

3rd Party Review of the NaiKun Offshore Wind Energy Project Environmental Assessment Application

Executive Summary

Version A.1
(Project #1021-001)

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Prepared For:

Council of the Haida Nation
Haida Gwaii

Prepared By:



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1.0 INTRODUCTION

The Council of Haida Nation (**CHN**) retained Rescan Environmental Services Ltd. (**Rescan**) to undertake a 3rd Party review of the proposed marine windfarm plan as put forth by NaiKun Wind Development Inc. (**Naikun**). When we initiated this Project in March 2009 we were dealing with Version 1 of the Application (dated March, 2009). In May Rescan was provided with Version 2 of the Application (dated May, 2009).

The process lasted approximately 7 months and involved the following steps:

1. Rescan specialists reviewed sections of the Application for an Environmental Assessment Certificate, as identified as “high priority” by the CHN.
2. Rescan comments were provided to Naikun (represented by Hemmera and their respective specialists and sub-consultants) for their review and comment.
3. A final round of discussion between the paired specialists ensued (i.e., in a series of conference calls) and the results/comments were then prepared by Rescan.
4. In some disciplines, a closing review was conducted by the CHN and additional comments/edits provided and added to the final comments.

The disciplines covered, as directed by the CHN included (based on the chapter titles provided by Naikun in the Application):

- Marine Wind and Wave Environment
- Marine Physical Environment
- Marine Aquatic Ecology
- Marine Mammals
- Marine Birds
- Terrestrial Ecology
- Archaeology
- First Nations Issues
- Socio-Economics
- Visual Assessment

As this is an Executive Summary, only the most significant issues are provided herein.

2.0 MARINE WIND AND WAVE ENVIRONMENT

No major issues.

3.0 MARINE PHYSICAL

Modelling Shore-line Impacts

Installation and operation of the wind farm will change the dynamics on the east coast of Graham Island (e.g., Rose Spit) to some degree in terms of sediment movement and resulting deposition and/or erosion. The question to be addressed is the magnitude of the effect. The degree to which the shoreline of Graham Island will be affected is addressed in the assessment, but is partially based on research conducted on wind farms in Europe that is then extrapolated to Haida Gwaii. Rescan's expert (Dr. Paul Griesman) recommends that a sediment transport model should be used to predict changes to sediment transport, deposition and shoreline erosion and accretion rates. The focus should be on both the shoreline and the immediate area of the wind farm. Although major impacts on Rose Spit are not anticipated, modelling is required (as has been done in most European jurisdictions) to indicate expectations of change.

Naikun has committed to pursuing such analyses; eg. after the environmental certificate has been issued (which is anticipated in late 2009).

Cable Burial

There are concerns that the buried power cables could become exposed (eg. creating a potential hazard for crab pots) in view of the fact that the upper layer of sediment is highly mobile; and therefore referred to as "dunes". However, the plan is to bury cable below the mobile layer. This will ensure that as dunes move, cables or foundations will not become unburied.

4.0 MARINE AQUATIC ECOLOGY

Magnetic Fields

There is concern that the magnetic field generated by the buried cables will have an impact on marine life, in particular, small benthic invertebrates (animals that live on the sea bottom – eg. shellfish). However, with the paired cables the electro-magnetic forces are largely offset as the positive balances out the negative. It is likely there will be negligible negative effects from either magnetic fields generated by the cables or from a potentially very small increase in temperature in the immediate area of the cables.

Community Changes

Colonization of the piles by invertebrates will take place throughout the water column. The length of the submerged portion of the towers will get covered in mussels, barnacles, etc. In turn, this will attract crabs and other predators, likely including diving birds. In effect, placement of 110 towers will create 110 new micro-climates where new life will take hold on a small scale, regardless of whether or not scour protection is provided.

Release of Copper

A small amount of copper (est 2.6 kg) of copper per WTG (tower) may be discharged into the water as a result of erosion or wear of the copper components. Containment methods on the turbines will be reviewed and detailed as part of the **EMP (Environmental Management Plan)**. Further, pre-construction ambient water and sediment baseline copper levels will be measured and serve as a baseline (as copper is likely "naturally" occurring in the water at low levels).

Introduced Species

If any ships from outside of North America are bringing equipment to the Project site, they should dump ballast water outside of Canadian waters. NaiKun and all contractors and suppliers will be required by NaiKun to comply with the Federal Government Ballast Water Control and Management Regulations. As part of the EMP suppliers will be notified of relevant regulations in this regard.

5.0 MARINE MAMMALS

Behavioural Response of Marine Mammals to Noise and Physical Barriers

There are no existing projects that are similar in extent and location that can be used as a reference point in the north Pacific; therefore, we do not know the effects of noise and physical barriers on marine mammals at such a large scale (30 - 60 sq. km). The biological significance of any observed behavioural response is difficult to assess - whether there are effects of survival and reproductive success is unknown. Observation of how certain species have responded to other high noise activities does provide some insight into the threshold for behavioral responses and can guide monitoring and mitigation programs to reduce potential behavioral changes that could result in population level effects. In summary, efforts will be made to keep all marine mammals as far away as possible from the site, particularly during the construction phase when risks are greater.

Direct Injury and Mortality - Effect of Pile Driving Noise on Marine Mammals

Because of the uncertainty of the effects of pile driving sound on marine mammals, trained marine mammal observers, “**soft starts**” (starting the pile driving process slowly so that the sound levels generated slowly build up, eg. over a few minutes, to full volume as maximum energy is exerted) and sound insulation devices (such as bubble curtains) during pile driving and construction must be implemented to reduce impacts. Visual monitoring of the safety zone will also be carefully implemented to ensure that marine mammals are not within this zone. Where marine mammals do enter the zone, immediate action will take place to shut down equipment and/or move the marine mammal out of the zone in an appropriate manner.

Timing of Construction and Impacts on Marine Mammals

Construction (pile driving, foundation installation, converter station, as well as all of the associated vessel and aerial traffic) is scheduled to occur between April and October. This timing overlaps with whale migration through the area, as well as calving and pupping periods. However, the gray whale migration is expected to be highly coastal and is not expected to occur within the project area. Construction activities such as pile driving will only occur during daylight hours, leaving hours of darkness largely unsonified (ie. no sound is generated). There are no known cetacean (whale) calving areas in the project area and information does not indicate that the area is a particular focus for cetacean species (for feeding or breeding). Pinnipeds (“*fin-footed mammals*”, eg. *seals or sea lions*) will be pupping at known rookeries on the island and in-air transmission of sound is not expected to cause significant disturbance. All reasonable measures will be put in place to protect cetaceans and pinnipeds from harm, particularly the birthing mothers and new-born calves/pups.

6.0 MARINE BIRDS

Potential Toxicity from Anti-foulants

An important point we don't seem to know yet is whether anti-foulants will be used on the submerged portion of the towers. If used they could lead to toxicity, but then there will be few animals anticipated on the towers. If anti-foulants are not used the towers will get heavily populated with invertebrates and will require intermittent cleaning by the operators. Appropriate monitoring and mitigation needs to be designed and deployed for whichever option is selected. Note that a case could be made to try both approaches on a comparative basis for a defined period.

Noise Effects on Marine Birds

Bird/mammal observers will document bird distribution and abundance in the vicinity of piling operations before, during and after pile driving. The effectiveness of soft starts in dispersing birds will be assessed during the early stages of piling. Soft starts are recognized as a best practice (particularly in regard to marine mammals). Present mitigation plans call for no piling operations (or cessation of piling) under certain conditions involving the presence of threatened species of diving birds in the vicinity.

Risk of Oil Spills/Toxic Compound Release

A comprehensive program of spill prevention, containment, and cleanup will be in place at all times to protect marine birds and other marine life in the event of a spill.

7.0 TERRESTRIAL ECOLOGY

Terrestrial Ecology was not, at this time, identified as a high priority item in Haida Gwaii (eg. as the point of landing for the proposed submarine power feed is yet to be confirmed).

8.0 ARCHAEOLOGY

Pre-contact Evidence

Based on the limited submarine archaeology work completed to date, there appears to be low potential for pre-contact archaeological finds in the study area (Hecate Strait). Also note that submarine video of much of the cable route has been completed.

9.0 FIRST NATIONS

Traditional Use and Knowledge

The collection and integration of Traditional Use and Traditional Knowledge to the Environmental Assessment process typically creates a number of challenges. There is great potential for the developers to learn more about the local environment and history and, with the benefit of such knowledge, adapting the development accordingly; for example, avoiding construction near a known squid spawning ground. However, it is often difficult to acquire such knowledge as privacy, trust and other issues get involved. While there has been limited TU or TK knowledge transfer to date, there is still time for these processes to evolve, although such communications should take place prior to the onset of construction in the hope of minimizing potential impacts.

10 SOCIO-ECONOMIC

Employment and Training Opportunities

Rescan had a significant concern in the sense that job descriptions for construction and operations and job opportunities for residents of Haida Gwaii were not clearly identified in the original Application. Naikun has since remedied the issue as they have provided a list of all anticipated jobs in both construction and operations, and they have further identified which jobs would likely be made available to the local population. Further, they have also committed to assisting with identification of training needs and facilitating funding for such training.

Sustainable Crab Fishing and Populations

Crab landings are extremely variable from year to year, with landings presented as ranging from “-40% to +400%”. To track crab landing in a meaningful way it is important to record not just total landings, but also Catch Per Unit Effort (CPUE); eg. the total number of “boat days”. Ideally, all landings will occur on Haida Gwaii (none on the mainland) and crab fishers provide total boat hrs (eg. worked the crab pots for X hours). This way it is easier to track changes in catch per unit effort – ie. you can determine the average number of legal sized crabs caught per hour of work, and look at the changes on a seasonal as well as year-to-year basis. Crab population studies (eg. based on mark and recapture programs) will further support the long-term population monitoring.

11 VISUAL RESOURCES

Rescan Comment:

We had initial problems with the presentation (visual assessment or “rendering” of the towers and how they would appear from the shoreline) due to poor resolution images. Once the image quality was improved by Naikun, the Rescan Visual Assessment team assessed the data and agreed with the outputs in terms of the visual impact when viewed from various vantage points, including Rose Spit; ie. at the nearest vantage point the towers would appear as “matchsticks on the horizon”.

12 SUMMARY

In summary, development of the Naikun wind farm will greatly benefit the people, animals and natural environment of Haida Gwaii.

All projects bring a mix of positive and negative affects. The decision making process should not focus solely on the perceived negative affects, but focus on the balance of all attributes of the proposed initiative. In terms of major project development in British Columbia we typically look at projects such as saw mills, pulp mills, and mines. These are large projects that create a lot of jobs; however, they also bring air and noise pollution along with other issues, often including serious environmental legacies of degraded or polluted land, the loss of nearby forests and vegetation, etc.

When compared to these typical “major projects” the Naikun Wind Development project clearly stands out in terms of the net benefits provided. The primary risks are that animals will be scared away from the wind-farm area during the construction phase; including sea-birds, fish, and marine mammals. However, the impacts should affect the animals at a behavioural level, and not affect their ability to survive or reproduce. Once the facility is in operations mode, animals will have little risk if/when they return to Dogfish Banks. Further, each tower will create a “mini-ecosystem” where mussels, barnacles, etc will take hold, thereby drawing crab, diving birds, etc. for a new food source in Hecate Strait.

With Project construction and operations, large volumes of diesel fuel currently shipped across Hecate Strait (approximately 9,000,000 l/yr) will be displaced with “green energy”. In addition to removing the risk of ships laden with diesel fuel going down in a storm and the fuel washing up on the east coast of Haida Gwaii, the wind-farm project also means that 26,000 tonnes of green house gases will no longer enter the environment as the diesel gensets are decommissioned.

The Project will create new jobs, many of them going to residents of Haida Gwaii, particularly in the operations phase – which is planned for 40+ years. Together with the 50% Haida ownership, this project will bring more wealth to the community, resulting in more and better equipped recreational facilities, libraries, etc in the coming years.

Based on 30 years of experience in the environmental assessment field, it is clearly refreshing to work on a project that provides such a healthy net balance of positive results for people and the environment. With effective long term monitoring and mitigation measures in place combined with active oversight by the Haida people, this project will stand out as a model.