

## Skeena Estuary & Industrial Development

Skeena estuary is the most important ecologic, socio-cultural, and economic zone on the BC north coast. The estuary is the second largest in BC, after the Fraser, and has seen relatively little development, other than in Prince Rupert harbour, the salmon fishing and canning industry, localized pollution from the Watson Island pulp mill, Ridley Island coal and grain terminals, and diking along the CN Rail and Highway 16 corridor.

Proposed industrial development by Port of Prince Rupert includes expansion of facilities associated with the shipment of bulk commodities such as grain, coal, potash, wood pellets, raw logs, containers, liquid natural gas (LNG), and supporting industry. Of major concern is the adverse environmental effects related to increased marine traffic, straightening and infilling of the foreshore, and conversion of very high value intertidal and sub-tidal habitats, particularly eelgrass meadows.

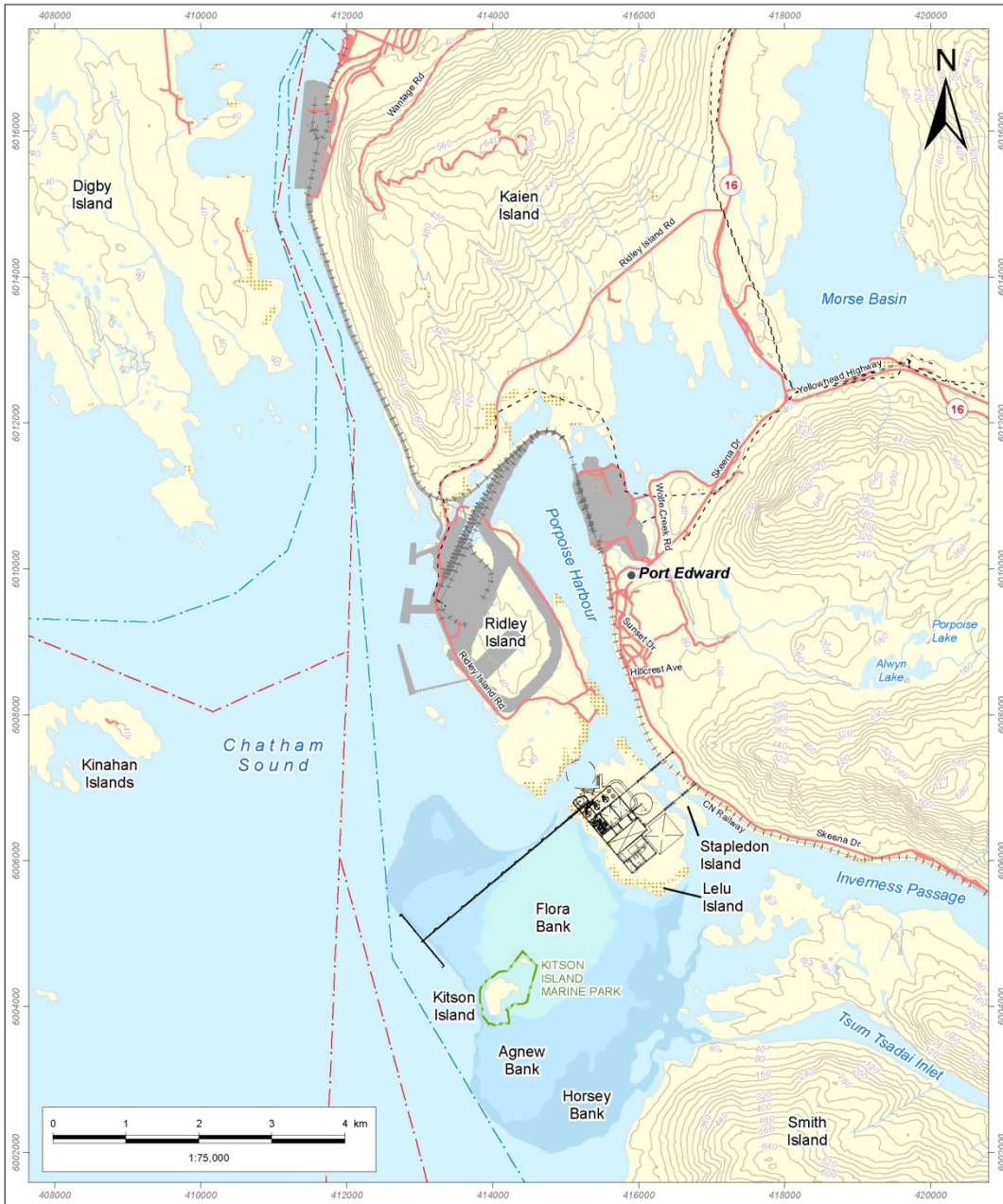
Two large-scale LNG plants are proposed: BG LNG located on the southern extremity of Ridley Island and Pacific Northwest LNG (PNW LNG) located on Lelu Island, within the Skeena River estuary.

This past spring, the federal government, through its omnibus budget bill C-38, introduced an entirely new, and diminished, environmental assessment law for Canada: the Canadian Environmental Assessment Act 2012 (CEAA 2012). Of major significance are the new limits on what projects— and what potential impacts – would be reviewed, as well as the limits on public participation and opportunities for consultation. **Because of these changes, the proposed PNW LNG is of immediate concern. The deadline for public comment to CEAA as to whether or not this project ought to undergo an Environmental Assessment under CEAA is **March 11, 2013.****

The majority of Lelu Island is proposed to be converted to LNG plant and facilities. Proposed ancillary development includes:

- Thermal electric power plant burning natural gas to produce 700 MW power;
- Pipeline delivering 3 Bcfd natural gas from north of Ft St John;
- Physical disturbance of more than 2 ha of foreshore and submerged land;
- Marine terminal with a 2.7 km-long elevated causeway to berthing docks positioned in the north western portion of Flora Bank;
- Bunkering facilities;
- Access roads and bridges.

It is crucial that the Skeena estuary be developed (if at all) in a precautionary manner that conserves its high biological values.



<ul style="list-style-type: none"> <li>● City or Town</li> <li>— Contour (m)</li> <li>- - - Electrical Power Transmission Line</li> <li>- - - Ferry Connection Segment</li> <li>— Project Component</li> <li>+++ Railway</li> <li>— River or Stream</li> <li>— Road</li> </ul>		<ul style="list-style-type: none"> <li>— Shipping Route</li> <li>▨ Archaeological Site</li> <li>▭ Protected Area</li> <li>Waterbody</li> <li>Shoals</li> <li>Agnew Bank</li> <li>Flora Bank</li> <li>Horsey Bank</li> </ul>	
<p><b>Pacific Northwest LNG</b></p> <p><b>Project Plot Plan and Surrounding Area</b></p>			
<p>Sources: Government of British Columbia; Government of Canada, Natural Resources Canada, Centre for Topographic Information, Canadian Hydrological Service (CHS), 1995.</p> <p><i>Although there is no reason to believe that there are any errors associated with the data used to generate this product or in the product itself, users of these data</i></p>			
<p>DATE: 16-JAN-13</p> <p>FIGURE ID: 123110537-003</p> <p>DRAWN BY: K. POLL</p>		<p>PROJECTION: UTM - ZONE 9</p> <p>DATUM: NAD 83</p> <p>CHECKED BY: A. POMEROY</p>	
<p>PREPARED BY:</p> <p><b>Stantec</b></p>		<p>PREPARED FOR:</p> <p><b>PROGRESS ENERGY CANADA LTD</b></p>	
		<p>FIGURE NO:</p> <p style="font-size: 24pt; font-weight: bold; text-align: center;">5</p>	

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## Biological and Physiological Significance of Skeena Estuary



The Skeena estuary contracts and expands seasonally and diurnally due to the range of Skeena River flows, tides, winds, Coriolis effect, and vertical and horizontal mixing of salt and freshwater.

The estuary extends from the Kwinitsa–Kasiks area through the mouth of the Skeena flaring to Pitt Island in the south and to Dundas Island in the north. Figure 1 delineates with red lines the estuary at a typical snowmelt flood; the upriver red line across the Skeena indicates the general limit of salt water inflow. In the northern portion, Skeena River water mixes with waters of the Nass River and Portland Canal tributaries to form a mega-estuary.

The estuary has distinct zones occupied by organisms with the ability to tolerate salt concentrations, river flow, tidal change, and varying sediment levels. The inner estuary extends from the Kwinitsa–Kasiks area to the mouth a few km downstream from Port Essington. This inner estuary is a post-glacial uplifted fjord with extensive deposits of sand and finer sediments.

The mid-estuary is composed of the islands that shape the 30 km discontinuous delta front, which extends from Gibson Is to Ridley Island. This area includes Lelu Is, Flora Bank, Inverness Passage, Smith Is, DeHorsey Is, Marcus Passage, Kennedy Is, and Telegraph Passage. The grate of islands channels the sediment plume in various directions, creating complex sediment deposition zones. During spring snowmelt freshet and fall precipitation events, Skeena flows are very turbid and the suspended sediment is deposited along the inner estuary or in the various channels that connect with Chatham Sound. Along the delta front, there is a sharp transition from sandy, channel sediment to muddy, deeper marine sediment.

The outer estuary is characterized by a gradient of increasing surface salinity in Chatham Sound, which passes into Dixon Entrance and Hecate Strait. Chatham Sound is the main recipient of Skeena River water; however, roughly one-quarter flows through Ogden Channel. Flows from the Nass River and Portland Canal tributaries can frequently prevent Skeena River flows from moving north of Tugwell Is.

The Skeena estuary and its roughly 2,500 ha of wetlands is a biological powerhouse because it provides a diversity of food sources and habitats that support large populations of fish and wildlife in a concentrated area, and plays a critical role in carbon sequestration –

known as “Blue Carbon”. All Skeena salmon, many species of foraging fish, and approximately 80% of coastal wildlife are dependent on estuaries for some portion of their life cycle. All Skeena salmon spend part of their life in the estuary, and therefore depend on its health as juveniles and returning adults.

Of particular interest in Skeena estuary are intertidal and sub-tidal eelgrass beds and meadows, complex habitats that are considered both critical and sensitive habitats. Eelgrass is important in estuarine food webs in several ways including its primary productivity, its micro and macro-invertebrate faunas, and its shelter for extensive juvenile salmon populations making the area a vital fish rearing locale. Similar to terrestrial forests, these marine gardens capture and store great amounts of carbon. Skeena eelgrass ecosystems have the highest possible priority for estuarine conservation, restoration, and enhancement.



Flora Bank, located between Lelu and Kitson Islands is recognized as one of the largest eelgrass beds in BC and supports 50 to 60% of the total Skeena estuary eelgrass. Mapping of Flora Bank eelgrass over the last 15 years shows the extent has neither diminished nor increased and the status is considered steady. We have an incomplete understanding of the Flora Bank eelgrass ecosystem, including its ecological functions and vulnerability to human activities and climate change. Unfortunately, estuarine habitats are among the most rapidly disappearing ecosystems on earth. It would be tragic for fish, wildlife, and ecosystem services like carbon sequestration, if the Skeena estuary and keystone habitats such as eelgrass beds are not conserved and maintained.

Kitson Island, Kitson Islet, and adjacent waters (100 m buffer) are a BC provincial marine park through a lease agreement with the Port of Prince Rupert. The park was established in 1993 and its conservation purposes include:

- Protecting salmon habitat;
- Protecting important waterfowl habitat;
- Protecting areas of high importance for humpback whales (concentrated annual use each spring) and harbour porpoises;
- Protecting areas of moderate importance for northern resident killer whales and Dall’s porpoises.

All of these protected area values will be at high risk due to adverse air emissions, alteration of physical habitat, contaminants, and noise pollution.

Currently, management of Lelu Island and Flora Bank is directed by the federal Port of Prince Rupert and its 2020 Land Use Management Plan, which is considered development-centric. The area is located within Tsimshian traditional territory. Skeena estuary does have a more ecologically informed estuary management plan that is common to other important estuaries in BC. Estuary management plans are useful tools for implementing more sustainable development, protecting fish and wildlife, and maintain carbon sequestration. An example of a comprehensive approach to estuary planning for the Fraser River can be found here: [http://www.bieapfrempp.org/main\\_frempp.html](http://www.bieapfrempp.org/main_frempp.html).

A regional environmental study, as defined by CEAA 2012 is needed to assess the multiple LNG pipelines proposed to cross terrestrial and marine ecosystems in northwest BC and for the LNG plants proposed for Kitimat and Prince Rupert estuaries. A regional study employs an ecosystem-based approach to address regional and policy issues that are beyond the scope of project assessments or regulatory decisions. **Please request a regional study** that investigates all proposed energy development in northwest BC.

If you're interested in further information, visit CEAA website to download project description and executive summary.

<http://www.ceaa-acee.gc.ca/050/document-eng.cfm?document=86025>

To provide a comment to CEAA:

[mailto:GNLPacificNorthwestLNG@ceaa-acee.gc.ca?subject=Pacific\\_Northwest\\_LNG\\_project](mailto:GNLPacificNorthwestLNG@ceaa-acee.gc.ca?subject=Pacific_Northwest_LNG_project)

Please consider weighing in on this urgent matter

