5.0 RESPONSE TO REGULATORY ISSUES

5.1 Mainland Moose

5.1.1 Moose Habituation to Wind Farms

This section addresses changes in moose distribution, habitat use and behaviour that have been documented at other wind farms after they have become operational. The following cases provide examples which address the issues of moose behavior at wind farms:

Case 1
In Vermont, strong evidence for habituation of moose to an array of wind turbines can be found in "Results of Wildlife Movement Monitoring using an Infrared Sensing Remote Camera located under Turbine 7, Searsburg Wind Project". This project was undertaken in the State of Vermont during the period April - November, 2006. The 11 units of the wind farm were built in 1997. Photographs were correlated by date, time, temperature, species, whether the turbine was generating and the blade rpm. Of the 87 photographs taken, moose were filmed 23 times with 14 of the 23 moose photographs taken by this camera while the turbine was operating.

Reference Cited:
http://www.state.vt.us/psb/document/7250Deerfield/Petition&SupportDocs/Wallin/DFLD-JW-5_CameraStudy.pdf.

Case 2
In Quebec a study by the Quebec Natural Resources Ministry found that moose hunting successes did not decline after the development of a wind farm in the Gaspe Peninsula area. The study found moose adapted well to the presence of a wind farm, provided that a mixture of transitional forest habitat was maintained.

Reference Cited:
Ref: Labonté, J., R. Courtois et J.P Ouellet, 1993. Déplacement et taille des domaines vitaux des orignaux (Alces alces) dans le Bas-Saint-Laurent et la Gaspésie. Ministère de l'Environnement et de la Faune du Québec, Service de la faune terrestre, Québec, 32 p.

Case 3
In Maine, a government document regarding the proposed Black Nubble Wind Farm in Redington Township states on page 74. "This project is not expected to cause undue adverse impact on mammal species."

Reference Cited:
http://www.maine.gov./doc/lurc/projects/redingtonrevised/Documents/Sectionc

Case 4
Also in Maine, under frequently asked questions, #3, "What will be the impacts on wildlife?" the Record Hill Wind group that is proposing to erect 21-25 turbines along a ridgeline near Roxbury, Oxford County, Maine state the following: "Other wildlife species, such as moose or bear that currently use the ridge may temporarily relocate during the construction period..., but are expected to return relatively soon afterwards and are not anticipated to be affected long-term.

Reference Cited:
http://recordhillwind.com/faq

Case 5
In British Columbia a technical assessment report concerning the Wartenbe Wind Project stated the following: "Project-specific and cumulative effects of disruption of movement patterns, mortality risk and habitat availability on moose and elk are of minimal concern and not significant.

Reference Cited:
http://a100.gov.bc.ca/appsdata/epic/documents/p257/d21232/1139007970950_e52fb264edd24896adcd9d3970351072.pdf

A general conclusion that can be drawn from the available scientific literature is that moose may avoid the area as a result of increased human activity during the construction phase of the Project. In this case the proposed sites for the wind farm lie along the western edge of the Pictou-Antigonish Highland area that constitutes moose habitat. The majority of the Pictou-Antigonish Highland habitat for moose in this region lies to the north and east of the proposed development, including the Eigg Mountain and James River Wilderness areas. The footprint of these turbines on the land base is small. The available science indicates that moose will habituate to this wind farm after the construction phase when it becomes operational.

5.1.2 Moose Recovery Plan

This section addresses SWI's commitments in the Recovery Plan for Moose (*Alces alces americana*) in Mainland Nova Scotia and Assessments of Endangered Mainland Moose in the Pictou-Antigonish Highlands.

The Recovery Plan for Moose (*Alces alces americana*) in Mainland Nova Scotia, was published in March, 2007. The author of this section (Bob Bancroft) serves on the Recovery Team. The overall goal of the recovery plan is to maintain the population of mainland moose in Nova Scotia within their current range.

Objectives of the recovery plan include "a rigorous long-term monitoring program to provide reliable data on the distribution and demographics of moose on mainland Nova Scotia."

Also identified in the recovery plan is the need to "develop and implement a management strategy to reduce poaching", and an education program to "raise public awareness of the status of mainland moose, threats and recovery efforts".

Stewardship is considered a key element in this plan, which will "promote public reporting of poaching and moose observations", "engage partners in recovery activities" and "engage landowners in stewardship of mainland moose and their habitat".

The Pictou-Antigonish Highland moose population is a significant component of the endangered provincial mainland population. This proposed wind farm is sited along a western edge of the highland area that is considered active moose habitat. The moose population was last subject to a general winter monitoring survey in1995. Beyond reported sightings, little is known of its present status. The proposed small turbine footprints along this western boundary are primarily leased sites located on private lands.

Shear Wind Inc. proposes to become a partner in recovery activities. It is working collaboratively with NSDNR Wildlife Division and regional biologists to implement an effective long term moose monitoring program. The protocol for this monitoring has developed through discussion with DNR Staff and contains an aerial and ground component that is being designed by DNR staff. It will assess the moose population within an area of the Pictou-Antigonish Highlands delineated by DNR biologists. In addition, SWI is committed to using its GIS resources to maintain a database of moose habitat in the area over the next decade.

Shear Wind Inc. has created a community liaison committee to interface with local residents. This committee should be an excellent means to promote the education and stewardship elements of the recovery action plan. Specifically, the committee should serve as a vehicle to raise public awareness of the status of mainland moose, inform local residents about the threats moose face and the recovery efforts being undertaken. Local residents will be encouraged to report moose observations and poaching activities, and landowners will be encouraged to act as stewards of mainland moose and their habitat.

Through these efforts Shear Wind Inc. will strive to assist the goal and objectives of the Recovery Plan for Moose in Mainland Nova Scotia.

5.1.3 Moose Monitoring Studies

On November 13, 2008, SWI met with the Department of Natural Resources (DNR) to explore measures which could be undertaken by SWI to address the issues related to the Mainland Moose Population. DNR has provided a protocol entitled: *Shearwind – Glen Dhu Monitoring Protocols for Mainland Moose.* This document provides scheduling, methodologies, training and equipment requirements for conducting surveys of a defined area of the Pictou-Antigonish Highlands. This protocol is attached in Appendix C of this document. SWI will conduct the moose surveys by helicopter and snowmobile in the area identified in accordance with this protocol. Mr. Robert Bancroft, M.Sc. will coordinate and supervise the work. Mr. Bancroft will review and compile the field data and present the findings to DNR on behalf of SWI.

Shear Wind Inc. proposes to become a partner in recovery activities. It is working collaboratively with NSDNR Wildlife Division and regional biologists to implement an effective long term moose monitoring program. The protocol for this monitoring has been developed through discussions with DNR Staff and contains an aerial and ground component that is being designed by DNR staff. It will assess the moose population within an area of the Pictou-Antigonish Highlands delineated by DNR biologists.

In addition, SWI is committed to using its GIS resources to maintain a database of moose habitat in the area over the next decade. SWI proposes to work with DNR and their forest resources personnel to develop baseline moose habitat mapping using currently available aerial and satellite imagery of the study area. Changes to moose habitat in the study area are ongoing due to forest harvesting operations. The focus of this mapping will be on sensitive thermal cover and other pertinent forest and physio-graphic conditions for moose habitat. For the next decade, this database will be updated on an annual basis using satellite imagery to revise the forest cover information. Satellite imagery information is available at DNR and is used forest inventory on an annual basis. With the approval of DNR, SWI will use the information which DNR presently collects to prepare annual moose habitat information in the project area.

SWI has created a community liaison committee to interface with local residents. This committee should be an excellent means to promote the education and stewardship elements of the recovery action plan. Specifically, the committee should serve as a vehicle to raise public awareness of the status of mainland moose, inform local residents about the threats moose face the recovery efforts being undertaken. Local residents will be encouraged to report moose observations and poaching activities, and landowners will be encouraged to act as stewards of mainland moose and their habitat.

Through these efforts Shear Wind Inc. will strive to assist the goal and objectives of the Recovery Plan for Moose in Mainland Nova Scotia.

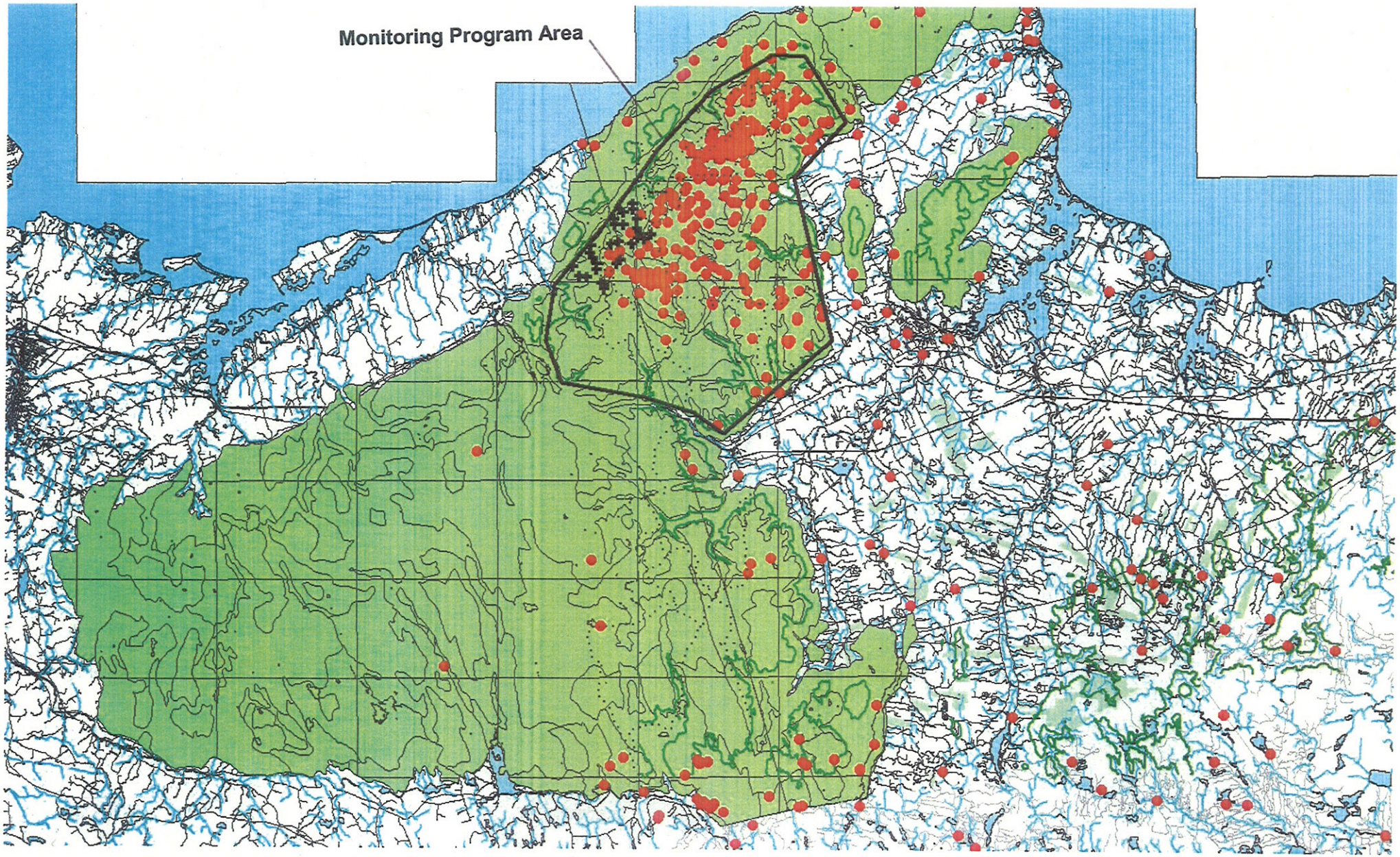

Figure 5.1: Proposed Glen Dhu Mainland Moose Monitoring Survey Area (source: Department of Natural Resources, 2008)

5.2 Migratory Birds

SWI is committed to conducting additional migration monitoring surveys for avian species as indicated in the EA Registration Document. SWI will also undertake acoustic monitoring surveys to quantify the pre-dawn decent of hermit thrushes in areas of mature hardwood forest as observed in the fall migration of 2007. A trial survey will be conducted in the spring of 2009 to test appropriate locations, equipment and methodology. A full acoustic monitoring survey will be conducted during the September/October 2009 migration period for this species. Requirements for additional monitoring and/or mitigation will be based on the findings of this survey.

Clearing and grubbing activities for construction will be conducted outside the breeding season for most species and when populations are low. To avoid runoff and sedimentation, the best times for these activities occur when the ground and soils are stable. This is the preferred approach and timing for the Glen Dhu Project pending the timing of the approval process. Under the present scenario, given Regulatory approval of the EA, it appears that clearing and grubbing operations could be conducted in February, March and April of 2009. SWI will comply with the Migratory Birds Convention Act (MBCA) during all phases of the Project.

The side walls of borrow pits and other steep-sided embankments provide nesting sites for some species such as Bank Swallows (*Riparia riparia)* and Kingfishers (*Ceryle alcyon).* These species dig their nests into the vertical banks which prevents access by predators such as raccoons. The areas where nests are present are typically quite obvious and such areas will not be used or infilled with excess materials. Also excess materials will not be placed near such sites so as to avoid creating access by predators to nesting areas. SWI's Environmental Protection Plan will include provisions for establishing exclusion zones in borrow pits to prevent impacts on nesting areas.

The surveys conducted for avian species followed Canadian Wildlife Service (CWS) protocols. These data are now in the public domain and SWI will provide Environment Canada and the Nova Scotia Department of Natural Resources with detailed information which may be available in the surveys and records. The avian surveys will be provided in electronic form from which the locations of selected species may be referenced. SWI has approved the presentation of the bird survey information to those naturalists' societies and groups interested in the topic.

5.3 Wetlands and Watercourses

SWI has been in contact with Mr. Charles McInnis, Habitat Protection Chief, Department of Fisheries and Oceans, regarding a site inspection to the proposed water crossings. This contact has been and the inspection will be carried at the convenience of Mr. McInnis.

SWI has taken significant steps to avoid wetlands. The location of wind turbines is by their nature, typically, on higher ground. The locations for access roads follow either existing roads or new roads located on higher ground to avoid wetlands and streams to the extent possible. Where wetlands are encountered the road bed will to go around the

wetland rather than through it. Where skirting the wetland is not possible, the road will be located to have a minimum impact on the wetland.

Given that the turbine sites are relatively small (90m x 90m) the maximum total area for turbine development is 24.3 hectares. The estimated area of new roads is 8.1 hectares. Given a total area of the revised Project site of approximately 640 hectares, the actual Project land requirements represent approximately 5% of the Project site. Physical evidence can be seen of large scale forest clearing operations over much of this area. Such operations have not been held accountable for impacts on wetlands nor have there been requirements to conduct wetland surveys.

There is significant visual evidence of impacts of forestry practices on the surface soils and wet areas of the Project site. It can be appreciated that the SWI roads will be of superior quality to existing woods roads. This may encourage the use of the Project roads over other roads by recreational users. The use of roads with improved capacity, drainage, erosion control and proper water crossings could lessen impacts on surface water and wetlands which result from vehicles using poorly constructed or damaged woods roads and inadequate water crossings.

SWI's commitments to avoiding wetlands and the small footprint which the Project will have on the surface of the site should be considered within the context of past practices by other large scale commercial users and the impacts such ongoing practices will have on the future of the Project area. During the life of the Project, if the public chose to use the properly designed and well maintained roads for the Project, a positive cumulative impact on wetlands and watercourses in the Project area would be realized.

Issues related to the protection of water supplies are addressed in Section 4.11. Table 2.2 shows the addresses of the residences around the area and each address is considered to have a well, the majority of which are shallow dug wells.

5.4 Public Accessibility Issues

There is current physical evidence of individuals accessing the Project area using ATV's, snowmobiles and four-wheel drive vehicles. The area is favoured by hunters and others involved in outdoor recreation. Although these are private lands, public access does not appear to be restricted. SWI has committed to restrict public access over its leased roads and lands. There are numerous points of access to the Project area over which SWI has no control.

Some members of the community have indicated an interest in providing a public information attraction based on the Glen Dhu Project. Any attraction would best be viewed from a location some distance from the Project site. SWI will provide technical information to support such a project outside the Glen Dhu Project area but has committed to DNR to restrict access, to the extent it can, to reduce potential human influence on the Mainland Moose population. As private lands with a history of public accessibility, there are limits to the influence SWI can have in regard to accessibility.

SWI has committed to creating a public liaison committee (see Section 4.5). One of the roles of this committee is public information and education. The committee will communicate with various interest groups such as Snowmobile and ATV associations with regard to access and environmental impacts.

5.5 Mi'kmaq Ecological Knowledge Survey (MEKS)

CMM Environmental Service of the Confederacy of Mainland Mi'kmaq undertook a MEKS of the Glen Dhu Project area. This study is located in Appendix D of this Addendum in response to the Minister's request for other studies.