



Woodfibre LNG Project at **SWIYAT**

Shipping

Comments from Squamish Nation Members

There is a lot of commercial and recreational boat activity in Howe Sound	Howe Sound can have very high winds. Plans around ship traffic needs to take that into account
Will exclusion zones effect activities such as sailing, windsurfing, kayaking, etc? Will Howe Sound be closed to other users?	The shipping schedule of LNG vessels needs to be clear in order to prevent accidents
LNG ship traffic should not interrupt canoe travel and training or ritual work	Ship-to-ship transfers during high winds may not be safe
Is Howe Sound too narrow and/or shallow for LNG ships?	The wake from LNG vessels may have a negative effect on marine resources. This needs to be examined
Will any anchorage spots be near Kwum Kwum?	What is the size of LNG ships? How much and what depth of water do they need?

Some Facts

- LNG Ships:
 - are double-hulled and designed specifically to handle LNG at its -162 °C temperature;
 - have more than six feet of space between the inner and outer hulls and the cargo tanks;
 - are equipped with state of the art radar, leak detection, and emergency shutdown technology;
 - are heavily regulated by international and federal standards;
 - have never been involved in an accident resulting in a loss of containment at sea; and
 - have been shipping LNG for 60-years and have taken 70,000+ voyages
- LNG will never mix with water. If exposed to air or water, LNG will quickly return to a gas state, and because methane is lighter than air, the gas will rise and dissipate into the air



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Safety

How it Works

- Once natural gas is converted to liquid at the WLNG terminal, it will be stored in an LNG floating storage and offloading unit (FSO). The FSO will be comprised of two decommissioned LNG carriers that have been retrofitted for this specific purpose
- 3-4 times a month, an LNG carrier will arrive at WLNG and load LNG. About 24 hours after arriving, it will head out of Howe Sound to the Pacific Ocean on its way overseas
- LNG Ships at Woodfibre LNG (WLNG):
 - will travel along existing shipping lanes in Howe Sound at a speed of 8-10 knots 3-4 times every month;
 - will be escorted by at least three tug boats and piloted by two BC Coast pilots who have at least 10 years of experience commanding a vessel in the area; and
 - will be powered by natural gas, not diesel
- Howe Sound is 1,400m wide at its narrowest point, and 5,200m at the Woodfibre site. International standards require a turning radius for LNG ships, and between 180m and 225m for one-way traffic (315m for 2-way traffic)
- It is estimated that the wake generated by the LNG carriers in normal conditions would be less than 10 centimetres high (when measured 50 metres from the carrier). This is lower than the wind-generated waves that are typical in Howe Sound
- No regulation requires an exclusion zone around LNG carriers in Canada. All WLNG ships will need to use the Certified Marine Access route; exceptions will be allowed only under exceptional circumstances, and must be reported within 72 hours

More Project Details

- A marine Control Zone of 450-550 metres from shore will be established, and only Project-related traffic will be permitted.
- WLNG must develop, for approval by Squamish Nation, an Access Management Plan that includes marine access.
- WLNG must develop, in consultation with Aboriginal groups, a communications protocol related to marine transportation.
- WLNG must develop and implement a program to verify and monitor wake assessments and impacts to marine users.
- Automatic-mooring-line monitoring will be used at the WLNG terminal – this means that emergency shut-down of the entire system can happen either onshore or from the terminal



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Squamish Nation EA Certification Process

- ☑ WLNG must provide access to Squamish Nation members to practice Aboriginal Rights in the surrounding area
- ☑ WLNG cannot allow transfer of any bunker fuel to LNG tankers anywhere in Squamish waters
- ☑ WLNG must conduct noise monitoring studies on marine mammals that includes mitigation measures.
- ☑ The facility can be used for LNG purposes only. No oil or diluted bitumen can be transported through the terminal
- ☑ WLNG will provide funding for Marine Use Plan to manage cumulative impacts of Industrial projects in Howe Sound