# Proposed Woodfibre LNG Project – Comments #1101 – 1200, Table 12 of 17

The following table includes Woodfibre LNG Limited's responses to comments #1101 - 1200 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.

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| 1101 | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | 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.<br>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.<br>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards<br>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 ENVIRONMENT: The once-through seawater cooling system proposed by Woodfibre LNG is outdated Woodfibre LNG is proposing an outdated and damaging cooling method to help cool the LNG facility.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.<br>If the herring are impacted, the dolphins, orcas, and humpbacks are also impacted as they no | 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 and 46. | |

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| | | | 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.<br><br>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.<br>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.<br>Sources:<br>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<br>4. SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility<br>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... | | | |

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| | | | 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?<br>Source: B.C. Ministry of Energy and Mines<br><br>5. ECONOMY: The requested socio-economic study has not been provided<br>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?<br>6. CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable<br>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.<br>7. GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues<br>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 | | | |

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| | | | pond spill.<br>8. ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life<br>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.<br>9. ENVIRONMENT: Missing baseline studies<br>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.<br>10. 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<br>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.<br>11. ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?<br>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.<br>In combination with either ozone (O3) or sulphur dioxide (SO2), nitrogen dioxide may | | | |

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| | | | 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).<br>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.<br>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. | | | |

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| 1102 | March 22, 2015 | Susan Bibbs - West Vancouver, British Columbia | Howe Sound is the area in which I was born and raised. I have seen the environmental devastation from the pulp and paper industry's dumping of toxins over decades into Howe Sound's ocean and air - to the point of closing another industry - the fishery. For decades, because of industrial pulp mill pollution (read dumping ground of toxic waste), not only was Howe Sound was a "dead zone" for the marine ecosystem, but the devasting toll on human health was inordinately high. With the closure of Woodfibre (and other pulp and paper industries surrounding Howe Sound) and Brittania Mines, Howe Sound is finally seeing a happy resurgence of life regenerating from the decades of environmental abuse and destruction by multi-national corporations. I am 100% opposed to Woodfibre LNG project. Never again. | Industrial Legacy | Thank you for the comment.<br>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.<br>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.<br>Woodfibre LNG Limited intends to perform additional remediation and ecosystem 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, closing of the onsite landfill, 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).<br>In addition, 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. | |

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| 1103 | March 22, 2015 | Mona Helcermanas-Benge - Horseshoe Bay, British Columbia | 12.3.3.5Conclusions regarding Seismic Events with the implementation of design measures described above, seismic events are not likely to have a significant adverse effect on the project...During such events facility services may be interrupted due to earthquake damage.<br>Question: if the earthquake interrupts the facility operation due to damage...what is the contingency plan. What kind of damage could you be talking about if you also state that these events are not likely to have a significant effect? | Seismic Hazard | Thank you for the comment. 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.<br>The Project will be designed:<br>• For a one in 2,475 year earthquake.<br>• In accordance with CSAZ276, Liquefied Natural Gas Production, Storage and Handling, with respect to their specific requirements for seismic design of LNG plants.<br>• 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<br>• 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.<br>• Project components, including bridges, will be designed for the 200-year instantaneous peak flows on Mill Creek and Woodfibre Creek.<br>• Buildings will be constructed at different elevations that correspond to their risk category in case of flooding.<br>• We will engage qualified professionals to conduct a debris flow and debris hazard assessment prior to construction.<br>• To address the potential effects associated with wildfire, we will conduct a fuel hazard assessment based on the Guide to Fuel Hazard Assessment and Abatement in British Columbia.<br>• 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.<br>• Project components will be designed to accommodate a sea level rise of 0.5 metres. | |

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| 1104 | March 22, 2015 | Brian Vincent - Squamish, British Columbia | TO: Environmental Assessment Office<br>FROM: Brian Vincent, Squamish, BC resident<br>I am writing to express my vigorous opposition to the proposed Woodfibre Liquified Natural Gas project. As a resident of Squamish, BC, I am deeply concerned that if the WLNG plant was to become a reality it would jeopardize Howe Sound, adversely impact fish, wildlife, habitat, and the environment, impact outdoor recreation activities, and undermine the quality of life of our community. I urge officials to reject the proposed WLNG project.<br>I have outlined my specific concerns below. The proposed WLNG project:<br>WOULD VIOLATE SAFETY STANDARDS: Siting an LNG facility in Howe Sound violates international safety standards and practices, putting Howe Sound residents at risk<br>WOULD JEOPARDIZE HOWE SOUND: The once-through seawater cooling system proposed by Woodfibre LNG is outdated<br>WOULD HARM PUBLIC HEALTH: Social costs and health impacts of air pollution<br>BE LOCATED ON UNSUITABLE SITE: The Woodfibre site is not a safe location for a hazardous LNG facility<br>WOULD NOT BOOST THE LOCAL ECONOMY: The requested socio-economic study has not been provided<br>WOULD CONTRIBUTE TO CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable<br>LACKS REGULATORY AND GOVERNMENT ENFORCEMENT: Inability of government to monitor, enforce, and respond to issues<br>WOULD THREATEN FISH: Removal of water from Mill Creek unsustainable for fish life<br>LACKS BASELINE STUDIES: Missing baseline studies<br>WOULD MAR 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<br>WOULD ENDANGERED SENSITIVE SPECIES: 9000 year old glass sponge reefs endangered by tanker traffic<br>WOULD HARM AIR QUALITY: Will there be smog? Will there be a smell?<br>Thank you for giving me an opportunity to express my concerns about the WLNG project. Again, I urge officials to reject this ill-conceived project. | 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 and 45. | |

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| 1105(i) | March 22, 2015 | Personal Information Withheld - Lions Bay, British Columbia | I am opposed to the LNG tanker traffic in Howe Sound as it is unsafe for those of use who live and recreate on the Sound. | Safety | At Woodfibre LNG, safety is the number one priority.<br>Woodfibre LNG will complete a voluntary Transport Canada Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL) for the Project. The review will include a comprehensive risk assessment to ensure safety of vessel transits from terminal to open ocean; the development of recommendations to improve safety and minimize risk; and, the development of detailed safety procedures and emergency response plans.<br>Subject to the recommendations of TERMPOL Woodfibre LNG Limited 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 metres 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 manoeuvers at very short notice.<br>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.<br>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. 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.<br>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 | |

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| 1105(ii) | March 22, 2015 | Personal Information Withheld - Lions Bay, British Columbia | The proposed Wood Fibre LNG facility is envrionmentally unsound and would set the Sound back while its recovering from heavy metal toxicity - a legacy of the Britannia Mines. | Industrial Legacy | 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.<br>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.<br>Woodfibre LNG Limited intends to perform additional remediation and ecosystem 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, closing of the onsite landfill, 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).<br>In addition, 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. | |

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| 1106(i) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | I am opposed to the Woodfibre LNG project. Although there is a long list of reasons not to support this project, I will focus on those that concern me most.<br>The first reason is climate change and water quality. An Environmental Assessment process that does not take into consideration the upstream impacts of gas extraction taking place in northern British Columbia is deeply flawed. The Howe Sound Community and local ecosystems are not closed systems, nor are the ecosystems affected by gas extraction in the north. Knowledge of the devastating environmental impacts of hydraulic fracturing is growing. The impacts include significant leakage of methane gas and contamination of groundwater and drinking water supplies. Allowing industry to use vast quantities of water, to which an unknown mixture of chemicals is added, is enormously irresponsible in an age of growing world-wide water shortages. (Let California be a lesson to us). | Hydraulic Fracturing | Woodfibre LNG acknowledges the expressed concern regarding hydraulic fracturing. Hydraulic fracturing activities are outside the EA scope of the Project.<br>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.<br>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.<br>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 & Gas Commission (OGC) regulates these extraction activities under the Oil & Gas Activities Act and related regulations. | |
| 1106(ii). | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | Allowing the Woodfibre LNG project to proceed would contribute to negative environmental impacts for the province as whole. Investment in fossil fuel infrastructure is a step in the wrong direction for British Columbia. All over the world investment in clean energy sources is growing. No matter how this project is branded, it still cannot be considered "green" because of the upstream impacts. | Renewable Energy | 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[1].<br>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. | |

[1] Centre for Liquefied Natural Gas. http://www.lngfacts.org/resources/CLNG-PACE_Study_one-pager.pdf.

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| 1106(iii) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | I also have concerns about this projects' negative impacts on our local economy. The proponent has failed to demonstrate how the project will provide lasting positive social and economic benefits to Squamish and the Howe Sound Region. No socio-economic study has been done. After suffering from the negative social and environmental impacts of a previous boom and bust industry in our town, our economy and our natural environment are just now beginning to recover. This recovery is an increase in the health of our marine and land ecosystems. Our tourism and recreation economy is just starting to take a foothold.<br>Other sectors are growing because businesses are choosing to live here for the natural beauty and the lifestyle. Woodfibre LNG will negatively impact these fledgling economies. The proponents have not proven that the project is complimentary to these other sectors. For example, a study has not been done to measure the impact on recreational and marine traffic. A detailed study of Howe Sound traffic and use patterns is needed. What is the base line data of year round traffic of tour boats, sailboats, kayaks, fishing boats etc? What will be the impact on these economic sectors of the tanker passings and their exclusion zones?<br>The argument for tax revenue does not hold because we have not evaluated the tax revenue that will be lost from the negative impacts to tourism/recreation and other growing sectors when business choose not to locate to Squamish. We require a study on the impact of having a heavy industry such as WLNG on the perception of Squamish and Howe Sound as a destination for tourism and other businesses. People come to the region because it is perceived to be natural wilderness. Even a "green" LNG plant can have a negative impact on other sectors of the local economy because it creates a negative perception.<br>The tourism industry should receive priority over WLNG because it actually does create sustainable jobs and more sustainable economy. Although it may bring a few jobs for some locals for a period of time, WLNG is not a sustainable economic solution for Squamish or the province. | Sustainable Economy<br>Effects of the Project on Marine Transport and Recreation<br>Tourism | 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.<br>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.<br>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.<br>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.<br>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):<br>CONSTRUCTION JOBS<br>• Create 650+ jobs each year of construction. • Create an additional 1,080+ jobs (indirect* and induced** employment) during the construction phase of the Project.<br>LONG-TERM OPERATION JOBS<br>• Create 100+ local jobs during operation.<br>• Create an additional 330+ local jobs (indirect* and induced**) during operation.<br>*Indirect impacts arise from changes in activity for suppliers.<br>**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.<br>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.<br>There is currently no regulation which stipulates an exclusion zone in Canada; however, Woodfibre LNG will complete a voluntary Transport Canada Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL) for the Project. The review will include a comprehensive risk assessment to ensure safety of vessel transits from terminal to open ocean; the development of recommendations to improve safety and minimize risk; and, the development of detailed safety procedures and emergency response plans.<br>Subject to the recommendations of TERMPOL Woodfibre LNG Limited 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. 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| | | | | | require the vessel to stop or engage in manoeuvers at very short notice.<br>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.<br>Potential effects on marine recreational boating activities are included in Section 7.3 Marine Transport. In support of this work, information interviews were conducted with various parties involved with recreational and commercial tourism use of Howe Sound, including:<br>• Sewell's Landing (Sewell's Marina)<br>• Sunshine Kayaking<br>• Coastal Inlet Adventures<br>• DFO<br>• Pacific Prawn Fishermen's Association<br>• Squamish Marine Services Ltd<br>• Squamish Yacht Club<br>• Squamish Windsports Society<br>• Coast River Kayak<br>• Sea to Sky Gondola<br>In addition, the assessment used a range of secondary sources of information and data, including Statistics Canada's Census of Population, National Household Survey, and Labour Force Survey. Local and regional economic and labour reports were used to characterize current and future economic development plans and market forecasts. Information was also collected through interviews with government representatives responsible for community and economic development and chambers of commerce.<br>Section 7.3.2.3.4 Small Vessel Traffic includes data on recreational boating routes and destinations, and marine based tourism activities.<br>• The waters in Queen Charlotte Channel are shown to have the highest number of hours for large pleasure craft and yacht vessels (which excludes smaller vessels of less than 30 m) within the local assessment area, based on data available for 2010. These waters also represent the highest density of large commercial vessel traffic in the local assessment area.<br>• Recreational boating is reported to be busiest in July and August, but the main boating season runs from May until September and can occur year-round. Recreational boating routes to destinations in the local assessment area are shown to follow the established shipping route to Squamish, and intersect it at various locations including Anvil Island, Lions Bay, Bowyer Island, Bowen Island, Horseshoe Bay, Snug Cove Whytecliff Point and Fisherman's Cove.<br>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.<br>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. | |

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| 1106(iv) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | Finally, I am gravely concerned about the impact on the marine ecosystem of Howe Sound. Even if the community can accept the risks to human safety posed by LNG tankers and the plant (and I have not been convinced that Howe Sound is an appropriate place to bring LNG tankers), the risks to the marine life are unacceptable. WLNG has not even been able to quantify this risk. Not enough is known about the impact of tankers on marine mammals and fish who depend on sound for survival. Section 5.19.3.13 says that "long-term comprehensive monitoring studies documenting the resilience of marine mammals to development, the effectiveness of mitigation and the time required to reverse impacts are lacking, particularly with respect to potential long-term impacts of behavioural changes due to elevations in underwater noise."<br>The WLNG submission says that vessel noises are expected to exceed established behavioural criteria for marine mammals in the project area and the local assessment area. | Effects of the Project on Marine Life | Woodfibre LNG is committed to building a project that is right for Squamish and right for BC – and this includes protecting the waters of Howe Sound.<br>Potential effects of underwater noise from the Project on marine mammals are assessed by comparing Project underwater noise levels (or suitable proxies) against established acoustic thresholds for marine mammals and fish, and not in direct comparison to ambient noise levels (as with other disciplines such as atmospheric noise or water quality). Ambient noise levels would be well below the established injury thresholds for marine mammals, which are the thresholds applied during mitigation and management planning.<br>An assessment of the potential effects of the Project on marine mammals is included in Section 5.19 Marine Mammals, and includes an assessment of the effects of noise. 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.<br>The assessment indicated that vessel traffic may cause a short-term change in behaviour of marine mammals due to underwater noise. A Marine Mammal Management Plan will be implemented during all phases of the Project to reduce the potential for effects of the Project on marine mammals. 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.<br>Please also refer to the Marine Mammals information sheet that has been developed as part of the Woodfibre LNG Limited response to public comments. | |

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| 1107(i) | March 22, 2015 | Lisa St-Amand - Squamish, British Columbia | Howe Sound is just coming back to life I a beautiful way. I am concerned about the impact the warmer water being released into the Sound will have, as well as the effects of large tanker on our delicate eco system. | Effects of the Project on Marine Water Quality and Environment | Thank you for the comment.<br>Woodfibre LNG Limited acknowledges community concerns about the potential effects of the Project on the waters, and marine and plant life in Howe Sound and is committed to a Project that includes environmental stewardship.<br>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 *Environmental Management Act*. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.<br>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.<br>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.<br>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.<br>The potential effects of shipping through Howe Sound have been assessed in the Application. No high or very high risks were identified, and thresholds established by the Oil and Gas Commission and other regulatory bodies are not exceeded for any events.<br>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 Mammal, Marine Transport and Public Safety information sheets that have been prepared as part of the Woodfibre LNG | |

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| 1107(ii) | March 22, 2015 | Lisa St-Amand - Squamish, British Columbia | Job wise I am concerned that many of the jobs will go to people with specialty training from outside Squamish. | Employment | From the very start, our commitment has been to build a project that's right for Squamish. That means working closely with the community to ensure we hire a quality local workforce and contract with local businesses and suppliers wherever we can.<br>Our primary source of information for Labour Market information (Section 6.2 in the Woodfibre LNG Environmental Assessment Certificate 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.<br>Baseline economic data were collected from a range of information sources, notably Statistics Canada.<br>For example, 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.<br>But we also know there are things we can be doing to help ensure locals get the most benefit from direct, indirect* and induced** jobs and contracts. That's why we 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 our Project.<br>We also have an online Business Directory to help ensure local contractors and businesses have the latest information on upcoming contracts and opportunities.<br>For more information, you can visit our website: (Link: http://www.woodfibrelng.ca/work-with-us/)<br>*Indirect impacts arise from changes in activity for suppliers.<br>**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 | |

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| 1107(iii) | March 22, 2015 | Lisa St-Amand - Squamish, British Columbia | I also worry about the negative effects the view (and possible smell?) of the plant will have on our blossoming tourism sector. I want a clean, healthy Squamish for my kids. | Visual Amenity<br>Smell / Odour | 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.<br>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.<br>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:<br>• reducing the level of contrast of buildings by using external surface finishing that has low glare and natural colours<br>• monitoring and maintaining natural screening to ensure minimal visibility of infrastructure<br>• providing additional screening of land-based infrastructure through temporary or permanent plantings where possible and safe to do so<br>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.<br>There is no odour associated with LNG facilities. The odour associated with natural gas is an additive called mercaptan, which is a safety feature to warn of potential leaks in homes and businesses. The additive is removed from the natural gas before it is liquefied, and does not produce odours at LNG facilities.<br>Section 9.2.2 Human Health Risk Assessment included an assessment of the potential effects on humans by Project-related emissions. The Application concluded that there were no Project-related significant adverse effects.<br>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.<br>Please also refer to the Air Quality Information Sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments. | |
| 1107(iv) | March 22, 2015 | Lisa St-Amand - Squamish, British Columbia | I would like instead to see investment into alternate energy resources. | Alternative Energy | 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[2]. | |

[2] Centre for Liquefied Natural Gas. http://www.lngfacts.org/resources/CLNG-PACE_Study_one-pager.pdf.

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| 1108(i) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | I travel across Howe Sound to the local Islands such as Gambier and Keats for work. I use my own small craft. Conditions can change rapidly, and as a small bisiness owner time is money.<br>How will I be affected by your large freighters?<br>It seems like when we cross paths, I will be forced to wait, possibly in dangerous conditions.<br>How will you deal with this problem? Will small businesses like myself be compensated for missing a day of work due to the LNG freighters blocking traffic in Howe Sound? | Marine Traffic | Thank you for the comment.<br>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. 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.<br>There is currently no regulation which stipulates an exclusion zone in Canada; however, Woodfibre LNG will complete a voluntary Transport Canada Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL) for the Project. The review will include a comprehensive risk assessment to ensure safety of vessel transits from terminal to open ocean; the development of recommendations to improve safety and minimize risk; and, the development of detailed safety procedures and emergency response plans.<br>Subject to the recommendations of TERMPOL Woodfibre LNG Limited 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 metres 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 manoeuvers at very short notice.<br>Please also refer to the Marine Transport and Public Safety information sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments. | |
| 1108(ii) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | What regulations will be in place to make sure that these LNG freighters dont pollute Howe Sound? How will you regulate dumping of bilge water Howe Sound?<br>How will you monitor the dumping of bilge water, as well as dumping invasive species within it such as zebra mussels? | Ballast and Bilge Water | Thank you for your questions.<br>LNG carriers must comply with the *Canada Shipping Act 2011*, 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.<br>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.<br>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. | |

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| 1109 | March 22, 2015 | Personal Information Withheld - Garibaldi Highlands, British Columbia | 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.<br>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.<br>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards<br>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.<br>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.<br>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 | 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 and 46. | |

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| | | | (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.<br>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.<br>Sources:<br>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<br>4. SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility<br>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?<br>Source: B.C. Ministry of Energy and Mines<br>5. ECONOMY: The requested socio-economic study has not been provided<br>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 | | | |

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| | | | 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?<br>6. CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable<br>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.<br>7. GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues<br>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.<br>8. ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life<br>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.<br>9. ENVIRONMENT: Missing baseline studies<br>The following baseline studies are either missing or are inadequate as they do not | | | |

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| | | | 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.<br>10. 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<br>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.<br>11. ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?<br>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.<br>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).<br>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 | | | |

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| | | | 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.<br>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. | | | |
| 1110 | March 22, 2015 | Personal Information Withheld - Garibaldi Highlands, British Columbia | 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.<br>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.<br>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards | 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 and 46. | |

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| | | | 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.<br>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.<br>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.<br>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.<br>Sources:<br>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 | | | |

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| 1111 | March 22, 2015 | Personal Information Withheld - Garibaldi Highlands, British Columbia | 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.<br>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.<br>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards<br>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.<br>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.<br>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 | 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 and 46. | |

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| 1113 | March 22, 2015 | Ann - Coquitlam, British Columbia | Please do everything you can to prevent this project from going ahead. The lives of all living beings, on land and in the ocean, are at risk. Surely lives are more important than non-renewable energy and more money in the hands of the already wealthy. | LNG Project | At Woodfibre LNG, safety is the number one priority.<br>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.<br>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.<br>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. 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. | |
| 1114(i) | March 22, 2015 | Mona Helcermanas-Benge - Horseshoe Bay, British Columbia | 12.0 Effects of Environment on project Wildfires have the potential to occur in the project area. The potential consequences for the project include risk to workers and damage to infrastructure. If a wildfire reaches the LNG plant, pipelines or FSO, there is a potential to cause explosion.<br>Question: Will WLNG be prepared for this problem or not? What is the plan? | Wildfire | Thank you for the comment.<br>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.<br>In accordance with provincial legislation, Woodfibre LNG Limited will be required to prepare a Fire Preparation Plan under the Wildfire Act and Wildfire Regulation. The Fire Preparation Plan addresses fire outside of the boundaries of the Project. 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.<br>In addition, Woodfibre LNG Limited is required to prepare a Construction Emergency Response Plan (ERP). The Construction ERP will describe best management practices and procedures for preparing for and responding to fires, including wildfires. | |

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| 1114(ii) | March 22, 2015 | Mona Helcermanas-Benge - Horseshoe Bay, British Columbia | 12.3.4.5 in Section 12.O<br>Conclusions regarding slope stability<br>We the implementation of the design measures described above, slope stability and mass wasting events are not likely to have a significant adverse effect on the project. Some discussion of planned upgrades.<br>Question: which design features exactly will protect the project from mass wasting events that could reach damage the project?<br>Woodfibre LNG will maintain ongoing communication with personnel responsible for Henriette Dam safety.<br>Since this EA does not include the dam which apparently has the potential to breach just how will that help?<br>in accordance with professional due diligence under the Engineers and Geoscientists Act, the project design will follow the National and BC Building codes. Slope stability assessments to be addressed for the one in 2,475 year earthquake for LNG facilities.<br>Question: when did the countdown begin for the 2,475 year earthquake event? Do the national and BC building codes include the building of LNG facilities? | Seismic Hazard<br>Henriette Lake Dam | 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.<br>At Woodfibre LNG, safety is the 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.<br>The Project will be designed:<br>• For a one in 2,475 year earthquake.<br>• In accordance with CSAZ276, Liquefied Natural Gas Production, Storage and Handling, with respect to their specific requirements for seismic design of LNG plants.<br>• 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<br>• 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.<br>• Project components, including bridges, will be designed for the 200-year instantaneous peak flows on Mill Creek and Woodfibre Creek.<br>• Buildings will be constructed at different elevations that correspond to their risk category in case of flooding.<br>• We will engage qualified professionals to conduct a debris flow and debris hazard assessment prior to construction.<br>• To address the potential effects associated with wildfire, we will conduct a fuel hazard assessment based on the Guide to Fuel Hazard Assessment and Abatement in British Columbia.<br>• 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.<br>• Project components will be designed to accommodate a sea level rise of 0.5 metres.<br>Woodfibre LNG Limited has undertaken an initial structural assessment of the Henriette Lake Dam. Further studies and discussions with the relevant regulators are currently in progress by Woodfibre LNG Limited to assess the dam in accordance with the *British Columbia Dam Safety Regulation*. Henriette Dam will then be upgraded to comply with the *Dam Safety Regulation* as required. | |

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| 1115 | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | No No No No NO. Squamish is just getting cleaned up from the previous messes you made. | LNG Project | Thank you for the comment.<br>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.<br>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).<br>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. | |

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| 1116 | March 22, 2015 | Leslie Campbell - Powell River, British Columbia | What a travesty it would be violate the integrity of our beautiful coastline. | LNG Project | Thank you for the comment.<br>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.<br>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).<br>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. | |

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| 1117(i) | March 22, 2015 | Brad Major - Squamish, British Columbia | I recreate in Howe Sound on a daily basis. My activities include kiteboarding, paddle boarding, fishing, crabbing, prawning and rockclimbing on the cliffs around the sound.<br>How will Woodfiber LNG affect crab and prawn populations in Howe Sound?<br>Will the increase in water temperature have an effect on shellfish populations.<br>Will the increase in water temperature have an effect on salmon? | Seawater Cooling System | Thank you for the comment.<br>Woodfibre LNG Limited acknowledges community concerns about the potential effects of the Project on the waters, and marine and plant life in Howe Sound and is committed to a Project that includes environmental stewardship.<br>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, including pH levels. The seawater cooling system will require a waste discharge permit under section 14 of the *Environmental Management Act*. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.<br>The seawater cooling system will be designed to meet BC water quality guidelines. The release temperature of the seawater will be less than 21$^{o}$C or 10$^{o}$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 m3 (for context, this volume is approximately 5% or 1/20$^{th}$ of an Olympic-size pool). This volume will not increase over time.<br>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.<br>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.<br>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. | |

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| 1117(ii) | March 22, 2015 | Brad Major - Squamish, British Columbia | Will I be able to paddle board on a down winder from Gambier Island to Squamish? or will we be affected by freighter schedules?<br>Will giant freighters in the sound effect the wind that allows us to kitebaord on most summer days?<br>I enjoy rockclimbing on the bluffs around Howe Sound. Will my access to the cliffs south of Woodfiber be affected by LNG freighter traffic? The cliffs are directly across from Britannia on the west side of the sound and are one of my favorite spots. | Marine Traffic | 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. 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.<br>There is currently no regulation which stipulates an exclusion zone in Canada; however, Woodfibre LNG will complete a voluntary Transport Canada Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL) for the Project. The review will include a comprehensive risk assessment to ensure safety of vessel transits from terminal to open ocean; the development of recommendations to improve safety and minimize risk; and, the development of detailed safety procedures and emergency response plans.<br>Subject to the recommendations of TERMPOL Woodfibre LNG Limited 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 metres 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 manoeuvers at very short notice.<br>Please also refer to the Marine Transport and Public Safety information sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments. | |
| 1118 | March 22, 2015 | Star Morris - Squamish, British Columbia | 2.7.2 Other Provincial Permits – water licenses<br>The WLNG EA application identifies 2 water licences on Mill Creek, F017347 and F044330 as being within the scope of the Project. However, the DL 2351 – now owned by Woodfibre LNG – holds an additional 6 water licences, along with the liability for these works. Information that would explain the future state or condition of all water licences has not been provided in the EAO application.<br>Absent in the Application, in particular, is water licence [F126618] for a major storage dam located on Henriette Lake, tributary to Woodfibre Creek. Henriette Lake Dam has been cited as being deficient to resist current earthquake loads (Sandwell 2010), and at risk of breaching and initiating a debris flow that could adversely impact the Project site.<br>It is understood that, as owner DL 2351 and the water licences, Woodfibre LNG is responsible for maintaining and inspecting the works (infrastructure) associated with the dam.<br>A water licencing review providing the required information for any amendments to the Water Licences needs to be done prior to Application approval, so Woodfibre-LNG is correctly identified as being responsible for maintaining the licenced works, or having liability for the works. | Water Licences | Thank you for the comment.<br>Water licences for the Project are appurtenant to the fee simple land. As such, they were transferred to Woodfibre LNG Limited with the transfer of the property.<br>Only two of the water licences are within the scope of the Project; these water licences are discussed in Section 2.7. The six water licences for power generation purposes are continuing to be put to beneficial use in accordance with the terms of the water licences.<br>Woodfibre LNG Limited has undertaken an initial structural assessment of the Henriette Lake Dam. Further studies and discussions with the relevant regulators are currently in progress by Woodfibre LNG Limited to assess the dam in accordance with the *British Columbia Dam Safety Regulation*. Henriette Dam will then be upgraded to comply with the *Dam Safety Regulation* as required. | |

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| 1119 | March 22, 2015 | Personal Information Withheld - North Vancouver, British Columbia | 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.<br>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.<br>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards<br>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.<br>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. | 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 # 11-12. | |

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| 1120 | March 22, 2015 | Personal Information Withheld - Vancouver, British Columbia | I am not in support of this proposal for Howe Sound.<br>I travel from Vancouver to Gambier Island every weekend and intend to make Gambier my home within 2 years. There are far too many known environmental and safety risks with this project and it would be taking a backward step to proceed with it.<br>Please allow Howe Sound to continue to recover and be a destination to learn about and experience the natural world. This is BC's strength and something that British Columbians can be proud of. The long term benefits of promoting tourism and recreation in Howe Sound far out-way any possible short term benefits of an outdated and destructive industry. | Intrinsic Values of Howe Sound | Thank you for the comment.<br>Woodfibre LNG is of the view that tourism and industry can work together to contribute to responsible economic development in a community.<br>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.<br>For example, Section 7.5 Visual Quality of the Application includes an assessment of the potential effects of the Project on the viewscape, including from the Sea-to-Sky Gondola. Woodfibre LNG has consulted directly with representatives of the Sea-to-Sky Gondola to address concerns associated with that viewscape and to consider potential mitigation measures.<br>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.<br>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).<br>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. | |
| 1121 | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | WE SIMPLY DON'T NEED LNG IN BC !!! WE LIVE HERE AND WANT TO STAY HEALTHY !!!<br>QUOTE - No creature, not even swine, befouls its nest with such abandon as does homo sapiens, poisoning his habitat with fiendishly concocted chemicals and their deadly toxic waste. A morass of rotting human flesh awaits us all unless the antidotes are rapidly APPLIED.<br>SERIOUSLY…THANKS FOR YOU TIME | LNG Project | Thank you for the comment. | |

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| 1122 | March 22, 2015 | J Halligan - Bowen Island, British Columbia | Safety for present residents of the coastal area affected and safety of fragile ecosystem of Howe Sound which has been rehabilitated by hours of volunteer efforts by those who truly care about this province's heritage and wish to prevent a repetition of past sins committed in the name of commerce and profit.<br>Also: I no longer have any faith in our government here in BC. Even if they *were* on board with preserving the defining features of this incredibly beautiful part of the world, they have proved themselves to be inexplicably incompetent and short sighted. Time their powers were reigned in so they can focus on raising their competence and credibility before dabbling in any more areas than they have already screwed up. Thanks. | LNG Project | Thank you for the comment.<br>Woodfibre LNG is committed to building a project that is right for Squamish and right for BC. This includes environmental stewardship.<br>The Woodfibre site has been used for industrial purposes for 100 years and continues to be zoned for this 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.<br>Woodfibre LNG Limited intends to perform additional remediation and restoration in the Project area, including 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. (Please refer to Section 2.6.7 Ecological Benefits of the Application). | |
| 1123(i) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | I am opposed to Woodfibre LNG.<br>I don't want breath the air from the plant. | Air Pollution | Thank you for the comment.<br>Section 9.2.2 Human Health Risk Assessment included an assessment of the potential effects on humans by Project-related emissions. The Application concluded that there were no Project-related significant adverse effects.<br>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.<br>Please also refer to the Air Quality Information Sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments. | |
| 1123(ii) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | I don't want a pipeline going through our estuary. | Pipeline | 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 website for more information: http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic_document_406_38521.html | |

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| 1123(iii) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | Squamish is just recovering from heavy industry and it's environmental clean up. With the return of porpoises and whales I would like to keep sharing those experiences with my daughter in her lifetime. | Industrial Legacy | 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.<br>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.<br>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). | |
| 1123(iv) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | I don't want an eye sore from the newly opened gondola. (It generates publicity for our tourism industry) | Visual Amenity | 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.<br>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.<br>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:<br>• reducing the level of contrast of buildings by using external surface finishing that has low glare and natural colours<br>• monitoring and maintaining natural screening to ensure minimal visibility of infrastructure<br>• providing additional screening of land-based infrastructure through temporary or permanent plantings where possible and safe to do so.<br>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. Woodfibre LNG has consulted directly with representatives of the Sea-to-Sky Gondola to address concerns associated with that viewscape and to consider potential mitigation measures. | |

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| 1123(v) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | I don't want more tankers added to the already existing traffic in the sound.(I kayak from Nexen beach to Brittania beach) | Marine Traffic | Woodfibre LNG expects that three to four LNG carriers will arrive at the site each month.<br>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.<br>Please also refer to the Marine Transport and Public Safety information sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments. | |
| 1123(vi) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | After the construction boom I don't think there are enough jobs offered to locals longterm to make it worth the risk that impacts our community directly. The subsidy for hydro seems obsurd for so few jobs. | Employment | 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.<br>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):<br>CONSTRUCTION JOBS<br>• Create 650+ jobs each year of construction. • Create an additional 1,080+ jobs (indirect* and induced** employment) during the construction phase of the Project.<br>LONG-TERM OPERATION JOBS<br>• Create 100+ local jobs during operation.<br>• Create an additional 330+ local jobs (indirect* and induced**) during operation.<br>*Indirect impacts arise from changes in activity for suppliers.<br>**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.<br>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. Ratepayers will not be subsidizing hydroelectric power for LNG facilities.<br>The BC Government announced the combined energy and demand charge for LNG facilities in 2014 will be $83.02 per megawatt hour (MWh), before applicable taxes. This is over 50% more than the average rate paid in 2014 by industrial customers. LNG customers will also be required to contribute the full cost of connecting to the BC Hydro system, as well as transmission system upgrades required to serve their facilities.<br>The Woodfibre LNG Project will comply with all applicable regional, provincial and federal laws, guidelines and standards including but not limited to: employment standards, health and environmental regulations and standards, taxation, and Aboriginal group agreements | |

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| 1123(vii) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | Tourism can generate more money in the future while preserving our natural resources. | Tourism | 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.<br>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.<br>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. | |
| 1124 | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | Not what you want to hear, but my #1 problem with the notion of building an LNG facility in the first place is that it relies on fracking. We already know how stupid that is and it's time to stop subsidizing dirty oil and instead put that money and effort towards energy efficiency and green alternatives. Just look at where we and the Australians went with coal. Switching towards greener forms of energy is the prudent thing to do!<br>Now as for what's wrong with this LNG proposal, there are a few things:<br>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.<br>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.<br>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 | 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 # 12-21 and 46. | |

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

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| | | | 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?<br>6. CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable<br>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.<br>7. GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues<br>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.<br>8.ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life<br>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.<br>9. ENVIRONMENT: Missing baseline studies<br>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 | | | |

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| | | | Woodfibre site, and the cumulative impact assessment. Proper studies need to be completed before any decisions can be made regarding this project.<br>10. 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<br>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.<br>11. ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?<br>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.<br>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).<br>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 | | | |

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| | | | 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.<br>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. | | | |
| 1125 | March 22, 2015 | Mona Helcermanas-Benge - Horseshoe Bay, British Columbia | 12.0 Effects of the Environment on the project Prior to commencing construction, WLNG will develop and implement an Emergency Response plan for the project construction phase.<br>Comment: Good thinking.<br>If a wildfire starts within or immediately adjacent to the Project area WLNG will:<br>immediately carry out fire control and if practicable, extinguish the fire.<br>continue with fire control until the fire is extinguished, unless ii)it becomes impracticable to continue with fire control or iii)an official relieves, in writing the crew from continuing c)as soon as practical, report the fire to provincial authorities and d)in accordance with prescribed requirements, rehabilitate the land damaged by fire control.<br>With the implementation of the design and mitigation measures described above, wildfire is not likely to have a significant adverse effect on the project.<br>Question: I was laughing so hard when I read this that the question I had just disappeared. Who writes this rubbish. A wildfire rushes in the project area and people can't leave until they get permission in writing?<br>Are you kidding? | Effects of the Project on the Environment | Thank you for your comment. | |

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| 1126(i) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | I am concerned with the impact of marine life in the Howe Sound from the proposed project. | Effects of the Project on Marine Life | Thank you for the comment.<br>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.<br>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 *Environmental Management Act*. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.<br><br>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.<br>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. | |
| 1126(ii) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | I am concerned by increased boat traffic due to the size of the boats and volume of assistant vehicles. While the three tugs and assistant vessel are necessary to the safety of the operation, they, along with the large LNG tankers, will impact the marine life in the Sound. | Effects of the Project on Marine Life | 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.<br>A Marine Mammal Management Plan will be implemented during all phases of the Project to reduce the potential for effects of the Project on marine mammals. 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.<br>Please also refer to the Marine Mammals information sheet that has been developed as part of the Woodfibre LNG Limited response to public comments. | |

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| 1126(iii) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | What is only just beginning to rebound after detrimental industrial activities of the previous project at the Woodfibre Site can easily be damaged by new projects. | Industrial Legacy | 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.<br>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.<br>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).<br>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. | |
| 1127 | March 22, 2015 | Personal Information Withheld - Whistler, British Columbia | This project goes against Squamish' tourism investments and success.<br>We must move beyond fossil fuels. The health of howe sound is not worth the risk. | Tourism | Thank you for the comment.<br>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.<br>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.<br>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.<br>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. | |

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| 1128 | March 22, 2015 | Grant Brown - Surrey, British Columbia | I think a healthy ecosystem for the area is more important to the people that live work and play there than an LNG termination that will provide limited jobs to outsiders and profits to albertans. This is wrong and it need to stop. | Economic Justification of the Project | Thank you for your comment.<br>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.<br>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).<br>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. | |

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| 1129 | March 22, 2015 | Personal Information Withheld - Howe Sound, British Columbia | Having lived on Howe Sounds for 25 years now, I have marvelled at its post-industrial recovery. About 3 years ago, I looked out and saw for the first time, hundreds of dolphins. More recently we have seen Orcas and a Humpback. Please, please don't reindustrialize this World Heritage worthy waterway. No Gravel Mines, LNG Plants or Incinerators!!!!! Millions have been spent to clean up these waters. Don't waste this remarkable recovery! | Effects of the Project on Marine Life | Thank you for the comment.<br>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.<br>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.<br>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).<br>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. | |

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| 1130 | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | I drive to the city for work, so that I can make a reasonable wage as a highly educated member of the Squamish community. I moved here from Vermont, a BC native who chose this one town to live in, out of anywhere I could have moved.<br>All of the reasons I love living here, and commute an hour and a half to stay here, would be taken away by this plan, or at least they would endanger them. It's too much risk. The employment opportunities for our town are too few, and the influx of immigrants would be too marginalized. Please don't allow it to destroy what makes this place great. | LNG Project | Thank you for your comment.<br>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.<br>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.<br>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.<br>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):<br>CONSTRUCTION JOBS<br>• Create 650+ jobs each year of construction.<br>• Create an additional 1,080+ jobs (indirect* and induced** employment) during the construction phase of the Project.<br>LONG-TERM OPERATION JOBS<br>• Create 100+ local jobs during operation.<br>• Create an additional 330+ local jobs (indirect* and induced**) during operation.<br>*Indirect impacts arise from changes in activity for suppliers.<br>**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.<br>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.<br>Please also refer to the Sustainable Economy information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments. | |

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| 1131 | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | 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.<br>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.<br>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards<br>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.<br>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.<br>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 | 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 and 46. | |

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| | | | (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.<br>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.<br>Sources:<br>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<br>4. SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility<br>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?<br>Source: B.C. Ministry of Energy and Mines<br>5. ECONOMY: The requested socio-economic study has not been provided<br>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 | | | |

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| | | | 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?<br>6. CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable<br>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.<br>7. GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues<br>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.<br>8. ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life<br>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.<br>9. ENVIRONMENT: Missing baseline studies<br>The following baseline studies are either missing or are inadequate as they do not | | | |

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| | | | 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.<br>10. 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<br>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.<br>11. ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?<br>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.<br>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).<br>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 | | | |

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| 1132(i) | March 22, 2015 | Laurie Parkinson - Bowyer Island, British Columbia | Marine Resources Baseline Study<br>Appendix 5.10/1/3 pg 48<br>All of the baseline studies done are very minimally, in my opinion.<br>For the baseline studies of marine birds,only 9 types of birds were recorded, and two of the birds were totally unidentified - to the point of not even figuring out if they were shore birds or water birds. Water birds are important. There are 161 sp of marine birds in Coastal BC and many colononial breeding marine birds in BC don't breed anywhere else in BC.<br>What is the normal standard for baseline studies of this type? How many days/season are birds studied? To what level are they identified? Please give references. | Marine Baseline Studies | Thank you for your question.<br>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.<br>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.<br>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 LAA and RAA.<br>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. | |

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| 1132(ii) | March 22, 2015 | Laurie Parkinson - Bowyer Island, British Columbia | Marine Mammals Pg 5.19-32/33<br>Ambient underwater noise study, to see if marine mammals would be bothered by noise.<br>The noise modelling was conducted using the Practical Spreading Loss Model, a 2 dimensional model designed specifically for pile driving and drilling activities. This model assumes that sound travels in a homogeneous environment. There are layers of different temperature water in Howe Sound so the sea is not a homogenous environment. Squamish River puts fresh water into Howe Sound, which is a different density than salt water. So I doubt the computer model used is appropriate. "Sophisticated sound field models do exist that take into account the actual sound speed fieldn int eh ocean, and the reflections from the sea surface and sea floor as the sound travels away from the source. Howver this type of model requires deetailed, site specific inputs for the model with respect to existing oceanographic, bathymetric, and substrate conditions, which are not available for the project area."<br>Why has Woodfibre not been required to do this sophisticated sound field model to find out how much the marine mammals would be bothered by the operational noise of Woodfibre LNG? BCEAO, please require this. | Noise Modelling | 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.<br>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).<br>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. | |

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| 1132(iii) | March 22, 2015 | Laurie Parkinson - Bowyer Island, British Columbia | WF EA. Marine water quality, marine resources Baseline Study, Appendix 5.10-1/2<br>Ambient underwater noise was studied at a single recording statoin on ONE day for 9 hours, a single tidal cycle, July 5th, 2013.<br>Were any ships or boats running motors in the area? This was not stated.<br>This is a very short time to study ambient noise, which the DFO tracking table also stated. Why such a short time? How many hours is normal? Please provice references. | Underwater Noise Study | 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.<br>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.<br>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; <1m sea state; 3m tide switch) during which several ship movements in the LAA would be captured and were recorded.<br>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).<br>It should be noted that, in addition to marine mammal monitoring that will be conducted during construction activities (e.g. pile driving), the 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. | |

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| 1133 | March 22, 2015 | Michael Horst - Squamish, British Columbia | My concerns are as follows:<br>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.<br>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.<br>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards<br>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.<br>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. | 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 and 46. | |

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| | | | 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.<br>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.<br>Sources:<br>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<br>4. SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility<br>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?<br>Source: B.C. Ministry of Energy and Mines | | | |

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| | | | 5. ECONOMY: The requested socio-economic study has not been provided<br>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?<br>6. CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable<br>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.<br>7. GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues<br>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.<br>8. ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life<br>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 | | | |

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| | | | fish life, especially in the summer months. Woodfibre LNG needs to source water for this project from somewhere else.<br>9. ENVIRONMENT: Missing baseline studies<br>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.<br>10. 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<br>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.<br>11. ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?<br>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.<br>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 | | | |

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| | | | ventilation rates (e.g., while exercising or playing).<br>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.<br>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. | | | |

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| 1134 | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | 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.<br>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.<br>CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable<br>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.<br>SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility<br>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?<br>Source: B.C. Ministry of Energy and Mines | 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 # 12, 14, and 16. | |

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<tr><td>1135(i)</td><td>March 22, 2015</td><td>Peter Frinton - Bowen Island, British Columbia</td><td>Woodfibre LNG Proposal- Personal Commentary from Peter Frinton<br>I do not support this application, on a number of grounds. Basically, we are being asked to accept that refrigerating natural gas at huge energy expense, shipping via large expensive tankers to distant ports, where it must be rephased to a gas, again using energy, before it can be piped to its final destinations for use is a value proposition. Far better to simply expand our North American markets.</td><td>LNG Industry</td><td>Thank you for your comments.</td><td></td></tr>
<tr><td>1135(ii)</td><td>March 22, 2015</td><td>Peter Frinton - Bowen Island, British Columbia</td><td>Air quality concerns-Point source criteria contaminents (indicator and non-indicator compounds). WLNG attest that concentration of these compounds will be below all stringent ambient air quality criteria- that CO NOx Sox PM2.5 and PM10 are expected to be 'negligable'.<br>This is in contrast to the picture painted by project detractors, who claim that 800T NOx, 44T SOx, 40T PM 2.5 are the equivalent to 44,000, 190,000 and 70,000 vehicles respectively. (Presumably based on an average number of vehicle kms travelled) This in addition to mercury, metals, alkanes, hydrogen sulphides and other compounds such as PAH's, VOC's and chlorine derivatives. TSP is currently not measured by any local recording stations.<br>WLNG measures emissions in concentrations (usually micrograms/ cubic metre) and in Tonnes/day. Their numbers sometimes do and do not mesh with those of project detractors- eg 3.65 T/annum PM2.5 vs 40 T/annum, while SOx arethe same.<br>I generally accept WLNG projections as accurate.<br>Project emissions as a percentage of BC's emissions are indeed very small, the highest being NOx at.5%. However, in raw terms, 850 Kg of NOx compounds emitted daily, or 295 T/annum is locally significant and could lead to air quality impacts (brown smog), with marine vessel exhaust as the largest expected contributor.<br>Under flaring conditions, these numbers go up dramatically. Particulates and CO increase by a factor of 300 to 900, and Nitrates double. 2015 standards for marine diesel will have brought down sulphates, but because 'catalytic converter' type technologies are not in wide marine use, nitrate emissions remain stubbornly high.<br>I have difficulty understanding the source of these marine nitrate emissions if, as indicated, the vessels will primarily be fueled by natural gas, and be offered shoreside electrical hookups.<br>The use of flaring was explained as being for emergency and maintenance conditions. The first objective should always be reduction, but clearly the priority sequence for necessary decompression</td><td>Air Quality</td><td>At the request of certain members of the Squamish community, Woodfibre LNG has participated in very preliminary discussions surrounding $CO_2$ capturing. Woodfibre is happy to continue participation in such discussions and will continue to investigate the technical and economic feasibility of these alternatives.<br>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.<br>The majority of Woodfibre LNG air emissions will come from elements removed from the natural gas prior to liquefaction, which are incinerated.<br>Estimated emissions in tonnes per year for the LNG plant powered by electric drive vs. the plant powered by gas turbines:<br><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>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.<br>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 Environmental Management Act,<br>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.<br>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.</td><td></td></tr>
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| | | | and/or system maintenance is incineration with energy capture, flaring, then venting.<br>I am concerned that incineration and energy recovery have been discounted as either too expensive or not warranted. Given the highly visible proposed location of WLNG and known periodic poor local air contaminant dispersion, I think that decision should be revisited. Just as all slash from the pre-Olypmpic Sea-to-Sky highway upgrade project was removed (ie an extraordinary level of care and vigilance), this project should be held to the same high standard. | | Please also refer to the Air Quality information sheet that has been prepared as part of the Woodfibre LNG response to public comments. | |
| 1135(iii) | March 22, 2015 | Peter Frinton - Bowen Island, British Columbia | GHG effects. WLNG used both FPTCCCEA and PCIC modelling to predict GHG impacts.<br>One of the problems with the scope of analysis provided is the limitation of both temporal and spatial boundaries. Nowhere is a calculation of cumulative effects other than in regrd to other Howe Sound projects, nor the wellhead to combustion/final use effects. Yet, by their own reckoning, most of the activities anticipated will have the potential to increase GHG impacts.<br>Given the laws of chemistry, CH4 when oxidized (+O2) will yield H2O plus CO2. CH4 has a molecular weight of 16; CO2 is 44. Therefore combustion yields about 2.75 the amount of GHG gas in the form of CO2 as the input CH4. For this project, that amounts to about 5.775 million tons per year. Add to this the estimated 3-9% fugitive emissions of CH4 along the line, the electricity use and transportation emissions. The estimate is 2.96 Tonnes of CO2 equivalents for each Tonne of NG processed and used. | GHG Emissions | 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. | |

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| 1135(iv) | March 22, 2015 | Peter Frinton - Bowen Island, British Columbia | There are underlying questions about logical consistency, alternate uses, rationale for LNG export that are not overtly considered.<br>BC is repurposing the Burrard Thermal NG plant (converting it to voltage regulation). BT has the capacity to produce about 900 megwatts of power. Obviously,one reason this is happening is because of BC's regulatory climate which encourages hydro over thermal energy. From a local air quality perspective, this is laudable, as is the WLNG decision to use electricity rather than burn NG for refrigeration. However, in terms of global GHG impacts, there are no real spatial boundaries. We are better off burning NG here than liquefying and shipping it around the world.<br>BC plans to build a 1100 megawatt Hydro facility at Site C, essentially replacing the output of Burrard. WLNG will use about 140,000 Kilowatts of this production, or 15% of Site C's output. Multiplied by the other LNG projects in planning stages, their combined demand for power would be very significant.<br>Alberta and Saakatchewan have nine coal burning power generation facilities. The question begged is why we are not simply piping extra gas to those provinces to reduce coal use. Already, more than half the NG produced in BC is used in the oilsands patch, and another quarter is exported by pipeline to the USA. Added to this are parallel applications to increase coal export capabilities in BC as well as bitumen and oil. It truly appears that while conversion of a 500 Megawatt coal plants to natural gas may be comparable to removing a half million cars from the road, there is no evidence that LNG exports would not be an additive rather than replacement energy source. | LNG Industry | The Province has established an LNG Strategy which is posted on its website at http://www.gov.bc.ca/ener/popt/down/liquefied_natural_gas_strategy.pdf.<br>Woodfibre LNG Limited notes that this LNG strategy is not directed specifically to the Woodfibre Project but rather to the LNG sector. | |

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| 1135(v) | March 22, 2015 | Peter Frinton - Bowen Island, British Columbia | Safety.I do not think tanker safety is a huge concern, but however remote the chance of an accident, the consequences could arguably be catastrophic. The SIGTTO organisation cautions against construction of LNG facilities in well populated areas, and transport up/down narrow inlets. Unfortunately WLNG is not, as yet, a member. | Accidents and Malfunctions | Woodfibre LNG is committed to SIGTTO membership; however, operation of a terminal or an LNG vessel is a prerequisite for such membership.<br>Siting of the Woodfibre LNG facility complies in every way with the Society of International Gas Tanker & Terminal Operators Ltd's (SIGTTO) guidance as the location of the site is not within a narrow waterway as defined by SIGTTO and TERMPOL.<br>*Narrow channel/waterway*<br>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.<br>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 to be a narrow channel.<br>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.<br>*LNG Carriers & Howe Sound Shipping Channel / Route*<br>• An LNG carrier needs a 180-metre (one way) wide channel for transit and 600 metre wide channel for turning with tugs.<br>• Howe Sound at its narrowest along the shipping route is 1440 m, or 4725 feet.<br>• 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.<br>*Additional Information*<br>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 Limited 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 metres 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 manoeuvers at very short notice.<br>Woodfibre LNG will develop a Squamish Harbour Vessel Traffic Plan | |

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| | | | | | 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. | |
| 1135(vi) | March 22, 2015 | Peter Frinton - Bowen Island, British Columbia | Impacts on Water - the use of marine waters as an energy 'sink' will likely have local impacts. While calculations indicate only a modest ocean temperature increase, the experience elsewhere (eg California) has led to strictures against the practice. As well, chlorination and fish kill associated with intake are unacceptable. | Seawater Cooling System | 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.<br>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.<br>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 *Environmental Management Act*. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.<br>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.<br>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. | |

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| 1135(vii) | March 22, 2015 | Peter Frinton - Bowen Island, British Columbia | Economics- If we are to develop and market our natural resources, there needs to be a good business case for theprovince and country. Instead WLNG is being offered accelerated CCA, low royalty rates based on net income,not gross margin or simply volume of gas sent to market, as is done in Norway. In addition, if the EAS provides assent, the project could still be delayed for two decades. The number of permanent jobs created relative tocapitalinvestment is low. | Economic Justification | 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%[3].<br>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[4]. China's energy demand increases by 5% annually[5]. 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)[6].<br>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):<br>CONSTRUCTION JOBS<br>• Create 650+ jobs each year of construction. • Create an additional 1,080+ jobs (indirect* and induced** employment) during the construction phase of the Project.<br>LONG-TERM OPERATION JOBS<br>• Create 100+ local jobs during operation.<br>• Create an additional 330+ local jobs (indirect* and induced**) during operation.<br>*Indirect impacts arise from changes in activity for suppliers.<br>**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.<br>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. | |

3 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>
4 ICIS. China Natural Gas Annual Report <http://www.icis.com/energy/channel-info-about/china-natural-gas-annual-report/>
5 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>
6 National Development and Reform Commission. 2014. Social Development and National Economics Statistics Bulletin 2011 – 2013.

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| 1135(viii) | March 22, 2015 | Peter Frinton - Bowen Island, British Columbia | Optics -Even if the business case was sound, the envioronmental impacts minimal, and the technology benign, it still is the wrong place to site an LNG facility, simply because Howe Sound has extremely high alternative societal values. The Sea-to-Sky Highway rates number #2, behind Stanley Park, as a regional attraction. Visitors find the scenery to be'stunning'. Flaring, light pollution, tanker movements are inimicable with those aesthetic values. Howe Sound has been de-industrializing after over a century of damaging industrial development. We are starting to see dramatic signs of ecological improvements, and we should not now reverse this process. | Visual Amenity<br>Industrial Legacy | 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.<br>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).<br>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.<br>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.<br>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.<br>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:<br>• reducing the level of contrast of buildings by using external surface finishing that has low glare and natural colours<br>• monitoring and maintaining natural screening to ensure minimal visibility of infrastructure<br>• providing additional screening of land-based infrastructure through temporary or permanent plantings where possible and safe to do so.<br>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. Woodfibre LNG has consulted directly with representatives of the Sea-to-Sky Gondola to address concerns associated with that viewscape and to consider potential mitigation measures. | |

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<tr><td>1136</td><td>March 22, 2015</td><td>Personal Information Withheld - Bowen Island, British Columbia</td><td>Hello, I am absolutely opposed to the LNG project proposed for Howe Sound. I liven Bowen Island, and am concerned for the impacts this project will have environmentally and economically. I believe we whole in the Sound will receive little if any benefit from this project. We face only risks to our natural environment, and the blight of more industry in this beautiful area. Our government should be investing in renewable power sources, such as solar, wind, and tidal, to the benefit of our future generations as well as for the present.</td><td>LNG Project</td><td>Thank you for the comment.<br>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.<br>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.</td><td></td></tr>
<tr><td>1137(i)</td><td>March 22, 2015</td><td>Paul Watt - Squamish, British Columbia</td><td>I have serious concerns about a number of issues surrounding the WLNG project. What gasses will be emitted from the flare stack, and what effect will they have on the area upwind (Squamish)? From what I understand, the nitrous oxides that will flow from the stack when burning waste gasses will acidify the air, and could make life difficult for people with asthma.</td><td>Air Quality<br>Effects of the Project on Human Health</td><td>Thank you for the comment.<br>The Woodfibre LNG Project will be powered by electricity from BC Hydro. By powering the plant with electricity, instead of natural gas, we will reduce our greenhouse gas emissions by about 80%. This will make Woodfibre LNG one of the cleanest LNG facilities in the world.<br>The majority of Woodfibre LNG air emissions will come from elements removed from the natural gas prior to liquefaction, which are incinerated.<br>Estimated emissions in tonnes per year:
<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>
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As part of Woodfibre LNG's Environmental Assessment Certificate 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. 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.<br>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.<br>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.<br>For more information, please see:<ul><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</li></ul></td><td></td></tr>
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| | | | | | 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.<br>Please also refer to Air Quality information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments. | |
| 1137(ii) | March 22, 2015 | Paul Watt - Squamish, British Columbia | What studies have been undertaken to understand what the warmed, chlorinated water will have on Howe Sound, which just now seems to be recovering from a century of industrial pollution? After considering the immediate environmental risks, and then considering the larger environmental implications of the overall methane and CO2 emissions of the LNG industry, I'm very much against this project. | Seawater Cooling System | 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.<br>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 *Environmental Management Act*. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.<br>The seawater cooling system will be designed to meet BC water quality guidelines. The release temperature of the seawater will be less than 21$^{o}$C or 10$^{o}$C above ambient water temperature of Howe Sound, whichever is less. Near-field simulation modeling shows that, with a release temperature of 10$^{o}$C greater than the ambient temperature, the total volume of water that would have a temperature greater than 1$^{o}$C above ambient is 125 m$^{3}$ (for context, this volume is approximately 5% of an Olympic-size pool). This volume will not increase over time.<br>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.<br>The effects of the Project on marine water quality is assessed in 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.<br>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, Herring, and Terrestrial Valued Components' Information Sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments. | |
| 1138(i) | March 22, | Michael Broughton - | The Glass Sponge discovery at Halkett Bay is a | Glass Sponge Reef | Thank you for your comment. | |

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| | 2015 | Lions Bay, British Columbia | significant scientific discovery as documented in the National Geographic News site and elsewhere.<br>The Halkett Bay area is now protected but this is of little value if the tremendous percussion and underwater disturbance by LNG Supertankers is allowed to proceed and destroy this treasure. | | Glass sponges are addressed in both the Application document (Section 5.16.2.4.1) and Marine Baseline Studies Report (Appendix 5.10).<br>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.<br>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.<br>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.<br>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 *Environmental Management Act*. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.<br>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. | |

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| 1138(ii) | March 22, 2015 | Michael Broughton - Lions Bay, British Columbia | This is just one of many reasons for not allowing the passage of the LNG Supertankers, having them passing next to one of the largest populations on the West Coast of North America is very poor judgement. Accidental or Terrorist activity could put a large portion of the lower mainland population at risk as the 'kill zone' around a LNG Supertanker is massive.<br>LNG Supertankers should not traverse inland waters such as Howe Sound, nor pass by large population centres like Vancouver.<br>Shipping from isolated ports on the Northern Coast of BC may make sense if the production of LNG can be justified, but shipping in Howe Sound and passing Vancouver can not be justified. | Safety | 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.<br>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.<br>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. 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 http://www.tc.gc.ca/eng/marinesecurity/menu.htm)<br>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.<br>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.<br>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.<br>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. | |

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| 1139 | March 22, 2015 | Personal Information Withheld - West Vancouver, British Columbia | The Howe Sound LNG proposal is the WRONG project, in the WRONG place, at the WRONG time. It threatens our environment, marine life, our safety, our health, tourism, recreation values, air quality, our shoreline, our climate, and the expensive effort to clean up the Sound. LNG is not clean - it is still a fossil fuel. Fracking is highly polluting. BC should be investing in clean green energy. Nothing is to be gained by LNG in Howe Sound- even the economy of it is flawed- and there is everything to lose. It must NOT happen. | LNG Project | Thank you for your comment.<br>Woodfibre LNG Limited recognizes the community concerns about the potential effects of the Project. 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.<br>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.<br>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).<br>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.<br>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[7].<br>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. | |
| 1140(i) | March 22, 2015 | Cathy Belgrave - British Columbia | I am opposed to the Woodfibre LNG Project. Over the last 10 plus years I have witnessed a steady | Effects of the Project on Marine Water Quality | Thank you for the comment.<br>Woodfibre LNG Limited recognizes the community concerns about | |

[7] Centre for Liquefied Natural Gas. http://www.lngfacts.org/resources/CLNG-PACE_Study_one-pager.pdf.

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| | | | renewal of the environmental balance in Howe Sound. Proceeding with the WFLNG project will destroy these gains and take us back to an industrial zone. My specific concerns include:<br>the use of sea water as a cooling method destroying the building blocks of sea life in Howe Sound. | Seawater Cooling System | 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.<br>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.<br>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).<br>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.<br>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 *Environmental Management Act*. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.<br>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.<br>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 | |

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| | | | | | LNG Limited response to public comments.<br>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. | |
| 1140(ii) | March 22, 2015 | Cathy Belgrave - British Columbia | Air emissions of nitrogen dioxide and sulfur dioxide (to name a few) posing environmental and health issues | Air Quality | 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[8].<br>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. | |

[8] Centre for Liquefied Natural Gas. http://www.lngfacts.org/resources/CLNG-PACE_Study_one-pager.pdf.

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| 1140(iii) | March 22, 2015 | Cathy Belgrave - British Columbia | Safety: Howe Sound is a narrow and not conducive to the tanker travel. There are major safety issues to the communities and environment. Having the no travel zones around the tankers is not sufficient and would impact existing commercial, recreational and ferry traffic.<br>Please do not proceed with this project.<br>If there is any development in Howe Sound let it be recreation and tourism | Safety | Siting of the Woodfibre LNG facility complies in every way with the Society of International Gas Tanker & Terminal Operators Ltd's (SIGTTO) guidance as the location of the site is not within a narrow waterway as defined by SIGTTO and TERMPOL.<br>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 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 to be a narrow channel.<br>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.<br>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 Limited 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 metres 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 manoeuvers at very short notice.<br>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.<br>There is currently no regulation which stipulates an exclusion zone in Canada; however, Woodfibre LNG will complete a voluntary Transport Canada Technical Review Process of Marine Terminal Systems and Transshipment Sites (TERMPOL) for the Project. The review will include a comprehensive risk assessment to ensure safety of vessel transits from terminal to open ocean; the development of recommendations to improve safety and minimize risk; and, the development of detailed safety procedures and emergency response plans.<br>Subject to the recommendations of TERMPOL Woodfibre LNG Limited 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 | |

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| | | | | | would extend up to 50 metres 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 manoeuvers at very short notice. | |
| 1141 | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | 1. Is there a plan to mitigate the pollution created? Specifically, the through water cooling system dumping chlorinated, heated water into Howe Sound. If this project does go through, I believe the water should be cooled to the same temperature as the Sound, as well as scrubbed, or filtered to remove the contaminants. Howe Sound is just starting to make a comeback after decades of being a literal dead zone for sea life. The same goes for air pollution created. | Seawater Cooling System<br>Air Quality | Thank you for the comment.<br>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.<br>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 section14 of the *Environmental Management Act*. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.<br>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.<br>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.<br>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.<br>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 | |

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| | | | | | 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).<br>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. | |
| 1142(i) | March 22, 2015 | Claire Rolf - Squamish, British Columbia | I have a number of environmental concerns:<br>Mercury Contamination of the Squamish Estuary<br>The Squamish Estuary has mercury contamination from previous industrial use at the nearby Nexen site... concentrations of mercury have been revealed on the east side of the WMA and within Site A... 4 locations in east marsh and the one sample taken on the boundary of Site A show mercury levels higher than the Sediment Quality Criteria for a typical contaminated site (SedQCtcs)1. An Ecological Risk Assessment completed by Nexen Inc. found no unacceptable risks to the environment and human health in the conservation area (now the WMA) if left in an undisturbed condition. The Ecological Risk Assessment was completed using the Ministry of Environment's protocols and was approved by the Ministry's Contaminated Sites Program.<br>The whole text can be found in :<br>cf. https://www.fcm.ca/Documents/presentations/2012/SCC2012/Management_plan_skwelilem_squamish_estuary_wildlife_management_area_EN.pdf | Mercury Contamination | 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 website for more information: http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic_document_406_38521.html | |
| 1142(ii) | March 22, 2015 | Claire Rolf - Squamish, British Columbia | Natural Gas<br>We know that it is comprised mostly of methane which is a powerful greenhouse gas.<br>The United Nations has just held an Emergency Summit on climate change because of the urgency of reducing green house gas. Scientists warn us that climate change is about to accelerate beyond our control, threatening so much of what we value and love. Elsewhere in the world governments are heeding these desperate calls and are taking action. For example, the European Union has made a unilateral commitment to reduce overall greenhouse gas emissions from its 28 Member States by 20% compared to 1990 levels which is one of the headline targets of the EU 2020 strategy. By reducing emissions since 1990 while expanding its economy, the EU has successfully | GHG Emissions | 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.<br>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[9].<br>The Woodfibre LNG Project will be powered by electricity from BC Hydro. By powering the plant with electricity, instead of natural gas, we will reduce our greenhouse gas emissions by about 80%. This will make Woodfibre LNG one of the cleanest LNG facilities in the | |

[9] Centre for Liquefied Natural Gas. http://www.lngfacts.org/resources/CLNG-PACE_Study_one-pager.pdf.

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| | | | shown that economic growth and emission cuts are not contradictory. http://ec.europa.eu/clima/policies/g-gas/index_en.htm<br>Steve Hamburg, EDF Chief Scientist has said: "By emitting just a little bit of methane, we're greatly accelerating the rate of climatic change." http://www.edf.org/people/steven-hamburg<br>Emissions from the combustion of natural gas contribute to acid rain and ground-level ozone, both of which can damage forests and agricultural crops and are dangerous to health. In fact, 77 per cent of particulates from natural gas plants are dangerously small. These fine particulates have the greatest impact on human health because they by-pass the bodies' natural respiratory filters and end up deep in the lungs. Many studies have found no safe limit for exposure to these substances that are not only carcinogenic but are linked to a range of respiratory illnesses such as childhood asthma.<br>By facilitating the transport of natural gas through the extremely vulnerable Howe Sound we are also sanctioning the extraction, combustion and inevitable emissions (methane) in BC and elsewhere in the world.<br>Woodfibre LNG is now estimating greenhouse gas emissions to be 142 thousand tonnes of CO2 equivalent every year.<br>This does NOT account for the green house gases produced elsewhere by the consumption of approximately 2.1 million tonnes of LNG exported annually from the Woodfibre site (National Energy Board File OF-EI-Gas-GL-W157-2013-01 01).<br>By going ahead with this LNG project we are sanctioning the water and carbon impacts of fracking of 50,000 wells in northern British Columbia. There will be a consequential environment impact at these well sites, and where they will do hydrolyque fracturing (Fracking) large volumes of water (8-15 million litres per well) will be used, with the consequential the dangers of storing and disposal of wastewater, as well as the risk of migration of gas into water supplies. When wastewater is mishandled, it can contaminate surface and groundwater.<br>We will be contributing to and sanctioning global warming. | | world.<br>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. | |

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| 1142(iii) | March 22, 2015 | Claire Rolf - Squamish, British Columbia | Howe Sound Eco System<br>Howe Sound has already been severely abused by industry in the past. It needs to recover.<br>The impacts of increased water temperatures and the addition of chlorinated seawater will could 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. | Effects of the Project on Marine Life | 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 section14 of the *Environmental Management Act*. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.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 $m^3$ (for context, this volume is approximately 5% of an Olympic-size pool). This volume will not increase over time.<br>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.<br>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.<br>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. | |

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| 1142(iv) | March 22, 2015 | Claire Rolf - Squamish, British Columbia | Visual and Air Pollution as well as Light and Noise Pollution - Howe Sound could be a world heritage site with the 360 degree view attracting people from around the world who desire to see and breath it's clean natural beauty. This is what is unique about Squamish. This will become the view from the Gondola. | Visual Amenity | 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.<br>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.<br>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:<br>• reducing the level of contrast of buildings by using external surface finishing that has low glare and natural colours<br>• monitoring and maintaining natural screening to ensure minimal visibility of infrastructure<br>• providing additional screening of land-based infrastructure through temporary or permanent plantings where possible and safe to do so<br>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. | |
| 1142(v) | March 22, 2015 | Claire Rolf - Squamish, British Columbia | Public safety and safety of other vulnerable living creatures:<br>international LNG terminal siting standards clearly state that an LNG plant should not be built in a long narrow heavily-used waterway<br>LNG tankers are so large that the captain can't see anything 1.2 km ahead, and the ship takes 8 km to stop<br>LNG tankers are rated as class A marine safety hazards; one tanker has the explosive power of 70 Hiroshima A-bombs<br>If LNG spills onto the ocean, once it warms, it becomes flammable. Contrary to what Woodfibre LNG says, the natural gas won't just rise and disappear. Especially if there is wind, the flammable portion will drift in a cold fog to somewhere there is an ignition source – a cigarette in Lions Bay, a car on the Sea-to-Sky, a stove in Whytecliffe. The 1000-degree fire from the contents of an LNG tanker would fill Howe Sound. As we know, accidents with little chance of happening, like Mt. Polley and Lac Megantic, do happen.<br>Woodfibre LNG is being built with minimum safety spacing between LNG liquefaction, storage, and loading facilities. If a fire starts one place, it can easily spread to other places in the facility. You can't put out a large LNG fire with water. | Safety | Siting of the Woodfibre LNG facility complies in every way with the Society of International Gas Tanker & Terminal Operators Ltd's (SIGTTO) guidance as the location of the site is not within a narrow waterway as defined by SIGTTO and TERMPOL.<br>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 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 to be a narrow channel.<br>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.<br>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 Limited 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 metres 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 manoeuvers at very short notice. | |

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| | | | | | 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.<br>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.<br>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.<br>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 | |

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| 1142(vi) | March 22, 2015 | Claire Rolf - Squamish, British Columbia | Only "up to" 100 long-term jobs will be created. Fortis hasn't planned to hire anyone new for maintaining and operating the gas pipeline. BC Hydro will probably use only current staff for this work.<br>In the end a billionaire in Singapore will get richer at great expense to our quality of life and our future.<br>Would BC produce and sell arms to terrorists ?<br>We ARE responsible for what happens elsewhere in the world with what we produce and ship.<br>We are responsible for the future not only of Howe sound but humanity and our planet. | Economic Justification | 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.<br>The Environmental Assessment Certificate application includes information on the economic benefits of the Woodfibre LNG project, should it go ahead.<br>• $83.7 MILLION: Estimated in tax revenue for all three levels of government during the construction phase of the Project.<br>• $86.5 MILLION: Estimated in tax revenue for all three levels of government per year of operation.<br>• $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.<br>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):<br>CONSTRUCTION JOBS<br>• • Create 650+ jobs each year of construction. • Create an additional 1,080+ jobs (indirect* and induced** employment) during the construction phase of the Project.<br>LONG-TERM OPERATION JOBS<br>• • Create 100+ local jobs during operation.<br>• • Create an additional 330+ local jobs (indirect* and induced**) during operation.<br>*Indirect impacts arise from changes in activity for suppliers.<br>**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.<br>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. | |
| 1143 | March 22, 2015 | R. Dawson - Bowen Island, British Columbia | NO LNG | LNG Project | Thank you for the comment. | |

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| 1144 | March 22, 2015 | Eric Waters - Squamish, British Columbia | I am concerned about wood fibre LNG. It is going to put our environment, especially Howe Sound, at great risk. Plus, it is soon to be outmoded technology therefore the economic windfall is not likely to materialize. I am against it. | LNG Project | Thank you for the comment.<br>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.<br>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. | |
| 1145(i) | March 22, 2015 | Lisa Brasso - West Vancouver, British Columbia | The proposed Woodfibre LNG Project is not suitable for Howe Sound for several reasons.<br>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; | Safety | Thank you for the comment.<br>Siting of the Woodfibre LNG facility complies in every way with the Society of International Gas Tanker & Terminal Operators Ltd's (SIGTTO) guidance as the location of the site is not within a narrow waterway as defined by SIGTTO and TERMPOL.<br>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 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 to be a narrow channel.<br>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.<br>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 Limited 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 metres 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 manoeuvers at very short notice.<br>Woodfibre LNG will develop a Squamish Harbour Vessel Traffic Plan | |

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| | | | | | 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. | |
| 1145(ii) | March 22, 2015 | Lisa Brasso - West Vancouver, British Columbia | the Woodfibre LNG proposal is located within a zone of moderate to high earthquake risk; emissions from Woodfibre LNG will add to the pollution in Howe Sound, exacerbating the existing air quality conditions; 9000 year old glass sponge reefs would be endangered by tanker traffic; and 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.<br>Furthermore, there are no regulations adopted to regulate this LNG industry from a technical standpoint; the requested socio-economic study has not been provided; and certain environmental baseline studies are either missing or are inadequate. The citizens in and around Howe Sound appreciate the sensitivity of it's ecosystems, the value it's natural environment offers, and the importance of preserving it. Industry of this magnitude is far too risky and invasive for the area. | Effects of the Project on the Environment | For a response to this comment, please refer to the "*Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions*", comment # 13, 14, 15, 17, 9, 20 and 45. | |

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| 1146 | March 22, 2015 | Tanner Field - Squamish, British Columbia | Has Howe Sound not gone through enough if the last 100 years? Just when the sound has begun to regain its strength we decide to keep adding big industry to the sound? I think it is time to take a leadership role and stand up for Canada's natural environment. Not only would be be protecting the biodiversity of the sound but, also protecting the region's tourism industry which is based on the areas natural beauty. | Industrial Legacy | Thank you for your comments.<br>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.<br>The Woodfibre site has been used for industrial purposes for 100 years and continues to be zoned for this 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.<br>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).<br>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 there were no Project-related significant adverse residual effects to the environment. | |

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| 1147(i) | March 22, 2015 | Nicki Simpson - West Vancouver, British Columbia | I am writing to express my concern with the proposed Woodfibre LNG project. I am currently a resident of West Vancouver, and have watched Howe Sound recover slowly over the course of my lifetime. The proposed project would take place in an ecosystem that has not fully recovered, and which is already subject to fairly heavy traffic as a result of boating and tourism. I would like to express three main concerns about the proposed project.<br>My first concern regards the fact that Howe Sound is still recovering from past industrial activity. Populations of marine mammals are returning to the area, and while some species have settled in others are not yet established. I attended the open house in West Vancouver, and was told that any populations that have the potential to occur were treated as if they were present. On page 5. 19-1 it is stated that 11 species have the potential to occur in the area. These species cannot be treated as well-established populations who may make slight changes in behavior as a result of construction or operation. The report does not take into account that the species with the potential to occur might not react in the same way as more established species. On page 5. 19-36 the report states that "Marine mammals that are located in proximity to the LAA likely have had prior experience with vessel presence and associated underwater noise from existing traffic, given the volume of shipping that presently occurs in the area and natural acoustic sources (e.g., surface agitation such as wind and waves; see Section 5.19.2.4)" and argues that because of this, only minor behavioral changes will result. Returning populations would not have had prior experience with the same underwater noise and boat traffic. Factors such as increased underwater noise, increased boat traffic, the potential for invasive species, and the possibility of a spill may have a greater effect on the behavior of populations that have not fully returned to the sound. It is important to the continued recovery of Howe Sound that returning non-established populations are taken into account and considered more fragile than well-established populations. How will Woodfibre address returning/non-established populations of marine life? | Effects of the Project on Marine Life | Thank you for the comment.<br>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.<br>The Woodfibre site has been used for industrial purposes for 100 years and continues to be zoned for this 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.<br>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).<br>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 there were no Project-related significant adverse residual effects to the environment.<br>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.<br>Please also refer to the Marine Mammals information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments. | |

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| 1147(ii) | March 22, 2015 | Nicki Simpson - West Vancouver, British Columbia | My second concern regards the manner in which risk is determined for the project. While the risks of a large explosion or other disaster are described as low in the Application and Supporting Studies, social understandings of this risk are not adequately considered. The on paper likelihood of a catastrophic event is fairly low, however the potential for such drastic events with such appalling consequences, even if they are unlikely, can make this risk unacceptable to many people. There has been widespread opposition to transporting explosive gas through such a populated corridor. While it has been shown that the probability of an accident is small, public perception of this risk must be taken into account. Risk is a subjective measurement, and stating that something is unlikely is insufficient. If an event is unlikely but still possible and can result in consequences that the local population finds unacceptable, then the level of risk cannot be considered low. Calculating an acceptable level of risk must involve a consideration of what the local population considers to be acceptable, and not just statistical likelihoods. British Columbia has forgone the use of nuclear power for similar reasons when faced with similar risks. | Safety | 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 information sheets that has been prepared as part of the Woodfibre LNG Limited response to public comments. | |
| 1147(iii) | March 22, 2015 | Nicki Simpson - West Vancouver, British Columbia | Lastly and most importantly, the proposed project would be the first port of export for the LNG industry in BC. The environmental assessment specifically considers the impacts of the facility, and does not include an assessment of production or exploration of natural gas. These two impacts cannot be separated. Building a facility for liquefaction and export of natural gas will result in an increase in fracking to provide the gas for export. While fracking is taking place in the North of the province, and not on the Woodfibre site, it is catastrophically destructive and the expansion of that destruction must be considered a result of this project. The greenhouse gas emissions from burning natural gas are also a factor that is not considered. The impact the Woodfibre site would have on the immediate area is important, but the environmental impact of this facility will reach far beyond Howe Sound, and these much more destructive effects must be taken into account in any responsible decision-making process. | Hydraulic Fracturing | Woodfibre LNG acknowledges the expressed concern regarding hydraulic fracturing. Hydraulic fracturing activities are outside the EA scope of the Project.<br>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.<br>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.<br>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 & Gas Commission (OGC) regulates these extraction activities under the Oil & Gas Activities Act and related regulations. | |

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| 1148 | March 22, 2015 | Personal Information Withheld - Lions, British Columbia | Halkett Bay is a protected area, Glass Sponges are only accessible by scuba divers in one place in the WORLD, Halkett Bay. LNG Supertankers will destroy these Sponge beds.<br>LNG shipping in Howe Sound is not in the best interest of all Citizens of BC... not only will the Glass Sponge beds be destroyed but also the potential collision hazard and the endangerment of the major population centre in Vancouver.... this is not an acceptable risk on any level. | Glass Sponge Reefs | Thank you for your comment.<br>Glass sponges are addressed in both the Application document (Section 5.16.2.4.1) and Marine Baseline Studies Report (Appendix 5.10).<br>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.<br>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.<br>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.<br>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 *Environmental Management Act*. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.<br>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. | |
| 1149(i) | March 22, 2015 | Laurie Parkinson - Bowyer Island, British Columbia | Marine Water Quality<br>pg 5.10-22, 3rd to last bullet<br>Plan for dechlorination process mentioned, but no info re what chemical will be used. What dechlorination process will be used? | Seawater Cooling System | Thank you for the comment.<br>See Section 2.2.6.2.10 Seawater Cooling System: 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% as active chlorine. Prior to discharge, the seawater will pass through a de-aeration tank and, if required, a de-chlorination agent will be added to the water. Studies are currently underway regarding to determine the appropriate system, the optimal dosing, and the dosing regimen (i.e., continuous vs. shock treatment). The concentration of residual chlorine at the edge of the initial dilution zone will be below the Canadian Water Quality Guideline of 0.5µg/L (CCME n.d.). The concentration of residual chlorine within the initial dilution zone cannot be acutely toxic and therefore must be 0.02 mg/L or less. | |

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| 1149(ii) | March 22, 2015 | Laurie Parkinson - Bowyer Island, British Columbia | Marine Water Quality<br>Table 5.10-6 Summary of Potential Changes and Mitigation Marine Water Quality, Operation Phase pg 5.10-31<br>Mitigations for temperature increase due to cooling water, residual chlorine, as well as change in water quality from once through cooling and from propellor wash - all very unclear. Changes to water quality said "not likely", and no are references given. So the proponent states it will be ok, but gives no info to prove this. Very frustrating. This reasoning is all through this EA.<br>How will the following be mitigated?<br>temp increase, residual chlorine, change in water quality from once through cooling, propellor wash? | Effects of the Project on Marine Water Quality<br>Mitigation | Section 5.10 Marine Water Quality provides a detailed assessment of potential Project-related effects to marine water quality and identifies Project design and mitigation measures to reduce potential effects. Mitigation for potential changes in marine water quality due to temperature increase, residual chlorine and propeller wash is addressed through the Project design, i.e. cooling system diffuser design, residual chlorine removal process and vessels speed during transit, berthing and manoeuvring. The assessments for these interactions were prepared using modeling and desktop assessment studies to comply with provincial and federal guidelines for the protection of aquatic life (MOE 2009; CCME2014) as follows:<br>Temperature:<br>• Provincial guidelines state that water temperature outside of an Initial Dilution Zone (IDZ) should not exceed 1$^{o}$C above ambient (MOE 2001). Establishment of an IDZ is a standard practice for effluent discharge in BC and means that water released from the cooling system diffuser may exceed guidelines up to 100m from the point of discharge. Water within the IDZ must still be below levels considered acutely toxic to aquatic life which in this case equals an increase of more than 10oC above ambient.<br>• Detailed near-field and far-field thermal plume modeling was undertaken to determine the likely fate of the thermal plume once released from the cooling system diffuser (Appendix 5.10-2 Near Field Mixing Simulation of Diffuser and Appendix 5.10-3 Marine Thermal Analysis). The results of the modeling predicted no temperature increase above 1$^{o}$C outside of an IDZ of no more than 11 m, significantly smaller than the allowable IDZ of 100 m by provincial guidelines.<br>• The cooling system diffuser would be positioned away from Mill Creek.<br>For further details about the design of the cooling system diffuser, please refer to Appendix 5.10-5 Conceptual Design of Diffuser.<br>Chlorine:<br>• A de-chlorination process would be implemented, if required, to remove residual chlorine from the cooling water discharge such that concentrations of residual chlorine are expected to remain below Canadian water quality guidelines for the protection of aquatic health (0.5mg/L) outside of the IDZ (CCME 2014). As with temperature, residual chlorine concentrations within the IDZ must also remain below acutely toxic concentrations (<0.02mg/L).<br>Propeller Wash:<br>• The potential effect of Project-related propeller wash on the seabed was assessed through a desktop analysis of horizontal velocities derived from propeller action associated with the passage and movement of tug boats and LNG tankers to and from the proposed LNG facility (Appendix 5.10-4 Propeller Wash Assessment).<br>• Water depth at the Floating Storage and Offloading unit was determined to be deep enough (50-100 m) to allow jets produced by ship propellers to dissipate through the water column before reaching the seafloor. As a result, seabed disturbance caused by ship propellers is expected to be negligible and this effect was not considered further in the assessment. . | |

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| | | | | | References:<br>MOE (British Columbia Ministry of Environment), (2001); Principles of Preparing Water Quality Objectives in BC. Available at: http://www.env.gov.bc.ca/wat/wq/BCguidelines/principles.html. Accessed September 2014.<br>MOE, (2009); Water Quality Guidelines (Criteria) Reports. Available at:<br>http://www.env.gov.bc.ca/wat/wq/wq_guidelines.html. Accessed September 2014.<br>CCME (Canadian Council of Ministers of the Environment), (2014); Canadian Water Quality Guidelines for the Protection of Aquatic Life. Available at: http://st-ts.ccme.ca/en/index.html. Accessed September 2014. | |
| 1149(iii) | March 22, 2015 | Laurie Parkinson - Bowyer Island, British Columbia | Marine Water Quality, Marine Resources Baseline Study, Appendix 5.10-1 2/3, pg 73 Table 12<br>This table covers 5 sample dates - 2 in Summer 2013 and 3 in Spring/Summer 2014.<br>Complete sampling of all specimen types was not done each sampling date.<br>Phytoplankton were sampled 4 of the 5 dates, and the number of samples/day ranged from 18-30. That's not the scientific technique I was taught.<br>Zooplankton were sampled 3 of the 5 times, and the # of samples/day ranged from 9 to 21.<br>Benthic Infauna were only sampled once - June 2014.<br>Fish were only sampled 2 of the 5 sampling dates, samples varying from 4 to 7 sets.<br>Here it says underwater noise was sampled at 2 places, but in the text it says only in one place.<br>My questions: Why weren't all types of sampling done on each sampling date?<br>Why was there such a wide spread in number of samples taken on the different dates?<br>Experimental technique I learned teaches to take the same number of samples each time - all samples treated the same.<br>I think more sampling needs to be done to fill in the holes in the data.<br>According to what standard would the above sampling be normal? Please give sources. | Marine Water Quality | The marine resources baseline study design is consistent with the recommended guidelines (e.g. British Columbia field sampling manual (MWLAP 2003); Environment Canada Metal Mining Environmental Effect Monitoring Technical Guidance Document (EC 2012), EPA Estuarine and Coastal Marine Waters: Bioassessment and Biocriteria Technical Guidance (Gibson et al. 2000) and etc.).<br>Baseline studies for an Environmental Assessment have a different purpose than experimental studies. The Marine Resources Baseline Studies detailed in Appendix 5.10-1 were conducted to understand the existing conditions (i.e., pre-project state) of the marine environment, to collect background data for future effects monitoring and to support the assessment of Project-related effects on the marine Valued Components. Baseline studies are designed to cover areas of potential environmental effects from the proposed project (receiving environment) and, therefore, can be modified depending on changes to project design. The baseline studies for the Project were conducted during different seasons and at various sites to reflect seasonality in productivity of certain biological groups (e.g. spring/early summer and late summer phytoplankton bloom, herring spawning period in spring, juvenile fish migration period in summer); for benthic infauna sampling was conducted once (in summer) as this is generally accepted practice for benthic studies (see below).<br>Underwater noise monitoring was conducted at a single location in the Project area and the in-text reference to two locations is incorrect. Thank you for highlighting the inconsistency<br>The different sampling techniques each have a different objective - sample size, sampling frequency and sampling intensity will therefore vary by method. There is long-standing statistical support and scientific rationale for studies to be designed using different sample sizes depending on the inherent variability of the variable in each group and/or the relative importance of each group (Mead 1988; Zar 2010) and related to the intended purpose. The current statistical techniques (Non-parametric; Multivariate Analysis; Bray-Curtis, ANOVA and etc.) allows use of different sample sizes for comparison.<br>In general, the data collected as a result of the literature review and field studies is considered adequate for the purpose of the baseline studies and commensurate or exceeding data collected for similar projects in the BC Pacific coastal region. Information on these projects can be found on the BC Government Project Information Center web-site at:http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic_home.html | |

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| | | | | | References:<br>Ministry of Water, Land, and Air Protection Province of British Columbia (MWLAP). 2003. British Columbia Field Sampling Manual for Continuous Monitoring and the Collection of Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples<br>Environment Canada (EC). 2012. Metal Mining Technical Guidance for Environmental Effect Monitoring.<br>Gibson, G.R., M.L. Bowman Bowman, J. Gerritsen, and B.D. Snyder. 2000. Estuarine and Coastal Marine<br>Waters: Bioassessment and Biocriteria Technical Guidance. EPA 822-B-00-024. U.S.<br>Environmental Protection Agency, Office of Water, Washington, DC.<br>Meas, R. The Design of Experiments: Statistical Principles for Practical Applications. Cambridge, New York. Cambridge University Press.<br>Zar, J.H., (2010); Biostatistical Analysis. Fifth Edition. Prenticw Hall. | |
| 1150(i) | March 22, 2015 | Brenda Broughton - Lions Bay, British Columbia | The Halkett Bay, Howe Sound, Glass Sponge scientific discovery is well documented as significant and is in the National Geographic news. Halkett Bay Glass Sponges are, I believe, now protected.<br>It is scientifically noted that LNG Supertankers cannot pass over the Glass Sponges in Halkett Bay in Howe Sound, without harming them. | Glass Sponge Reefs | Thank you for your comment.<br>Glass sponges are addressed in both the Application document (Section 5.16.2.4.1) and Marine Baseline Studies Report (Appendix 5.10).<br>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.<br>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.<br>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.<br>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 section14 of the *Environmental Management Act*. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.<br>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. | |

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| 1150(ii) | March 22, 2015 | Brenda Broughton - Lions Bay, British Columbia | What the universe has given this region and thus, BC and Canada, with our spectacular Howe Sound, cannot be understated, in the above water beauty or the below water wonders.<br>Howe Sound's spectacular beauty, must be preserved, as it is a multi-billion dollar industry. I have just been in Ottawa and Orlando for about 3 weeks, and in both locations you could not turn on the television without watching a TV commercial made in Howe Sound. You will not be aware of this, as you do not know Howe Sound. This is a fact.<br>For example, in watching the movie 'The Interview' with Seth Rogen that was so controversial, and the President of the United States, President Obama stood up for the movie as it was creating a potential international incident between the US and Korea in late 2014...in viewing i,t I recognized the back of the Stawanus Chief mountain near Squamish, and that the ending was filmed in Minaty Bay, Britannia, Howe Sound, across from the proposed LNG ... thus we googled where this movie was made...it was filmed in 19 locations in the Lower Mainland/Vancouver...several locations were in Howe Sound.<br>The EAO team has no way of recognizing the significance of Howe Sound, but this is a significant jewel for all of Canada and its economy. The Sea to Sky Corridor is the number one scenic highway in the world...and attracts visitors to Whistler and now the Sea to Sky Gondola...these are income producers in excess of the LNG Plant and shipping, as per your own figures presented.<br>The Glass Sponges represent a significant life form in Howe Sound that most cannot see, but for Europeans, for people from China...this is the kind of information...the kind of 'mecca' that they long to say they have seen and breathed in the spectacular beauty and fresh air and clean ocean. This is the future of Howe Sound ~ the beauty is the economy.<br>To introduce LNG Supertankers is to harm Howe Sound...is to be a traitor to the broad interests of the future of our Region, British Columbia and Canada. This is a very serious matter.<br>Minimizing this information is treasonous. Minimization is a disease. Let it not reflect any role that you play.<br>Today business is not conducted in silos, but rather in an integrated review of all considerations. The EAO process is fundamentally from the last century...it is a business model that can say 'yes' to anything presumably.<br>The answer must be a clear 'No' to LNG and LNG Supertanker shipping in Howe Sound. | Sustainable Economy | 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.<br>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.<br>Please also refer to the Sustainable Economy information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments. | |

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| 1151 | March 22, 2015 | Shirley Lewis - Squamish, British Columbia | No more development !!! We love our land the way it is! When are you people going to stop this distruction to our mother esrth | LNG Project | Thank you for the comment. | |
| 1152(i) | March 22, 2015 | Cris Zavarce - Squamish, British Columbia | We moved from Ontario June 2014 and have fallen in love with this beautiful place of Squamish. One of the fascinating characteristics of the Howe Sound was that powerful wind coming from the South-West in the summer. The air felt clean and invigorating, but the thought of having to smell toxic air from machinery and ships' smoke stacks spoiling such a unique gifts drives me insane! And yes, IT WILL DEFINITIVELY HAPPEN! | Air Quality | Thank you for the comment. There is no odour associated with LNG facilities. The odour associated with natural gas is an additive called mercaptan, which is a safety feature to warn of potential leaks in homes and businesses. The additive is removed from the natural gas before it is liquefied, and does not produce odours at LNG facilities.<br>Regulations are set by the OGC to ensure that there are no smells or odours emitted from the boundary of an LNG facility.<br>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.<br>Section 9.2.2 Human Health Risk Assessment included an assessment of the potential effects on humans by Project-related emissions. The Application concluded that there were no Project-related significant adverse effects.<br>Please also refer to the Air Quality Information Sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments. | |
| 1152(ii) | March 22, 2015 | Cris Zavarce - Squamish, British Columbia | And I'm talking about the regular operation of the proposed LNG project, not even mentioning the likely accidents, for which no one seems to be held accountable after they happened.<br>I wonder if we had, truly enforceable criminal laws, against government and industry executives, that sign the approval of environmental safety of projects like this one, I wonder how many will sing if they knew for sure they were going to end up behind bars if something bad happened? | Liability | 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.<br>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.<br>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.<br>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. | |

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| 1152(iii) | March 22, 2015 | Cris Zavarce - Squamish, British Columbia | BC, how could you let money and greed spoil this beautiful place? Why is our government, our EMPLOYEES, not promoting and supporting tourists developments and industries that will reflect what the people that live here, THE PEOPLE THAT PAY THEIR SALARIES, want?<br>I see the Howe Sound as an incredible beautiful and prosperous tourist and recreational area like many others around the world. I'm sure there is money to be made in these kind of projects and more jobs to be created, than in the LNG kind of project.<br>BC, you have a beautiful province, don't let anybody take that away from you(us). | Tourism | 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.<br>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.<br>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.<br>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. | |
| 1153 | March 22, 2015 | Personal Information Withheld - Passage Island, British Columbia | I am a resident islander in howe sound. We commute daily through these waters rough or calm. We have watched and witnessed first hand the incredible rebound of marine animals in this sound. I can actually say I watched 2 humpback whales swim through our bay, passed my property as I sipped my morning tea.<br>We have seen Pods of orcas that had not been seen in 14 years.<br>I am not in favor of the proposed LNG activity in Howe Sound.<br>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.<br>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. | 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 and 46. | |

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| | | | Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards<br>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.<br>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.<br>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.<br>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.<br>Sources:<br>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 | | | |

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| | | | 4. SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility<br>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?<br>Source: B.C. Ministry of Energy and Mines<br>5. ECONOMY: The requested socio-economic study has not been provided<br>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?<br>6. CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable<br>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.<br>7. GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond | | | |

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| | | | to issues<br>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.<br>8. ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life<br>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.<br>9. ENVIRONMENT: Missing baseline studies<br>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.<br>10. 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<br>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.<br>11. ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?<br>Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide | | | |

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| | | | (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.<br>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).<br>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.<br>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. | | | |

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| 1154 | March 22, 2015 | jani carroll - Bowen Island, British Columbia | Just don't think this is a good idea for this beautiful area that is coming back from other environmental misuse.NO thank you!! | LNG Project | Thank you for the comment. | |
| 1155(i) | March 22, 2015 | Gillian Darling Kovanic - Bowen Island, British Columbia | Myself and my husband Rudolf Kovanic of the same location have attached our comments as a .pdf file. thank you<br>Letter-20150322-10.19.pdf<br>March 19th, 2015<br>Environmental Assessment Board<br>For Woodfibre LNG Plant<br>Province of British Columbia<br>To The Environmental Assessment Board Members,<br>As a 23-year resident of Bowen Island and who spent the first 20 years of my life in West Vancouver at the doorstep of Howe Sound, I am writing this letter of vehement opposition to the re-industrialization of Howe Sound that will occur if Woodfibre LNG is granted permission to construct an LNG export facility at Woodfibre and be allowed to ship cryogenic LNG through Howe Sound, Montagu and Queen Charlotte Channels.<br>THE WRONG PLACE TO PUT AN LNG PLANT: A THREAT TO OUR LOCAL ECONOMY<br>Instead of desecrating this dramatic, steep-sided, narrow channel that is Canada's southern-most fjord by turning it into the site of Canada's first LNG export plant, it absolutely should be designated as a World Heritage Site (which it is) to be enjoyed by British Columbians, Canadians and international visitors for all time to come. Literally on the doorstep of Canada's second largest city (projected 3.4 million by 2041), the recreation and tourist potential of Howe Sound and the Sea to Sky Corridor is immense and is only just beginning to be exploited. The communities of Squamish and Whistler alone annually generate $ 1.4 billion dollars a year from tourism. It is initiatives like the Gondola to the top of the Squamish Chieftain and the new Sea to Sky Marine trail to open June 2015 connecting Howe Sound to the Trans-Canada Trail that draws eco-tourists from across Canada and around the world, engendering a vibrant local and environmentally sustainable economy. | Effects of the Project on Tourism | Thank you for the comment.<br>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.<br>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.<br>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.<br>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. | |

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| 1155(ii) | March 22, 2015 | Gillian Darling Kovanic - Bowen Island, British Columbia | In comparison, jobs being promised by Woodfibre LNG are no compensation for the huge safety and environmental risks posed to the communities of Howe Sound, marine and terrestrial. The LNG plant will be constructed overseas by foreign workers and after installation, operated mostly by trained temporary offshore workers (perhaps a few security jobs might be available locally.) | Employment | 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):<br>CONSTRUCTION JOBS<br>• Create 650+ jobs each year of construction. • Create an additional 1,080+ jobs (indirect* and induced** employment) during the construction phase of the Project.<br>LONG-TERM OPERATION JOBS<br>• Create 100+ local jobs during operation.<br>• Create an additional 330+ local jobs (indirect* and induced**) during operation.<br>*Indirect impacts arise from changes in activity for suppliers.<br>**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.<br>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. | |
| 1155(iii) | March 22, 2015 | Gillian Darling Kovanic - Bowen Island, British Columbia | The $2 million being offered to Squamish in annual taxes once the plant's up and running are negligible compared to dollars being generated now and in the future through recreation and tourism in this area. | Tax | 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.<br>The Environmental Assessment Certificate application includes information on the economic benefits of the Woodfibre LNG project, should it go ahead.<br>• $83.7 MILLION: Estimated in tax revenue for all three levels of government during the construction phase of the Project.<br>• $86.5 MILLION: Estimated in tax revenue for all three levels of government per year of operation.<br>• $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.<br>For more information see Section 2.6 Project Benefits of Woodfibre LNG's Environmental Assessment Certificate Application. | |

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| 1155(iv) | March 22, 2015 | Gillian Darling Kovanic - Bowen Island, British Columbia | A Woodfibre LNG rep at Bowen's Open House (January 30/15) explained it would be 15 years and only after the construction costs of the plant are covered before any taxes (0.5% of profits) will be paid to the Province of B.C.. As the Assessment Board knows, Woodfibre LNG, owned by the billionaire tycoon, Sukanto Tanoto, is a wholly-owned subsidiary of the Singapore-based multi-national, Royal Golden Eagle. Neither Tanato nor RGE has experience building or operating LNG export plants (RGE owns 36% of an LNG import terminal in China.) Except for one plant being planned in the Maritimes, due to safety concerns and uninsurable risks, all LNG plants have been turned down in Canada (including a storage facility on Texada Island 15 years ago that was disallowed along with all other potential sites in the Salish Sea.) Also because of Mr. Tanato's convictions of large-scale tax evasion in the British Virgin Islands, cited environmentally destructive practices and human rights abuses, British Columbians cannot trust that we will ever see any downstream taxes paid to us by this company, nor can we trust our precious environment to an individual/company with such an appalling track record. | Corporate Ownership | The Woodfibre LNG Project is owned by Woodfibre LNG Limited, a privately held Canadian company based in Vancouver with a Community Office in Squamish.<br>Woodfibre LNG Limited is a subsidiary of Pacific Oil and Gas (PO&G) which develops, builds, owns and operates projects throughout the energy supply chain.<br>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.<br>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. | |
| 1155(v) | March 22, 2015 | Gillian Darling Kovanic - Bowen Island, British Columbia | If Woodfibre LNG is given permission, its presence will literally choke off tourism in Howe Sound/Sea to Sky corridor. | Tourism | 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.<br>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.<br>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.<br>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. | |

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| 1155(vi) | March 22, 2015 | Gillian Darling Kovanic - Bowen Island, British Columbia | The two huge proposed LNG storage tanks will have the explosive capacity 70 times greater than a Hiroshima atomic bomb, and the 377 foot-tall flare stack belching out the dangerous green house gasses like methane, sulphur dioxide, nitrous oxide and other noxious chemicals are dangerous health risks that will degrade our air quality and deposit carcinogens on the land and in the water. Also huge LNG tankers larger than navy aircraft carriers carrying 60,000 tons of highly flammable cryogenic LNG bearing down the narrow Sound at 10-knots with a 1.6 km. exclusion zone will endanger passenger ferries, sailors and kayakers and create waves that will threaten children playing on local beaches and houses built along the foreshore (remember the 'Fast Cat Ferry' fiasco which were much smaller vessels!!) | Accidents and Malfunctions | At Woodfibre LNG, safety is the number one priority.<br>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.<br>Section 11.0 Accidents and Malfunctions of the Application assesses the effects of potential accidents and malfunctions for the Project. No high or very high risks were identified, and thresholds established by the Oil and Gas Commission (OGC) and other regulatory bodies are not exceeded for any events.<br>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.<br>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.<br>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.<br>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. | |
| 1155(iv) | March 22, 2015 | Gillian Darling Kovanic - Bowen Island, British Columbia | Woodfibre LNG operations will have the capacity to destroy our local economy, our environment, our safety, our quality of life and our peace of mind. Without the permission from the majority of the tens of thousands of residents living along Howe Sound, neither the BC Government, the BC Environmental Assessment Board nor the National Energy Board have obtained the social license required to green light this project that threatens to destroy our precious environment and endanger our communities. We will not allow this special area that we call home to be turned into a sacrificial zone for the benefit of the petro-chemical industry and big business.<br>The single most important financial asset that people living up and down the shores of Howe Sound own are their real estate holdings. | Social License | 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.<br>A public consultation report will be filed with the EAO in accordance with the environmental assessment. | |

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| 1155(v) | March 22, 2015 | Gillian Darling Kovanic - Bowen Island, British Columbia | With the mismanagement of the BC Ferry Service, we have already been hit hard suffering approximately a 35% drop in the value of our homes. According to the Vancouver business group, CRED, depending on how close our houses are to the pipeline or transiting fuel-laden tankers, property values drop 10% to 40% . If Woodfibre LNG is approved, every property owner in Howe Sound will be severely negatively affected. A double whammy from which we'll never recover! | 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. | |
| 1155(vi) | March 22, 2015 | Gillian Darling Kovanic - Bowen Island, British Columbia | THE WRONG PLACE TO PUT AN LNG PLANT: A THREAT TO OUR ENVIRONMENT<br>As a result of 100-years of irresponsible industrial degradation caused by massive discharges of organochlorines (Woodfibre Pulp Mill) and minerals, especially copper and zinc leaching from the abandoned Britannia Copper Mine, by the end of the 20th-Century the marine ecology of Howe Sound was in deep trouble. At that time, an Environment Canada expert said that Howe Sound was "the single worst point source of metal pollution on the North American continent." Fifteen years ago in Snug Cove on Bowen Island, I found an adult Harbour Seal that had hauled itself out onto a dock. On its last legs, the body of this poor emaciated creature was covered in huge tumour-like growths the size of large grapefruits, evidence of the highly toxic (carcinogenic) waters of its Howe Sound habitat.<br>After years of exhaustive legal proceedings, environmental restoration of the Sound began a decade ago. Thanks to the tireless work of local volunteers and recovery specialists (costing $75 million dollars, $45 million of which are Canadian tax payers' dollars!), today Howe Sound is on the re-bound. These days this is an all-too-rare environmental 'good news story' that should be celebrated provincially, nationally and internationally. Herring are once again spawning in the Sound, salmon are returning, a pod of 350 Pacific White-Sided Dolphins now feed here regularly, Biggs Killer Whales abound and for the first time in living memory, a humpback whale has been sighted frolicking in Howe Sound. It would be an absolute travesty to trash all these efforts and millions of tax-payers' dollars spent on these recovery efforts only to re-industrialize and once again degrade this precious ecological and recreational area. | Industrial Legacy | Woodfibre LNG is committed to building a project that is right for Squamish and right for BC. This includes environmental stewardship.<br>The Woodfibre site has been used for industrial purposes for 100 years and continues to be zoned for this 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.<br>Woodfibre LNG Limited intends to perform additional remediation and restoration in the Project area, including 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. (Please refer to Section 2.6.7 Ecological Benefits of the Application).<br>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 section14 of the *Environmental Management Act*. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.<br>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.<br>Please also refer to the Marine Mammal information sheets that have been prepared as part of the Woodfibre LNG Limited response to public comments | |

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| 1155(vii) | March 22, 2015 | Gillian Darling Kovanic - Bowen Island, British Columbia | The long narrow fjord of Howe Sound doesn't flush well. A technique eschewed, in fact banned internationally, Woodfibre LNG proposes to use sea water to cool natural gas to minus -160 degrees Celsius for shipping. I was told by a Woodfibre LNG rep at the Bowen Island School Open House Event on that the outpouring of hot, chlorinated sea-water (I later found out that this is 17,000 tons per hour) to be expelled back into Howe Sound would only raise the ocean water temperatures in the head of the Sound by one degree Celsius. And one degree won't matter? I wasn't reassured and this is why.<br>In 2014, climatologists monitoring temperatures due to global climate change in the Pacific North West released evidence showing that temperatures in our area have risen by 1.38 degrees Celsius in the past 30 to 40 years. Also in 2014, after months of research, Cornell University scientists identified the pathogen at the heart of the "starfish wasting disease" that's been killing millions of starfish along the Pacific coast from Alaska to California and certainly including Howe Sound. The cause of what's being called the largest marine disease outbreak ever recorded appears to be 'the sea star associated densovirus' that's probably existed on the West Coast for decades and whose presence has now magnified. Researchers, continuing to investigate the likely causes of this massive outbreak, suspect that warming ocean water and ocean acidification could be causing starfish to become more susceptible to this deadly viral infection. Projects like Woodfibre LNG will only compound this crisis (especially in low flush waterways like Howe Sound) & contribute significantly to BC's unsustainable carbon footprint.<br>In the summers of 2013/14 I observed with real concern that all the starfish had disappeared along the beach where I live on Bowen Island's north eastern shores on Howe Sound. The impact of the death of these starfish on the Glaucous-wing and Herring Gulls that earn their living, nest and raise their chicks in Howe Sound (who survive during the nesting season principally on starfish) has been devastating. In the late summer of 2014 when the seagull chicks fledged out of their nests on Christie Island's Bird Sanctuary next to Anvil in Howe Sound and followed their parents down to Mannion Bay, for almost two weeks I could hardly bear to be outside hearing the constant plaintive cries of these hungry seagull chicks whose parents had nothing to feed them. When impacted, every factor in a tightly woven ecosystem such as the one in Howe Sound has a ripple effect on the viability of other creatures' survival. This is why I remain totally unconvinced by the Woodfibre LNGs rep's contention at the Jan. 30th meeting that a one-degree temperature rise caused by Woodfibre LNG won't make any difference to the marine ecology of | Effects of the Project on Marine Environment<br>Seawater Cooling System | 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.<br>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 section14 of the *Environmental Management Act*. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.<br>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.<br>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. | |

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| | | | Howe Sound! The science is in & the sad truth is we are already at the tipping point.<br>In addition to water temperature increases from the proposed LNG plant, hundreds of thousands of the tons of chlorinated water will be expelled from the plant's cooling system each year that will kill immeasurable amounts of marine life including juvenile salmon, herring, plankton, crustaceans and perhaps even our rare and delicate glass sponge colonies; and undo all our recovery efforts in Howe Sound. If Woodfibre LNG is approved, that cancer-ridden Harbour Seal of pre-clean up times in Howe Sound will also be our future. | | | |
| 1155(viii) | March 22, 2015 | Gillian Darling Kovanic - Bowen Island, British Columbia | THE WRONG PLACE TO PUT AN LNG PLANT: A THREAT TO OUR SAFETY<br>If spilled, cryogenic LNG will immediately start to gasify and becomes extremely explosive. The Environmental Review Board reviewing Woodfibre LNG will be aware that in 2008, the US Department of Energy's National Nuclear Security Administration's, Sandia National Laboratories (SNL), released an exhaustive risk-based analysis concerning threats from LNG spills on water unintentional and intentional ("Safety Analysis of Spills Over Water From Large LNG Carriers".)<br>SNL determined that areas in which LNG shipments transit narrow harbours or channels (Howe Sound, Montague and Queen Charlotte Channels)....coming a quarter to one mile of people and major infrastructure elements such as military facilities (Horseshoe Bay Ferry Terminal could be viewed as a comparable facility), human settlements (the 11 communities and municipalities that edge onto Howe Sound) and commercial centers or national icons (the fjord of Howe Sound itself, CN Railway line to northern BC, and the multi- billion dollar upgraded Sea to Sky Highway). Within these distances the risk and consequences of an accidental LNG spill could be significant and have severely negative impacts. Vapor dispersion, extreme fire hazards and thermal radiation could pose a severe public safety threat and property hazard.<br>An intentional spill as the result of a deliberate act of terrorism like a hijacking a BC Ferry to ram an LNG tanker increases the hazard risk zone to over 1 1/2 miles. 'Well, how likely would such an act occur in this area?' one might ask. Likely enough that the BC Ferry Terminal in Horseshoe Bay and the 26 daily ferry runs in and out of this terminal were identified as a potential terrorist risk for the 2010 Winter Olympics. In response, $ 35 million dollars was spent on safety and up-graded security on the ferry system during this event. The opportunity to create an even greater conflagration by hijacking a ferry and ramming an LNG tanker loaded with 60,000 tons of highly explosive cryogenic LNG could be a terrorist's dream come | Accidents and Malfunctions | At Woodfibre LNG, safety is the number one priority.<br>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.<br>Section 11.0 Accidents and Malfunctions of the Application assesses the effects of potential accidents and malfunctions for the Project. No high or very high risks were identified, and thresholds established by the Oil and Gas Commission (OGC) and other regulatory bodies are not exceeded for any events.<br>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.<br>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.<br>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.<br>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<br>Siting of the Woodfibre LNG facility complies in every way with the Society of International Gas Tanker & Terminal Operators Ltd's (SIGTTO) guidance as the location of the site is not within a narrow waterway as defined by SIGTTO and TERMPOL.<br>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 | |

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| | | | true. But in Woodfibre's literature on potential accidents & malfunctions there's not a single mention of an emergency response plan addressing this increased risk of terrorism.<br>As a number of LNG plants and pipeline accidents have proven, LNG fires are nearly impossible to put out. Since the Federal Government cancelled the Vancouver Coast Guard in 2013 now we only have a volunteer team on call-out. All of the communities in Howe Sound use wood burning heating sources for at least half the year plus the increasingly tinder dry summer conditions in our forests on all the islands up and down the Sound means there's an extremely high risk of fire year round. A massive fire caused by an LNG explosion simply could never be contained by any of the fire or safety vessels or emergency response systems currently available in this area.<br>Although there have been some close calls, I am aware that to date, there have been no LNG tankers that have exploded or been seriously breached over the last five decades that these ships have plied the oceans. However there was likely a 50-year record of relative railway safety through Quebec's Eastern Townships before the Lac Megantic disaster that wasn't supposed to happen either, destroying half the town and killing four dozen people. And as long as crude oil continues to be hauled by train through their town, I'm sure the survivors of the Lac Megantic disaster will never be free of the worry of another conflagration. And if Woodfibre LNG tankers are ever allowed to ply these waters of Howe Sound, I know that every night for the rest of my life as I lay my head on the pillow on the shores of Queen Charlotte Channel where I live, my last thought before sleeping will be the worry that tonight my family and myself could be enveloped and asphyxiated by a dense, choking fog of searing methane dioxide or radiated to a crisp.<br>So narrow is Howe Sound with a chain of dozens of islands and islets dotting its waters, when the proposed LNG tankers travel down the Sound in the shipping lanes mid-Channel, the entire passage of these ships will fall within the hazard zones indentified by the US Department of Energy's Sandia Report. It's impossible to fulfill the so-called 'world class environmental standards' to be enforced on Woodfibre LNG as touted by Port Metro Vancouver because locating this plant in a long and extremely narrow steep fjord lined by human habitation and essential infrastructure -- in Howe Sound itself -- immediately disqualifies it from ever achieving the standard of a 'world class environmental project'. | | 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 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 to be a narrow channel.<br>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.<br>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 Limited 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 metres 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 manoeuvers at very short notice.<br>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. | |

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| | | | HOWE SOUND IS THE WRONG PLACE TO BUILD AN LNG PLANT THAT, IF APPROVED, WILL POSE AN EXTREME THREAT TO OUR LOCAL ECONOMY, OUR ENVIRONMENT AND OUR SAFETY. FOR THESE REASONS, WE SAY NO TO WOODFIBRE LNG.<br>Yours sincerely,<br>Gillian Darling Kovanic and Rudolf Kovanic | | | |
| 1156(i) | March 22, 2015 | Laurie Parkinson - Bowyer Island, British Columbia | Benthic Habitat<br>Sec 5.16.2.4.2<br>Pg 5.16-12<br>"Glass sponges have also been documented in proximity to the Project Site. Records of both dead and live specimens of reef-forming glass sponge species were observed at depths ranging from 38m to 175 m near Woodfibre."<br>How near to Woodfibre? Please be exact. How much in line with the proposed shipping route? Please give references.<br>Benthic Habitat<br>Sec 5.16.2.2<br>Pages 5.16-12<br>"Since the interactions of the effects associated with past and present existing projects are not expected to change over time, these projects are considered throught the documentation of the existing conditions for this VC."<br>What does this mean?<br>Howe Sound has recovered significantly since past industrialization, and will continue to recover if not damaged again - by Woodfibre LNG we fear. | Effects of the Project on Benthic Habitat | Thank you for the comment.See Section 5.16.2.4.1 Existing Conditions within the Regional Assessment Area: Glass sponges (class Hexactinellida) are deep-sea organisms found typically at depths between 500 m and 3,000 m; however, glass sponges are also found at water depths shallower than 50 m in only four locations in the world. One of these locations is Howe Sound, where glass sponges grow in less than 100-m depth and have been documented as shallow as 18 m near Bowyer Island (Leys et al. 2004, McDaniel 1973, Dennison 2012). Glass sponges have also been documented in proximity to the Project site. Records indicate both live and dead specimens of reef-forming glass sponge species were observed at depths ranging from 38 m to 175 m near the Woodfibre site in 1984 (Leys et al. 2004); however, these glass sponge occurrences did not represent a fully intact glass sponge reef. Glass sponges observed near the Woodfibre site consisted of mostly dead specimens with only a single live solitary sponge observed shallower than 100 m; the closest living glass sponge reef was documented approximately 10 km to the southwest of the Project area at the mouth of the sill in Montagu Channel. Underwater video surveys conducted by Golder in 2013 and 2014, to depths reaching 55 m chart datum, did not capture any occurrences of glass sponges within the Project area (refer to Appendix 5.10-1 Marine Resources Baseline Study).<br>Section 5.16.3.2.3 Potential Effects for Marine Benthic Communities: glass sponges were not identified within the vicinity of the Project during underwater video surveys and have not been identified within the LAA (refer to Appendix 5.10-1 Marine Resources Baseline Study). Glass sponges are known to occur within the RAA and have been previously noted adjacent to the Project area; however, sediment re-suspension from Project activities is expected to be localized and is unlikely to affect glass sponges outside the Project area.<br>Section 5.16.2.2 Background Information: "Since the interactions of the effects associated with past and existing projects are not expected to change over time, these projects are considered through the documentation of the existing conditions for this VC (marine benthic communities)."<br>Existing projects (past and present) form part of the existing conditions from which the potential effects of the Project are assessed. A summary of the projects, the effects of which are included in the existing conditions, is presented in Table 4-7 Existing Conditions – Past and Existing Projects. Projects and activities that are considered in the existing conditions for Marine Benthic Habitat include: Britannia Mine Remediation Project, Furry Creek Hydro Project, Howe Sound Pulp and Paper Corporation, Upper and Lower Mamquam Hydro Projects, McNair Creek Hydro Project, mineral activities, fishing, and backcountry and outdoor recreation activities. | |
| 1156(ii) | March 22, | Laurie Parkinson - | Marine Water Quality | Effects of the Project on | Figure 5.10-9 shows a small area of the plume of ΔT (the difference | |

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| | 2015 | Bowyer Island, British Columbia | Sec 5.5.10.4.4, pg 5.10-32<br>Modelling of thermal plume (warm cooling water) indicates that in winter the warm water will come to the surface. Juvenile salmon live in the surface layer of the water, where the plume of warm water from the cooling system will rise to.<br>Figures are missing re this. Figures on pages 5.10 36-38 do not show surface layer, to indicate size of surface plume, even though the text mentions the plume surfacing.<br>So - what will residual chlorine do to juvenile salmon? How badly will it affect their sensory sysem (sense of smell they use to navigate with)? Please don't tell me probably ok, and not back it up with references.<br>Warm water is confusing to salmon, leads them to lose dominance to other fish,etc. So how will the surface plume of chlorinated warm water affect juvenile salmon? Please give references. | Marine Water Quality | in temperature between the plume and ambient water) = 0.35°C at mid-depth in the winter. The plume reaches the water surface but ΔT < 0.2°C. This difference is below the Canadian and BC water quality guidelines of 1°C and the resulting temperature in the plume is below the salmon mortality temperature threshold of 22°C (WDOE 2002).<br>As a de-chlorination process would be implemented, residual chlorine is expected be removed from the cooling water discharge such that concentrations of residual chlorine would remain below Canadian water quality guidelines for the protection of aquatic health (0.5 □g/L) residual chlorine concentrations within the IDZ must also remain below acutely toxic concentrations (<0.02mg/L).<br>With the implementation of Project design and mitigation measures, the residual effect of habitat quality change from the sweater cooling system to the Forage Fish and Other Fish VC (which includes salmon), is likely to be negligible since Project-related changes to marine water quality are expected to remain within water quality guidelines and therefore be negligible (see Section 5.10 Marine Water Quality for further detail).<br>References:<br>MOE, (2009); Water Quality Guidelines (Criteria) Reports. Available at:<br>http://www.env.gov.bc.ca/wat/wq/wq_guidelines.html. Accessed September 2014.<br>CCME (Canadian Council of Ministers of the Environment), (2014); Canadian Water Quality Guidelines for the Protection of Aquatic Life. Available at: http://st-ts.ccme.ca/en/index.html. Accessed September 2014.<br>Washington State Department of Ecology (WDOE), (2002); Evaluating Standards for Protecting Aquatic Life in Washington's Surface Water Quality Standards: Temperature Criteria. Draft Discussion Paper and Literature Summary. Publication Number 00-10-070. 189pp. | |
| 1157. | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | 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.<br>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. | Effects of the Project on Marine Water 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 # 12. | |
| 1158 | March 22, | Tawnya Hons - | I would like more information on how this site has | Industrial Legacy | Thank you for the comment. | |

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| | 2015 | Calgary, Alberta | been determined to be a brownfield site. It is my understanding that the Howe Sound is quite recovered from previous damage and that it would be at risk of damage again. The return of orcas to the sound seems to indicate a level of health inconsistent with a brownfield site. I am not opposed to using waterways for economic development but the cost of such use must factor in more than just the cost of business and value the environment, holding businesses to a very high standard of care, something I'm not sure I've seen in this case. | | 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.<br>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). | |
| 1159 | March 22, 2015 | Calvin Martin - Burnaby, British Columbia | LNG isn't a bridge to a new energy future. It's a gang plank. We have better options. Please think beyond the nex decade and invest in something that is viable for the planet and our future generations. | LNG Project | Thank you for your comment. | |

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| 1160 | March 22, 2015 | Laurie Parkinson - Bowyer Island, British Columbia | Glass sponges are rare, and live all up and down Howe Sound - the shipping route. Local scuba divers have recorded this. Please see the recent article re Howe Sound glass sponges:<br>Glass Sponge Reefs in Halkett Bay off of Gambier Island http://news.nationalgeographic.com/news/2013/10/131018-glass-sponge-reef-canada-ocean-science/<br>Even MLA Jordan Sturdy waxed on in Legislature about this: http://jordansturdymla.ca/bcltv_videos/mla-sturdy-halkett-bays-glass-sponges/<br>The force of water from propellors on LNG ships will damage 9,000 year old glass sponge reefs.<br>Please investigate this seriously, and reply with references. Howe Sound is the wrong place for LNG tankers.<br>Yes, I know other big ships come up Howe Sound, but LNG tankers are a third bigger in length than the biggest ship to Squamish Terminals. LNG tankers are 315m long and the largest non-LNG ship is 208m long. | Effects of the Project on Marine Life | Thank you for the comment.<br>The Woodfibre Project LNG carriers are approximately 290 m in length, 45 m across, and the underwater profile is 12 to 15 m below the surface.<br>See Section 5.16.2.4.1 Existing Conditions within the Regional Assessment Area: Glass sponges (class Hexactinellida) are deep-sea organisms found typically at depths between 500 m and 3,000 m; however, glass sponges are also found at water depths shallower than 50 m in only four locations in the world. One of these locations is Howe Sound, where glass sponges grow in less than 100-m depth and have been documented as shallow as 18 m near Bowyer Island (Leys et al. 2004, McDaniel 1973, Dennison 2012). Glass sponges have also been documented in proximity to the Project site. Records of both live and dead specimens of reef-forming glass sponge species were observed at depths ranging from 38 m to 175 m near Woodfibre in 1984 (Leys et al. 2004); however, these glass sponge occurrences did not represent a fully intact glass sponge reef. Glass sponges near the Woodfibre site consisted of mostly dead specimens with only a single live solitary sponge observed shallower than 100 m; the closest living glass sponge reef was documented approximately 10 km to the southwest of the Project area at the mouth of the sill in Montagu Channel. Underwater video surveys conducted by Golder in 2013 and 2014, to depths reaching 55 m chart datum, did not capture any occurrences of glass sponges within the Project area (refer to Appendix 5.10-1 Marine Resources Baseline Study).<br>The sailing line (shipping route) is a minimum of 1300 metres (and typically more than 1500 metres) from the location of the glass sponge reefs located at Halkett Point and Lost Reef between Pam rocks and Christie Islets. The glass sponge reefs are located at depths ranging between 20 m and 40 m at these locations.<br>Section 5.16.3.2.3 Potential Effects for Marine Benthic Communities: Glass sponges were not identified within the vicinity of the Project during underwater video surveys and have not been identified within the LAA (refer to Appendix 5.10-1 Marine Resources Baseline Study). Glass sponges are known to occur within the RAA and have been previously noted adjacent to the Project area; however, sediment re-suspension from Project activities is expected to be localized and is unlikely to affect glass sponges outside the Project area. | |
| 1161 | March 22, 2015 | Darci Rosalie - Gambier, British Columbia | what are the 5 chemicals added to the de-chlorination process in the marine water cooling system? | Seawater Cooling System | Thank you for the comment.<br>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% as active chlorine. Prior to discharge, the seawater will pass through a de-aeration tank and, if required, a de-chlorination agent will be added to the water. Studies are currently underway regarding to determine the appropriate system, the optimal dosing, and the dosing regimen (i.e., continuous vs. shock treatment). The concentration of residual chlorine at the edge of the initial dilution zone will be below the Canadian Water Quality Guideline of 0.5µg/L (CCME n.d.). The concentration of residual chlorine within the initial dilution zone cannot be acutely toxic and therefore must be 0.02 mg/L or less. | |

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| 1162 | March 22, 2015 | Personal Information Withheld - West Vancouver, British Columbia | Key concerns with Woodfibre LNG's application:<br>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.<br>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.<br>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards<br>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.<br>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. | 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 and 46. | |

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| | | | 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.<br>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.<br>Sources:<br>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<br>4. SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility<br>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?<br>Source: B.C. Ministry of Energy and Mines | | | |

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| | | | 5. ECONOMY: The requested socio-economic study has not been provided<br>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?<br>6. CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable<br>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.<br>7. GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues<br>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.<br>8. ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life<br>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. | | | |

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| | | | Woodfibre LNG needs to source water for this project from somewhere else.<br>9. ENVIRONMENT: Missing baseline studies<br>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.<br>10. 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<br>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.<br>11. ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?<br>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.<br>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). | | | |

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| | | | 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.<br>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. | | | |
| 1163 | March 22, 2015 | Star Morris - Squamish, British Columbia | 5.1.4.1 Geotechnical and Natural Hazards – design specifications<br>"The area surrounding the Project is both seismically and geomorphologically active. BC experiences more than 1,200 earthquakes each year, 300 of which occur in the Lower Mainland and on Vancouver Island (Knight Piésold 2014).<br>The LNG facility and administrative facility are being designed for a one in 2,475 seismic event; while the floating storage and offloading unit (FSO) is being designed for a one in 475 seismic event."<br>QUESTION: Why is the FSO designed for only a one in 475 seismic event?<br>12.3.3.4 Mitigation Measures<br>"Measures to avoid or minimize the potential effects of natural seismic events that will be incorporated into Project design ...<br>The design code for LNG facilities included in CSA Z276 does not dictate any direct action regarding tsunami hazard and risk assessment."<br>QUESTION: In the absence of 'action regarding tsunami hazard and risk assessment', can the CSA Z276 be adequate to base LNG facility design codes on? | Seismic Hazard | Thank you for the comment. The FSO jetty and mooring of the FSO is designed for the worst case (i.e. 1 in 2475). The FSO itself is governed by a lesser seismic criteria and the 1:100 year storm event as it is a floating structure.<br>The Project will be designed in accordance with CSAZ276, Liquefied Natural Gas Production, Storage and Handling, with respect to their specific requirements for seismic design of LNG plants.<br>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. | |

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| 1164(i) | March 22, 2015 | Leo Pedersen - Bowen Island, British Columbia | I am extremely concerned about the proposed LNG terminal and its affect on the environment, tourism, and ferry traffic. | Effects of the Project on the Environment, Tourism and Marine Traffic | Thank you for the comment.<br>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.<br>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.<br>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).<br>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.<br>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.<br>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.<br>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.<br>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. | |

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| 1164(ii) | March 22, 2015 | Leo Pedersen - Bowen Island, British Columbia | The sea water cooling has recently been rendered illigal on the California coast because of the extreme damage to sea life. Most of their plants have recently been converted to "Air Cooling". It is unacceptable to use this method in the confined waters of Howe Sound. | Seawater Cooling System | 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.<br>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.<br>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[10]. The EPA brought regulations into force in 2014 that cover facilities that withdraw more than two million gallons per day (315 $m^3$/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. 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.<br>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. | |

[10] 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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| 1165 | March 22, 2015 | Laurie Parkinson - Bowyer Island, British Columbia | Benthic Habitat<br>Sec 5.16.1.2<br>Pg 5.16-9<br>last paragraph<br>Potential effects of the Project include ingestion of many forms of marine life by seawater cooling system.<br>Please watch this video: http://www.gracelinks.org/212/power-plants-kill-fish-animation<br>I was told at the Gambier WF OH that seawater cooling systems are used all over the world. That's true. It's an old cheap environmentally damaging system that has been banned in Calif (retrofitting will take a while) and NY, and is out of favour in Europe.<br>You can see from the following link that very few new US power plants have been built with once through cooling systems since the mid 1980's. http://www.eia.gov/todayinenergy/detail.cfm?id=14971 Newer more environmentally friendly technologies are re-circulating cooling (cooling towers) and air cooled condensers (dry cooling).<br>So why is Woodfibre considering using this system and why would BCEAO let them? | Effects of the Project on Benthic Habitat | Thank you for the comment.<br>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.<br>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:<br>• air cooling<br>• evaporative cooling<br>• freshwater cooling from local streams<br>• seawater cooling from Howe Sound<br>Through this study, seawater cooling was chosen as the preferred cooling media. Seawater is one of the most abundant and efficient cooling mediums available[11]. 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.<br>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 section14 of the *Environmental Management Act*. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.<br>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.<br>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. | |

[11] Thomas C. and Burlingame R. n.d. Direct Seawater Cooling in LNG Liquefaction Plants. Available at: http://www.ivt.ntnu.no/ept/fag/tep4215/innhold/LNG%20Conferences/2007/fscommand/PO_36_Thomas_s.pdf.

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| 1166(i) | March 22, 2015 | Personal Information Withheld - Bowen Island, British Columbia | I am opposed to the LNG proposal for these reasons:<br>I am concerned about the impact on marine life, caused by the heating of sea water for the cooling system of the processing plant. It has been shown that slight increases in water temperature have dramatic, negative impacts on marine life, and so this is not acceptable. | Seawater Cooling System | Thank you for the comment.<br>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.<br>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 *Environmental Management Act*. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.<br>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.<br>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. | |

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| 1166(ii) | March 22, 2015 | Personal Information Withheld - Bowen Island, British Columbia | I am disturbed that this terminal and tanker operations will not comply with SIGTTO standards. There is a lot of marine traffic in the sound, and Squamish is exploring a passenger ferry route. The LNG project is not compatible with the level of boating, shipping and marine recreational activity in the sound. | Marine Traffic | Siting of the Woodfibre LNG facility complies in every way with the Society of International Gas Tanker & Terminal Operators Ltd's (SIGTTO) guidance as the location of the site is not within a narrow waterway as defined by SIGTTO and TERMPOL.<br>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 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 to be a narrow channel.<br>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.<br>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 Limited 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 metres 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 manoeuvers at very short notice.<br>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. | |

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| 1166(iii) | March 22, 2015 | Personal Information Withheld - Bowen Island, British Columbia | After a hundred years of industrial degradation, Howe Sound's recovery has shifted the local economy increasingly towards adventure, Eco and green tourism. The LNG project will provide few jobs relative to tourism, and yet will threaten the sound's economy. | Tourism | 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.<br>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.<br>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.<br>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. | |
| 1167 | March 22, 2015 | marg mcconnell - Bowen Island, British Columbia | Our waters are too vulnerable and fragile<br>NO. to wood fibre Lng | LNG Project | Thank you for your comment.<br>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.<br>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. | |

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| 1168 | March 22, 2015 | Laurie Parkinson - Bowyer Island, British Columbia | Marine Water Quailty<br>Sec 5.10.6.1<br>Uncertainty, Sensitivity, and Reliability<br>Pg 5.10-42 last paragraph<br>For mitigatin, it was assumed that no change results will be achieved. This indicates that no modelling was done to prove mitigation would be successful - it is merely hoped it would be.<br>What studies does Woodfibre plan do to to find out if mitigation would be successful? Please include references to substantiate reasoning. | Effects of the Project on Marine Water Quality | Thank you for the comment.<br>Environmental Monitoring Plans will be developed and implemented to confirm that the recommended mitigation measures are effective. See Section 5.10.6.2 Monitoring and Follow-up Programs: Monitoring will be comprised of two main components: operational (or compliance) monitoring and effects monitoring. Operational monitoring will occur during all phases of Project as a part of the environmental management plans. Operational monitoring will include monitoring of Project emissions, effluents, discharges and footprints, and assessment of the Proponent and contractor's environmental performance. Performance indicators and benchmarks will be developed to assess the Project environmental performance in accordance with the applicable permits. These will include, but will not be limited to treated process water and the seawater cooling system criteria (e.g., temperature, TSS, turbidity, pH).<br>The effects monitoring will include periodic studies consisting of studies of water and sediment quality, and benthic and pelagic communities. The monitoring plan will address parameters measured and analysed, and locations and frequency of measurements and sampling. The studies will be conducted at the Project study area (receiving environment) and reference area. The monitoring plan will establish timelines for each monitoring activity (e.g., five years for post-construction monitoring). Monitoring data will be assessed against Project specific guidelines and baseline (pre-Project) data. Project-specific guidelines for water quality will be developed based on accepted methodology (MOE 2001) using Canadian and BC water quality guidelines for the protection of aquatic life or background concentrations where they exceed the Canadian water quality guidelines or BC water quality guidelines as water quality benchmarks. | |
| 1169 | March 22, 2015 | alison king - Vancouver, British Columbia | 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.<br>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 | 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 and 46. | |

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| | | | communities along the shores of Howe Sound.<br>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards<br>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.<br>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.<br>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.<br>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.<br>Sources:<br>Mills et al (2009) Adverse cardiovascular effects of air pollution. Nature Clinical Practice Cardiovascular Medicine 6: 36-44 Shindell | | | |

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| | | | (2015) The social costs of atmospheric release. Climatic Change<br>4. SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility<br>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?<br>Source: B.C. Ministry of Energy and Mines<br>5. ECONOMY: The requested socio-economic study has not been provided<br>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?<br>6. CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable<br>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 | | | |

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| | | | and health impacts of air pollution in general.<br><br>7. GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues<br>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.<br>8. ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life<br>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.<br>9. ENVIRONMENT: Missing baseline studies<br>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.<br>10. 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<br>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 | | | |

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| | | | unsatisfactory.<br>11. ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?<br>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.<br>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).<br>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.<br>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 | | | |

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| | | | health issues such as lung or heart disease and asthma. | | | |
| 1170 | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | 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.<br>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.<br>Sources:<br>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<br>CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable<br>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.<br>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 | 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 # 11-13 and 16. | |

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| | | | high-danger zone, including: Bowen Island, Bowyer Island, Anvil Island, Passage Island, Porteau Cove, West Vancouver, and parts of the Sea to Sky highway.<br>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.<br>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards<br>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.<br>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. | | | |

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| 1171(i) | March 22, 2015 | Laurie Parkinson - Bowyer Island, British Columbia | Benthic Habitat<br>Sec 5.16.3.2.2<br>Sec 5.10 Marine Water Quality<br>"With mitigation measures in place, Project-related changes to marine water quality are unlikely to exceed water quality guidelines."<br>Based on what evidence, please?<br>Even if the fish buckets sort out the fish successfully, all the larvae of animals in the tide pools that are like little jelly fish will be killed. | Effects of the Project on Marine Water Quality | Thank you for the comment.<br>See Section 5.10.2.1.3 Evaluating Changes: The following documents are considered relevant to the marine water quality Intermediate Component: BC Water Quality Guidelines: 2006 Edition (MOE 2009), Canadian Environmental Quality Guidelines (CCME 2014), Best Management Practices for Pile Driving and Related Operations (DFO 2003), and Principles for Preparing Water Quality Objectives in BC (MOE 2001).<br>Section 5.10.6 Conclusions summarizes the findings of the effects assessment on Marine Water Quality:<br>• No Project-related changes in marine water quality beyond natural variability and exceeding water quality guidelines, including increase in levels of suspended sediments, turbidity and contaminants, due to increased site erosion, sediment transport, seabed disturbance, concrete works, pile removal, and other construction activities. Identified potential interactions will be mitigated by development and implementation of a CEMP and associated management plans, and environmental monitoring.<br>• No changes exceeding water quality guidelines due to increase in marine water temperature, residual chlorine, PAHs, metals, mercaptans, amines, and other contaminants of potential concern from seawater cooling system and treated process water discharge. This will be achieved through Project design that includes process water treatment, chlorine removal, and the diffuser design.<br>No changes in marine water quality due to remobilization of legacy contaminants from sediments (i.e., PAHs, metals, dioxins and furans) and increase of suspended sediment due to propeller wash during shipping operations (i.e., berthing for LNG transfer and shipping within Howe Sound). Jet velocities on the seafloor generated by Project vessels will be below the threshold velocity of motion of seafloor sediment. | |

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| 1171(ii) | March 22, 2015 | Laurie Parkinson - Bowyer Island, British Columbia | And for what benefit? Little tax $ to Squamish/BC/Canada the way all the layers of subsidies are set up, all profits go overseas to Singapore, and only 100 long term jobs - same # as Squamish Gondola | Project Benefits | 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):<br>CONSTRUCTION JOBS<br>• Create 650+ jobs each year of construction. • Create an additional 1,080+ jobs (indirect* and induced** employment) during the construction phase of the Project.<br>LONG-TERM OPERATION JOBS<br>• Create 100+ local jobs during operation.<br>• Create an additional 330+ local jobs (indirect* and induced**) during operation.<br>*Indirect impacts arise from changes in activity for suppliers.<br>**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.<br>• $83.7 MILLION: Estimated in tax revenue for all three levels of government during the construction phase of the Project.<br>• $86.5 MILLION: Estimated in tax revenue for all three levels of government per year of operation.<br>• $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<br>• $122.8 MILLION in GDP per year during operation<br>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. | |

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| 1172 | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | I have no interest in living with increased air pollution. I left Squamish back when the mill was running and the town smelt of wood pulp, and I plan to move my family out of the area should the wood fiber LNG plant go through. The few jobs and minimal taxes aren't enough to keep us here and the pollution and safety hazards are more than enough to have us leave<br>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.<br>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:<br>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 | 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 # 13. | |
| 1173 | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | 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.<br>If the herring are impacted, the dolphins, orcas, and humpbacks are also impacted as they no longer have a food supply. The impacts of increased water temperatures and the addition of chlorinated seawater will likely reverse the recent revival of marine life in Howe Sound, which is just now recovering from the toxic legacies of previous industries. This is unacceptable. | Marine Water Quality | 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. | |

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| 1174 | March 22, 2015 | Personal Information Withheld - Gambier, British Columbia | I am concerned about the rare glass sponge reef. If a tanker had to go of course for any reason including a potential collision with a recreational boater or any other unintended event, this reef is at risk. This reef needs to be protected. It is an important part of the ecosystem. | Glass Sponge Reef | 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. | |
| 1175 | March 22, 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. | LNG Industry | 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. | |
| 1176 | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | 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. | Water 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 # 18. | |
| 1177 | March 22, 2015 | sonja larsen - Vancouver, British Columbia | I am profoundly opposed to this project. The lack of scientific studies, the environmental and community impact, the health impact of air pollution, all of these are reasons this project is a bad idea. We relay on our government to protect us and our province. Do the right thing and turn down this project please! | LNG Project | Thank you for the comment. | |

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| 1178(i) | March 22, 2015 | Personal Information Withheld - British Columbia | I am completely against LNG as I believe that the safety of Howe Sound would be at jeopardy, as even a slight possibility of an industrial accident is too risky for all of us. | Safety | At Woodfibre LNG, safety is the number one priority.<br>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.<br>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.<br>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.<br>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.<br>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 | |

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| 1178(ii) | March 22, 2015 | Personal Information Withheld - British Columbia | Also, I am wholly opposed to liquid natural gas derived from fracked sources. | Hydraulic Fracturing | Woodfibre LNG acknowledges the expressed concern regarding hydraulic fracturing. Hydraulic fracturing activities are outside the EA scope of the Project.<br>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.<br>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.<br>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 & Gas Commission (OGC) regulates these extraction activities under the Oil & Gas Activities Act and related regulations. | |
| 1179(i) | March 22, 2015 | Jacqueline Voci - Vancouver, British Columbia | I am strongly against the Woodfibre LNG project. Howe Sound needs to be allowed to fully rehabilitate from past industrial damage. We are beginning to see encouraging signs of vitality, including orca sightings. I believe every public decision we make about the sound must support the continued health of marine life rather than putting it at risk.<br>I would like to see Howe Sound reserved for recreation and tourism, free of heavy industry. | Recreation<br>Tourism | Thank you for the comment.<br>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.<br>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.<br>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.<br>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. | |

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| 1179(ii) | March 22, 2015 | Jacqueline Voci - Vancouver, British Columbia | My primary concerns are:<br>The potential for damage to marine life caused by the water cooling system<br>The effects of the 5 chemicals (the names of which Woodfibre LNG hasn't disclosed) that will dechlorinate the water pumped out into Howe Sound | Seawater Cooling System | 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 *Environmental Management Act*. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.<br>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% as active chlorine. Prior to discharge, the seawater will pass through a de-aeration tank and, if required, a de-chlorination agent will be added to the water. Studies are currently underway regarding to determine the appropriate system, the optimal dosing, and the dosing regimen (i.e., continuous vs. shock treatment). The concentration of residual chlorine at the edge of the initial dilution zone will be below the Canadian Water Quality Guideline of 0.5µg/L (CCME n.d.). The concentration of residual chlorine within the initial dilution zone cannot be acutely toxic and therefore must be 0.02 mg/L or less.<br>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.<br>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. | |
| 1179(iii) | March 22, 2015 | Jacqueline Voci - Vancouver, British Columbia | The effects of LNG tankers on kayakers, swimmers, pleasure crafts and others who use Howe Sound for recreational and tourism purposes | Recreation | 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.<br>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.<br>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.<br>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. | |

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| 1179(iv) | March 22, 2015 | Jacqueline Voci - Vancouver, British Columbia | The risks associated with LNG tankers travelling a narrow route so close to heavily populated communities.<br>We are all fortunate to call this spectacular part of the world home. We share a moral obligation to protect the natural surroundings that make it so extraordinary. As a community, we've failed Howe Sound in the past. Let's right our wrongs. Let's protect it. Let's keep BC supernatural. | Safety | Siting of the Woodfibre LNG facility complies in every way with the Society of International Gas Tanker & Terminal Operators Ltd's (SIGTTO) guidance as the location of the site is not within a narrow waterway as defined by SIGTTO and TERMPOL.<br>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 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 to be a narrow channel.<br>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.<br>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 Limited 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 metres 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 manoeuvers at very short notice.<br>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. | |

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| 1180(i) | March 22, 2015 | John Rich - Bowen Island, British Columbia | I am strongly opposed to the Woodfibre LNG proposal.<br>I have resided on Bowen Island for over 40 years, and am a frequent recreational user of Howe sound.<br>There are many arguments, based on both economic and environmental considerations, against the export of LNG from British Columbia. These arguments are extremely persuasive. However, even if they are not accepted, the Woodfibre project should not proceed as it is simply in the wrong place.<br>Woodfibre is not a suitable place for an LNG export facility for both economic and environmental reasons.<br>As is now widely known, over the past few years the environmental recovery of Howe Sound, after years of industrial activities with their pollution, has been remarkable. The Woodfibre proposal would reverse that trend. Even without accidents of any sort, the project will involve, at a minimum, significant air pollution, effects on marine ecology as a result of cooling the product, and shoreline erosion from large ships. | Effects of the Project on the Environment | Thank you for the comment.<br>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.<br>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.<br>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).<br>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. | |
| 1180(ii) | March 22, 2015 | John Rich - Bowen Island, British Columbia | A clean environment is important for its own sake, but also for its economic value. This is particularly the case in Howe sound, which is effectively the natural backyard to a metro population of 2 million people, as well as a tourist destination for tens of thousands annually.The number of direct and indirect jobs in recreation and tourism, and the investment in residences, summer homes, boats and equipment has a huge economic benefit to the region and BC generally. This cannot easily coexist with industrial development. An LNG plant will diminish the views on which our tourism industry depends, and diminish the natural experience which is fundamental to most recreational activity in the area. | Tourism | 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.<br>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.<br>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.<br>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. | |

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| 1180(iii) | March 22, 2015 | John Rich - Bowen Island, British Columbia | Tanker traffic in the sound, given the necessary concerns with safety, will compromise recreational boating and kayaking. Tanker traffic is also bound to disrupt marine transport, including ferries, water taxis and private boats used to access the Howe Sound islands. | Marine Traffic | 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. | |
| 1180(iv) | March 22, 2015 | John Rich - Bowen Island, British Columbia | The existence of LNG tanker traffic is also likely to have a negative effect on property values. Even if there have not been accidents involving LNG tankers to date, there is no assurance there will not be accidents in the future. It's important to note that howe sound is narrow, and has frequent boat and ferry traffic. These circumstances preclude best safety practices. Even with low risk, an accident involving a ship collision would be catastrophic. There are hundreds of families on Bowen Island, mine included, who live in what elsewhere in the world would be classified as an exclusion zone when tankers are in transit.<br>From a personal perspective, the effect of Woodfibre LNG, if approved, will be substantial. My recreational activities on the water, which are frequent, year round, will be affected, as well as those of my extended family. Our property value will be diminished. Our safety will be compromised.<br>If a project like this has any benefit at all, which I doubt, it should be situated elsewhere, not so close to so many people with so many conflicting activities - not in anyone's back yard. | Effects of the Project on Real Estate<br>Safety<br>Recreation | 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.<br>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.<br>International Gas Tanker & 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).<br>*Narrow channel/waterway*<br>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.<br>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.<br>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.<br>*LNG Carriers & Howe Sound Shipping Channel / Route*<br>• An LNG carrier needs a 180-metre (one way) wide channel for transit and 600 metre wide channel for turning with tugs.<br>• Howe Sound at its narrowest along the shipping route is 1400 metres, or 4593 feet.<br>• 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.<br>*Additional Information*<br>Subject to the recommendations of Transport Canada's TERMPOL | |

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| | | | | | 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 metres 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.<br>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. | |
| 1181 | March 22, 2015 | Personal Information Withheld - Garibaldi Highlands, British Columbia | All of the concerns raised by the group "My Sea to Sky" are my concerns. They simply can not be ignored. If this project goes ahead they have in fact been ignored and this process is redundant. Please read below.<br>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.<br>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.<br>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards<br>2. ENVIRONMENT: The once-through seawater cooling system proposed by Woodfibre LNG is | 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 and 46. | |

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| | | | 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.<br>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.<br>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.<br>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.<br>Sources:<br>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<br>4. SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility | | | |

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| | | | 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?<br>Source: B.C. Ministry of Energy and Mines<br>5. ECONOMY: The requested socio-economic study has not been provided<br>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?<br>6. CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable<br>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.<br>7. GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond | | | |

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| | | | to issues<br>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.<br>8. ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life<br>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.<br>9. ENVIRONMENT: Missing baseline studies<br>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.<br>10. 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<br>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.<br>10. ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?<br>Woodfibre LNG is estimating air pollution emissions of 295.7 tonnes of nitrogen dioxide | | | |

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| | | | (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.<br>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).<br>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.<br>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. | | | |
| 1182 | March 22, 2015 | Personal Information Withheld - Vancouver, | Woodfibre LNG has secured the water license to extract water from Mill Creek, which flows through | Effects of the Project on Fish and Fish Habitat | Thank you for the comment. For a response to this comment, please refer to the "*Woodfibre LNG Limited May 2015 Memo to Frequently* | |

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| | | British Columbia | 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.<br>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.<br>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.<br>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?<br>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. | | *Asked Questions*", comment # 7, 12, 18, 19. | |
| 1183(i) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | March 22, 2015<br>BC Environmental Assessment Office<br>836 Yates St | Tourism Industry | Thank you for the comment.<br>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 | |

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| | | | P.O. Box 9426<br>Victoria, BC<br>V8W 9V1<br>Woodfibre LNG: Environmental and Socioeconomic Concerns<br>To Whom It May Concern;<br>A fortuitous bus stop, one winter evening in Brackendale, 17 years ago altered the entire course of my life. I had just completed 4 months traveling in New Zealand and was out of funds on an unplanned 2 week stop-over in BC on route home to Ontario. A poster for the Squamish Hostel was hanging inside the bus stop and when I called the toll free line, a friendly voice answered making me feel instantly welcome. Before I knew it, I had made arrangements to get dropped off at the hostel. When the sun came up the next morning, and I laid eyes on Squamish for the first time, it was love at first sight. I found the spectacular snow-capped peaks towering above town truly breathtaking and the majestic beauty of the Chief truly awesome.<br>A two week stop-over turned into two months. I continued traveling on and off for another 6 years, comparing everywhere to Squamish, and 17 years later I have yet to find another community that offers the diversity of outdoor recreation, aesthetic beauty, safety, social amenities and diverse, educated, progressive open mindedness that is found in this unique oasis. Seventeen years ago I embarked on a journey that meant leaving my family, friends and job in Ontario to abandon everything I once knew so that I could totally surrender myself to Squamish, the place that I wholeheartedly love.<br>Initially, I found myself spending time with the local birding community and was introduced to the beautiful cacophony of birdsong around town and particularly in the Squamish Estuary. Recently, I attended the BCRPA spring training conference where 2 guest speakers spoke animatedly about their attempts at estuary restoration and the vital importance of their preservation. They explained that "estuaries are basically marine gardens and one of the most productive ecosystems on earth". They went on to say that "only 3% of our coastline is estuary while estuaries are responsible for 80% of all wildlife on the coast" and "are critical for osmoregulation of juvenile salmonids, act as a habitat bank and of course provide feeding opportunities for birds".<br>This is because estuaries are semi-enclosed mixing areas for tidal, rain, fresh water, sediments and tidal nutrients. At the time that I first began enjoying the beauty of the estuary and listening to the lovely array of bird songs, while the experts around me identified their calls and took count, I had no idea that this lovely area would become part of my daily walkabouts, a paddle boarding | | 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.<br>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.<br>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.<br>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. | |

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| | | | sanctuary for me and would later be jeopardized by industry.<br>After moving to Squamish, I became a passionate hiker and rock climber which also evolved to include an equally passionate affair with sailing. I love climbing or hiking to the top of the Chief, taking the new gondola, sitting on a peak or enjoying a beer on the new deck overlooking Howe Sound and the mountains beyond. Since Woodfibre closed down, the town no longer smells on an inflow and there is no longer smoke billowing up over the Sound. It's truly beautiful. I also spent several years working as a horseback trail guide and loved guiding eager tourists along the rivers by horseback, sharing the beauty that nature has to offer and giving them a unique vantage point to witness the salmon, eagles and black bears that they have come from all around the world to witness first hand.<br>As for sailing, I bought a Columbia 30 sailboat 11 years ago and moved aboard as this was the most affordable way to learn to sail. Since having purchased the boat, I have lived aboard on and off for approximately 4 years interspersed with time on land as I have since purchased a lovely little duplex in Dentville after selling my townhome in Valleycliffe. The high cost of living in Squamish often necessitates taking on roommates to help with paying the bills and boat life provides a much needed sanctuary. Frankly, even if I won the lottery, I would still choose to spend my summers staying on the water! I love waking up to the sound of the otters playfully banging on the bottom of the hull.<br>It's still such a novelty to me to open the hatch and watch the otters run laps down the dock before they leap playfully back into the water to tease my dog by banging on the hull again. There is nothing more serene than being surrounded by porpoises and/or dolphins (sorry I'm not sure which) while boating in Howe Sound. To watch them swim, within arms' reach, on their side at the bow of the boat so that they can make eye contact with you with such a seemingly intelligent eye for several boat lengths at a time before swimming off to display their amazing acrobatics in the water and then return to swim at the bow once more. Unfortunately I was away at school doing an apprenticeship when the whales and dolphins visited Howe Sound last year but apparently my boat was surrounded by them, and I would dearly have loved to have shared that experience. I can only hope that if we don't disturb their habitat, they will return again.<br>As for roommates, fortunately, it is rarely difficult for home owners to find tenants as people come to Squamish from all around the globe for the world class rock climbing, mountain biking, sailing, fly-fishing, skiing and most recently kite and wind | | | |

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| | | | surfing that Squamish has to offer. Many of my friends and peers rely on rental income from seasonal outdoor recreationists in order to offset the high cost of housing. Tourists coming to participate in activities like kite surfing tend to be more willing and able, to afford rent. In the event that any unforeseen accident should occur and jeopardize our water based, and other outdoor recreational activities, many people in this community would be at a very high risk of losing their homes and businesses.<br>This is due to the fact that many home owners rely on extra revenue generated by renting out rooms in their homes to outdoor enthusiasts and many businesses in this community cater solely to recreational pursuits or indulge their post activity libations. | | | |
| 1183(ii) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | While I have been told that the proposed Woodfibre LNG will be state of the art, and I don't doubt that it will be, the fact remains that accidents do happen and it only takes one accident to destroy habitat and a community. One has only to google the history of accidents in the LNG industry to discover several accidents that have taken place around the world between 1944 and 2005. According to the Timor-Leste Institute for Development Monitoring and Analysis, some of these incidents include a leak into the sewer systems of Cleveland, Ohio in 1944 resulting in the deaths of 128 people. In 1964, during loading operations lightning struck the forward vent riser of the Methane Progress and ignited vapor which was being routinely vented through the ship's venting system. A similar incident occurred in 1965 while a vessel was at sea.<br>In both those cases, the flames were quickly extinguished. In 2004 a pipeline transporting natural gas from Belgium to France exploded resulting in 23 known fatalities. Another incident occurred in Algeria in 2004 when a steam boiler that was part of an LNG production plant exploded, triggering a second, more massive vapor-cloud explosion and fire. The explosion and fire destroyed a portion of the LNG plant and caused 27 deaths, 74 injuries and material damage outside the plant. In 2005, a 28 inch LNG underground pipeline exploded in Nigeria and the resulting fire engulfed an estimated 27 square kilometers."<br>While I understand that Woodfibre LNG will likely be one of the most advanced plants of its' kind and the risk of an accident occurring is low, it is not entirely preventable. The fact remains that people make mistakes and unforeseen mechanical failure, extreme climate and geological events can occur. | Safety | At Woodfibre LNG, safety is the number one priority.<br>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.<br>Section 11.0 Accidents and Malfunctions of the Application assesses the effects of potential accidents and malfunctions for the Project. No high or very high risks were identified, and thresholds established by the Oil and Gas Commission (OGC) and other regulatory bodies are not exceeded for any events.<br>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.<br>Please also refer to Public Safety information sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments. | |
| 1183(iii) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | From an aesthetic perspective, Woodfibre LNG will dramatically alter the breathtaking beauty of Howe Sound from both the marine and aerial perspective. At the very least, if the plant is approved, I hope that an extensive green roof | Visual Amenity | 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.<br>Woodfibre LNG is designing the facility to reduce the size of the | |

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| | | | system will be utilized to help reduce the visual impact of the structure as well as reduce hydro consumption and offset carbon emissions. I recently completed a red seal landscape horticulture apprenticeship at Kwantlen Polytechnic University in Langley and have attached a copy of one of my assignments on green roofs to this letter in the hope that you will further review and consider an extensive green roof for this facility in the event that Woodfibre LNG is approved. | | disturbed area and to blend it into the environment as much as possible.<br>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:<br>• reducing the level of contrast of buildings by using external surface finishing that has low glare and natural colours<br>• monitoring and maintaining natural screening to ensure minimal visibility of infrastructure<br>• providing additional screening of land-based infrastructure through temporary or permanent plantings where possible and safe to do so<br>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. | |
| 1183(iv) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | More concerning, to me, than Woodfibre LNG is the source of fuel and practices involved in obtaining the fuel to service the plant. While the plant itself may end up being comparatively benign, I am extremely concerned by every aspect of the fracking process. At a time when desertification is actively occurring in some communities, water conservation should be at the forefront of politician's minds. Justifying water usage in fracking by stating that "Metro Vancouver residents flush 4 times as much fresh water down their toilets as our gas industry uses in a year" is unacceptable. Two wrongs don't make a right! Home owners have just as much responsibility as corporations and government to reduce their consumption, waste and emissions and should be addressed in the appropriate venue as well. | Hydraulic Fracturing | Woodfibre LNG acknowledges the expressed concern regarding hydraulic fracturing. Hydraulic fracturing activities are outside the EA scope of the Project.<br>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.<br>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.<br>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 & Gas Commission (OGC) regulates these extraction activities under the Oil & Gas Activities Act and related regulations. | |

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| 1183(v) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | Canada is quickly losing the respect of other Nation's and, embarrassingly, getting a reputation for having "the worst climate policy in the developed world". It is irresponsible given the irrefutable evidence of climate change, desertification and the link between fracking and earthquakes to continue this process. This is not just about "saying No" to Woodfibre LNG in Squamish, this is about Canadian citizens "saying No" to non-sustainable environmental practices and policies everywhere period.<br>Having said that, I am not opposed to low-impact, sustainable industry whether it is developing solar roadways, harnessing tidal energy or Australia's Carnege Perth Wave Energy Project that uses the motion of the ocean to generate zero emission electricity while desalinating water. | Climate Change | 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[12].<br>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. | |
| 1183(vi) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | Thank you for taking the time to read my letter and considering my feedback. I apologize for its' length, however it is difficult to reduce such an important issue to one page. I greatly appreciate the transparency of this process and the opportunity residents have been given to provide constructive feedback, and most of all for our feedback to have been taken into consideration. I also recognize why this location has been considered for Woodfibre LNG. The site has been utilized by industry in the past and some of the infrastructure is already in place. I have been in contact with members of Woodfibre LNG and greatly appreciated their receptivity and genuine consideration of my suggestion to install an extensive green roof system in the event that the plant is approved. I have also felt very conflicted in this process, as I have very dear friends that have been and/or are currently employed by Woodfibre LNG.<br>However, despite the fact that it may mean higher taxes, less jobs, more roommates and the potential necessity of moving out of my home for months at a time in order to rent out my room in order to pay for the increased taxes, I can't help but think about the porpoise swimming on its side at the bow of my boat, gazing up at me with silent, inquisitive, intelligence or to think about the serenity of paddle boarding through the estuary while listening to the sound of the birds singing to know that at the end of the day it doesn't matter how many jobs that Woodfibre LNG (or any non-sustainable corporation anywhere) provides or how much money they are willing to invest into a community. At the end of the day you can't eat, drink, breathe or swim in money. There will come a time when government comes to this realization as well and I sincerely hope, for all of our sakes, that it isn't too late. | LNG Project | This comment is noted. | |

[12] Centre for Liquefied Natural Gas. http://www.lngfacts.org/resources/CLNG-PACE_Study_one-pager.pdf.

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| 1184 | March 22, 2015 | Michael hart - Whistler, British Columbia | Why is there such a rush to export all the natural gas? From what I have found there is under 100 years at the current extraction rate of natural gas in bc. We need to be thinking ahead for future generations and stop being so greedy. | LNG Industry | 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%[13].<br>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[14]. China's energy demand increases by 5% annually[15]. 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)[16]. | |
| 1185(i) | March 22, 2015 | Peter Williamson - Bowen Island, British Columbia | Dear Sir or Madam,<br>I would like just express my concerns about the Woodfibre LNG project proposed for Howe Sound.<br>1. Howe Sound is a fjord of high scenic value with excellent opportunities for recreation and tourism. The Sea to Sky Highway passes along the Sound and is a primary tourist route in British Columbia. Being located so close to Vancouver and leading to Whistler, one of the provinces premier tourist destinations, the Sea to Sky Highway attracts a large number of tourists and has very important role in British Columbia's tourist industry. The tourist industry is one of the world's fast-growing industries with tremendous opportunities for the long-term. As scenic landscapes such as Howe Sound are encroached on by industry and human settlement, they are degraded and devalued. The aesthetics and value of a landscape may seem intangible, but landscapes such as Howe Sound have a very real economic value (difficult as it may be to quantify), as well as far less tangible but more important spiritual, emotional and ecological value.<br>2. The cumulative impact of industrialization on a landscape can be very real and detrimental to aesthetics, and to the tourism and recreation industries.<br>3. The fact that the less tangible value of the Howe Sound ecology and landscape may be impossible to quantify, should make us more cautious rather than less when it comes to considering the impact of scenic eyesores such as the proposed LNG terminal facility, docking facilities and ships, as well as navigation aids, flare stacks, Hydro corridors, and so on. I am also concerned about the aesthetics of light and noise pollution, and the general loss of amenity for both the people of Howe Sound and the many visitors to the area. | Intrinsic Value of Howe Sound | Thank you for the comment.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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.<br>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:<br>• reducing the level of contrast of buildings by using external surface finishing that has low glare and natural colours<br>• monitoring and maintaining natural screening to ensure minimal visibility of infrastructure<br>• providing additional screening of land-based infrastructure through temporary or permanent plantings where possible and safe to do so<br>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. | |

13 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>
14 ICIS. China Natural Gas Annual Report <http://www.icis.com/energy/channel-info-about/china-natural-gas-annual-report/>
15 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>
16 National Development and Reform Commission. 2014. Social Development and National Economics Statistics Bulletin 2011 – 2013.

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| 1185(ii) | March 22, 2015 | Peter Williamson - Bowen Island, British Columbia | 4. There is also very likely to be unpleasant odour from emissions and flaring off, and also air pollution in Howe Sound, and adverse health effects resulting, and of this having negative impact on tourism and recreation. | Smell/Odour | There is no odour associated with LNG facilities. The odour associated with natural gas is an additive called mercaptan, which is a safety feature to warn of potential leaks in homes and businesses. The additive is removed from the natural gas before it is liquefied, and does not produce odours at LNG facilities.<br>Section 9.2.2 Human Health Risk Assessment included an assessment of the potential effects on humans by Project-related emissions. The Application concluded that there were no Project-related significant adverse effects.<br>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.<br>Please also refer to the Air Quality Information Sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments. | |
| 1185(iii) | March 22, 2015 | Peter Williamson - Bowen Island, British Columbia | 5. Howe Sound is currently undergoing a well-documented ecological recovery. This is tremendously good news in itself, not to mention it being good news for the tourism and recreational fishing industries. It is also a source of delight for the people of Howe Sound and its many visitors to see the beginnings of a recovery of the herring population, the salmon runs, the gradual return of dolphins, seals, orcas and whales. All of these very welcome developments are put at risk by the various aspects of this project. | Effects of the Project on the Environment | 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.<br>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.<br>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).<br>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. | |

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| 1185(iv) | March 22, 2015 | Peter Williamson - Bowen Island, British Columbia | 6. I am greatly concerned about thermal pollution from warm water being pumped into Howe Sound, as well as the use of chlorine in water used for cooling. I'm concerned that the impact of this process on the marine ecology has not been adequately studied and is not well understood.<br>7. It has been proposed that, if water is to be used for cooling at the LNG liquefaction facility, then electrical energy should be generated through heat exchange and this energy be used on-site, or put back into the grid. I have not seen this addressed anywhere and wonder why such an obvious and environmentally responsible measure has not been seriously considered. | Seawater Cooling System | 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.<br>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.<br>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 *Environmental Management Act*. Woodfibre LNG Limited is legally required to comply with all requirements as outlined in the permit.<br>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.<br>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.<br>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. | |

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| 1185(v) | March 22, 2015 | Peter Williamson - Bowen Island, British Columbia | 8. I recognize that the shipping of LNG has a good safety record. This is in no small part due to the widespread and rigorous adoption of the SIGTTO standards regulating the shipping of LNG, and the siting and operation of LNG terminals. Placing an LNG facility at the proposed site would contravene a number of SIGTTO guidelines. One of these cautions against siting terminals in long narrow inlets. A second concern is where the terminal is placed on the trajectory of passing marine traffic. This would be the case at Woodfibre, as the course of vessels en route to Squamish would point towards the terminal and the storage ships. The loss of power or steering, by a ship, at a critical moment, could quite possibly result in a collision between such a ship and one of the LNG storage vessels or a visiting LNG carrier.<br>9. Siting the terminal in the proposed location poses unnecessary and unreasonable danger to the local populations near Woodfibre and along Howe Sound as vessels approach the terminal and exit again, fully loaded with LNG.<br>10. Applying accepted safety standards for LNG shipping operations would unreasonably impact ferry traffic, recreational shipping, fishing and commercial marine transportation.<br>11. This project appears to be incompatible with SIGTTO's internationally accepted safety standards, and it is clear that locating a terminal in Howe Sound would be irresponsible, environmentally damaging and place local populations at unreasonable risk.<br>12. One likely cause of a catastrophic accident would be a collision of an LNG tanker with another vessel, the consequent rupture of one or more LNG tanks and ingress from the sea. This would result in rapid phase transition as the LNG vapourises and "violent non-flammable shocks". SIGTTO states that "Such experimentally derived data as does exist suggests such shocks could be energetic enough to threaten the integrity of adjacent structures." This means they could threaten the integrity of the ship, rupture adjacent LNG tanks or those of adjacent storage ships.<br>13. SIGTTO is careful not to speculate on what such a disaster might ultimately entail. Testing such scenarios is not practically possible. The risk of a catastrophic accident involving an LNG tanker, while seemingly small, is not insignificant. The scale of a worst-case scenario accident has never been addressed and those who have raised concerns about such matters have been dismissed as scare-mongers. Realistic consideration of worst-case scenarios must be taken into account. | Safety | Siting of the Woodfibre LNG facility complies in every way with the Society of International Gas Tanker & Terminal Operators Ltd's (SIGTTO) guidance as the location of the site is not within a narrow waterway as defined by SIGTTO and TERMPOL.<br>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 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 to be a narrow channel.<br>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.<br>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 Limited 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 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 manoeuvers at very short notice.<br>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.<br>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.<br>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.<br>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 | |

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| | | | 14. SIGTTO states in its publication titled LNG Operations in Port Areas, "it is clear, their inherently robust constructions notwithstanding, that LNG tankers are vulnerable to penetration by collisions with heavy displacement ships at all but the most moderate of speeds. Such incidents ought to be treated as credible within any port where heavy displacement ships share an operating environment with LNG tankers."<br>15. mThe Port of Squamish has heavy displacement ships visiting with great regularity. LNG tankers would be sharing an "operating environment" with these ships.<br>16. The operating environment is also not unproblematic. Howe Sound is prone to Arctic outflow winds, heavy rain, snow and fog. Such conditions increase the risk of an accident involving an LNG or storage vessel in a narrow inlet already used by large commercial ships, ferries and other vessels. | | 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 | |
| 1185(vi) | March 22, 2015 | Peter Williamson - Bowen Island, British Columbia | 17. A second possible cause of a catastrophic incident with an LNG tanker is a terrorist attack. The Prime Minister has recently said that "jihadists" have declared war on Canada. If this is not merely rhetoric to justify draconian legislation, then we must take the prospect of an attack on an LNG tanker as a possibility that warrants serious consideration. With the Sea to Sky Highway high above the water, along the edge of the narrow Sound, there could hardly be a more convenient place for terrorists to shoot at a tanker, should they so wish.<br>18. Should any emergency occur, access to affected areas and egress from affected areas would be difficult. The Sea to Sky Highway is the only road along the east side of Howe Sound. There is no road along the west side of Howe Sound, and places for launching a vessel or for disembarking from a vessel, are very limited because of the deep waters and steep sides of the fjord. An emergency that closed the Sea to Sky Highway would make access to, and egress from, affected areas extremely difficult. | Terrorism | 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 http://www.tc.gc.ca/eng/marinesecurity/menu.htm)<br>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.<br>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.<br>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.<br>Please also refer to the Public Safety Information Sheet that has been prepared as part of the Woodfibre LNG Limited response to public comments. | |

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| 1186(i) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | I am opposed to the LNG plant at Woodfibre.<br>Only in the last few years has Howe Sound begun to recover from the ill- effects of an undustrial past. We are seeing life return to Howe Sound in the form of dolphins, orcas, and herring. We have done our bit with the intrusive industrial sector that we had with the Woodfibre Pulp Mill and the Britannia Beach Mine. We hope to turn to a new path, now, with light industry and companies that will not bring harm to our beautiful land and seascape.<br>I do not want to see our beautiful area compromised by the Woodfibre LNG plant. | Industrial Legacy | Thank you for the comment.<br>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.<br>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.<br>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).<br>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. | |
| 1186(ii) | March 22, 2015 | Personal Information Withheld - Squamish, British Columbia | I am also opposed to the Fortis pipeline coming right through Squamish and through the estuary.<br>Thank you. | Pipeline | 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 website for more information: http://a100.gov.bc.ca/appsdata/epic/html/deploy/epic_document_406_38521.html | |

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| 1187(i) | March 22, 2015 | Matthew Wood - Squamish, British Columbia | The environment is my primary concern, both for residents and native wildlife. | Effects of the Project on the Environment | Thank you for your comment.<br>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.<br>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. | |
| 1187(ii) | March 22, 2015 | Matthew Wood - Squamish, British Columbia | When woodfibre initially closed, it was a sorely needed breath of fresh air for Squamish. The site is predominantly upwind and I fear for the respiratory health of my newborn daughter and every other young family that has chosen to make Squamish the place to raise their children. | Effects of the Project on Health | 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.<br>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 *Environmental Management Act*,<br>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.<br>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.<br>Please also refer to the Air Quality information sheet that | |

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| 1187(iii) | March 22, 2015 | Matthew Wood - Squamish, British Columbia | We don't need another industrial eyesore and potential environmental disaster on our horizon. | Visual Amenity | 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.<br>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.<br>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:<br>• reducing the level of contrast of buildings by using external surface finishing that has low glare and natural colours<br>• monitoring and maintaining natural screening to ensure minimal visibility of infrastructure<br>• providing additional screening of land-based infrastructure through temporary or permanent plantings where possible and safe to do so<br>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.<br>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. | |

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| 1188 | March 22, 2015 | Personal Information Withheld - Vancouver, British Columbia | To: EAO<br>I feel mostly heartsick at the need to submit these comments as a strong show of my opposition to the proposed Woodfibre LNG Project. How is it even possible that such opposition needs to be voiced? How did this project ever get this far?<br>BC is the most resource-rich province in Canada, in fact, one of the most resource-rich regions in the world. To risk, at any level, the environment of such a natural wonder, for any reason, staggers the mind. Why?<br>Please, please uphold the integrity of your office and garner the trust and respect of BC residents. This project is unnecessary to BC's economy, and risks so much, as outlined below.<br>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.<br>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.<br>Source: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards<br>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 | 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 and 46. | |

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| | | | marine life such as juvenile salmon, herring, and plankton which are the building blocks for all other life in Howe Sound.<br>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.<br>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.<br>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.<br>Sources:<br>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<br>4. SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility<br>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, | | | |

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| | | | 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?<br>Source: B.C. Ministry of Energy and Mines<br>5. ECONOMY: The requested socio-economic study has not been provided<br>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?<br>6. CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable<br>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.<br>7. GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues<br>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 | | | |

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| | | | Megantic rail disaster and the Mt Polley tailing pond spill.<br>8. ENVIRONMENT: Removal of water from Mill Creek unsustainable for fish life<br>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.<br>9. ENVIRONMENT: Missing baseline studies<br>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.<br>10. 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<br>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.<br>11. ENVIRONMENT: Will there be smog? Will there be a smell? Will there be noise?<br>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. | | | |

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| | | | 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).<br>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.<br>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. | | | |
| 1189 | March 22, 2015 | Fenner - Lions Bay, British Columbia | Please do not allow this. I grew up here and want my kids to be able to do the same and for them to live in a healthy environment. | LNG Industry | Thank you for the comment. | |

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| 1190 | March 23, 2015 | Personal Information Withheld - Bowen Island, British Columbia | Re: Proposed Woodfibre LNG Project ("WFLNG")<br>We are residents of Bowen Island and have a number of concerns and questions with regard to the above project.<br>Our concerns are :<br>The effect of air, light, sound and water pollution from WFLNG on the marine life in Howe Sound. Howe Sound has finally been coming back to life after years as being used as a dumping ground for the various industries around the Sound. The introduction of the WFLNG plant will destroy much of the marine life. Other jurisdictions have banned this type of cooling process because of its deleterious effects; why would we allow the use of this process in such a sensitive area?<br>The use of a seawater cooling system that will require millions of gallons of water to be chlorinated and heated by 10 C, and the potential to turn the northern part of Howe Sound into a marine desert as a result.<br>The effect of the tanker traffic on the increasing recreational and tourism business in Howe Sound, and how any economic benefits from the WFLNG project will be offset by even greater losses in the tourism industry in this area.<br>The effect of the tanker traffic on small boat recreational use in Howe Sound and the resulting loss to the tourism industry.<br>The effect of the tanker traffic on ferry schedules as a result of the exclusion zones and the huge disruption this will cause to residents and visitors alike.<br>Shoreline effects of swells from the accompanying tugs and one enormous LNG tanker are a concern for boaters and small craft, as well as those along the shoreline<br>The potential for an accident, collision or terrorism with a tanker. However miniscule the chances of such an accident, any resulting explosion will be catastrophic to the human population in this area. It is alarming that there is even consideration for this within such a densely populated/tourist zone not to mention narrow Sound. No LNG manufacturing or transport should be allowed that does not have at least a 10 km variance between it and a populated zone. There are no guarantees. How do we justify the potential for human loss with a need for corporate profit?<br>Our questions are:<br>With respect to a potential breach and personal safety: Do you provide all population within the 1.6 km - 2 km with gas masks, special shelters, emergency sirens? How many do you provide per a given area? Will test drills be implemented for public knowledge and preparedness? There are many families with young children in this area - | 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 # 22-38. | |

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| | | | how much reaction time will exist to take emergency measures from the time of a breach?<br>With respect to the heating and chlorination of sea water, what will WFLNG do to apply best practices to cool and de-chlorinate this water when returning it to the ocean to minimize the environmental damage? What alternative approaches to cooling have been considered and discarded by WFLNG, and why?<br>How long will LNG or natural gas be stored in the floating storage and offloading units at WFLNG? Will the government limit the storage of LNG at any given time in order to minimize the chance of explosion?<br>What are the conditions that will be placed on the WFLNG with respect to flaring off gas from the storage unit and from any stationary tankers?<br>Will the EAO insist, as a condition of permitting this facility, that WFLNG apply best practices with respect to using alternative practices to gas venting and flaring to ensure a reduction of the resulting air pollution in the Howe Sound area?<br>How will the communities around the Sound be protected from unwanted air and light pollution from WFLNG?<br>How will CO2 emissions from the WFLNG be measured and monitored?<br>What experience does this company, Woodfibre LNG, have with building and operating an LNG plant?<br>How many tugs will be present as these tankers move through Howe Sound and how often will they be travelling through Howe Sound?<br>Please provide details of the recreational traffic in Howe Sound – ferries, sailboats, power boats, tour boats, kayaks, etc. – and how the presence of these large tankers with the necessary exclusion zones around them will affect this traffic. Please ensure these studies are done when there is summer traffic in Howe Sound.<br>Please provide information on how an explosion, however remote, of an LNG tanker will affect the population that lives in Howe Sound (see federal government decision to refuse LNG tanker traffic on the east coast of Canada).<br>When will WFLNG complete the TERMPOL review, the Minister of Transportation's recommendations on LNG shipping for Howe Sound? If after the EA review, this is unacceptable and this must form part of the review prior to the issuance of any EA certificate.<br>Who will be reimbursing residents for the loss of property value due to the proposed LNG plant, potential risk factors to the ocean, environment, our health and safety plus the visibility of 30 unsightly/dangerous cargo tankers per month now | | | |

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| | | | traveling past our picturesque island properties?<br>The scope of the assessment for this project, according to sections 11 and 13, is to consider "the potential adverse environmental, economic, social, heritage and health effects of the proposed Project, including cumulative effects and practical means to avoid, minimize or otherwise manage any such potential adverse effects."<br>In my opinion, an analysis of the information to date requires a recommendation of non-approval to the Minister. I ask the EAO to uphold the clear mandate it is given under the Environmental Assessment Act and to recommend rejection of this project. The "potential adverse effects" are of such significance that mitigation measures are not the answer. Outright rejection is the only answer. Furthermore, as this review is being done as a substitute process for any Canadian environmental assessment, the clear language in section 5 of the Canadian Environmental Assessment Act requires consideration of fish and fish habitat, aquatic species and migratory birds, all of which will suffer serious negative effects if this project is allowed to proceed. | | | |
| 1191 | March 23, 2015 | Denee Austin - Smithers B.C., British Columbia | I am oppose to all LNG activities in canada, or any industry like them. they are bad for our friends in the sea, and the forest. and need to be stopped immediately. | LNG Industry | Thank you for the comment. | |
| 1192 | March 23, 2015 | Personal Information Withheld - Squamish, British Columbia | I do not want this plant built. I cannot say that I am for this and still have the ability to look my children in the eye. The gas for this plant will come from fracking which has time and again been proven to be unsafe. It isn't regulated properly as most of the oil and gas isn't. We have an opportunity here to tell the BC government that deserve better!! Let's put our faith and money behind industry and technology that support environmental sustainably!! NO TO LNG!!! | LNG Industry | Woodfibre LNG acknowledges the expressed concern regarding hydraulic fracturing. Hydraulic fracturing activities are outside the EA scope of the Project.<br>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.<br>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.<br>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 & Gas Commission (OGC) regulates these extraction activities under the Oil & Gas Activities Act and related regulations.<br>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 | |

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| | | | | | plant with natural gas fueled power generation for one year equates to taking 557,000 cars off the roads over the same time period[17]. | |
| 1193 | March 23, 2015 | Personal Information Withheld - Langdale, British Columbia | NO LNG | LNG Project | Thank you for the comment. | |
| 1194 | March 23, 2015 | Personal Information Withheld - Bowen Island , British Columbia | The B.C. Environmental Assessment Office PO Box 9426 Stn Prov Govt Victoria, BC V8W 9V1<br>Re: Application by Woodfibre LNG for processing and export facility in Howe Sound<br>Dear Sirs/Madam,<br>Even though this request might fall outside the application of Woodfibre LNG for the construction and operation of a processing and export facility in the Howe Sound, it is fundamental to the larger question of curbing emissions to combat global warming, which British Columbia has committed itself to, and since the project 'BC LNG' is sold by the BC Government to the citizens of British Columbia, with the claim that LNG is a clean source of energy and that exports will-off set CO2 emissions from coal in Asia to combat global warming, the burden of prove for the claim is on the claimant.<br>I therefore request, in the understanding, that the prognoses is that the overtime most of the methane to be exported will come from fracking operations in northern BC; that more studies are being undertaken concerning methane leaking from well-heads, pipes and processing facilities; that methane is a more potent global warming gas than CO2, that great amounts of electricity will be needed for compressor stations and cooling down methane from gas to liquid; that great amounts of heavy diesel will be used to ship the liguid methane gas to Asia; that the construction of any infrastructure from the fracking operations all the way down to the export facility, added the construction of any hydro infrastructure to power these facilities, added the waste water treatment systems needed to treat waste water from the fracking operations, added construction of LNG tankers, added the construction LNG processing and distribution facilities and network in Asia, will cre ate methane and CO2 emissions, that Woodfibre LNG, the BC Environmental Assessment Office and BC Minister of Environment will provide the citizens of B.C. with an independent study that provides insight into how the Life Cycle Analysis' of BC LNG for export to Asia compares to coal used in Asian power plants for electricity generation.<br>Respecting that you will take this matter seriously, I | GHG Emissions<br>Hydraulic Fracturing | Woodfibre LNG acknowledges the expressed concern regarding hydraulic fracturing. Hydraulic fracturing activities are outside the EA scope of the Project.<br>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.<br>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.<br>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 & Gas Commission (OGC) regulates these extraction activities under the Oil & Gas Activities Act and related regulations.<br>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[18].<br>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. | |

[17] Centre for Liquefied Natural Gas. http://www.lngfacts.org/resources/CLNG-PACE_Study_one-pager.pdf.

[18] Centre for Liquefied Natural Gas. http://www.lngfacts.org/resources/CLNG-PACE_Study_one-pager.pdf.

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| | | | am looking forward this study. | | | |

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| 1195 | March 23, 2015 | Christine - Sunshine Coast, British Columbia | I am concerned about the environmental impacts that would occur if an LNG tanker had a spill in coastal waterways. | Accidents and Malfunctions | Thank you for the comment.<br>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.<br>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.<br>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. | |
| 1196(i) | March 23, 2015 | Personal Information Withheld - Vancouver, British Columbia | this Region is just getting back to get better after Aluminium Factory and it is close to the Heart of One of the oldest rain forests in the world. a tanker is a high risk in such a narrow passage. | Shipping Route | Thank you for the comment.<br>Siting of the Woodfibre LNG facility complies in every way with the Society of International Gas Tanker & Terminal Operators Ltd's (SIGTTO) guidance as the location of the site is not within a narrow waterway as defined by SIGTTO and TERMPOL.<br>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$^{th}$ 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 to be a narrow channel.<br>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.<br>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 Limited 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 metres on either side of the vessel and up to | |

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| | | | | | 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 manoeuvers at very short notice.<br>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. | |
| 1196(ii) | March 23, 2015 | Personal Information Withheld - Vancouver, British Columbia | it also is a famous tourist attraction, especially with the relatively new sea to sky gondola. and the tankers would be right across the sound right in the middle of the view. "green" Canada would directly show they're massive, dangerous EXPORTS of natural resources which are definitely not green nor renewable. | Tourism | 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.<br>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.<br>For example, Section 7.5 Visual Quality of the Application includes an assessment of the potential effects of the Project on the viewscape, including from the Sea-to-Sky Gondola. Woodfibre LNG has consulted directly with representatives of the Sea-to-Sky Gondola to address concerns associated with that viewscape and to consider potential mitigation measures.<br>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.<br>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. | |

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| 1197(i) | March 23, 2015 | Janine MacLeod - Roberts Creek, British Columbia | I have several serious concerns with the proposed Woodfibre LNG Project.<br>First, the risks associated with LNG tanker traffic in Howe Sound are absolutely unacceptable. The Sound is narrow and densely populated; an accident could be deadly. The proposed project puts the lives of my parents and many good friends 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 waterway s 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.<br>Sources: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards | 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. | |

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| 1197(ii) | March 23, 2015 | Janine MacLeod - Roberts Creek, British Columbia | Second, the projected impacts of the Woodfibre project on the Howe Sound marine ecosystem would be significant. I have watched the Sound recovering from the damage inflicted by previous industrial projects with great hope and optimism - the recent return of herring, as well as sightings of dolphins and orcas in Howe Sound make me feel like a good future may be possible. 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 (= 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 t he 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.<br>Moreover, 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.<br>Sources: http://news.nationalgeographic.com/news/2013/10/131018-glass-sponge-reef-canada-ocean-science/, http://jordansturdymla.ca/bcltv_videos/mla-sturdy-halkett-bays-glass-sponges/<br>There are also problems with the proponent's proposal to abstract water from Mill Creek for their operations. The Department of Fisheries and Oceans has objected to the proposal: the proposed abstraction 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. | Effects of the Project on marine Life | For a response to this comment, please refer to the "*Woodfibre LNG Limited May 2015 Memo to Frequently Asked Questions*", comment # 12, 18 and 45. | |

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| 1197(iii) | March 23, 2015 | Janine MacLeod - Roberts Creek, British Columbia | My third objection to the project relates to its contribution to runaway global climate change. 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. From a climate perspective, shale gas is one of the dirtiest fossil fuels on the market. Approval for the Woodfibre LNG plant would thus tie this region firmly to an absolutely outdated and inappropriate industry.<br>Sources: Robert W. Howarth · Renee Santo ro · 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 | Hydraulic Fracturing | Woodfibre LNG acknowledges the expressed concern regarding hydraulic fracturing. Hydraulic fracturing activities are outside the EA scope of the Project.<br>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.<br>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.<br>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 & Gas Commission (OGC) regulates these extraction activities under the Oil & Gas Activities Act and related regulations. | |

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| 1197(iv) | March 23, 2015 | Janine MacLeod - Roberts Creek, British Columbia | Furthermore, the plant itself would generate significant greenhouse gas emissions. Woodfibre LNG's own estimates predict greenhouse gas emissions of 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.<br>In this forum - the official Environmental Assessment process - legitimacy seems to hinge on the maintenance of a dispassionate tone and on the primacy of facts and statistics. There are good reasons for this. However, technical language can itself become dangerous where it conceals the lived experiences associated with the decisions under consideration. Given the very deadly implications of climate change around the world - from massive droughts to violent storms to devastating floods and the collapse of food systems - the expansion of the LNG industry in BC is undoubtedly a form of mass murder, however much its impacts are deferred in time and space. We know that the greenhouse gas emissions associated with the plant itself, with the extraction of shale gas, and with its combustion when it reaches its eventual destination will exacerbate conditions of insecurity and suffering caused climate change. For this reason alone, the Woodfibre LNG proposal should be rejected outright. There is a great deal of work to do to build a just transition away from fossil fuels. Proposals like this are a waste of precious time and should be treated accordingly. | GHG Emissions | 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[19].<br>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. | |

[19] Centre for Liquefied Natural Gas. http://www.lngfacts.org/resources/CLNG-PACE_Study_one-pager.pdf.

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| 1198 | March 23, 2015 | Eoin Finn - Bower Island, British Columbia | UNSUITABILITY OF THE WOODFIBRE SITE:<br>The Woodfibre site is not a safe location for a hazardous LNG facility.<br>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).<br>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?<br>The attached map shows the fault lines at the site .<br>* Source: B.C. Ministry of Energy and Mines, 2015 | Seismic Hazard | 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. | |
| 1199 | March 23, 2015 | Personal Information Withheld - Bowen Island, British Columbia | 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 guid eline 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.<br>Sources: Sandia Report, 2004 and SIGTTO LNG Terminal Siting Standards<br>ENVIRONMENT: The once-through seawater cooling system proposed by Woodfibre LNG is outdated Woodfibre LNG is proposing an outdated | 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 and 45-46. | |

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| | | | 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 le gacies of previous industries. This is unacceptable.<br>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. 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<br>SITE SUITABILITY: The Woodfibre site is not a safe location for a hazardous LNG facility<br>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 | | | |

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| | | | (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?<br>Sources: http ://www.cbc.ca/news/multimedia/every-fault-line-in-british-columbia-1.2919420<br>Bornhold, B.D., 1983, Fiords, GEOS, no. 1, p 1-4<br>B.C. Ministry of Energy and Mines<br>ECONOMY: The requested socio-economic study has not been provided<br>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?<br>CLIMATE CHANGE: 142 thousand tonnes of greenhouse gas emissions is unacceptable<br>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.<br>GOVERNMENT REGULATION: Inability of government to monitor, enforce, and respond to issues<br>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 | | | |

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| | | | several examples of accidents with resulting environmental destruction in recent years, including the Lac Megantic rail disaster and the Mt Polley tailing pond spill.<br>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.<br>ENVIRONMENT: Missing baseline studies<br>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.<br>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<br>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.<br>ENVIRONMENT: 9000 year old glass sponge reefs endangered by tanker traffic<br>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.<br>Sources:<br>http://news.nationalgeographic.com/news/2013/10/ | | | |

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| | | | 131018-glass-sponge-reef-canada-ocean-science/ , http://jordansturdymla.ca/bcltv_videos/mla-sturdy-halkett-bays-glass-sponges/<br>ENVIRONMENT: Will there be smog? Will there be a smell?<br>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, 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 increas ed 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 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.<br>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. Emissio ns 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. | | | |

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| 1200 | March 23, 2015 | Personal Information Withheld - Halfmoon bay , British Columbia | If they pay a fair income tax, and hire canadian s . Go for it.<br>How about giving me a job . I am electrician/ millwright . Working back on the sunshine coast , 35 years in mining. | Benefits of Project | Thank you, this comment is noted. | |