> <p>An assessment of the potential effects of the Project on tourism is included in Section 6.2 Labour Market and Section 6.3 Sustainable Economy. The Application concluded that there were no Project-related significant adverse residual effects to the economy.</p> <p>The Application assesses the potential effects of the Project to outdoor recreation in Section 7.4 Land and Resource Use. With the proposed mitigation, it is not likely that there will be significant residual effects to outdoor recreation</p> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p>	

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1393	March 23, 2015	Laurie Parkinson - Bowyer Island, British Columbia	<p>Marine Mammals, Underwater noise, all project phases pg 5.19-42 4th paragraph</p> <p>"The effect is likely to be reversible as behaviour effects are likely to persist only for the duration of the vessel activities or pile driving activities." Could you please remove these repetitive "likely" comments and give some references to back this up? On what basis does the EA say the marine mammals will probably learn to live with it, vs leave Howe Sound, to which they have recently returned?</p>	Effects of the Project on Marine Mammals	<p>Thank you for your comment.</p> <p>The Project has been assessed in accordance with the British Columbia <i>Environmental Assessment Act</i>, <i>Canadian Environmental Assessment Act, 2012</i>, and the approved Application Information Requirements. The terms used in the Application are consistent with the BC EAO Guidelines for the Selection of Valued Components and Assessment of Potential Effects<sup>15</sup>.</p> <p>Many toothed whales show considerable tolerance of ship traffic, including dolphins and porpoise (Richardson et al. 1995). There is no available evidence of toothed whales permanently abandoning parts of their historical range because of vessel traffic (full review in Richardson et al. 1995 and Gordon et al. 2004). Hatler and Darling (1974) reported that grey whales in British Columbia return annually to traditional summer feeding areas despite co-occurrence of high vessel traffic in these regions.</p> <p>Some humpbacks in Alaska show little or no reaction of approaching vessels (Watkins et al. 1981), with animals less likely to react overtly when actively feeding than when resting or engaged in other activities (Krieger and Wing 1984; 1986). In southeastern Alaska, vessel activity was observed to elicit short-term avoidance behaviour, although some humpbacks still remained for several weeks in areas of heavy vessel traffic, and returned to the same area in subsequent years (Baker et al. 1988; 1992).</p> <p>The most extensive data are from summer feeding grounds off Cape Cod, where humpback whales have been shown to spend extended periods in high traffic areas, and return there annually despite frequent exposure to vessel activity (Watkins 1986; Beach and Weinrick 1989; Clapham et al. 1993). In general, evidence on reactions of seals to vessel sound is scarce; the limited data suggests that seals are fairly tolerant of vessel sound / vessel activity, and are known to return to areas of previous disturbance (full review in Richardson et al. (1995). Harbour seals hauled out on land have been shown to move into the water in response to vessel sounds, particularly during the pupping period (Reijnders 1981; Brasseur 1993 in Richardson et al. 1995). This species has also been observed returning to haul out sites within an hour of being displaced into the water as a result of vessel disturbance (Bowles and Stewart 1980; Osborn 1985). Several other studies report habituation of harbour seals and gray seals to repeated vessel approaches in high traffic areas (Bonner 1982; Johnson et al. 1989).</p> <p>References:</p> <p>Baker, C.S., Perry, A., Vequist, G., (1988); Humpback whales of Glacier Bay, Alaska. <i>Whalewatcher</i>. 22(3):13-17.</p> <p>Baker, C.S., Straley, J.M., Perry, A., (1992); Population characteristics of individually identified humpback whales in southeastern Alaska: Summer and Fall 1986. <i>Fisheries Bulletin</i>. 90(3):429-437.</p> <p>Beach, D.W., Weinrich, M.T., (1989); Watching the whales: is an educational adventure for humans turning out to be another threat for endangered species? <i>Oceanus</i>. 32(1):84-8.</p> <p>Bonner, W.N., (1982); Seals and man/a study of interactions. University of Washington Press, Seattle, WA. 170p.</p> <p>Bowles, A.E., Stewart, B.S., (1980); Disturbances to the pinnipeds and birds of San Miguel Island, 1979–80, Pg. 99–137. In: Jehl Jr., J.R. and C.F. Cooper (eds.), <i>Potential Effects of Space Shuttle Sonic Booms</i></p>	

<sup>15</sup> British Columbia Environmental Assessment Office (EAO). 2013. Guidelines for the Selection of Valued Components and Assessment of Potential Effects. Available at: [http://www.eao.gov.bc.ca/pdf/EAO\\_Valued\\_Components\\_Guideline\\_2013\\_09\\_09.pdf](http://www.eao.gov.bc.ca/pdf/EAO_Valued_Components_Guideline_2013_09_09.pdf)

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					<p>on the Biota and Geology of the California Channel Islands: Research Reports. Center for Marine Studies, San Diego State University, and Hubbs/Sea World Research Institute for U.S. Air Force, San Diego, CA.</p> <p>Clapham, P.J., Baraff, L.S., Carlson, C.A., Christian, M.A., Mattila, D.K., Mayo, C.A., Murphy, M.A., Pittman, S., (1993); Seasonal occurrence and annual return of humpback whales, <i>Megaptera novaeangliae</i>, in the southern Gulf of Maine. Canadian Journal of Zoology. 71:440- 443.</p> <p>Gordon, J., Gillespie, D., Potter, J., Frantzis, A., Simmonds, M. P., Swift, R., Thompson, D., (2004); A review of the effects of seismic surveys on marine mammals. Mar. Technol. Soc. J. 37(4): 16–34.</p> <p>Hatler, D.F., Darling, J.D., (1974); Recent observations of the gray whale in British Columbia. Canadian Field Naturalist. 88(4):449-459.</p> <p>Johnson, S. R., Burns, J.J., Malme, C.I., Davis, R.A., (1989); Synthesis of information of the effects of noise and disturbance on major haulout concentrations of Bering Sea pinnipeds. OCS Study MMS 88-0092. Rep. From LGL Alaska Research Assoc. Inc., Anchorage, AK, for U.S. Mineral Management Service, Anchorage, AK. 267p. NTIS PB89-191373.</p> <p>Krieger, K. J., Wing, B.L., (1984); Hydroacoustic surveys and identification of humpback whale forage in Glacier Bay, Stephens Passage, and Frederick Sound, Southeastern Alaska, Summer 1983. U. S. Dep. Commer., NOAA Technical Memorandum. NMFS/NWC-66, 60p.</p> <p>Krieger, K. J., Wing, B.L., (1986); Hydroacoustic monitoring of prey to determine humpback whale movements. U.S. Dep. commer., NOAA Technical Memorandum. NMFS/NWC-98, 62p.</p> <p>Osborn, L.S., (1985); Population dynamics, behaviour, and the effect of disturbance on haulout patterns of the harbour seal, <i>Phoca vitulina richardsi</i> / Elkhorn Slough, Monterey Bay, California. B.A. Thesis, Department of Environmental Studies and Department of Biology. University of California, Santa Cruz. 75p.</p> <p>Reijnders, P.J.H., (1981); Management and conservation of the harbour seal, <i>Phoca vitulina</i>, population in the international Wadden Sea area. Biological Conservation. 19(30):213-221.</p> <p>Richardson, J., Greene, C.R. Jr., Malme, C., Thomson, D., (1995); Marine mammals and noise. Academic Press. San Diego.</p> <p>Watkins, W.A., Moore, K., Wartzok, D., Johnson, J.H., (1981); Radio tracking of finback (<i>Balaenoptera physalus</i>) and humpback (<i>Megaptera novaeangliae</i>) whales in Prince William Sound, AK. Deep-Sea Research. 28A(6):577-588.</p> <p>Watkins, W.A., (1986); Whale Reactions to Human Activities in Cape Cod Waters. Marine Mammal Science. 2(4):251-262.</p>	



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1394	March 23, 2015	Personal Information Withheld - Squamish, British Columbia	I have been an elementary school teacher in Squamish for five years. Our children love Howe Sound and want to protect it. We are very concerned about the environmental impact of Woodfibre LNG, such as the warm, chlorinated sea water that would be released into the sound, and the removal of water from Mill Creek. Both of these actions could damage or kill marine life! We would much rather see the government invest in renewable energy resources.	Effects of the Project on Marine Life Mill Creek	<p>Thank you for your comment.</p> <p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the <i>Fisheries Act</i>. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>The seawater cooling system will be designed to meet BC water quality guidelines. The release temperature of the seawater will be less than 21°C or 10°C above ambient water temperature of Howe Sound, whichever is less. Near-field simulation modeling shows that, with a release temperature of 10°C greater than the ambient temperature, the total volume of water that would have a temperature greater than 1°C above ambient is 125 m<sup>3</sup> (for context, this volume is approximately 5% of an Olympic-size pool). This volume will not increase over time.</p> <p>Residual levels of chlorine at the discharge ports will be less than 0.02 mg/L. This is much less than the chlorine in drinking water, which is approximately 0.04 mg/L to 2.0 mg/L. For more information on the effects of the Project on marine water quality please refer to Section 5.10 Marine Water Quality. Additional components of the marine environment that have been assessed include Freshwater Fish and Fish Habitat (Section 5.15), Marine Benthic Habitat (Section 5.16), Forage Fish and Other Fish (Marine) (Section 5.18) and Marine Mammals (Section 5.19). A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that there were no Project-related significant adverse residual effects to the environment.</p> <p>Woodfibre LNG Limited has committed to maintaining minimum instream flow releases, which will be determined by a qualified professional. This means that the water licence could not be used to capacity during low flows, and flows that are protective of fish and fish habitat will remain in Mill Creek.</p> <p>More information is included in Section 5.9 Water Quantity and Section 5.15 Freshwater Fish and Fish Habitat of the Application.</p> <p>Additional information on the seawater cooling system intake and discharge was provided to the EAO on April 23, 2015. Please also refer to the Seawater Cooling System information sheet that have been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
1395(i)	March 23, 2015	Personal Information Withheld - Lions Bay, British Columbia	<p>I am opposed to the LNG project proposed in the Howe Sound, situated at the former Woodfibre site. I am a full time resident in the Village of Lions Bay, located on the Howe Sound. I have serious concerns about many issues involving this project which have not been addressed in the proposal put forward by Woodfibre LNG.</p> <p>My issues with this project are:</p> <p>1. The proposed path for the LNG tankers will directly impact the safety of my home. The proposed siting of the Woodfibre LNG terminal and the associated transit of LNG tankers through Howe Sound poses an unacceptable risk to my safety and that of people in communities along the shores of Howe Sound, and, as well, in addition those vehicles commuting along the Sea to Sky corridor.</p> <p>The Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards - show that Siting an LNG facility in Howe Sound violates international safety standards and practices, putting Howe Sound residents at risk.</p>	Safety	<p>At Woodfibre LNG, safety is the number one priority. Woodfibre LNG will be designed for the safe and efficient handling of liquefied natural gas, both on land and on water. This includes standards set out in the BC Oil and Gas Activities Act and the associated Liquefied Natural Gas Facility Regulation, national and BC building codes, as well as national and international standards, guidelines and codes of practice where there are no applicable codes for BC.</p> <p>The Accidents and Malfunctions section (Section 11.0) of the Application assessed the consequence and frequency of effects resulting from credible worst case scenarios for the Project. It showed that potential risks to the public were within the tolerable risk criteria regulated by the BC Oil and Gas Commission (OGC). The OGC will include a review of the quantitative risk assessment for this Project in the permit application review to confirm that the study and results meet the regulated requirements. Additional information on accidents and malfunctions was provided to the EAO on April 29, 2015. Siting of the Woodfibre LNG facility complies in every way with the Society of International Gas Tanker &amp; Terminal Operators Ltd's (SIGTTO) guidance as the location of the site is not within a narrow waterway as defined by SIGTTO and TERMPOL (Technical Review Process of Marine Terminal Systems and Transshipment Sites).</p> <p><i>Narrow channel/waterway</i></p> <p>TERMPOL specifies a body of navigable water of width four times the vessel's beam to be a one-way narrow channel, and seven times the beam to be a two-way narrow channel. SIGTTO specifies a body of navigable water of width five times the vessel's beam to be a one-way narrow channel. So, for a characteristic 45 metre beam LNG carrier calling at the proposed Woodfibre LNG Terminal, this would imply a width of 180 meters for a one-way narrow channel and 315 metres for a two-way narrow channel.</p> <p>The US 5th Circuit court in its judgments has specified that under Rule 9 of the International Regulations for Preventing Collisions at Sea (COLREGS) and the U.S. Inland Navigation Rules, a "narrow channel" to be 1000 feet (305 metres) while other court judgments have considered any body of water with width less than 1060% the beam of the vessel, which would be 488 metres for Woodfibre LNG, to be a narrow channel.</p> <p>SIGTTO's guidance principles also recommend turning circles to have a minimum diameter of twice the overall length of the largest LNG carrier (i.e., 600 m for Woodfibre LNG) and TERMPOL requires turning circle of 2.5 times the length, which equates to 750 m.</p> <p><i>LNG Carriers &amp; Howe Sound Shipping Channel / Route</i></p> <ul style="list-style-type: none"><li>• An LNG carrier needs a 180-metre (one way) wide channel for transit and 600 metre wide channel for turning with tugs.</li><li>• Howe Sound at its narrowest along the shipping route is 1400 metres, or 4593 feet.</li><li>• The width of Howe Sound at the proposed Woodfibre LNG terminal is 5.2 km or 17,060 feet with nearest distance to Darrell Bay being 2.7 km or 8858 feet and 60 meters deep with no large vessel movements within 2.7 km or 8858 feet.</li></ul> <p><i>Additional Information</i></p> <p>Subject to the recommendations of Transport Canada's TERMPOL Review Committee, which includes Transport Canada, Pacific Pilotage Authority, BC Coast Pilots and Canadian Coast Guard, Woodfibre LNG has always maintained that it would deploy at least three tugs in an escort pattern, at least one of which will be tethered, to provide a dynamic safety awareness zone for recreational and pleasure craft</p>	

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					<p>around the LNG carrier during its transit within Howe Sound. This dynamic safety awareness zone would extend up to 50 meters on either side of the vessel and being dynamic in nature, would be transient with the movement of the LNG carrier. This arrangement of tugs also serves as an emergency provision to address contingencies that may require the vessel to stop or engage in manoeuvres at very short notice.</p> <p>Woodfibre LNG will develop a Squamish Harbour Vessel Traffic Plan to identify strategies to minimize displacement of marine-based recreational activities. As a component of the Squamish Harbour Vessel Traffic Plan, Woodfibre LNG will also work with Matthews Southwest and Bethel Lands Corporation, and District of Squamish, to minimize displacement of recreation activity by Project-associated ferry and water taxi traffic that travels to and from the Project site. Please also refer to Public Safety information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	
1395(ii)	March 23, 2015	Personal Information Withheld - Lions Bay, British Columbia	<p>2. Also of concern is the "tanker size, depth and route" and the stated transiting depth of the LNG tanker; from the project document; Water depth (transit) 125 m minimum depth seaward of berth and in Howe Sound and how this will affect the prehistoric delicate "Glass Sponge" bioherms located underwater in several locations in the Howe Sound, whose rarity has been recognized globally for their unique significance.</p> <p>The 125 meter required depth will not permit the safe passage over the Porteau Sill. The top of the sill sits at only 31 meters and the deepest passage on the sill is at 70 meters which places the LNG tanker within 500 meters of the sponge bioherm that the Department of Fishes and Oceans is currently studying for a complete closure of all type of contact trap fishing (prawn, crab). It makes no sense to drive an LNG tanker over this area that in one pass could completely remove the sponge bed from the ocean floor if the area is being closed to another type of commercial activity. Noting, that the sill could not safely be dredged without producing damaging levels of sedimentation that would smother the sponge.</p> <p>As the DFO document states (Sections 1.4.2); a lack of studies or scientific information will not be used as a reason for failing to protect fish habitat. A study on the effects of such large LNG tankers on the benthic stationary life in Howe Sound, noting that the study of Hexactinellid sponges is still in it infancy is necessary for this project.</p>	Effect of the Project on Marine Life	<p>Glass sponges are addressed in both the Application document (Section 5.16.2.4.1) and Marine Baseline Studies Report (Appendix 5.10).</p> <p>Woodfibre LNG expects that three to four LNG carriers will arrive at the site each month. The carriers will navigate through the established commercial shipping route in/out of Howe Sound (through Queen Charlotte Channel) to the Strait of Georgia and out to the Pacific Ocean. The carriers will be escorted by at least three tug boats, at least one of which will be tethered, and will be piloted by BC Coast Pilots who are experts with Howe Sound navigation.</p> <p>The minimum water depth along the shipping route is 60 metres, and the LNG carriers draft will sit approximately 12 metres to 15 metres below the water surface.</p> <p>The sailing line (shipping route) is a minimum of 1300 metres (and typically more than 1500 metres) from the location of the sponge reefs located at Halkett Point and Lost Reef between Pam rocks and Christie Islets. At depths ranging between 20 m and 40 m (i.e., associated depths where glass sponge reefs have been observed at these locations), the velocity produced by a propeller wash is considered negligible due to dissipation of the prop-wash with distance from sailing line.</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the Fisheries Act. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>For more information on the effects of the Project on marine water quality please refer to Section 5.10 Marine Water Quality. Additional components of the marine environment that have been assessed include Freshwater Fish and Fish Habitat (Section 5.15), Marine Benthic Habitat (Section 5.16), Forage Fish and Other Fish (Marine) (Section 5.18) and Marine Mammals (Section 5.19). A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. The Application concluded that there were no Project-related significant adverse residual effects to the environment.</p>	

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1395(iii)	March 23, 2015	Personal Information Withheld - Lions Bay, British Columbia	3. The size of the LNG tankers and the subsequent size of the wave that will eventually reach the shoreline/beaches will create tremendous displacement and water force. This will create dangerous situations along the waterbreaks.	Effects of the Wake on the Shoreline	<p>As part of the Application, a Vessel Wake Assessment was carried out by Moffatt &amp; Nichol. Moffatt &amp; Nichol is a leading global infrastructure advisor with a BC presence specializing in the planning and design of facilities that shape coastlines, harbours and rivers, as well as an innovator in the planning for transportation complexities associated with the movement of freight.</p> <p>The vessel wake assessment estimated that the wake generated by the carriers in normal conditions would be less than 10 centimetres at 50 metres away from the LNG carrier, which is less than the wind-generated waves typically encountered in Howe Sound. In addition, it identified that any wake generated by a LNG carrier along the shipping route would diminish in size the further it traveled away from an LNG carrier, and would be unnoticeable at the shoreline, given the natural occurrence of typical wind-generated waves in Howe Sound.</p> <p>Indirect wake effects from shipping activities were considered in the assessment (Section 7.3.3.2.1 Potential Interactions) and, based on the analysis by Moffatt &amp; Nichol, the potential wake effects were determined to be negligible (i.e., they would not have a measurable change).</p> <p>For more information on the Vessel Wake Assessment, please see Appendix 7.3-2 of the Application. Additional information on the vessel wakes was provided to the EAO on April 23, 2015.</p>	
1395(iv)	March 23, 2015	Personal Information Withheld - Lions Bay, British Columbia	4. The stated technology for the water cooling systems has been banned in the USA and other countries who used the once-through seawater cooling system proposed by Woodfibre LNG. Why would such a system be incorporated in the Howe Sound if proof exists that this outdated and damaging cooling method will adversely affect marine life/systems?	Seawater Cooling System	<p>In LNG facilities, seawater cooling is used primarily to remove waste heat generated from the main refrigerant compressors, which are used to cool the gas. Seawater cooling is used widely, including in about half of the LNG facilities currently in operation in the world. Seawater cooling is energy efficient, and produces less environmental noise and less visual effects than air cooling.</p> <p>California did not ban seawater cooling. California did not ban seawater cooling. Section 316(b) of the US Clean Water Act requires the Environmental Protection Agency (EPA) to issue regulations on the design and operation of intake structures, in order to minimize adverse environmental impacts<sup>16</sup>. The EPA brought regulations into force in 2014 that cover facilities that withdraw more than two million gallons per day (315 m<sup>3</sup>/h) of cooling water. These regulations govern the controls that must be in place at new and existing plants related to entrainment and impingement of marine organisms..</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the Fisheries Act. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>The seawater cooling system will be designed to meet BC water quality guidelines. The release temperature of the seawater will be less than 21°C or 10°C above ambient water temperature of Howe Sound, whichever is less. Near-field simulation modeling shows that, with a release temperature of 10°C greater than the ambient temperature, the total volume of water that would have a temperature greater than 1°C above ambient is 125 m<sup>3</sup> (for context, this volume is approximately 5% of an Olympic-size pool). This volume will not increase over time.</p>	

16

Source: <http://water.epa.gov/lawsregs/lawsguidance/cwa/316b/upload/Final-Regulations-to-Establish-Requirements-for-Cooling-Water-Intake-Structures-at-Existing-Facilities.pdf>

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					<p>Residual levels of chlorine at the discharge ports will be less than 0.02 mg/L. This is much less than the chlorine in drinking water, which is approximately 0.04 mg/L to 2.0 mg/L.</p> <p>The effects of the Project on marine water quality have been assessed in Section 5.10 Marine Water Quality of the Application. Additional components of the marine environment that have been assessed include Freshwater Fish and Fish Habitat (Section 5.15), Marine Benthic Habitat (Section 5.16), Forage Fish and Other Fish (Marine) (Section 5.18) and Marine Mammals (Section 5.19). A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p> <p>Additional information on the seawater cooling system intake and discharge was provided to the EAO on April 23, 2015. Please also refer to the Seawater Cooling System Information Sheet that has been prepared as part of the Woodfibre LNG Limited Response to Public Comments.</p>	
1395(v)	March 23, 2015	Personal Information Withheld - Lions Bay, British Columbia	<p>5. Air pollution and climate change concerns are inadequately addressed in the Woodfibre LNG proposal (see Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application) - with suggested emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year, which will contribute to both health and environmental issues.</p> <p>Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year.</p> <p>6. Woodfibre LNG did not provide the requested socio-economic study. What are the economic benefits to Squamish and the surrounding communities?</p>	GHG Emissions Economic Benefits	<p>For a response to this comment, please refer to the "<i>Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions</i>", comment # 13, 15 and 16.</p>	



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1395(vi)	March 23, 2015	Personal Information Withheld - Lions Bay, British Columbia	<p>7. The Emergency Response Assistance Plan is not identified. What is the Transport Canada ERAP for the proposed Woodfibre project? (From <a href="http://www.tc.gc.ca/eng/tdg/erap-menu-72.htm">http://www.tc.gc.ca/eng/tdg/erap-menu-72.htm</a> - sec1 - An ERAP or Emergency Response Assistance Plan is a plan that describes what is to be done in the event of a transportation accident involving certain higher risk dangerous goods. The Transportation of Dangerous Goods Regulations (TDGR) for dangerous goods that require special expertise and response equipment to respond to an incident requires the ERAP. The plan is intended to assist local emergency responders by providing them with technical experts and specially trained and equipped emergency response personnel at the scene of an incident.)</p> <p>How does the ERAP program fit into the Woodfibre scenario? Who provides the funding for the additional training, equipment, personnel, and maintenance of these elements? Who are the first responders ? When will decision be made as to proceeding with adjustments? What are the boundaries for responsibility for local Fire Departments, Squamish and otherwise?</p>	Emergency Response	<p>Woodfibre LNG will be designed for the safe and efficient handling of liquefied natural gas, both on land and on water. This includes standards set out in the BC Oil and Gas Activities Act and the associated Liquefied Natural Gas Facility Regulation, national and BC building codes, as well as national and international standards, guidelines and codes of practice where there are no applicable codes for BC.</p> <p>The Accidents and Malfunctions section (Section 11.0) of the Application assessed the consequence and frequency of effects resulting from credible worst case scenarios for the Project. It showed that potential risks to the public were within the tolerable risk criteria regulated by the BC Oil and Gas Commission (OGC). The OGC will include a review of the quantitative risk assessment for this Project in the permit application review to confirm that the study and results meet the regulated requirements. Additional information on accidents and malfunctions was provided to the EAO on April 29, 2015. Please also refer to Section 2.2.5.2 Project Design Legislation and Standards. The Project must comply with the CSA Z276 Liquefied Natural Gas – Production, Storage and Handling standard. This program will include a detailed Emergency Response Plan including documented emergency response procedures, required equipment, training requirements, identification of trained personnel and plans for emergency drills and exercises.</p> <p>It is Woodfibre LNG Limited's intention to be self-sufficient for all possible emergency situations and it is not anticipated that Woodfibre LNG Limited would require First Responder emergency services. In addition, Woodfibre LNG Limited will continue discussions with local government and other emergency service providers in the LAA to ensure a robust communications plan in the unlikely event of an emergency related to the Woodfibre LNG Project.</p> <p>Please also refer to the Public Safety and Marine Transport information sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

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1395(vii)	March 23, 2015	Personal Information Withheld - Lions Bay, British Columbia	8. The Woodfibre LNG proposal is located in a zone of moderate to high earthquake risk, on two known thrust faults. The Woodfibre site also has a history of slope failure. This is a high risk location.	Seismic Hazard	<p>Woodfibre LNG Limited looked at several sites for its project before finding one that was the right fit for LNG. Home to industry and shipping for more than 100 years, the Woodfibre site features: industrial zoning, a deepwater port, access to a FortisBC pipeline network, and access to BC Hydro electricity.</p> <p>At Woodfibre LNG, safety is our number one priority. This includes designing and building a facility that prevents or minimizes the potential effects of geotechnical and natural hazards. Third party independent experts have conducted a detailed investigation and review of geotechnical and natural hazards of the Woodfibre site.</p> <p>The Project will be designed:</p> <ul style="list-style-type: none"><li>• for a one in 2,475 year earthquake.</li><li>• in accordance with CSAZ276, Liquefied Natural Gas Production, Storage and Handling, with respect to their specific requirements for seismic design of LNG plants.</li><li>• To address the potential for liquefaction, ground improvements will be undertaken as part of Project construction and if deemed necessary, critical infrastructure will be moved to other locations within the project site</li><li>• If a ship is at dock at the time of a seismic event, and the movement between the LNG carrier and the floating storage and offloading unit (FSO) is outside safe operating parameters, the LNG transfer will safely shutdown and release the LNG carrier from its mooring and allow it to naturally move away from the FSO with assistance from the tugs on standby.</li><li>• We will engage qualified professionals to conduct a debris flow and debris hazard assessment prior to construction.</li><li>• Seismic monitors will be installed on critical process equipment and linked to the facility's ESD (Emergency Shutdown System). Should a seismic event occur, and the vibration experienced is outside the designed parameters of the seismic monitors, the facility (via the ESD) will automatically trip and place itself in fail-safe mode.</li></ul>	
1395(viii)	March 23, 2015	Personal Information Withheld - Lions Bay, British Columbia	9. Where will these tankers be re-fuelled? Port Metro Vancouver prohibits ships of this size being refueled in the harbour anchorages. Do we face the prospect of large oil barges with 3-4,000 tons of bunker fuel being towed up the Sound for refueling? This issue has not been addressed by Woodfibre LNG.	Refuelling	<p>For a response to this comment, please refer to the “Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions”, comment # 4.</p>	

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1395(ix)	March 23, 2015	Personal Information Withheld - Lions Bay, British Columbia	<p>10. Proper baseline studies have not been conducted. They are either missing or are inadequate as they do not conform to any recognized scientific standards for the following: 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 project.</p> <p>Many issues, questions and concerns remained unanswered and unaddressed. The Woodfibre LNG project proposed for the Howe Sound does not meet safety, environmental, economic or social standards necessary for proceeding.</p> <p>The renewal of the marine environment here in the Howe Sound with sitings of dolphins, orcas, and humpbacks throughout the Howe Sound and adjacent Georgia Straight deserves to be protected.</p> <p>Please do not proceed with approval for this project.</p>	Baseline Studies	<p>For a response to this comment, please refer to the “<i>Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions</i>”, comment # 19.</p>	
1396(i)	March 23, 2015	Tiffany Robinson - Gambier Island, British Columbia	<p>1. ENVIRONMENT: Glass sponges are found across the globe. But only along British Columbia's continental shelf do they grow over the skeletons of their dead ancestors to form massive deepwater reefs. This buildup is thanks to high levels of dissolved silica, which the sponges use to build their glass skeletons, and strong currents of cold water laden with nutrients. Will the silica be impacted by the LNG plant?</p> <p>I am concerned the LNG Woodfibre project will put the glass sponges at risk. Please consider water temperature, "once through" water returned to Howe Sound 10 degrees warmer after processing, tanker transport, intake of water into system, etc.</p> <p>"The sponge communities provide refuge for juvenile fish and they have a large filtering capacity, so they provide an important ecological function," says Bruce Reid, regional manager of Fisheries and Oceans Canada in Vancouver.</p> <p>"One single sponge is estimated to filter 9,000 liters a day," says Danielle Ludeman, a graduate student at the University of Alberta. "So when you multiply that out over the entire reef, that's a huge amount of water that they're filtering and extracting that bacteria from."</p> <p>Glass sponge reefs host high levels of biodiversity, thanks to the habitat they create for marine species. They also function as nurseries for rockfish, a very slow-growing group of fish—many of which are threatened—and are a source of food for invertebrates and fish.</p> <p>The glass sponges, which have the consistency of meringue, are vulnerable to damage from</p>	Effect of the Project on Glass Sponge Reefs	<p>Thank you for your comments.</p> <p>Glass sponges are addressed in both the Application document (Section 5.16.2.4.1) and Marine Baseline Studies Report (Appendix 5.10).</p> <p>Woodfibre LNG expects that three to four LNG carriers will arrive at the site each month. The carriers will navigate through the established commercial shipping route in/out of Howe Sound (through Queen Charlotte Channel) to the Strait of Georgia and out to the Pacific Ocean. The carriers will be escorted by at least three tug boats, at least one of which will be tethered, and will be piloted by BC Coast Pilots who are experts with Howe Sound navigation.</p> <p>The minimum water depth along the shipping route is 60 metres, and the LNG carriers draft will sit approximately 12 metres to 15 metres below the water surface.</p> <p>The sailing line (shipping route) is a minimum of 1300 metres (and typically more than 1500 metres) from the location of the sponge reefs located at Halkett Point and Lost Reef between Pam rocks and Christie Islets. At depths ranging between 20 m and 40 m (i.e., associated depths where glass sponge reefs have been observed at these locations), the velocity produced by a propeller wash is considered negligible due to dissipation of the prop-wash with distance from sailing line.</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the Fisheries Act. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>For more information on the effects of the Project on marine water quality please refer to Section 5.10 Marine Water Quality. Additional components of the marine environment that have been assessed include Freshwater Fish and Fish Habitat (Section 5.15), Marine</p>	

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
			<p>bottom trawling—a form of commercial fishing that rakes the ocean floor for fish. When researchers with Natural Resources Canada surveyed the sponge reefs in northern British Columbia in 2001, they discovered that more than half of the reefs were damaged—most likely by trawling.</p> <p>Alaska's Marine Fisheries Service reported some 2,866 tons (2.6 million kilograms) of sponge bycatch between 1990 and 2002. The U.S. National Marine Fisheries Service estimates that 91 percent of that bycatch was caused by bottom trawling.</p> <p>The sponge reefs in southern British Columbia's Georgia Strait currently do not have any protection, putting them at risk of being irreparably damaged. Can you ensure the entire scope of the LNG project, processes, facility, transportation, etc will not degrade or negatively impact the glass sponges?</p> <p>"Here in the Strait of Georgia, the fishing activity that is likely the most destructive, and has the biggest impact, is bottom trawling and prawn traps," says Sabine Jessen, oceans director at CPAWS. Fisheries and Oceans Canada is currently in dialogue with local fishing stakeholders to put protection measures in place as part of a regional integrated fisheries management plan. "Our interest is to prevent physical damage of the sponges," says Reid.</p> <p>Please prohibit the LNG Woodfibre project if it is not in alignment with this regional integrated fisheries management plan to protect the glass sponge reefs.</p> <p>Source: <a href="http://news.nationalgeographic.com/news/2013/10/131018-glass-sponge-reef-canada-ocean-science/">http://news.nationalgeographic.com/news/2013/10/131018-glass-sponge-reef-canada-ocean-science/</a></p>		<p>Benthic Habitat (Section 5.16), Forage Fish and Other Fish (Marine) (Section 5.18) and Marine Mammals (Section 5.19). A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. The Application concluded that there were no Project-related significant adverse residual effects to the environment.</p>	

Comment #	Date Received	Author	Comment	Issue / Theme	Proponent’s Response	EAO’s Response
1396(ii)	March 23, 2015	Tiffany Robinson - Gambier Island, British Columbia	<p>2. SAFETY: Siting an LNG facility in Howe Sound violates international safety standards and practices, putting 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. The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards</p> <p>3. 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.</p> <p>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.</p> <p>4. HEALTH: Social costs and health impacts of air pollution Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrous oxides (NOx) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG’s environmental assessment</p>	LNG Project	For a response to this comment, please refer to the “Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions”, comment # 11-21, 46.	



Comment #	Date Received	Author	Comment	Issue / Theme	Proponent's Response	EAO's Response
			<p>application). Emissions of NOx and SO2 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.</p> <p>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.</p> <p>Sources:</p> <p>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</p> <p>5. SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility</p> <p>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. 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?</p> <p>Source: B.C. Ministry of Energy and Mines</p> <p>6. ECONOMY: The requested socio-economic study has not been provided</p> <p>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</p>			

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			<p>Sound once the LNG terminal is operational. 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?</p> <p>7. CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable</p> <p>Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year. These annual emissions of CO2 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.</p> <p>8. GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues</p> <p>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.</p> <p>9. ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life</p> <p>Woodfibre LNG has bought the water license to take water from Mill Creek. 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.</p> <p>10. ENVIRONMENT: Missing baseline studies</p> <p>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</p>			

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			<p>regarding this project.</p> <p>11. VIEWSCAPES: BC Hydro clearcut of two 64 metre swaths of forest at the Woodfibre site will impact views from the Sea to Sky highway and the gondola</p> <p>BC Hydro is proposing to clearcut 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 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 is unsatisfactory.</p> <p>12. ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?</p> <p>Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Nitrogen Dioxide (NO2) 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.</p> <p>In combination with either ozone (O3) or sulphur dioxide (SO2), nitrogen dioxide may cause injury at even lower concentration levels.Sulphur Dioxide (SO2) is a toxic gas with a pungent, irritating, and rotten smell. Current scientific evidence links short-term exposures to SO2, 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).</p> <p>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 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.</p> <p>Recent research (by MSc student Annie</p>			

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			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 are of particular concern for infants, the elderly, and is directly linked to health issues such as lung or heart disease and asthma.			
1397(i)	March 23, 2015	Karine Le Du - Squamish, British Columbia	<p>Socio-economic impacts study: the proponent should be required to have a third party detailed socio-economic impacts study completed, specific to the LAA (rather than broader geographic region), and specific to current and forecasted economic activities and types of businesses established here (rather than past industries), and on the basis of community-established values (to be determined through public engagement efforts facilitated by third party public engagement consulting professionals). The study should consider alignment with the new Squamish brand, growth in tourism and other emerging industries, and impacts on tourism and other emerging industry.</p> <p>Findings of said study should be assessed by the EAO to evaluate if this project is a good fit for our community and to determine whether the proposed project has net positive or net negative socio-economic impact to Squamish with regards to our community values. Certification should not be granted if the project is deemed to have net negative socio-economic impacts.</p>	Effects of the Project on the Local Economy	<p>Thank you for the comments.</p> <p>An independent third party economic impact assessment of the proposed Woodfibre LNG project is included in the Application. Accounting and Consulting firm MNP found the following economic benefits of the project (2014 CAD):</p> <ul style="list-style-type: none"><li>• \$83.7 MILLION: Estimated in tax revenue for all three levels of government during the construction phase of the Project.</li><li>• \$86.5 MILLION: Estimated in tax revenue for all three levels of government per year of operation.</li><li>• \$243.3 MILLION: Estimated to the District of Squamish, Resort Municipality of Whistler, Electoral Area D of Squamish-Lillooet Regional District, Squamish First Nation communities, and Metro Vancouver gross domestic product (GDP) during construction and more than</li><li>• \$122.8 MILLION in GDP per year during operation.</li></ul> <p>For more information, please refer to Section 2.6 Project Benefits of the Application. Additional benefits from the Project are described in greater detail in Section 6.2 Labour Market, Section 6.3 Sustainable Economy and Section 7.2 Infrastructure and Community Services.</p> <p>Please also refer to the Sustainable Economy information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

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1397(ii)	March 23, 2015	Karine Le Du - Squamish, British Columbia	Seawater cooling: there is much concern about the negative marine impacts of the proposed seawater cooling system. Consider requiring the proponent to engage the public in the review of alternative cooling processes, including water and land based solutions, and in the selection of the most suitable cooling system, on the basis of community-established values (values to be determined through public engagement efforts facilitated by third party public engagement consulting professionals).	Seawater Cooling System Public Consultation	<p>In selecting a preferred cooling method, Woodfibre LNG Limited considered environmental effects, regulatory issues, and capital and operating cost considerations (e.g., maintenance, reliability, energy efficiency). Reliability and maintainability of heat exchangers is perhaps the most critical factor in the consideration of the preferred cooling media.</p> <p>Linde Group (2014) conducted a cooling study on seawater vs. air cooling, and WorleyParsons (2013) conducted a cooling media study on the following cooling media options:</p> <ul style="list-style-type: none"><li>• air cooling</li><li>• evaporative cooling</li><li>• freshwater cooling from local streams</li><li>• seawater cooling from Howe Sound</li></ul> <p>Through this study, seawater cooling was chosen as the preferred cooling media. Seawater is one of the most abundant and efficient cooling mediums available<sup>[1]</sup>. Seawater cooling produces less environmental noise and visual effects than air cooling. During operation, it is preferable that the cooling medium be at a consistent temperature through the year. The seawater temperature fluctuations are less over the year than the temperature fluctuations of the air or creek water.</p> <p>In addition, Woodfibre LNG Limited would like to note that two of the factors that Woodfibre LNG Limited took into consideration when assessing alternatives was public concern about noise and visual effects from using air cooling.</p> <p>Additional information on the seawater cooling system intake and discharge was provided to the EAO on April 23, 2015. Please also refer to the Seawater Cooling System information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	
1397(iii)	March 23, 2015	Karine Le Du - Squamish, British Columbia	deregulation of environmental protection acts: I would like to request that the EAO compile a list of relevant environmental protection acts that have been altered and bills that have been passed or eliminated since the BC Liberal gov't and Federal Conservative gov't have been elected, including such information as impact on protection of land, water and air. Make the list available to the public for review. Where those acts and bills have resulted in a reduction in environmental protection and monitoring of environmental quality, make it part of the project's conditions to adhere to more stringent versions of regulatory policies (acts or bills) so as to uphold integrity in the protection of our natural resources.	Regulatory Requirements	<p>Woodfibre LNG Limited defers to the EAO on this question.</p> <p>Should an Environmental Assessment Certificate be granted for the Project, a Table of Conditions will be developed that outlines all of the requirements with which the Project will have to comply. Woodfibre LNG Limited will be legally responsible for ensuring all conditions are met.</p> <p>The Project will also require a Facility Permit, Leave to Commence Construction and Leave to Operate from the Oil and Gas Commission (OGC) as well as numerous other environmental permits.</p>	For more information related to comments on the Environmental Assessment process please see “EAO Response to Public Comments – Application Review Public Comment Period for Woodfibre LNG, January 22 – March 23, 2015” under the Application Review EAO Generated Documents <a href="#">[Link]</a> .



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1397(iv)	March 23, 2015	Karine Le Du - Squamish, British Columbia	jobs and economy: request more certainty and greater detail in quantity and types of jobs the project proposes to offer during construction and operation; review various global economic scenarios and conduct cost-benefit analyses to determine if the economic gains are equitably balanced against environmental and social impacts; reject certification if the project is deemed to have disproportionate negative impacts on environment and LAA society compared to financial gains.	Economic Benefits	<p>An independent third party economic impact assessment of the proposed Woodfibre LNG project is included in the Application. Accounting and Consulting firm MNP found the following economic benefits of the project (2014 CAD):</p> <p>CONSTRUCTION JOBS</p> <ul style="list-style-type: none"> <li>• Create 650+ jobs each year of construction.</li> <li>• Create an additional 1,080+ jobs (indirect* and induced** employment) during the construction phase of the Project.</li> </ul> <p>LONG-TERM OPERATION JOBS</p> <ul style="list-style-type: none"> <li>• Create 100+ local jobs during operation.</li> <li>• Create an additional 330+ local jobs (indirect* and induced**) during operation.</li> </ul> <p>*Indirect impacts arise from changes in activity for suppliers.</p> <p>**Induced impacts arise from shifts in spending on goods and services as a consequence of changes to the payroll of the directly and indirectly affected businesses.</p> <p>For more information, please refer to Section 2.6 Project Benefits of the Application. Additional benefits from the Project are described in greater detail in Section 6.2 Labour Market, Section 6.3 Sustainable Economy and Section 7.2 Infrastructure and Community Services.</p> <ul style="list-style-type: none"> <li>• \$83.7 MILLION: Estimated in tax revenue for all three levels of government during the construction phase of the Project.</li> <li>• \$86.5 MILLION: Estimated in tax revenue for all three levels of government per year of operation.</li> <li>• \$243.3 MILLION: Estimated to the District of Squamish, Resort Municipality of Whistler, Electoral Area D of Squamish-Lillooet Regional District, Squamish First Nation communities, and Metro Vancouver gross domestic product (GDP) during construction and more than</li> <li>• \$122.8 MILLION in GDP per year during operation.</li> </ul> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p>	
1397(v)	March 23, 2015	Karine Le Du - Squamish, British Columbia	enviro-economic impact study: request that the proponent commission a third party enviro-economic impact study to determine the direct and indirect costs to tax payers in the LAA and the RAA of predicted resultant environmental impacts of the project (for example, healthcare costs associated with reduction in air quality; infrastructure costs associated with rise in sea level; etc.).	Economic Impact Study	Woodfibre LNG Limited has committed to carrying out an Economic Impact Study to gain a deeper understanding of how the Project may affect the economy. The scope of this study will be developed in conjunction with the District of Squamish.	

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1398	March 23, 2015	richie m billy Siyamshun hawk - Squamish B.C, British Columbia	<p>lost public trust and lost credibility to those involved in the process of fast tracking this without morally considering the environment with sincerity transparent. is shameful.</p> <p>Considerable greenhouse gases are also emitted during gas processing and this, too, must be carefully assessed. as to an example below from an existing working LNG plant that has the company cooking up the books and not telling the truth.</p> <p>there should be a 10 year testing Study and getting the environmental assessed should be done for realistic moral essessments. not the cooked up cowboy make money scheme. dothe science of the seismic surveys intense underwater noise that can affect whales, dolphins and other wildlife, and various vessel movements, artificial light, underwater noise.</p> <p>The specific impacts considered include: water quality and quantity, air quality, health effects, GHG emissions, land use, induced seismicity, and traffic. dredging the ocean surface the united nations study the increased percentage of methane emissions is the result of larger methane leakage due to the longer pipeline distance</p> <p>Natural gas for many years was regarded as a volatile waste product within the oil and coal industries, and was subsequently vented into the atmosphere resulting in pollution.</p> <p>If the gas industry has been allowed to just simply dump the surplus CO2 in the air, that's a big concern.</p> <p>An example Below of a public speaking, of an existing LNG fully functiuonal and with its unethical practices that come with it.</p> <p>According to Senator Ludlam "the companies behind these gas projects claim that gas is a clean energy, but they don't talk about the massive emissions that are caused when gas from high-CO2 gas fields is processed and that CO2 is stripped out and vented to the atmosphere."</p> <p>The Greens claim one joint venture alone, James Price Point hub, near Broome, will emit 32 million tonnes a year of greenhouse gases - equal to five per cent of Australia's current greenhouse gas emissions, or all of New Zealand's total annual greenhouse gas emissions.</p> <p>Senator Ludlam said in an interview with Fairfax Media.</p>	GHG Emissions LNG Industry Effects of the Project on the Environment	<p>Thank you for the comments.</p> <p>Natural gas is the world's cleanest burning fossil fuel, and plays an important role in reducing GHG emissions globally. However, assessing either the upstream or the downstream effects of the Project on climate change or greenhouse gas emissions is outside the scope of the environmental assessment, as defined in the section 11 order.</p> <p>Woodfibre LNG Limited is not engaged in oil or gas extraction or production activities. The gas delivered to the Project site will be supplied to the Project from western Canadian market hubs through an expansion of the existing gas transmission system by Fortis BC, and is the same gas that is supplied to Squamish, Metro Vancouver, Whistler, the Sunshine Coast and Vancouver Island through the Fortis BC pipeline system.</p> <p>Like other customers along the pipeline route, Woodfibre LNG will buy its feed gas from third party suppliers, potentially including aggregators. This natural gas will be delivered in a co-mingled stream through the Fortis BC pipeline to the site.</p> <p>Natural gas liquefied in the Woodfibre LNG facilities will be produced and processed primarily in the northeastern region of BC, but may also originate from other wells connected to the Western Canadian Gas Transmission System. The Oil &amp; Gas Commission regulates these extraction activities under the Oil &amp; Gas Activities Act and related regulations.</p> <p>Natural gas is the cleanest burning fossil fuel and has been identified as the best and most reliable way to help transition away from high-emission fuels such as oil and coal. This is particularly true in energy-hungry Asian markets, where Woodfibre LNG Limited plans to sell its product.</p> <p>Woodfibre LNG Limited is committed to building a project that is right for Squamish and right for BC – and this includes protecting the waters of Howe Sound. Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>Section 5.3 Greenhouse Gas Management of the Application includes an assessment of the potential Project-related effects to greenhouse gases. The influence of Project-related greenhouse gas emissions on climate change was evaluated by assessing whether any measurable change in climate could result from the Project-generated greenhouse gas emissions. The relatively minor increase in global emissions associated with the Project would correspond to a change in climate that is unlikely to be measurable.</p> <p>All discharges to the marine environment will meet or exceed applicable legislation and guidelines, including the BC Water Quality Criteria (marine and estuarine life), the Canadian Environmental Quality Guidelines (water quality guidelines for the protection of aquatic life – marine), and the <i>Fisheries Act</i>. The seawater cooling system will require a waste discharge permit under section 14 of the <i>Environmental Management Act</i>. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.</p> <p>The potential effects of the Project on the environment have been assessed in Section 5.0 Assessment of Potential Environmental Effects of the Application. A summary of the residual and cumulative</p>	

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					<p>environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p> <p>The assessment of potential effects of the Project on marine mammals in Howe Sound is described in Section 5.19 of the Application. The most common marine mammal species reported in the upper reaches of Howe Sound, closest to the Project area, are harbour seals, Pacific white-sided dolphins, and killer whales. Additional marine mammals that are sighted in Howe Sound include humpback whales, minke whales, grey whales, harbour porpoises, sea lions, harbour seals and porpoises.</p> <p>The assessment indicated that vessel traffic may cause a short-term change in behaviour of marine mammals due to underwater noise. Woodfibre LNG Limited will develop and implement Underwater Noise Management Plan and a Marine Mammal Management Plan. These plans will include mitigation measures designed to address adverse effects and cumulative effects from underwater noise and monitoring programs.</p>	

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1399(i)	March 23, 2015	Auli Parviainen - Squamish, British Columbia	<p>Woodfibre LNG project has a whole host of issues, which remain unaddressed by the proponent in the proposal and the provincial government for that matter. I stand firmly opposed to this project given its failure to provide any reasonable basis to see a net benefit for Squamish, Sea to Sky, Howe Sound or the province.</p> <p>Howe Sound is currently in recovery from its industrial past and has recently seen the resurgence of marine life, which provides ample new economic opportunities. Calls for designating Howe Sound as UNESCO World Heritage Site abound and for a reason. It is telling of a distinctly different vision of Howe Sound, one that does not fit an industrial operation like Woodfibre LNG. Howe Sound is the wrong location for this project</p>	Project Benefits	<p>Thank you for your comments.</p> <p>Woodfibre LNG Limited is of the view that the Woodfibre site is the right fit for an LNG facility. It features: zoned industrial, more than 100 years of industrial use, deepwater port, access to established shipping routes, access to FortisBC pipeline, access to BC Hydro transmission grid, and access to labour force.</p> <p>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project on the waters and marine and plant life in Howe Sound. From the very beginning, Woodfibre LNG has been committed to listening to the community and building a project that is right for Squamish and right for BC – and this includes environmental stewardship.</p> <p>An assessment of the potential Project-related effects on the environment is included in Section 5.0 of the Application. A summary of the residual and cumulative environmental effects that cannot be avoided or mitigated through the re-design or relocation of the Project, or through Proponent commitments to mitigation measures are included in Section 21.0 Summary of Project-related Residual Effects. Mitigation measures are summarized in Section 22.0, and include mitigation measures to reduce or avoid effects to the marine environment. The Application concluded that, with mitigation measures in place, there were no Project-related significant adverse residual effects to the environment.</p> <p>Woodfibre LNG Limited took ownership of the Woodfibre site in February 2015 and is already contributing to the District of Squamish's tax revenue. Woodfibre LNG is expected to pay an estimated \$2 million (+) per year during operation, should the project go ahead.</p> <p>The Environmental Assessment Certificate application includes information on the economic benefits of the Woodfibre LNG project, should it go ahead.</p> <ul style="list-style-type: none"><li>• \$83.7 MILLION: Estimated in tax revenue for all three levels of government during the construction phase of the Project.</li><li>• \$86.5 MILLION: Estimated in tax revenue for all three levels of government per year of operation.</li><li>• \$243.3 MILLION: Estimated to the District of Squamish, Resort Municipality of Whistler, Electoral Area D of Squamish-Lillooet Regional District, Squamish First Nation communities, and Metro Vancouver gross domestic product (GDP) during construction and more than \$122.8 MILLION in GDP per year during operation.</li></ul> <p>For more information see Section 2.6 Project Benefits of Woodfibre LNG's Environmental Assessment Certificate Application. Please also refer to the Sustainable Economy information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments.</p>	

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1399(ii)	March 23, 2015	Auli Parviainen - Squamish, British Columbia	I strongly object that the Environmental Assessment Process excludes full life cycle impacts and global context to the project. Given the legal requirement of BC to achieve specified greenhouse gas emissions targets it should be a mandatory requirement to include the full scope of the life cycle impacts of LNG. Hydraulic fracturing, methane leakage and water use are among the numerous concerns associated with this process.	GHG Emissions Hydraulic Fracturing	<p>Natural gas is the world's cleanest burning fossil fuel, and plays an important role in reducing GHG emissions globally. However, assessing either the upstream or the downstream effects of the Project on climate change or greenhouse gas emissions is outside the scope of the environmental assessment, as defined in the section 11 order.</p> <p>Woodfibre LNG Limited is not engaged in oil or gas extraction or production activities. The gas delivered to the Project site will be supplied to the Project from western Canadian market hubs through an expansion of the existing gas transmission system by Fortis BC, and is the same gas that is supplied to Squamish, Metro Vancouver, Whistler, the Sunshine Coast and Vancouver Island through the Fortis BC pipeline system.</p> <p>Like other customers along the pipeline route, Woodfibre LNG will buy its feed gas from third party suppliers, potentially including aggregators. This natural gas will be delivered in a co-mingled stream through the Fortis BC pipeline to the site.</p> <p>Natural gas liquefied in the Woodfibre LNG facilities will be produced and processed primarily in the northeastern region of BC, but may also originate from other wells connected to the Western Canadian Gas Transmission System. The Oil &amp; Gas Commission regulates these extraction activities under the Oil &amp; Gas Activities Act and related regulations.</p> <p>Section 5.3 Greenhouse Gas Management of the Application includes an assessment of the potential Project-related effects to greenhouse gases. The influence of Project-related greenhouse gas emissions on climate change was evaluated by assessing whether any measurable change in climate could result from the Project-generated greenhouse gas emissions. The relatively minor increase in global emissions associated with the Project would correspond to a change in climate that is unlikely to be measurable.</p>	



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1399(iii)	March 23, 2015	Auli Parviainen - Squamish, British Columbia	<p>Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year. These annual emissions of CO2 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.</p> <p>I am gravely concerned with the following areas and request that more information be supplied:</p> <p>1. ECONOMIC IMPACTS</p> <ul style="list-style-type: none"><li>• The proposal does not provide data-based information and analysis of the impacts on the region's existing economy or future economic potential. Sea to Sky Corridor has no existing non-renewable energy industry and is not anticipated to yield any economic or labour market growth from this sector. Employment Projections by the Squamish Lillooet Regional District anticipate significant growth in tourism, government, health and other services, all of which could be significantly damaged by this project. No specific impacts have been assessed in regards to the growing local recreation economy including water-based sports, events and other traffic drivers. Request that the proponent must supply a comprehensive socio-economic impact study</li><li>• 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). Request that the proponent provide details to the nature of construction and how many parts will be shipped from other regions to Howe Sound. Request that proponent clarifies the nature of construction jobs expected.</li><li>• The project promises 100 full-time jobs once operational. Request that the proponent clarify what skills and special expertise will be required of these workers and the anticipated use of temporary foreign workers.</li><li>• Property tax due to District of Squamish is still unclear. Request that the proponent be required to finalize the amount within EA process to allow for full socio-economic assessment prior to any approvals.</li><li>• Squamish is expected to grow and double its size by 2035. The cumulative impact of Woodfibre LNG and Fortis pipeline proposal (related projects) will absorb a significant amount of industrial land space. Given the lack</li></ul>	LNG Project	<p>For a response to this comment, please refer to the “Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions”, comment # 11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 45 and 46.</p>	

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			<p>of available space for employment opportunities this project is likely to escalate the impact of commuter traffic to and from Squamish. Request that the proponent supply a comprehensive socio-economic study, which ascertains the number of employment opportunities lost due to the cumulative absorption of industrial land.</p> <p>2. SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility</p> <ul style="list-style-type: none"><li>• Earthquake hazards - The project is located within this zone of moderate to high earthquake risk, on two known thrust faults. On February 15th, 2015, a 3.4 magnitude earthquake hit Vancouver's coast that was felt throughout Howe Sound.</li><li>• Slope failures - The Woodfibre site 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.</li><li>• Henriette Lake Dam Seismic Deficiency - this has not been included in the assessment although it could have significant impact in the project area. Request that a mitigation plan be submitted. Request that the study by Knight Piesold be released</li><li>• Siting in a narrow fjord - The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? 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.</li></ul> <p>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. The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers</p>			

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			<p>through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>Sources: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards</p> <p>ENVIRONMENT: The once-through seawater cooling system proposed by Woodfibre LNG is outdated</p> <p>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.</p> <p>Sources:</p> <p><a href="http://www.cbc.ca/news/multimedia/every-fault-line-in-british-columbia-1.2919420">http://www.cbc.ca/news/multimedia/every-fault-line-in-british-columbia-1.2919420</a></p> <p>Bornhold, B.D., 1983, Fjords, GEOS, no. 1, p 1-4</p> <p>B.C. Ministry of Energy and Mines</p> <p>3. ENVIRONMENTAL –</p> <ul style="list-style-type: none"><li>• The once-through seawater cooling system is outdated.</li></ul> <p>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 plankto, 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.</p> <p>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. Request that the project must provide an alternate cooling system, which mitigates damaging impacts on Howe Sound marine life.</p> <ul style="list-style-type: none"><li>• Air pollution - Woodfibre LNG is estimating air</li></ul>			

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			<p>pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Emissions of NOx and SO2 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.</p> <p>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:</p> <p>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</p> <ul style="list-style-type: none"><li>• Removal of water from Mill Creek unsustainable for fish life</li></ul> <p>Woodfibre LNG has secured the water license 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.</p> <ul style="list-style-type: none"><li>• Missing baseline studies</li></ul> <p>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 project.</p> <p>VIEWSCAPES: BC Hydro clearcut of two 64 metre swaths of forest at the Woodfibre site will impact views from the Sea to Sky highway and the gondola</p> <p>BC Hydro is proposing to clearcut 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 highway and the</p>			

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			<p>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 is unsatisfactory.</p> <p>4. GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues</p> <p>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.</p> <ul style="list-style-type: none"><li>• Will there be smog? Will there be a smell?</li></ul> <p>Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application).</p> <p>Nitrogen Dioxide (NO2) 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 (O3) or sulphur dioxide (SO2), nitrogen dioxide may cause injury at even lower concentration levels.</p> <p>Sulphur Dioxide (SO2) is a toxic gas with a pungent, irritating, and rotten smell. Current scientific evidence links short-term exposures to SO2, 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.</p> <p>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</p>			



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			<p>pollution in Howe Sound, exacerbating the existing air quality conditions, particularly in the Squamish-Brackendale corridor.</p> <p>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 are of particular concern for infants, the elderly, and is directly linked to health issues such as lung or heart disease and asthma.</p> <ul style="list-style-type: none"><li>9000 year old glass sponge reefs endangered by tanker traffic</li></ul> <p>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.</p> <p>Sources:</p> <p><a href="http://news.nationalgeographic.com/news/2013/10/13/1018-glass-sponge-reef-canada-ocean-science/">http://news.nationalgeographic.com/news/2013/10/13/1018-glass-sponge-reef-canada-ocean-science/</a></p> <p><a href="http://jordansturdymla.ca/bcltv_videos/mla-sturdy-halkett-bays-glass-sponges/">http://jordansturdymla.ca/bcltv_videos/mla-sturdy-halkett-bays-glass-sponges/</a></p>			

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1400	March 23, 2015	Donald Wilson - Squamish, British Columbia	<p>Woodfibre LNG project has a whole host of issues, which remain unaddressed by the proponent in the proposal and the provincial government for that matter. I stand firmly opposed to this project given its failure to provide any reasonable basis to see a net benefit for Squamish, Sea to Sky, Howe Sound or the province.</p> <p>Howe Sound is currently in recovery from its industrial past and has recently seen the resurgence of marine life, which provides ample new economic opportunities. Calls for designating Howe Sound as UNESCO World Heritage Site abound and for a reason. It is telling of a distinctly different vision of Howe Sound, one that does not fit an industrial operation like Woodfibre LNG. Howe Sound is the wrong location for this project.</p> <p>I strongly object that the Environmental Assessment Process excludes full life cycle impacts and global context to the project. Given the legal requirement of BC to achieve specified greenhouse gas emissions targets it should be a mandatory requirement to include the full scope of the life cycle impacts of LNG. Hydraulic fracturing, methane leakage and water use are among the numerous concerns associated with this process.</p> <p>Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year. These annual emissions of CO2 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.</p> <p>I am gravely concerned with the following areas and request that more information be supplied:</p> <p>1. ECONOMIC IMPACTS</p> <ul style="list-style-type: none"><li>• The proposal does not provide data-based information and analysis of the impacts on the region's existing economy or future economic potential. Sea to Sky Corridor has no existing non-renewable energy industry and is not anticipated to yield any economic or labour market growth from this sector. Employment Projections by the Squamish Lillooet Regional District anticipate significant growth in tourism, government, health and other services, all of which could be significantly damaged by this project. No specific impacts have been assessed in regards to the growing local recreation economy including water-based sports, events and other traffic drivers. Request that the proponent must supply a comprehensive socio-economic impact study</li></ul>	LNG Project	<p>Thank you for your comment. For a response to this comment, please refer to the "Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions", comment # 11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 45 and 46.</p>	

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			<p>project area. Request that a mitigation plan be submitted. Request that the study by Knight Piesold be released</p> <ul style="list-style-type: none"><li>• Siting in a narrow fjord - The Society of International Gas Tanker and Terminal Operators (SIGTTO) LNG Terminal Siting Standards states that LNG terminals should not be located in narrow, inland waterways with dense local populations and significant commercial, recreational, and ferry traffic. Why would that guideline not apply to Howe Sound? 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.</li></ul> <p>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. The proposed siting of the Woodfibre LNG terminal and associated transit of LNG tankers through Howe Sound poses an unacceptable risk to safety of people in communities along the shores of Howe Sound.</p> <p>Sources: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards</p> <ul style="list-style-type: none"><li>• ENVIRONMENT: The once-through seawater cooling system proposed by Woodfibre LNG is outdated</li></ul> <p>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.</p> <p>Sources: <a href="http://www.cbc.ca/news/multimedia/every-fault-line-in-british-columbia-1.2919420">http://www.cbc.ca/news/multimedia/every-fault-line-in-british-columbia-1.2919420</a> Bornhold, B.D., 1983, Fjords, GEOS, no. 1, p 1-4 B.C. Ministry of Energy and Mines</p>			

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			<p>3. ENVIRONMENTAL –</p> <ul style="list-style-type: none"><li>• The once-through seawater cooling system is outdated.</li></ul> <p>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 plankto, 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.</p> <p>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. Request that the project must provide an alternate cooling system, which mitigates damaging impacts on Howe Sound marine life.</p> <ul style="list-style-type: none"><li>• Air pollution - Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application). Emissions of NOx and SO2 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.</li></ul> <p>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:</p> <p>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</p> <ul style="list-style-type: none"><li>• Removal of water from Mill Creek unsustainable for fish life</li></ul> <p>Woodfibre LNG has secured the water license to extract water from Mill Creek, which flows through the Woodfibre site. The Department of Fisheries and</p>			



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			<p>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.</p> <ul style="list-style-type: none"><li>• Missing baseline studies</li></ul> <p>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 project.</p> <p>VIEWSCAPES: BC Hydro clearcut of two 64 metre swaths of forest at the Woodfibre site will impact views from the Sea to Sky highway and the gondola</p> <p>BC Hydro is proposing to clearcut 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 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 is unsatisfactory.</p> <p>4. GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues</p> <p>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.</p> <ul style="list-style-type: none"><li>• Will there be smog? Will there be a smell?</li></ul> <p>Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide (NO2) and 43.8 tonnes of sulfur dioxide (SO2) every year (See Table 5.2-14 of the Air Quality Section of Woodfibre LNG's environmental assessment application).</p> <p>Nitrogen Dioxide (NO2) 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</p>			

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			<p>increase susceptibility to respiratory infections. In combination with either ozone (O3) or sulphur dioxide (SO2), nitrogen dioxide may cause injury at even lower concentration levels.</p> <p>Sulphur Dioxide (SO2) is a toxic gas with a pungent, irritating, and rotten smell. Current scientific evidence links short-term exposures to SO2, 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.</p> <p>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.</p> <p>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 are of particular concern for infants, the elderly, and is directly linked to health issues such as lung or heart disease and asthma.</p> <ul style="list-style-type: none"><li>• 9000 year old glass sponge reefs endangered by tanker traffic</li></ul> <p>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.</p> <p>Sources:</p> <p><a href="http://news.nationalgeographic.com/news/2013/10/13/1018-glass-sponge-reef-canada-ocean-science/">http://news.nationalgeographic.com/news/2013/10/13/1018-glass-sponge-reef-canada-ocean-science/</a></p> <p><a href="http://jordansturdymla.ca/bcltv_videos/mla-sturdy-halkett-bays-glass-sponges/">http://jordansturdymla.ca/bcltv_videos/mla-sturdy-halkett-bays-glass-sponges/</a></p>			