HEMMERA

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DATE:	**May 4, 2009**
TO:	**NaiKun Wind Development Inc**
FROM:	**Hemmera – Graham Seagel**
RE:	**Response to Comments on Marine Physical Methods; NaiKun EA Application Screening**

The following is in response to comments provided to NaiKun from Rescan, on behalf of the Council of the Haida Nation, during the Screening of the Application for and Environmental Assessment Certificate for the NaiKun Offshore Wind Energy Project.

Comment From Rescan

1. 3.6.1 Physical Hypotheses p28 and p29 of TOR document: Hypothesis #1 through # 6 Changes to the wave climate and changes to sediment transport regimes during construction, operation and decommissioning. Of these hypotheses, it is the effects during operation (hypotheses #2 and #5) that would have the most significant effects (due at least to duration) on wave climate and sediment transport. These hypotheses must be tested with site specific modelling supported by wave, current and preferably sediment transport measurements for calibration if wind inputs are used. The question of the degree of modification of the local wind regime which will be affected by the turbines, needs also to be addressed and, if significant, the model wind fields should be refined.

Comment From Rescan*:*

Data Review and Collection (5.3 p48) has not been rigorously undertaken as far as I can tell. I could not find references to the extensive work done by DFO and MEDS (Marine Environmental Data Service) on wave data collection, wind driven and tidal circulation. In particular I did not find an explanation of the sediment dynamics which formed and maintain Rose Spit, that is nourishment of the beaches by littoral transport of sediment. There will be some effect on the littoral transport due to installation of the turbine towers, the question to be addressed is the magnitude of the effect.

Response from Hemmera on behalf on NaiKun:

NaiKun retained RPS Energy who have worldwide expertise offshore wind farms projects to review all available literature, and metocean data and information available on Dogfish Banks seafloor. As well as experts in the regional geology were retained (i.e. Heiner Josenhans). This review has been documented and there are citations to these reviews in the Application (Volume 3).

The sediment dynamics at Rose-Spit are very well documented (including Barrie and Conway 1996. Geological Society of London Special Publication, Evolution of Nearshore and Coastal Macrotidal Sand Transport Queen

Charlotte Islands Canada; v.117,p. 233-427) and this literature was reviewed and reflected in Volume 3 and the effects assessments in Volume 1, section 6. It is evident that the sediment dynamics at Rose Spit and the wind farm area are very different. Rose Spit is located North of 54 degrees 10 minutes latitude whereas the wind farm northern limit is 54 degrees latitude; a separation of at least 20km between the wind farm structures and Rose Spit. These are different geomorphic areas when it comes to coastal interaction and sediment supply. The wind farm is on the bank top and is offshore in an area dominated by longshore transport and does not interact with the coastline. Rose Spit and its adjacent offshore submarine extension is at the confluence of Hecate Strait and Dixon Entrance and is intimately related to the longshore coastal processes, specifically coastal erosion. This spit is at the northern end of Dogfish Bank where water depth increases from less than 10-15m to great than >100m.

A discussion of the sediment dynamics is provided in Volume 3, sections 3.4 and 3.5.

NaiKun have acknowledged that there will be a local effect of the foundations and towers on local wind, waves and sediment transports near the towers. However, this effect on sediment transport is not expected to extend from one turbine tower to another nor from the wind farm to the shoreline of Graham Island.

The assessment in Section 5 identifies that there will be local effects on wind and wave around turbine foundations but that these effects are not expected to extend from one turbine foundation to another, nor from the wind farm to the shoreline. This assessment is based on experience at other offshore wind farms, and the geomorphic processes well documented for Dogfish Banks.

The degree to which the shoreline of Graham Island will be affected is addressed in the assessment. This assessment is based on a strong literature specific to Dogfish Banks that indicates that sediment on which the shoreline features of Graham Island depend is a product of longshore transport and not transport of sediment from the wind farm area to the shoreline. Evidence collected (and reported in the Application) by NaiKun is consistent with this view.

Consideration has been given to using wind and wave data that NaiKun would collect as part of the operational monitoring of the wind farm at turbines and the offshore converter station for the purpose of assessing long term trends in physical processes on Dogfish Banks, with particular reference to the effects of climate change on this important coastal feature. This consideration would be consistent with the commitment by NaiKun to adaptive management and collaboration with other stakeholders in the area. Indeed the significant data base that will accumulate for winds and waves would afford a unique opportunity for researchers, stakeholders and NaiKun to advance the basis for multi-stakeholder management of the area. This consideration has not been advanced at this time because consultation on the aspect with stakeholders has not occurred and commitments cannot be made without such consultation.

NaiKun would welcome input that would further their understanding of the effect of the project on the littoral transport due to installation of the turbine towers.