

**FINAL**  
**Terms of Reference**

**As Required by the Environment Act  
For Preparation of an Environmental Assessment Report**

**Proponent: Cape Breton Explorations Limited**

**Project: Wind/Hydro Energy Project, Cape Breton, NS**



February 28, 2008

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## **BACKGROUND**

Cape Breton Explorations Limited (Proponent) proposes to develop a hybrid wind/hydro pump storage power generating facility on the hills above Lake Uist. The reservoir, the penstock, the hydro turbines and most of the wind resource are located in Cape Breton Regional Municipality (CBRM); however, two or three turbines may be located in the Municipality of the County of Richmond.

Presented in this document are the Terms of Reference for the Environmental Assessment Report (EA Report) required for the Wind/Hydro Energy Project (Project), in accordance with the requirements of Part IV of the *Environment Act*. The Proponent must include all the information requested within the Terms of Reference as a minimum, in accordance with the *Environmental Assessment Regulations* pursuant to Part IV of the *Environment Act*.

This Terms of Reference includes Valued Ecosystem Components (VECs) which must be adequately addressed in the EA Report. The Proponent must identify any additional VECs to be examined during the assessment process.

The order in which information is presented is at the discretion of the Proponent, however, a concordance table will be required to indicate where the information can be found. The Proponent may provide additional information to assist the Environmental Assessment Board (EA Board) in making their recommendation to the Minister and assist the Minister in making a decision on the Project. Since the EA Report is intended for public review, the information should be presented in non-technical language wherever possible and appropriate, including a non-technical executive summary. The Proponent will be required to submit an electronic copy of the EA Report in accordance with the Environmental Assessment Branch (EA Branch) Bulletin on 'Requirements for Submitting Electronic Copies of Environmental Assessment Documents' for publication on the Department's website.

### Nova Scotia EA Requirements

The proposed Project is subject to a Class 2 EA under the *Environment Act*, which requires the Proponent to prepare an EA Report for the Project. Regulations require that the proposed Terms of Reference for the EA Report be prepared by the Environmental Assessment Administrator (Administrator) and made available for public review. The proposed Terms of Reference were released for comment between December 8, 2007 and January 21, 2008. The Terms of Reference was finalized after considering comments received during the review period.

### Government of Canada's EA Requirements

A project description has been submitted to the federal government. Federal EA requirements are being determined.

## 1.0 INTRODUCTION

This section shall introduce the reader to the EA Report and include the purpose for the document within the context of Part IV of the Nova Scotia *Environment Act* and *Environmental Assessment Regulations*.

The Nova Scotia *Environmental Assessment Regulations* require the EA Report to include, but not be limited to, the following information:

- ▶ a description of the proposed undertaking;
- ▶ the reason for the undertaking;
- ▶ other methods of carrying out the undertaking;
- ▶ a description of alternatives to the undertaking;
- ▶ a description of the environment that might reasonably be affected by the undertaking;
- ▶ the environmental effects of the undertaking;
- ▶ an evaluation of advantages and disadvantages, to the environment, of the undertaking;
- ▶ measures that may be taken to prevent, mitigate or remedy negative environmental effects and maximize the positive environmental effects on the environment;
- ▶ a discussion of adverse effects or significant environmental effects which cannot or will not be avoided or mitigated through the application of environmental control technology;
- ▶ a program to monitor environmental effects produced by the undertaking during its construction, operation and abandonment stages;
- ▶ a program of public information to explain the undertaking.

## 2.0 PROJECT DESCRIPTION

This section of the EA Report shall describe each component of the project as it is planned through its full life cycle, including site preparation, construction, commissioning, operation, maintenance and decommissioning of:

- ▶ The wind turbines
- ▶ The hydro turbines and power station
- ▶ The reservoir

- ▶ The penstock
- ▶ electrical transmission lines, pipelines, roads and supporting infrastructure

## **2.1 The Proponent**

This section shall outline the Proponent's corporate commitment to sustainable development and environmental protection goals and principles. Including pertinent corporate policies, programs, plans, strategies, protocols, guidelines, codes, and environmental management systems (EMS).

Provide summary information on the nature of the management structure and organizational accountability for designing, constructing, operating and modifying the Project; implementing environmental mitigation measures and environmental monitoring; and managing potential adverse environmental effects.

Provide details on relevant corporate experience (the Proponent and related companies) with similar operations in Canada and in other countries with similar regulatory and social policy regimes. Describe experience in building and operating other wind farms or hydro facilities. Provide a record of the environmental performance and capability of the Proponent in conducting this type of project. Indicate the environmental record of key sub-contractors.

## **2.2 Project Location**

Describe how the Project site was chosen, including a discussion of the specific environmental considerations used in site selection of all project components, and the advantages of the proposed site. Describe the Project's compatibility with existing local and regional land-use policies and plans, and opportunities to integrate project planning into regional scale development efforts. Discuss compatibility of the Project location in relation to Aboriginal Peoples' current and traditional land uses.

Provide details on ownership of property within the Project footprint including lands owned by the Proponent, the Crown, or private lands. Provide details of existing agreements to develop the Project on lands not owned by the Proponent. Provide details for the required acquisition or use of private lands and Crown Lands, and discuss any contingencies should these lands not be available for project development.

Describe the ultimate boundaries of the Project in a regional context including existing and proposed land uses and infrastructure such as road networks, railways, power lines, pipelines, proximity to settled areas, individual and community water supplies, wetlands, water bodies, streams, ecologically sensitive areas and archaeological sites. Include mapping at an appropriate scale.

Provide a list and map of communities in the region potentially affected by the Project and indicate the distance between those communities and the specific project components as appropriate.

## **2.3 Project Design**

This section shall describe the design plans and appropriate design standards for all components of this project. All associated infrastructure including turbines, pipelines/penstock, water reservoirs, water intake facilities, power transmission lines and any other infrastructure, must be detailed. Also discuss environmental controls planned for the Project and how, environmental protection, conservation, best management practices (BMPs) and best available technology have been considered in the design.

This section shall also provide potential design variations and implications (including advantages or disadvantages to the environment) of those variations. Any assumptions which underlie the details of the Project design shall be described. Where specific codes of practice, guidelines and policies apply to items to be addressed, those documents shall be cited.

## **2.4 Construction**

This section shall include a description of the following:

- 2.4.1 Identify and describe by location, all physical works and activities carried out during the construction phase, including but not limited to: clearing and grubbing; blasting (if applicable); site access and roadways; turbine construction methods; reservoir construction methods; dangerous goods storage areas; watercourse crossings or diversions; utilities; road crossings; description of equipment used for construction.
- 2.4.2 Proposed construction schedules, including days of the week, times of the day, seasonal schedules and anticipated commencement and completion dates.
- 2.4.3 Describe any disposal of excess/waste excavated rock and overburden, including those for acid producing bedrock.
- 2.4.4 Identify by project component, all construction methods, standards, codes of practice, policies and guidelines, that will be used during construction. Identify environmental BMPs that will be utilized during construction.
- 2.4.5 Identify and describe construction and project design components, land use selection and practices that will minimize impacts on wildlife habitats.

## **2.5 Project Operation**

Describe the operation of all project components, including the wind turbines, hydro turbines, penstock, reservoir and intake facilities. The description of the operation shall include routine and maintenance operations for all project components. Discuss contingency plans for any accidents or malfunctions that may occur (i.e. ice throw from turbines) as a result of the project.

Describe operational minimum or maximum water levels and minimum and maximum water

depths for both the upper and lower reservoirs for power generation to continue.

Provide an estimate the reduction in green house gas emissions over the life of the project

## **2.6 Decommissioning and Reclamation**

Describe the proposed plans for decommissioning the facility, including all infrastructure and reclamation of any impacted site. The report shall also discuss the future land use options of the property following decommissioning and reclamation. Describe the plans for the reservoir during decommissioning.

## **3.0 REGULATORY ENVIRONMENT**

Describe the existing regulatory environment (Federal, Provincial, Municipal) including all permitting, licensing and regulatory requirements and Municipal Planning Strategy and Bylaw requirements that apply to all phases of the Project and associated infrastructure. Provide a schedule indicating anticipated dates for required regulatory approvals.

## **4.0 NEED FOR THE PROJECT**

This section shall discuss the purpose and public need for the undertaking.

## **5.0 A DESCRIPTION OF ALTERNATIVES TO THE PROJECT**

This section of the EA Report shall describe functionally different ways to meet the Project need and achieve the Project purpose.

## **6.0 OTHER METHODS FOR CARRYING OUT THE PROJECT**

The EA Report shall discuss other methods for carrying out the Project. This section shall also discuss alternate locations for the Project.

The rationale for rejecting other described methods of carrying out the Project must be provided, including a discussion of how environmental sustainability, and impact avoidance criteria were applied.

## **7.0 ASSESSMENT METHODOLOGY**

This section shall include the study strategy, methodology and boundaries used for preparing the EA Report . The following must be clearly defined:

- a) The temporal boundaries (i.e., duration of specific project activities and potential impacts) for construction and operation through decommissioning and operation.
- b) The study boundaries or project area and all space that will be potentially impacted or subject to subsequent modifications, by the Project as proposed, and the methodology used to identify the study boundaries.
- c) The Valued Ecosystem Components<sup>1</sup> (VECs) within the study boundaries and the methodology used to identify the VECs. The methodology used for VEC identification shall include input from members of the public, government departments and agencies, other experts, and other interested parties, as well as input from Aboriginal Peoples.

Any baseline data should include method of collection (including technique, effort).

Where appropriate the EA Report shall identify environmental protection objectives (including those contained in applicable legislation or guidelines) associated with each VEC.

- d) Strategy for investigating the interactions between the Project and each VEC and how that strategy was used to coordinate the individual studies undertaken.
- e) Method for predicting and evaluating project impacts upon the environment; determining necessary avoidance, mitigation, remediation and/or compensation (in this order of consideration); and determining the significance of any residual impacts including (but not limited to) cumulative impacts.

The following sections outline specific concerns and requirements related to the existing environment, adverse effects and environmental effects assessment, proposed mitigation, residual environmental impacts, proposed compliance and effects monitoring and the public information program that are to be addressed in the EA Report for the proposed project.

## **8.0 EXISTING ENVIRONMENT**

This section of the EA Report shall identify the study area and shall describe the existing environment in the study area over four seasons, where appropriate, through the use of original baseline studies.

The EA Report shall clearly indicate baseline data/information which is not available or where

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<sup>1</sup>For the purpose of this Environmental Assessment, Valued Ecosystem Components are interpreted as environmental; socio-economic; human health; reasonable enjoyment of life and property; and cultural, historical, archaeological, paleontological and architectural features that may be impacted, whether positive or negative, by the proposed project.

existing data cannot accurately represent environmental conditions in the Project area over four seasons. If the background data have been extrapolated or otherwise manipulated to depict environmental conditions in the project area, modeling methods and equations shall be described and shall include calculations of margins of error.

Environmental features must be depicted in detailed mapping of the project and study area. The components of the environment to be discussed shall include identified VECs and the following:

### **8.1 Area Geography**

Describe the study area geography and topography including features such as lakes, streams, and wetlands.

### **8.2 Existing and Planned Land Uses**

Describe the patterns of current and planned land use and settlement in the study area including residential, industrial, agricultural, parks and protected areas, as well as any current land use by Aboriginal Peoples. This section shall include map(s) to illustrate land uses and provide distances to significant settlements.

### **8.3 Socio-Economic Conditions**

Describe the current socio-economic conditions of the area including population demographics and economic conditions (including Aboriginal Peoples). Provide details of employment rates and trends at the municipal and regional level. The spatial boundaries of this analysis should include areas within which any employees of the Project are expected to reside.

Identify key industries in the region (both land based and marine based), and describe their contribution to the local and regional economies. Provide details of residential and commercial property values.

Describe any local and regional economic development goals and objectives identified through community consultation, or existing economic development plans and strategies.

### **8.4 Atmospheric Conditions**

For the study area, provide a review of baseline meteorological data, including annual and seasonal climatic conditions for the region.

### **8.5 Ambient Noise and Light Levels**

Describe the existing ambient acoustical environment at the project site and in any other areas where project activities could be expected to have an environmental effect. Provide the spatial boundaries of existing noise and vibration levels, as well as locations of recording stations and length of record for any acoustic or vibration data presented. Consider the effects of different

meteorological conditions on noise propagation. Provide information on any existing relevant standards, guidelines or objectives with respect to noise and vibration levels.

Describe existing ambient light levels at the project site and at any other areas where project activities could have an environmental effect on light levels. Describe night-time illumination levels during different weather conditions and seasons.

## **8.6 Surface Water**

Provide a general hydro logic, hydraulic and water quality description of all surface water bodies in the vicinity, including upstream and downstream to all project components. Hydrological assessment should be done for both 7 day low flow period and 100 year returns, and should clearly show seasonal variability. Existing uses, withdrawal capacities, and users of the watercourses shall be identified.

Provide monthly water budgets for all surface water systems potentially affected. Water budgets should provide abstractions for evapotranspiration, fisheries demand flows, fire flow demand and for any know users of the various watercourses.

Provide detailed information on the watercourse/flows diversions as proposed, coupled with the low flow data, peak flow data (100 year returns) and monthly water budgets.

Detail information as required as per the Canadian Dam Association's Dam Safety Guidelines.

## **8.7 Groundwater**

Provide a description of the regional and local hydrogeology of the study area, including a discussion of both groundwater quantity and quality. The direction of groundwater flow at the site should be discussed and potential receptors of groundwater should be identified. Also discuss groundwater use in the area, including both current and likely potential future uses. Discuss the hydrogeological conditions in the study area including the relationship between the existing ground surface and the groundwater levels in the area of the reservoir.

Discuss the approximate location of existing water wells in the vicinity (within a 1 km radius) of all project components. Show approximate well locations on a map.

## **8.8 Flora, Fauna and Habitat**

Identify, locate, describe, characterize and map the typical flora, fauna and associated habitats within the proposed development area using the Guide for Nova Scotia Wind Power Developers, the Guidelines for Including Wild Species in Environmental Assessments to those agreed through direct consultation with Nova Scotia Department of Natural Resources (DNR) Biologists (Wildlife Division and Regional Services). Field inventory and monitoring initiatives should be carefully planned, prioritized and undertaken using accepted scientific methods. Field inventories for vascular plants and lichens must include all new development corridors (highways, transmission lines etc.), the proposed reservoir site and sites where turbines will be

located.

Identify all rare species (Nova Scotia General Status of Wild Species) and those at risk (listed under either or both SARA and NSESA) known or reasonably inferred to occur within the proposed development area. Identify known or reasonably inferred threats posed by the project to rare species and those at risk. Identify and describe old growth forest within the project footprint. Sources of information that should be consulted, but not limited to include NSDNR, Wildlife Division; the Atlantic Conservation Data Center; Environment Canada (CWS); the Nova Scotia Museum of Natural History, local naturalists, relevant interest groups and published scientific literature. Field survey methodologies and the species priorities for their undertaking required to supplement available data shall be completed in a manner acceptable to NSDNR, Wildlife Division.

Identify any and all species (including invertebrates and bats) that may be negatively impacts or threatened by the project development directly (kills, mortality adults/young) or indirectly through habitat destruction, increased access (i.e. fur harvesters), alteration or loss (including cumulative impacts). Inventories, monitoring and/or research to address potential negative impacts of the project on species and habitats must be completed by trained professional botanists/biologists and to the satisfaction of NSDNR, Wildlife Division and the Canadian Wildlife Service. The proponent will identify and describe the significance of the proposed development area for migratory birds, wintering birds, breeding birds and colonial nesting birds and will quantify anticipated impacts. Similar focus in inventory and threat identification/remediation will be assigned to assessing impacts on resident, over wintering and migratory bats.

Identify proposed mitigation including assigning conservation leave areas, changes in operational practices or compensation. Identify existing or planned wildlife management areas, ecological reserves, or wilderness areas, managed wetlands, and significant wildlife habitats. Identify areas of high wildlife concentrations, wildlife corridors, or unique habitats that are rare in Nova Scotia; discuss the potential value of these to Nova Scotia's protected areas network.

## **8.9 Wetland Resources**

Identify the location, size and class (based on the Canadian Wetland Classification System) of any wetland within the predicted zone of influence and conduct a wetland evaluation. The true ecosystem value of each wetland shall be examined through on-site investigations using comprehensive valuation methodology that assesses component, functional and attribute values. Assess all wetlands as per the NS Bulletin Respecting the Alteration of Wetlands (2006).

Field surveys and investigations required to supplement the available data shall be completed in a manner that is acceptable to the DNR, Wildlife Division and Nova Scotia Department of Environment and Labour (NSEL).

## **8.10 Aquatic Species and Habitat**

Identify any freshwater fish or fish habitat that exists in any watercourse that may be impacted

by the development. The description of these species and habitat should identify any species-at-risk and ecologically sensitive or critical habitat and migratory routes of fish and marine mammals.

Describe the relative distribution and abundance of valued fish resource components within the predicted zone of influence. Fish species, age, health and diversity shall be described.

A description of any seasonal variation in the location, abundance and activities of aquatic species should be included. Describe and identify key habitat features, such as spawning, rearing, nursery, feeding, migration and overwintering areas, as they occur within the project area. Also describe the criteria utilized for determining the zone of influence this project has on the fish habitat.

### **8.11 Bedrock and Surficial Geology**

Provide a general description of the bedrock and surficial geology of the study area. Identify potential sources of acidic rock (sulphide values >0.4%). Detail the local surficial and bedrock geology where the artificial reservoir is proposed to ensure the area is suitable for water storage and to estimate seepage rates.

### **8.12 Historical, Archaeological, Paleontological and Architectural Resources**

Identify any areas containing features of historical, paleontological, cultural, archaeological or architectural importance in a manner acceptable to the Nova Scotia Department of Tourism, Culture & Heritage, Heritage Division. Describe the nature of the features located in those areas. All heritage research permits acquired, and consultation with Aboriginal Peoples during this analysis should be identified in the document. Ensure proper archaeological work is done in the areas of concern where modelling indicated moderate to high Mi'kmaq presence.

### **8.13 Transportation**

Describe the existing road conditions in the area, including class of road, traffic volumes and traffic types, and the road surface conditions. Describe the anticipated routes that traffic is likely to follow, especially during construction. Include anticipated upgrades to the local highway network and any new access point required, as well as a list of permits required by the department.

## **9.0 ADVERSE/ENVIRONMENTAL EFFECTS ASSESSMENT AND MITIGATION**

The EA Report shall identify and predict the magnitude and significance of Project impacts, both positive and negative, on the environment. "Adverse effects" and "environmental effects" are defined under the *Environment Act*. This section shall also address impacts on identified VEC's, as well as, but not limited to, the following socio-economic, community and bio-physical environmental impacts.

The EA Report shall describe all measures that are technically and economically feasible that have or will be taken to avoid or mitigate significant negative impacts and maximize the positive environmental effects of the Project, with emphasis on pollution prevention, impact avoidance, and best management practices. Mitigation includes the elimination, reduction or control of the adverse effects or the significant environmental effects of the Project and may include restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or any other means.

Describe compensation that will be provided when environmental damage is unavoidable or cannot be adequately mitigated by any other means.

This section shall address, but not necessarily be limited to the following:

### **9.1 Impacts on Land Use and Mitigation**

The EA Report shall include a description of the potential impacts to existing or planned land uses in the study area, and discuss any planned mitigation. Provide accurate images reflecting various perspectives and sight lines, including visibility from Route 4, viewpoints from sailing on the lakes and viewscapes from opposing shores.

### **9.2 Impacts on Socio-Economic Conditions and Mitigation**

Discuss the impact on residential property values. Discuss plans to mitigate any possible loss of property or property value.

Discuss the impact on First Nations' current uses of land and resources for traditional purposes and on any land claims which may exist within the proposed study area. Describe actions that will be taken to mitigate adverse impacts on First Nations.

Describe potential impacts to tourism and mitigation measures.

Provide a dispute resolution process for addressing Project-related complaints and concerns that may be received from nearby land owners or residents.

### **9.3 Noise Impacts and Mitigation**

Discuss any predicted increase and impact of background noise levels from project construction activities. Discuss any predicated increase in noise during operation of the project, and measures that will be taken to mitigate increased noise levels. Discuss the potential for noise associated with construction and operation as it relates to human health, including proximity of the site to human receptors.

### **9.4 Impacts on Surface Water and Mitigation**

Identify source and receiving waters and associated watersheds for construction and operational phases, and discuss all associated impacts to surface water quality, water quantity, fish habitat

and groundwater. The CCME Canadian Water Quality Guidelines and the Guidelines for Canadian Drinking Water Quality (2007), as they pertain to other water uses, aquatic life and existing ambient water quality, shall be used as a context for addressing the magnitude and importance of the predicted impacts.

Quantify the effects of the water draw down on water levels and flows in the downstream lakes and rivers, specifically Loch Lomond and Grand River. Detail the depths from which the water will be drawn (i.e. drawing down 21% of the lake volume equates to a given level change).

Discuss the impact of the project on water quality (parameters such as temperature, dissolved oxygen, and total dissolved solids) in McCuishs Brook, Lake Uist, Loch Lomond and any other surface water bodies whose water quality may be affected during construction and operation.

Discuss the effects of the potential release of mercury as a result of flooding during the reservoir construction and operation and the potential impacts to surface water quality, including aquatic life consumed by nearby recreational users.

Discuss the potential for soil eroding from the construction activities into adjacent watercourses. Describe the criteria used for design of run-off control features, i.e., expected run-off volumes, storm design data, etc. This section shall indicate if allowance has been made for potential changes in precipitation due to climate change. Present an outline of siltation, erosion and run-off control features, storm drainage management procedures and mitigation measures including specific references to seasonal variation, that will be used in the following situations: (a) clearing and grubbing of the site, (b) installation of watercourse structures, (c) trenching and other subgrade work, and (d) construction of service roads. Discuss commitments or plans that will protect the environment from these activities.

Provide the predicted impacts on surface water and vegetation resulting from the use of ice and snow control procedures, and from other maintenance activities.

Discuss the predicted impacts resulting from the disturbance of any contaminated soils. If contaminated soils are to be disturbed, discuss methods to minimize adverse impacts.

Indicate and discuss the probabilities of spills/accidents and the environmental consequences of such events. Discuss the potential impact of contaminated run-off on the environment, including the accidental release of a hazardous substance. Discuss commitments to provide contingency and remediation plans for any contamination of, or drainage to, surface water resources, including decrease of water quality or quantity. Contingency plans should include projections for minimum and maximum water levels and water depths as well as specific procedures for when water levels are below a minimum level or depth or above a maximum level or depth for operation.

Describe the procedure for the disposal of wastewater as a result of construction and operation of the project.

## **9.5 Impacts on Groundwater and Wells and Mitigation**

Provide a description of potential impacts from construction and operation activities on groundwater and wells, including both quality and quantity aspects. Predict any anticipated changes to groundwater quality and quantity and the significance of the anticipated changes.

Provide a discussion of groundwater monitoring, mitigation and contingency plans.

Indicate and discuss the probabilities of spills/accidents and the environmental consequences of such events. Discuss potential impacts of contaminated groundwater on fish, fish habitat and water quality.

Describe actions that will be taken to mitigate any negative impacts on groundwater quality and quantity.

Describe measures to be employed in the event of accidental dewatering of domestic water supply wells including compensation for loss or degradation of domestic water supplies.

Discuss commitments to provide contingency and remediation plans for any contamination of or drainage to groundwater resources, including decrease of water quality.

## **9.6 Impacts on Flora, Fauna and Habitat and Mitigation**

Predict, characterize and quantify the impacts of construction and operation of the project on terrestrial/aquatic flora and fauna, including birds and bats with a full assessment of known or reasonably inferred impacts on rare species (including habitats), species at risk (including habitats), and other significant habitat values. Assess, discuss and qualify the impacts of habitat fragmentation on wildlife populations including any interruption, alteration or destruction of wildlife corridors and cumulative impacts of such loss. Potential impacts on migratory bird habitat shall be assessed.

Discuss measures that will be taken to minimize impacts of construction and project operation on floral species, including rare species and those known to be at risk. Include plans for landscaping and preservation of existing vegetation. Describe reclamation practices and utilize native species for restoration of the site.

Describe practices that will be utilized during the development and operation of the project to minimize impacts to terrestrial and aquatic fauna (including bats and birds). Include any plans for preserving existing habitat and compensation for loss or degradation of aquatic and/or terrestrial habitats (i.e. habitat rehabilitation or replacement).

## **9.7 Impacts on Wetlands and Mitigation**

Provide site-specific mapping to demonstrate, as applicable, why particular wetlands cannot be avoided through routing. In the event that effects to wetlands are shown to be unavoidable through routing, the methods that will be implemented to minimize impacts to wetlands shall be

specified. Predict the impacts to all wetlands which may be affected by the proposed Project.

Include a plan for monitoring impacts on wetlands to maintain ecological and hydrological integrity of any wetlands in the area and for ensuring that appropriate mitigation activities are undertaken.

Identify plans for the preservation of existing wetlands and compensation for loss or degradation of the functional values of wetlands impacted by the Project. Also include plans to monitor the success of mitigative action.

### **9.8 Impacts on Aquatic Species and Habitat and Mitigation**

Predict the impacts that the Project will have on freshwater and diadromous species, including a full account of impacts on species of concern and habitat, including the potential impacts associated with freshwater intakes.

Describe the anticipated changes to the habitat as a result of the fluctuations in water depth/draw down (ie. Effects to the littoral zone, thermocline) and proposed mitigation measures. Discuss the potential impacts on fish populations during the summer months from lower water levels and increased water temperatures and proposed mitigation measures.

Describe the timing of work in and immediately adjacent to watercourses, and fish passage at watercourse crossings. Describe mitigation measures.

### **9.9 Geological Impacts and Mitigation**

Discuss the potential for the impact, of acidic water run-off from bedrock disturbed by project construction, on VECs.

Describe alternatives to disrupting net acid producing bedrock. When no practical alternative to exposing this bedrock exists, mitigation plans shall be developed for minimizing the impacts on the aquatic environment.

### **9.10 Impacts on Historical, Archaeological, Paleontological and Architectural Resources, and Mitigation**

Predict the Project related impacts to all structures, sites, resources or things of historical, archaeological, paleontological or architectural significance. Describe mitigation measures to preserve, protect, or recover any features of socio-economic, cultural, archaeological or paleontological value that are identified in the project area.

### **9.11 Impacts on Transportation and Mitigation**

Discuss any anticipated changes in traffic during construction and operations, including traffic flow, speed and density in adjacent residential and commercial areas. Discuss the mitigation measures planned to address anticipated impacts.

### **9.12 Impacts of the Environment on the Project and Mitigation**

Discuss the effect the environment may have on the construction and operation phases of the Project, including weather and climatic elements. Any necessary climate information shall be provided. Discuss how the Project accommodates the potential effects of climate change in its design considerations.

## **10.0 RESIDUAL ADVERSE EFFECTS AND ENVIRONMENTAL EFFECTS**

This section of EA Report shall list and contain a detailed discussion and evaluation of the residual impacts for each VEC, including the criteria for determining significance<sup>2</sup>. Residual impacts are those adverse effects or significant environmental effects which cannot or will not be avoided or mitigated through the application of environmental control technologies or other acceptable means. Those impacts that cannot be mitigated or avoided shall be clearly distinguished from those impacts that will not be mitigated or avoided. These impacts become important in the evaluation of a proposed project as they represent the environmental cost of the Project.

## **11.0 EVALUATION OF THE ADVANTAGES AND DISADVANTAGES TO THE ENVIRONMENT**

This section shall present an overall evaluation of the advantages and disadvantages to the environment, including the VECs, during the construction, operation and decommissioning phases of the Project. The evaluation of the disadvantages shall include an examination and justification of each disadvantage.

## **12.0 PROPOSED COMPLIANCE AND EFFECTS MONITORING PROGRAMS**

The EA Report shall include a framework upon which compliance and effects monitoring will be based throughout the life of the proposed project, through to decommissioning. Monitoring programs must be designed to determine the effectiveness of the implemented mitigation measures. The EA Report shall describe the compliance reporting methods to be used, including reporting frequency, duration, methods, format and receiving agencies.

Recognizing that the effectiveness of compliance and effects monitoring depends on a workforce that can identify and address potential impacts during construction and operation of the facility, the framework shall include procedures for providing training and orientation to on site employees during construction and operation of the facility.

The description of the compliance and effects monitoring program shall also include any

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<sup>2</sup> Under the *Environmental Assessment Regulations* "significant" means, with respect to an environmental effect, an adverse impact in the context of its magnitude, geographic extent, duration, frequency, degree of reversibility, possibility of occurrence or any combination of the foregoing

procedures/plans for addressing potential exceedences of environmental protection standards, guidelines or approvals.

The discussion of compliance monitoring shall include, but not be limited to:

### **12.1 Noise Monitoring**

Discuss the plans for monitoring construction and operational noise levels at the site, and at any residential or commercial areas near the Project.

### **12.2 Surface Water Monitoring**

Discuss any surface water monitoring plans for the construction, operation and decommissioning phases of the Project, including both water quality and quantity aspects.

### **12.3 Ground Water Monitoring**

Discuss plans for periodic monitoring of water quality and quantity, and any wells (if blasting operations are proposed). Discuss any groundwater monitoring plans for the construction and operational phases of the Project.

### **12.4 Bird and Bat Monitoring**

Discuss plans for bird and bat monitoring during project operations. Monitoring plans should be developed in accordance with DNR and Canadian Wildlife Service standards.

### **12.5 Wetland Monitoring**

Discuss plans for monitoring effects on wetlands during construction and operation phases of the project.

### **12.6 Fish Monitoring**

Discuss plans for fish and aquatic habitat monitoring in source and receiving waters.

### **12.7 Other Monitoring Plans**

Include any other monitoring plan which may include an Environmental Protection Plan (EPP) or other guidelines, polices or plans, proposed for the construction, operation and decommissioning of the facility.

## **13.0 PUBLIC INFORMATION PROGRAM**

This section of the EA Report shall detail the public information program initiated by the Proponent. The Proponent shall describe in detail the opportunities that have been, or will be

provided to allow the public to express their concerns and receive information on the various phases of project development. This section shall include a description of the various stakeholders for this project and how they were identified and informed on the Project.

The results of public consultation and information sessions shall detail what comments were raised, and how they were addressed, including any commitments made by the Proponent.

#### **14.0 ASSESSMENT SUMMARY AND CONCLUSION**

This section of the EA Report shall summarize the overall findings of the EA with emphasis on the main environmental issues identified.