

**FISHERIES AND OCEANS  
CANADIAN ENVIRONMENTAL ASSESSMENT ACT (CEAA) 2012  
PROJECT EFFECTS DETERMINATION REPORT**

**GENERAL INFORMATION**

<b>1. Project Title:</b> Wind and solar power replacement, Green Island, NL	
<b>2 Proponent:</b> Fisheries and Oceans Canada, Real Property Safety and Security (DFO RPSS)	
<b>3. Other Contacts</b> (Other Proponent, Consultant or Contractor): Public Works and Government Services Canada	<b>4. Role:</b> OGD Consultant
<b>5. Source of Project Information:</b> Danielle Button, Project Officer, DFO RPSS	
<b>6. Project Review Start Date:</b> May 29, 2015	
<b>7. DFO File No.:</b> n/a	<b>8. PWGSC File No.:</b> 133430024
<b>9. EC File No.:</b> EAS 2015-052	

**BACKGROUND**

**10. Background about Proposed Development (including a description of the proposed development):**

The proposed project involves the demolition and removal of an existing wind turbine and the installation of 5 new wind turbines at the Green Island light station site.

**PROJECT REVIEW**

**11. DFO's rationale for the project review:**

Project is on federal land  and;

- DFO is the proponent
- DFO to issue *Fisheries Act* Authorization or *Species at Risk Act* Permit
- DFO to provide financial assistance to another party to enable the project to proceed
- DFO to lease or sell federal land to enable the project to proceed
- Other

**12. Fisheries Act Sections (if applicable):** n/a

**13. Other Authorities**

Environment Canada

**14. Other Authorities rationale for involvement:**

Canadian Environmental Protection Act  
Species at Risk Act  
Migratory Birds Convention Act  
Fisheries Act

<b>15. Other Jurisdiction:</b> n/a	
<b>16. Other Expert Departments Providing Advice:</b> n/a	<b>17. Areas of Interest of Expert Departments:</b> n/a
<b>18. Other Contacts and Responses:</b> n/a	
<p><b>19. Scope of Project (details of the project subject to review):</b></p> <p><b><u>Project Description</u></b></p> <p>Fisheries and Oceans Canada – Real Property Safety and Security (DFO RPSS) are proposing to replace an existing 7.5 kW wind turbine with five (5) smaller-scale wind turbines. The replacement of the one turbine with five (5) smaller wind turbines is an effort to introduce some redundancy in the wind power generation, reduce the resources required to maintain the system as well as address health and safety issues for the employees that service this equipment. The five (5) turbines will be able to, at peak operating condition, supply more power than required. This will allow one or more turbines to be taken out of service without compromising the navigation aids or residential loads. As this site is considered remote, accessible by boat or helicopter only, the smaller turbines and towers should allow a maintenance crew of two (2) people to lower a tower and repair or remove a turbine as required.</p> <p>As part of the project an existing solar panel array will also be upgraded.</p> <p><b><u>Site preparation:</u></b></p> <p>The project site is located on a remote island. As a result, workers may be required to temporarily reside on the island while project activities are carried out. To accommodate the workers, a temporary tent may be set up on-site and temporary pit privies installed.</p> <p>The existing tower including all guy-wire cabling will be dismantled and removed from site. The new turbines will be mounted on concrete pads and erected with new guy-wiring. The new turbines will be connected to the existing electrical infrastructure. As part of the project the existing solar panel array will also be reinstalled. The new panels will be installed on the existing racking. The old panels will be removed from the site.</p> <p>Crews and equipment will be transported via boat or helicopter in order to remove the existing turbine and install the new turbines. Equipment required to carry out the proposed activities will likely include: chainsaws, hammers, generators, jackhammers, scaffolding, etc. Construction debris (including any material that has to be managed as hazardous) will be transported off-site using helicopters or a barge.</p> <p><b><u>Scheduling</u></b></p> <p>Subject to regulatory approval and operational priorities and funding, this project may commence during the 2015-2016 fiscal year.</p>	
<p><b>20. Location of Project:</b></p> <p>The project site is located on Green Island located midway between the tip of the Burin Peninsula and the islands of St. Pierre et Miquelon at coordinates 46° 53' 00" N, -56° 05' 00" W (refer to site map in Appendix A). It is accessible only by boat or helicopter.</p>	

## **21. Environment Description:**

### **Physical Environment**

Green Island is low-lying, measuring roughly 0.8 x 0.4 km and is covered mostly with grasses and ferns. The island's perimeter consists primarily of exposed bedrock and boulders.

### **Biological Environment**

Green Island is home to a breeding population of Leach's Storm-Petrels (*Oceanodroma leucorhoa*). A 2008 survey conducted for DFO (Janet Russell) reported 103,833 pairs present on the island during the study period (July 25 – August 3). No other seabirds were reported to be nesting on the island in significant numbers (Russell 2008b). Green Island is the 5<sup>th</sup> largest Leach's Storm-Petrel colony in Newfoundland and Labrador (EC 2015).

The site is located in the eastern hyper-oceanic barrens eco-region of Newfoundland, a small (1603.4 km<sup>2</sup>) but widely fragmented eco-region. It covers the cold and rocky coastlines along the southern tips of the Burin and Avalon peninsulas, and on the northeastern coastal strips near Bay de Verde, Bonavista, and Cape Freels. The topography is flat to gently rolling and elevations range from sea level to about 200 metres. Trees in this ecoregion are all stunted and form scattered areas of balsam fir tuckamore with the remainder of the ecoregion almost completely devoid of tree cover.

### **Species at Risk (Aquatic and Terrestrial)**

A search of the Atlantic Canada Conservation Data Centre (ACCDC) database was conducted which produced a list of rare/unique species (i.e. plants and animals) within a 5 km buffer zone (standard ACCDC procedure) of the site of the proposed work. All species were cross-referenced with Schedule 1 of the Species At Risk Act (SARA); no species were reported.

**22. Scope of Effects Considered (sections 5(1) and 5(2)):**

**Table 1: Potential Project / Environment Interactions Matrix**

Project Phase / Physical Work/Activity	As per Section 5(1)			Section 5(1c)				Section 5(2)			Due Diligence			
	Fish (Fisheries Act)	Aquatic Species (SARA)	Birds (MBCA)	Health and Socio economic	Physical and cultural heritage	Land use	*HAPA Significance	Health and Socio economic	Physical and cultural heritage	*HAPA Significance	Water (ground, surface, drainage, etc)	Terrestrial / Aquatic Species	Soil	Air Quality
<b>Construction/Installation</b>														
Site preparation	-	-	P	-	-	-	-	-	-	-	P	P	P	-
Tower demolition/removal	-	-	P	-	-	-	-	-	-	-	P	P	P	-
Tower installation	-	-	P	-	-	-	-	-	-	-	P	P	P	-
Solar panel replacement	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Operation / Maintenance</b>														
Routine repairs/maintenance	-	-	P	-	-	-	-	-	-	-	-	P	-	-
Wind turbine operation	-	-	P	-	-	-	-	-	-	-	-	P	-	-
<b>Decommissioning / Abandonment</b>														
	-	-	-	-	-	-	-	-	-	-	-	-	-	-

\*structure, site or thing that is of historical, archaeological, paleontological or architectural significance.  
 Legend: P = Potential Effect of Project on Environment; ' - ' = No Interaction

### **23. Environmental Effects of Project:**

Potential Project/Environment Interactions and their effects are outlined below:

#### **Birds (MBCA):**

- Migratory birds and their nests may be encountered during the site preparation, tower demolition/removal and tower installation activities, resulting in disturbances to nesting/feeding birds.
- Discharge of machinery fuels/fluids or project refuse may negatively impact birds.
- Bird mortality may increase as a result of collisions with wind turbines, turbine blades and guy-wires.
- Migratory birds may be attracted to construction lighting, leading to increased mortality due to exhaustion.

#### **Terrestrial/Aquatic Species:**

- Discharge of machinery fuels/fluids or project refuse may negatively impact birds.
- Bird mortality may increase as a result of collisions with wind turbines, turbine blades and guy-wires.
- Site preparation/grubbing will result in disturbances/destruction of on-site vegetation and may also result in disturbances to nesting/feeding birds.

#### **Water:**

- Accidental discharge of machinery fuel/fluids could result in contamination of surface water.

#### **Soils:**

- Accidental discharge of machinery fuel/fluids could result in contamination of on-site soils.

### **24. Mitigation Measures for Project (including Habitat Compensation):**

- Under Section 6 of the Migratory Birds Regulations, it is forbidden to disturb, destroy or take a nest or egg of a migratory bird; or to be in possession of a live migratory bird, or its carcass, skin, nest or egg.
- The breeding season for migratory birds in the general project area is approximately April 1<sup>st</sup> – September 30<sup>th</sup>. Construction activities, including vegetation clearing, should proceed outside the breeding season. Should migratory birds or their nests be encountered during project activities, the site supervisor should be immediately notified and work minimized to avoid any potential disturbance to the nest site and surrounding habitat.
- Areas of the island occupied by seabirds and waterbirds should be avoided, including when approaching the island by vessel.
- The proponent should consider the development and implementation of a management plan to further minimize the risk of impacts to migratory birds.
- Helicopter use near seabird colonies should be avoided during the breeding season.
- Oil spill response equipment, such as adsorbents and open-ended barrels should be available on-site in case of a spill or leak. All spills or leaks must be promptly contained, cleaned up and reported to the 24-hour environmental emergencies report system (1-800-563-2444).
- Ensure that all construction equipment is in good working order and careful maintenance and monitoring of all equipment be carried out to minimize the risk of spills or leaks of petroleum-

based products.

- Conduct work in a manner that prevents the release of debris or any deleterious substance into any body of water. Construction related refuse must be removed from site.
- Construction related lighting should be kept to a minimum. Lighting for the safety of employees should be shielded to shine down and only to where it is needed, without compromising safety. Use of LED lights is recommended, as LED light fixtures are less prone to light trespass, which reduces the incidence of migratory bird attraction.
- EC-CWS also recommends the following additional mitigations be implemented:
  - A **pre-construction population census** for Leach's Storm- petrel be conducted in order to establish baseline conditions. The design of this survey should be comparable to that described in Russell, 2008a.
  - A **post-construction population census** for Leach's Storm-petrel be conducted approximately five (5) years after the pre-construction survey.
  - A **mortality monitoring program** and a **carcass detection survey** be implemented following the methods outlined in Russell 2008b.

EC-CWS is willing and able to conduct these studies as well as to provide training on survey techniques, if required, in consultation with DFO.

#### **25. Significance of Adverse Environmental Effects of project:**

Significant adverse environmental effects are unlikely, taking into account mitigation measures.

#### **26. Other Considerations (Public Consultation, Aboriginal Consultation, Follow-up)**

##### **Public Consultation**

The proposed project is located in uninhabited location. No negative public concern is expected as a result of this project. As such, public consultation was not deemed necessary as part of this determination.

##### **Aboriginal Consultation**

The proposed project is located in a uninhabited location. As such, aboriginal consultation was not deemed necessary as part of this determination.

##### **Government Consultation**

Federal and provincial authorities likely to have an interest in the project were consulted by Public Works & Government Services Canada, Environmental Services, during the course of this assessment. A project description was forwarded to Environment Canada on May 29, 2015; their comments have been incorporated into this report.

##### **Accuracy and Compliance Monitoring**

A follow-up program (as defined in S. 2(1) and as applicable to non-designated projects on federal lands) is a program for determining the effectiveness of any mitigation measures. Site monitoring (accuracy and compliance monitoring) may be conducted to verify whether required mitigation measures were implemented. The proponent must provide site access to Responsible Authority officials and/or its agents upon request.

#### **27. Other Monitoring and Compliance Requirements (e.g. *Fisheries Act* or *Species at Risk Act* requirements)**

n/a

## CONCLUSION

### 28. Conclusion on Significance of Adverse Environmental Effects:

The Federal Authority has evaluated the project in accordance with Section 67 of *Canadian Environmental Assessment Act (CEAA), 2012*. On the basis of this evaluation, the department has determined that the project is not likely to cause significant adverse environmental effects with mitigation and therefore can proceed using mitigative measures as outlined.

29. Prepared by:



30. Date: August 4, 2015

31. Name:

Mark McNeil

32. Title:

Environmental Specialist, PWGSC-ES

33. Reviewed by:

\_\_\_\_\_

34. Date:

\_\_\_\_\_

35. Name:

Danielle Button

36. Title:

Project Officer, DFO-RPSS

## DECISION

### 37. Decision Taken

- DFO may exercise its power, duty or function, i.e. may issue the authorization - where the project is not likely to cause significant adverse environmental effects. Confirm below the specific power, duty or function that may be exercised.
- DFO to issue *Fisheries Act* Authorization or *Species at Risk Act* Permit
  - DFO to proceed with project (as proponent)
  - DFO to provide financial assistance for project to proceed
  - DFO to provide federal land for project to proceed
- DFO has decided not to exercise its power, duty or function because the project is likely to cause significant adverse environmental effects.
- DFO to ask the Governor in Council to determine if the significant adverse environmental effects are justified in the circumstances

38. Approved by: \_\_\_\_\_ 39. Date: \_\_\_\_\_

40. Name: Craig Hogan

41. Title: Regional Engineer, DFO-RPSS, NL

### 42. References:

Russell, J. (2008a) Observations and Recommendations on monitoring the effects of a Green Island, Fortune Bay Light Station Wind Turbine on Leach's Storm Petrels (*Oceanodroma leucorhoa*) breeding on Green Island, Fortune Bay, Southeastern Newfoundland in 2008. A report submitted to Fisheries and Oceans Canada.

Russell, J. (2008b) Population Estimate for the colony of Leach's Storm-Petrels (*Oceanaodroma leucorhoa*) breeding on Green Island, Fortune Bay, Southeastern Newfoundland in 2008. A report submitted to Fisheries and Oceans Canada.

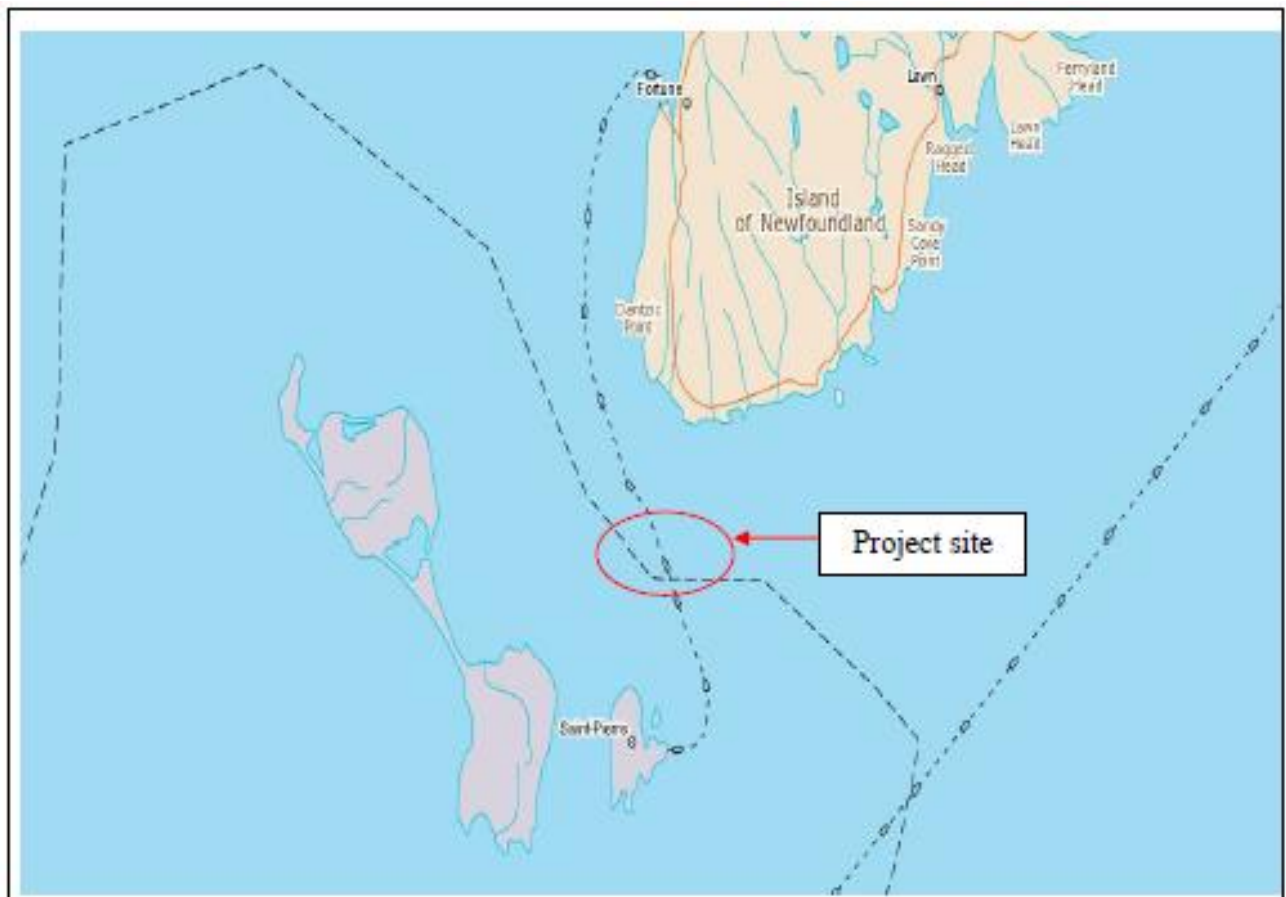


## **APPENDICES**

- Appendix A - Topographic Map and Site Photographs
  - Appendix B – Site Plan
  - Appendix C: Environment Canada Response
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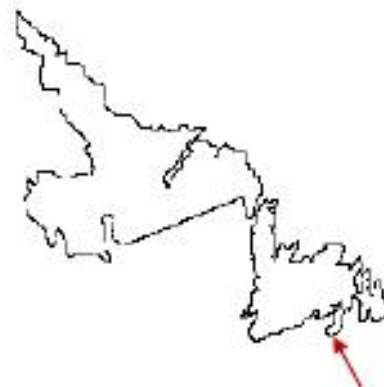
**Appendix A**  
**Topographic Map and Site Photos**





**Description**

Figure 1: Topographic Map of Proposed Site  
 Location: Green Island



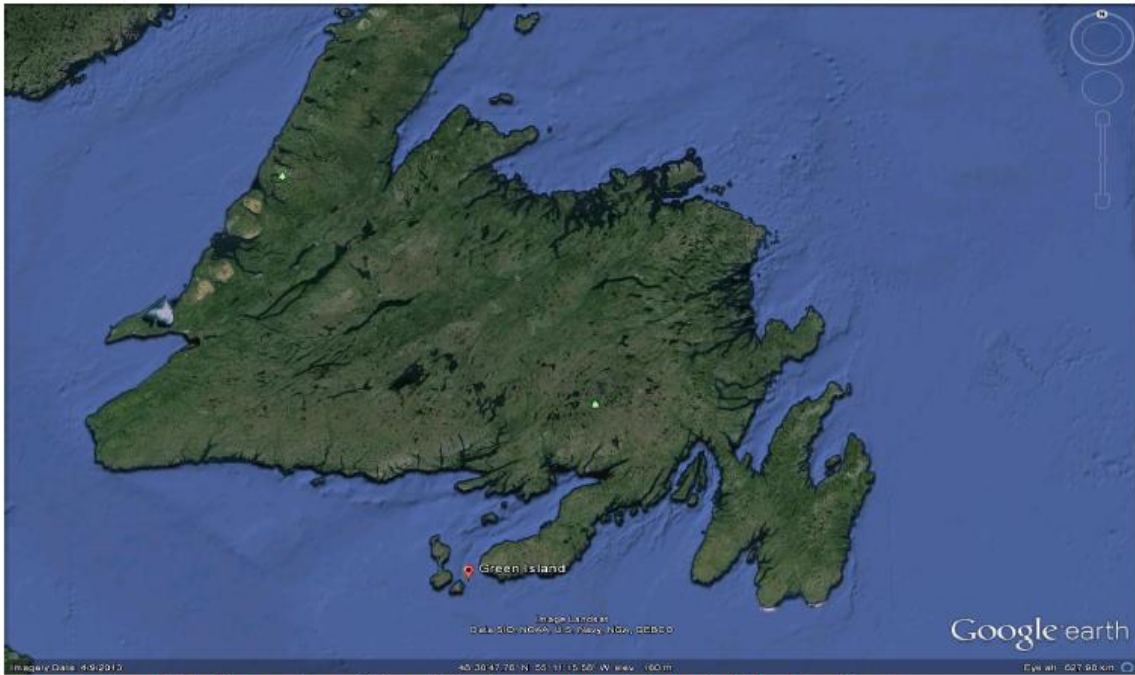


Figure 2: Google Earth overview of Green Island site relative to Island of Newfoundland.



Figure 3: Google Earth close-up of Green Island site. Project area highlighted in red.

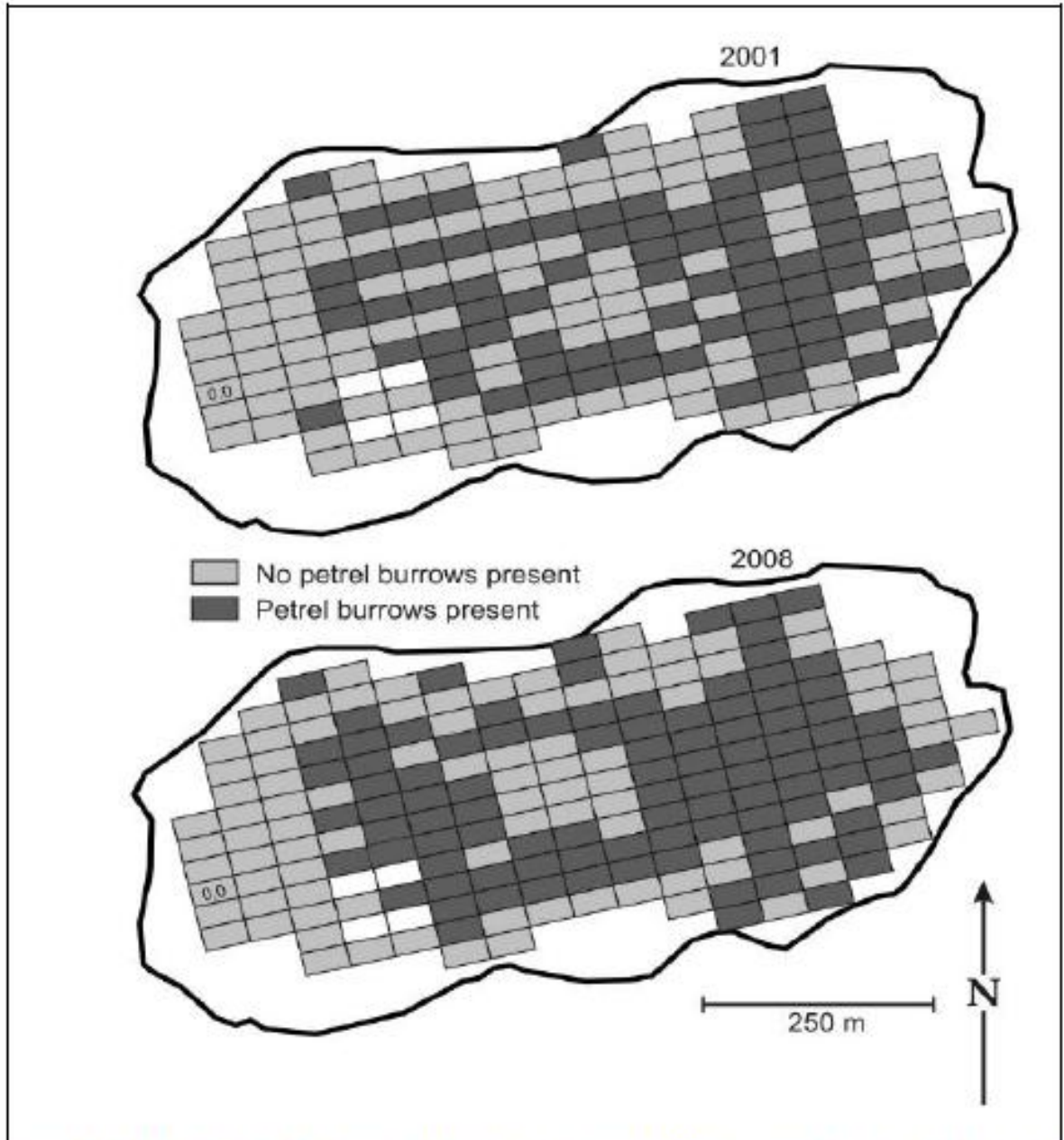


Figure 4: Distribution of Leach's Storm-Petrel burrows in 2001 and 2008 on Green Island (Source: Russell, 2008).

**Appendix B**  
**Site Plan**



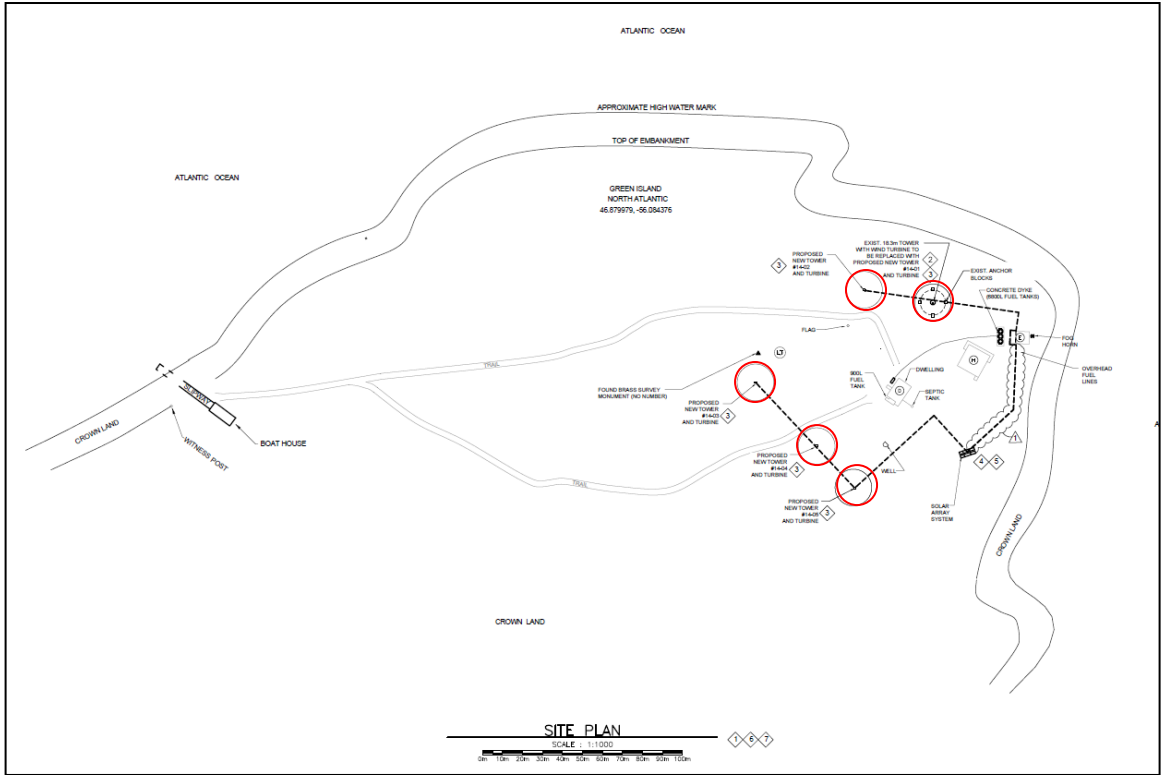


Figure 5. Proposed locations of new wind turbines (red) on Green Island, NL.

**Appendix C**  
**Environment Canada Response**







Environment Canada    Environnement Canada

Environmental Stewardship Branch  
6 Bruce Street  
Mount Pearl, NL A1N 4T3

9 June 2015

Mark McNeil  
Public Works and Government Services Canada  
Suite 204, 1 Regent Square  
Comer Brook, NL, A2H 7K6

Dear Mr. McNeil:

**RE: Wind and solar power replacement, Green Island, Fortune Bay, NL                    EAS 2015-052**

As requested in your email of 29 May 2015, Environment Canada (EC) has reviewed the project description for the above-noted project. Please note that our review comments, in areas related to EC's mandate, are provided to support your environmental management process for this project.

It is understood that Fisheries and Oceans Canada – Real Property Safety and Security (DFO RPSS) is proposing to replace an existing 7.5 kW wind turbine with five (5) smaller-scale wind turbines and upgrade an existing solar panel array at the Green Island light station site. The existing tower and all guy-wire cabling will be dismantled and removed. The new turbines will be mounted on concrete pads and erected with new guy-wiring. The new turbines will be connected to the existing electrical infrastructure.

The following EC comments stem from the department's mandate under the *Migratory Birds Convention Act* (MBCA) and Section 36 of the *Fisheries Act*. Pertinent EC expertise and related comments also originate with the *Canadian Environmental Protection Act* (CEPA), the *Canadian Wildlife Act*, and the *Species at Risk Act*, as well as *Department of the Environment Act*.

## REVIEW COMMENTS

### *Regulatory Requirements*

#### *Fisheries Act*

Pollution prevention and control provisions of the *Fisheries Act* are administered and enforced by Environment Canada. The deposit of a deleterious substance to water frequented by fish may constitute a violation of the *Fisheries Act*, whether or not the water itself is made deleterious by the deposit. Subsection 36(3) of the *Fisheries Act* prohibits anyone from depositing or permitting the deposit of a deleterious substance of any type in water frequented by fish, or in any place under any conditions where the deleterious substance, or any other deleterious substance that results from the deposit of the deleterious substance, may enter any such water. The notion of a deleterious substance applies both to fish and to fish habitat.

It is the responsibility of the proponent to ensure that all reasonable measures are conducted to prevent the release of substances deleterious to fish from their proposed activities. In general, compliance is determined at the last point of control of the substance before it enters waters frequented by fish, or, in any place under any conditions where a substance may enter such waters.

### Migratory Birds Convention Act

Migratory birds, their eggs, nests, and young are protected under the *Migratory Birds Convention Act* (MBCA). Migratory birds protected by the MBCA generally include all seabirds except cormorants and pelicans, all waterfowl, all shorebirds, and most landbirds (birds with principally terrestrial life cycles). The list of species protected by the MBCA can be found at <https://www.ec.gc.ca/nature/default.asp?lang=En&n=496E2702-1>. Bird species not listed may be protected under other legislation.

Under Section 6 of the *Migratory Birds Regulations* (MBR), it is forbidden to disturb, destroy or take a nest or egg of a migratory bird; or to be in possession of a live migratory bird, or its carcass, skin, nest or egg, except under authority of a permit. It is important to note that under the current MBR, no permits can be issued for the incidental take of migratory birds caused by development projects or other economic activities.

Furthermore, Section 5.1 of the MBCA describes prohibitions related to deposit of substances harmful to migratory birds:

- “5.1 (1) No person or vessel shall deposit a substance that is harmful to migratory birds, or permit such a substance to be deposited, in waters or an area frequented by migratory birds or in a place from which the substance may enter such waters or such an area.
- (2) No person or vessel shall deposit a substance or permit a substance to be deposited in any place if the substance, in combination with one or more substances, results in a substance — in waters or an area frequented by migratory birds or in a place from which it may enter such waters or such an area — that is harmful to migratory birds.”

It is the responsibility of the proponent to ensure that activities are managed so as to ensure compliance with the MBCA and associated regulations.

### Species at Risk

The proponents should also be reminded that the prohibitions under SARA are now in force. The complete text of SARA, including prohibitions, is available at [www.sararegistry.gc.ca](http://www.sararegistry.gc.ca).

It should be noted that Section 79 of the *Species at Risk Act* states:

79. (1) Every person who is required by or under an Act of Parliament to ensure that an assessment of the environmental effects of a project is conducted, and every authority who makes a determination under paragraph 67(a) or (b) of the [Canadian Environmental Assessment Act, 2012](#) in relation to a project, must, without delay, notify the competent minister or ministers in writing of the project if it is likely to affect a listed wildlife species or its critical habitat.
- (2) The person must identify the adverse effects of the project on the listed wildlife species and its critical habitat and, if the project is carried out, must ensure that measures are taken to avoid or lessen those effects and to monitor them. The measures must be taken in a way that is consistent with any applicable recovery strategy and action plans.

### Canadian Environmental Protection Act

The proponent should also be aware of the potential applicability of the *Canadian Environmental Protection Act* (CEPA 1999). CEPA 1999 enables protection of the environment, and human life and health, through the establishment of environmental quality objectives, guidelines and codes of practice, and the regulation of toxic substances, emissions and discharges from federal facilities, international air pollution, and [disposal at sea](#).

Under CEPA 1999 a substance is considered toxic if it is entering or may enter the environment in a quantity or concentration or under conditions that have or may have an immediate or long-term harmful effect on the environment or its biological diversity, constitute or may constitute a danger to the environment on which life depends; constitute or may constitute a danger in Canada to human life or health.

### ***Migratory Birds and Species at Risk***

The Canadian Wildlife Service of Environment Canada (EC-CWS) has reviewed the above project and offers the following comments.

#### **Site-Specific Comments**

- Green Island is an important colony for Leach's Storm-Petrel, as the 5<sup>th</sup> largest Leach's Storm-Petrel colony in Newfoundland and Labrador. Newfoundland harbours the majority of the world's breeding population for the species (Robertson et al. 2006).
- **Construction activities should not proceed until migratory birds have finished nesting and have departed the colony.** On Green Island, migratory birds are likely to breed from April 1<sup>st</sup> through to September 30<sup>th</sup>.
- The effects of multiple small wind turbines on the Leach's Storm-petrel colony (as opposed to the existing taller, single wind turbine) are currently unknown. The populations of several Leach's Storm-petrel colonies in other parts of Newfoundland and Labrador are in decline. If the Green Island colony is also in decline, it is important to establish that this decline is not attributed to the proposed wind turbines. **A pre-construction population census** for Leach's Storm-petrel is recommended to be undertaken in order to establish baseline conditions, whose design should be comparable to that described in Russell 2008a. EC-CWS is willing and able to undertake this census in the summer of 2015 in consultation with DFO.
- **A post-construction population census** for Leach's Storm-petrel is recommended to be undertaken approximately five years after the pre-construction survey. EC-CWS is willing and able to undertake this census in consultation with DFO.
- **A mortality monitoring program and a carcass detection survey** should be implemented, following the methods outlined in Russell 2008b. This study will require modification to account for multiple wind turbines, and should be developed in consultation with EC-CWS. EC-CWS can provide training for the survey techniques.

#### **Works Cited:**

Russell, J. (2008a) Observations and Recommendations on monitoring the effects of a Green Island, Fortune Bay Light Station Wind Turbine on Leach's Storm Petrels (*Oceanodroma leucorhoa*) breeding on Green Island, Fortune Bay, Southeastern Newfoundland in 2008. A report submitted to Fisheries and Oceans Canada. Pp 5.

Russell, J. (2008b) Population Estimate for the colony of Leach's Storm-Petrels (*Oceanodroma leucorhoa*) breeding on Green Island, Fortune Bay, Southeastern Newfoundland in 2008. A report submitted to Fisheries and Oceans Canada. Pp 12.

Robertson, G.J., Russell, J., Bryant, R., Fifield, D.A. & Stenhouse, I.J. (2006) Size and trends of Leach's Storm-Petrel *Oceanodroma leucorhoa* breeding populations in Newfoundland. *Atlantic Seabirds* 8 (1/2): 41-50. Pp 10.

### General guidance on reducing disturbance to seabird colonies

Environment Canada recommends that, during the breeding season, people stay off seabird and waterbird colonies, maintain appropriate buffer zones around colonies, and avoid any disturbance of migratory birds. In addition to the advice given below, information concerning working near or on seabird colonies can be found at <http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=E3167D46-1>.

- **On land**
  - In general, maintain a distance of at least 300 m from seabird and waterbird colonies. It may be possible to approach closer at authorized and supervised locations where appropriate fenced viewing facilities have been established.
  - For high-disturbance activities (e.g. drilling, blasting), maintain a buffer of at least 1 km from colonies.
- **On the water**
  - In general, maintain a minimum distance of at least 300 m from all areas of the island or colony occupied by seabirds and waterbirds.
  - Always travel at steady speeds when close to seabird and waterbird colonies, moving parallel to the shore, rather than approaching the colony directly.
  - Avoid any sharp or loud noises, do not blow horns or whistles, and maintain constant engine noise levels.
  - Do not pursue seabirds or waterbirds swimming on the water surface, and avoid concentrations of these birds on the water.
  - Anchor large vessels at least 500 m from the breeding islands and only approach as close as 300 m in smaller vessels.
  - Never dump waste or garbage overboard, because
    - even small amounts of oil can kill birds and other marine life, and habitats may take years to recover; and
    - fishing line, cans, plastic bottles and other plastic waste can injure or kill birds.
- **From the air**
  - Helicopters and other aircraft should keep well away from breeding colonies, as aircraft can cause severe disturbance to seabird/waterbird colonies, and there is a serious risk of collision with flying birds.

### Vegetation Clearing

Clearing vegetation during construction activities may cause disturbance to migratory birds and inadvertently cause the destruction of their nests and eggs (<http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=FA4AC736-1>). Many species use trees, as well as brush, deadfalls and other low-lying vegetation for nesting, feeding, shelter and cover. This would apply to songbirds throughout the region, as well as waterfowl in wetland areas. Disturbance of this nature would be most critical during the breeding period. The breeding season for most birds within the project area occurs between April 1<sup>st</sup> and August 15<sup>th</sup> in this region, however some species protected under the MBCA do nest outside of this time period. Please see the webpage "General Nesting Periods of Migratory Birds in Canada" (Website: <http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1>). This project area falls within zone "D3-4") for more information concerning the breeding times of migratory birds.

Environment Canada provides the following recommendations:

1. to avoid the risk of nest destruction, the proponent should avoid vegetation clearing during the most critical period of the migratory bird breeding season, which is April 15<sup>th</sup> through August 15<sup>th</sup> in this region.

2. to develop and implement a management plan that includes appropriate preventive measures to minimize the risk of impacts on migratory birds (See "Planning ahead to reduce risks to migratory bird nests", PDF: <http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=50C4FE11-801E-4FE3-8019-B2D8537D76CF>). It is the responsibility of the individual or company undertaking the activities to determine these measures. For guidance on how to avoid the incidental take of migratory birds nests and eggs, please refer to the Avoidance Guidelines (Website: <http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=AB36A082-1>). The management plan should include processes to follow should an active nest be found at any time of the year.

#### Helicopter Site Access

Aircraft, particularly helicopters, have been known to cause significant negative impacts to migratory birds during various life stages (i.e. chick rearing, moulting). Mitigation measures such as timing and adjusting the altitude and pattern of helicopter flight lines can minimize disturbance. Helicopter use near seabird breeding colonies should be avoided from April 1<sup>st</sup> – September 30<sup>th</sup>.

#### Mortality Events

Wind farm operators are expected to contact CWS within 24 hours in the event of mortality of an individual migratory bird species at risk or 10 or more migratory birds in one night. Notification should include specific details about the event (e.g., name and location of the wind farm, number of mortalities, species, map showing turbines and associated infrastructure and locations of collisions, meteorological conditions during previous night(s), details of lights at the site, any other factor which may have influenced the event). Staff and contractors should be instructed that if a mortality event, as described above, occurs, the area around each wind turbine should be carefully checked to better evaluate the extent of the event, even if this is not described in their wind farm's "regular" post-construction bird monitoring protocol, or if the formal post-construction bird monitoring program has ended.

#### Light Attraction and Migratory Birds

In Atlantic Canada, nocturnal migrants and night-flying seabirds (e.g. storm-petrels) are the migratory birds most at risk of attraction to lights and flares. Attraction to lights at night or in poor visibility conditions during the day may result in collision with lit structures or their support structures, or with other migratory birds. Disoriented migratory birds are prone to circling light sources and may deplete their energy reserves and either die of exhaustion or be forced to land where they are at risk of depredation.

To minimize risk of incidental take of migratory birds due to human-induced light, Environment Canada recommends at minimum the following beneficial management practices:

- The minimum amount of pilot warning and obstruction avoidance lighting should be used on tall structures.
- The use of only strobe lights at night, at the minimum intensity and minimum number of flashes per minute (longest duration between flashes) allowable by Transport Canada, is recommended.
- Using the minimum number of lights possible is recommended.
- The use of solid-burning or slow pulsing warning lights at night should be avoided.
- Lights should completely turn off between flashes.
- Lighting for the safety of the employees should be shielded to shine down and only to where it is needed, without compromising safety.

- Use of LED lights is highly recommended, as LED light fixtures are less prone to light trespass (i.e. are better at directing light where it needs to be, and do not bleed light into the surrounding area), and this property reduces the incidence of migratory bird attraction.

#### Other Coastal Infrastructure Activities

EC-CWS has the following recommended beneficial management practices for working on shorelines:

- Project staff should not approach concentrations of seabirds, sea ducks or shorebirds.
- Project staff should use the main navigation channels to get to and from the site; and should have well muffled vessels and machinery.
- Project staff should undertake any measures that may minimize or eliminate discharge of oily waste into the marine environment.
- Food scraps and other garbage left on beaches and other coastal habitats can artificially enhance the populations of avian and mammalian predators of eggs and chicks. The proponent should ensure that no litter (including food waste) is left in coastal areas by their staff and/or contractors
- If there is any noticeable change in seabird numbers or distribution at the location during operations, EC-CWS should be notified.

#### Species at Risk

The following species at risk (as listed on Schedule 1 of the *Species at Risk Act*) may occur within the study area: Olive-sided flycatcher (Threatened), Red Crossbill (*Rufa* subspecies; Endangered). Though unlikely to be found within the project footprint, these species may occur within the study area and we request that sightings be reported to EC-CWS.

#### Fuel Leaks

The Canadian Wildlife Service of Environment Canada recommends that the proponent adhere to best practices with regard to fuelling and servicing equipment, using biodegradable fluids, fuel spills and spill contingency plans, to protect migratory birds and their habitats (described in more detail under *Management of Hazardous Materials and Waste*). Furthermore, the proponent should ensure that contractors are aware that under the *Migratory Birds Regulations*, "no person shall deposit or permit to be deposited oil, oil wastes or any other substance harmful to migratory birds in any waters or any area frequented by migratory birds."

#### *On-land Disposal and Site Disturbance*

In general, impacts related to onshore disturbance should be designed so as to:

- place a priority on pollution prevention;
- facilitate compliance with the general prohibition against the deposit of a deleterious substance into waters frequented by fish (Section 36 of the *Fisheries Act*); and
- respect applicable Canadian Council of Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines.

In terms of site disturbance the following 'best practices' should be reflected in efforts to manage impacts so as to respect the above-noted objectives:

- install siltation control structures (e.g. silt curtains, cofferdams, sediment fences) prior to beginning any activities involving disturbance of the site and work along the shoreline if appropriate;
- schedule work to avoid periods of heavy precipitation;
- maintain a vegetated buffer zone, as appropriate and where possible, to protect surface waters;
- immediately stabilize any disturbed areas along the shoreline to prevent erosion;
- monitor the integrity and effectiveness of the siltation control structures daily for the duration of the project; and
- upon completion of the project, only remove silt control structures when suspended sediment concentrations within any contained water have returned to background conditions.

#### ***Concrete Production***

Discharges from project work involving the use of concrete, cement, mortars and other Portland cement or lime-containing construction materials may have a high pH, and work should be planned and conducted to ensure that sediments, debris, concrete, and concrete fines are not deposited, either directly or indirectly into the aquatic environment. Any potentially contaminated water (e.g. exposed aggregate wash-off, wet curing, equipment and truck washing), should be prevented from entering the aquatic environment unless it can be confirmed that this water will not be deleterious to fish or harmful to migratory birds. Containment facilities should be provided at the site as required.

#### ***Management of Hazardous Materials and Waste***

In order to ensure compliance with Section 36 (3) of the *Fisheries Act* and with the *Migratory Birds Convention Act* and related Regulations, provisions for the management of hazardous materials (e.g. fuels, lubricants) and wastes (e.g. contaminated soil, sediments, waste oil) should be identified and implemented so as to ensure the risk of chronic and accidental releases is minimized. Additionally, the following mitigation recommendations are made with respect to the transport, storage, use and disposal of petroleum products and toxic substances which, when employed, may minimize impacts to nearby receiving waters:

- Even small spills of oil can have very serious effects on migratory birds and fish. Therefore, every effort should be taken to ensure that no oil spills occur in the area. Refuelling and maintenance activities should be undertaken on level terrain, at least 30m from any surface water (including shorelines), on a prepared impermeable surface with a collection system to ensure oil, gasoline and hydraulic fluids do not enter surface waters. Waste oil should be disposed of in an approved manner.
- Biodegradable alternatives to petroleum-based hydraulic fluid for heavy machinery and chainsaw bar oil are commonly available from major manufacturers. Such biodegradable fluids should be considered for use in place of petroleum products whenever possible, as a standard for best practices.
- Drums of petroleum products or chemicals should be tightly sealed against corrosion and rust and surrounded by an impermeable barrier in a dry, water-tight building or shed with an impermeable floor.
- In order to ensure that a quick and effective response to a spill event is possible, spill response equipment should be readily available on-site. Response equipment, such as adsorbents and open-ended barrels for collection of cleanup debris, should be stored in an accessible location on-site. Personnel working on the project should be knowledgeable

about response procedures. The proponent should consider developing a contingency plan specific to the proposed undertaking to enable a quick and effective response to a spill event. The proponent should indicate how the contingency plans will be prepared, and response measures implemented, to reflect site-specific conditions and sensitivities. In developing a contingency plan, it is recommended that the Canadian Standards Association publication Emergency Planning for Industry CAN/CSA-Z731-03, be consulted as a useful reference.

- The proponent should report any spills of petroleum or other hazardous materials to the Environmental Emergencies 24 Hour Report Line (St. John's 709-772-2083; other areas 1-800-563-9089).

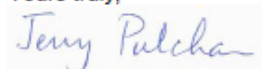
#### *Effects of Weather and Climate on the Project*

Over its lifetime, coastal infrastructure will be sensitive to the impacts of wind, waves, storm surge, sea ice and sea level rise. Global average sea level rise projections range from 18 to 59 cm over the next century (Intergovernmental Panel on Climate Change). Some recent trends in research indicate that due to ice sheet melt, this range can be much higher than the projected 59cm by the year 2100. Coastal erosion will add to the effects of sea level rise. Sea level rise and crustal subsidence will exacerbate the effects of winds, waves and storm surges. In addition, climate warming will also lead to an increase in the water-holding capacity of the atmosphere, and more intense precipitation events are likely over the coming decades. This may affect local flooding and infrastructure drainage. In considering the full life-cycle of the project, any sensitivity to climate change should be identified and adjustments made if necessary. It may be more cost-effective to adjust design criteria at this stage than to retrofit in future.

Historical data and local area knowledge should be utilized to determine adequacy of design. Based on an analysis of the potential effects of climate and weather elements, mitigation should be focused on minimizing risk of environmental damage and other accidents. Climatological data can be found at <http://www.climate.weatheroffice.ec.gc.ca/>, and value-added data can be obtained from EC's Climate Services. Contact: 1-900-565-1111 or email: [weather.info.meteo@ec.gc.ca](mailto:weather.info.meteo@ec.gc.ca). Hydrometric station data, both archived and real-time, are available at <http://www.ec.gc.ca/rhc-wsc/>. The proponent is also encouraged to regularly consult EC's local forecast at <http://www.weatheroffice.ec.gc.ca/>.

I trust that this information will be of assistance in your review of this project. If you wish to discuss these comments or have further questions, please do not hesitate to contact me at 709-772-4313 or via email at [jerry.pulchan@ec.gc.ca](mailto:jerry.pulchan@ec.gc.ca) at your convenience.

Yours truly,



Jerry Pulchan  
Environmental Assessment Analyst  
Environmental Protection Operations Directorate- Atlantic

Attachments

Cc: M. Hingston