

DRAFT
ENVIRONMENTAL IMPACT
STATEMENT GUIDELINES
for the
KEYYASK GENERATION PROJECT
proposed by the **Keeyask Hydropower Limited**
Partnership

Prepared by:
Canadian Environmental Assessment Agency

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Table of Contents

TABLE OF CONTENTS	I
LIST OF ACRONYMS AND DEFINITIONS	III
PART 1 - BACKGROUND.....	1
1 INTRODUCTION.....	1
1.1 PROPOSED PROJECT	1
1.2 PURPOSE OF THE ENVIRONMENTAL IMPACT STATEMENT GUIDELINES	1
1.3 FEDERAL EA REQUIREMENT	2
1.4 SCOPE OF PROJECT FOR THE PURPOSES OF THE EA	2
PART 2: CONTENT AND STRUCTURE OF THE EIS.....	4
2 PREPARATION AND PRESENTATION OF THE EIS	4
3 EXECUTIVE SUMMARY.....	5
4 INTRODUCTION AND PROJECT BACKGROUND	5
4.1 THE PROPONENT	5
4.2 PROJECT OVERVIEW.....	5
4.3 PARTICIPANTS IN THE ENVIRONMENTAL ASSESSMENT	6
4.4 REGULATORY FRAMEWORK AND THE ROLE OF GOVERNMENT	6
5 PROJECT DESCRIPTION	6
5.1 PURPOSE OF AND NEED FOR THE PROJECT.....	6
5.2 DESCRIPTION.....	7
5.2.1 <i>Location</i>	7
5.2.2 <i>Components</i>	7
5.2.3 <i>Activities</i>	7
5.2.4 <i>Schedule</i>	7
6 SCOPE OF THE ASSESSMENT	7
6.1 FACTORS TO BE CONSIDERED.....	7
6.2 SCOPE OF THE FACTORS	8
6.2.1 <i>Determination of Valued Ecosystem Components (VECs)</i>	8
6.2.2 <i>Spatial Boundaries</i>	9
6.2.3 <i>Temporal Boundaries</i>	9
6.3 PROJECT ALTERNATIVES.....	9
6.3.1 <i>Alternatives to the Project</i>	10
6.3.2 <i>Alternative Means of Carrying out the Project</i>	10
7 CONSULTATION	11
7.1 PUBLIC PARTICIPATION.....	11
7.2 ABORIGINAL CONSULTATION.....	11
7.3 GOVERNMENT AGENCY CONSULTATION.....	12
8 EXISTING ENVIRONMENT	12
8.1 BIOPHYSICAL ENVIRONMENT.....	12
8.1.1 <i>Physical Environment</i>	12
<i>Atmosphere</i>	12
<i>Land</i>	13
<i>Surface Water and Groundwater</i>	13
8.1.2 <i>Aquatic Environment</i>	13
<i>Water Quality and Sediment Quality</i>	13
<i>Aquatic Habitat</i>	14

Draft EIS Guidelines for the Keeyask Generation Project

<i>Intactness</i>	14
<i>Algae and Aquatic Plants</i>	14
<i>Aquatic Invertebrates</i>	14
<i>Fish</i>	14
<i>Mercury Concentrations and Other Characteristics of Fish Quality</i>	15
8.1.3 Terrestrial Environment	15
<i>Soil Quantity and Quality</i>	15
<i>Terrestrial Habitat</i>	15
<i>Fire Regime</i>	15
<i>Ecosystem Diversity</i>	15
<i>Wetland Function</i>	15
<i>Carbon Storage</i>	16
<i>Intactness</i>	16
<i>Terrestrial Plants</i>	16
<i>Terrestrial Invertebrates</i>	16
<i>Amphibians and Reptiles</i>	16
<i>Birds</i>	16
<i>Mammals</i>	17
<i>Mercury in Wildlife</i>	17
<i>Species of Conservation Concern</i>	17
8.2 SOCIO-ECONOMIC ENVIRONMENT	17
8.2.1 <i>Economy</i>	17
8.2.2 <i>Population, Infrastructure and Services</i>	17
8.2.3 <i>Personal, Family and Community Life</i>	18
8.2.4 <i>Land and Resource Use</i>	18
8.2.5 <i>Heritage Resources</i>	19
8.2.6 <i>Traditional and Local Knowledge</i>	19
9 ENVIRONMENTAL EFFECTS ASSESSMENT	20
9.1 ASSESSMENT METHODOLOGY	20
9.1.1 <i>Precautionary Approach</i>	20
9.1.2 <i>Impact Matrix</i>	21
9.1.3 <i>Potential Effects on Aboriginal Groups</i>	21
9.2 MITIGATION MEASURES	22
9.3 RESIDUAL EFFECTS	23
9.4 DETERMINATION OF THE SIGNIFICANCE OF RESIDUAL EFFECTS	23
9.5 EFFECTS OF THE ENVIRONMENT ON THE PROJECT	24
9.6 EFFECTS OF POTENTIAL ACCIDENTS AND MALFUNCTIONS	24
9.7 CAPACITY OF RENEWABLE RESOURCES	25
9.8 CUMULATIVE ENVIRONMENTAL EFFECTS	25
9.9 SUMMARY	26
10 ECONOMIC AND SOCIAL BENEFITS OF THE PROJECT	26
11 BENEFITS TO CANADIANS	26
12 ENVIRONMENTAL MANAGEMENT	27
12.1 PLANNING	27
12.1.1 <i>Decommissioning and Reclamation Plan</i>	27
12.2 FOLLOW-UP PROGRAM	28
13 SUMMARY AND CONCLUSIONS	29
14 REFERENCES	30

List of Acronyms and Definitions

<u>Acronym</u>	<u>Meaning</u>
Agency, the	Canadian Environmental Assessment Agency
CSR	Comprehensive Study Report (federal)
Cooperative Agreement	<i>Canada-Manitoba Agreement on Environmental Assessment Cooperation</i>
Federal Act, the	<i>Canadian Environmental Assessment Act</i>
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EALB	Department of Conservation and Water Stewardship – Environmental Assessment and Licensing Branch
PAT	Project Administration Team
Project, the	Keeyask Generation Project
Proponent	Keeyask Hydropower Limited Partnership
Provincial Act, the	<i>The Environment Act (Manitoba)</i>
TAC	Federal/Provincial Technical Advisory Committee
TC	Transport Canada
VEC	Valued Ecosystem Component

PART 1 - BACKGROUND

1 Introduction

The Keeyask Hydropower Limited Partnership (the proponent) has submitted a project description and Environment Act Proposal for the development of the Keeyask Generation Project (the Project), a 695-megawatt hydroelectric generation station on the lower Nelson River in northern Manitoba.

The proposed project will be subject to environmental assessment (EA) under both the *Environment Act* (provincial Act) and the *Canadian Environmental Assessment Act* (federal Act). The Government of Canada and the Government of Manitoba have agreed to review the project cooperatively as per the *Canada-Manitoba Agreement on Environmental Assessment Cooperation* (Cooperative Agreement).

The purpose of this document is to identify for the proponent and interested parties, the information and analysis required by the federal government for consideration in an environmental impact statement for the Keeyask Generation Project (the Project).

1.1 Proposed Project

The proponent is proposing to construct and operate a 695-megawatt hydroelectric generation station at Gull Rapids on the lower Nelson River immediately upstream of Stephen's Lake. The site would be approximately 30 kilometres southwest of Gillam, Manitoba. The Project would include a powerhouse complex, a spillway, dams, dykes, a reservoir, and other related infrastructure.

The Project includes all activities and physical works associated with the construction, operation, maintenance, decommissioning and reclamation of the proposed generating station as described in the proponent's project description dated July 6, 2011, and associated addendum dated August 31, 2011.

1.2 Purpose of the Environmental Impact Statement Guidelines

The purpose of this document is to identify for the proponent and the public, the information required by the federal government in the EIS for consideration in the EA for the Keeyask Generation Project (the Project). These guidelines specify the nature, scope and extent of the information required. The proponent will prepare and submit an EIS that: identifies the potential adverse environmental effects of the Project; identifies technically and economically feasible measures to mitigate those effects; and evaluates whether the proposed project will result in any significant adverse environmental effects.

While these guidelines provide a framework for preparing a complete EIS, it is the responsibility of the proponent to provide sufficient data and analysis on any potential environmental effects to permit proper evaluation by the Canadian Environmental Assessment Agency (the Agency), technical and regulatory agencies, Aboriginal groups and the public.

These guidelines outline the minimum information requirements while providing the proponent with flexibility in selecting methods to compile data for the EIS. These

guidelines have been prepared following consideration of the proponent's scoping document and the comments received during the January 2012 public review of the project description, scoping document and federal Background Information Document.

These guidelines should not be regarded as either restrictive or exhaustive, as concerns other than those identified in the document could arise during the investigations associated with the EA. In addition to the information within these guidelines, the elements presented within the proponent's scoping document are expected to be included within the EIS document.

1.3 Federal EA Requirement

The Project is a "project": fits the definition of a project as set out in the *Canadian Environmental Assessment Act*.

Fisheries and Oceans Canada (DFO) will be required to issue one or more authorizations under section 32 and subsection 35(2) of the *Fisheries Act* with respect to the Project. Transport Canada (TC) will also be required to issue one or more approvals under section 5 of the *Navigable Waters Protection Act*. The authorizations and approvals are described in the Law List Regulations under the federal Act. DFO and TC are responsible authorities as defined in section 2 of the federal Act and therefore must ensure that an EA of the Project is carried out before any *Fisheries Act* authorizations and *Navigable Waters Protection Act* approvals are issued.

The Project is subject to a comprehensive study pursuant to paragraph 4(b) of the Comprehensive Study List Regulations, given that it would be a hydroelectric generation station with a production capacity in excess of 200 megawatts. As this project will be assessed as a comprehensive study under the federal Act, the Agency will exercise the powers and perform the duties and functions of the responsible authorities during the assessment process until the comprehensive study report is submitted to the Minister of Environment. Following the Minister of Environment's decision, DFO and TC will assume their roles as responsible authorities in relation to the Project.

Information on the federal EA may be obtained from:

Jim Morrell, Project Manager
Canadian Environmental Assessment Agency – Prairie Office
Suite 101, 167 Lombard Avenue
Winnipeg, Manitoba R3C 2Z1
Tel: 204- 983-7997 Fax: 204-983-7174
E-mail: KeeyaskGeneration@ceaa-acee.gc.ca

1.4 Scope of Project for the Purposes of the EA

The scope of the project for the purpose of the cooperative EA will include all activities and physical works associated with the construction, operation, maintenance, decommissioning and reclamation of the proposed Keeyask Generation Project as described in the proponent's project description and scoping document.

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The EIS shall include a description of all components of the Project and any associated physical works and activities to support the construction, operation, maintenance, decommissioning and reclamation of the Project.

The scope of the project for the purpose of the comprehensive study will include the scope as described above as well as the construction and operation of the future Keeyask Transmission Project. Manitoba Hydro intends to submit a project description for the Keeyask Transmission component of the Project separately.

Part 2: Content and Structure of the EIS

2 Preparation and Presentation of the EIS

The EIS is a statement of the proponent's environmental conclusions and commitments related to the proposed project and, as such, must be explicitly endorsed by the proponent. It will be made available for Aboriginal consultation and public review, and to the extent possible, must be written in a manner that can be understood by non-specialists. Acronyms and a glossary of technical terms must be provided.

The sections that follow elaborate on the information to be documented in each section of the EIS. Sufficient information needs to be provided for each so that informed conclusions can be reached regarding the potential for impacts on the various components of the environment. However, the greatest time and effort are to be applied to data collection and interpretation related to the most significant environmental components as identified as VECs by the proponent and through these guidelines. The proponent must provide a rationale if issues identified in the guidelines are not fully addressed in the EIS. Key impacts that are identified for more intensive investigation must be highlighted.

Where external sources of information or data are used, the proponent shall reference the information within the text of the EIS in addition to providing a complete reference list at the end of the document. Where conclusions that are critical to the assessment of environmental impacts are cited from other reports, the proponent shall provide sufficient detail of the originating data and analysis so as to enable a critical review of that material. Such detailed reference material could be submitted as an appendix to the EIS. The EIS shall be a stand-alone document upon which a critical review can be undertaken.

Please note that the information included in this document is not intended to be exhaustive and additional detail, studies and components may require examination.

The EIS that is made publicly available for comment should not contain:

- information that is sensitive or confidential (i.e., financial, commercial, scientific, technical, personal, cultural or other nature), that is treated consistently as confidential, and the person affected has not consented to the disclosure; or,
- information that is likely to endanger the life, liberty or security of a person through its disclosure.

The proponent should consult with the Agency regarding whether specific information requested by these guidelines should be treated as confidential.

To facilitate the identification of documents and their coding in public registries, the title page of the EIS will contain the name and location of the Project, the title of the document (including the term "environmental impact statement"), subtitle, name of the proponent, date in month and year and the Canadian Environmental Assessment Registry Reference Number.

The EIS will be provided to regulatory authorities in printed and electronic form.

3 Executive Summary

The EIS will contain an executive summary which will include:

- a concise description of all key components of the Project;
- a succinct description of the consultation conducted with Aboriginal groups, the public, and government agencies, with a summary of the issues raised and solutions found and/or suggested during these consultations;
- a description of the key environmental effects of the project and proposed technically and economically feasible mitigation measures; and
- the proponent's conclusions and significance determinations from the assessment.

In order to enhance understanding of the EIS and facilitate consultation activities, the executive summary should be prepared using “plain language” and should serve as a stand-alone document. The executive summary will include maps indicating the locations of the Project and its key components. The proponent will prepare a summary of the environmental effects analyses in a table format to present the information clearly and accurately.

The executive summary must be provided in English and French upon submission.

4 Introduction and Project Background

4.1 The Proponent

The proponent shall:

- identify itself and the name of the legal entity that would develop, manage and operate the Project;
- provide its contact information for the proponent (e.g., name, address, phone, fax, email);
- explain its corporate and management structures;
- specify the mechanism that would be used to ensure that corporate policies will be implemented and respected for the Project;
- identify key personnel, contractors, and/or sub-contractors responsible for preparing the EIS; and
- provide the qualifications of biologists that have conducted surveys for migratory birds, species at risk and species of conservation concern, and wetland delineations should be provided in an appendix to the EIS.

4.2 Project Overview

The proponent shall briefly summarize, the project, by presenting the project components, associated and ancillary works, activities, scheduling details, timing of each phase of the Project and other key features. If the Project is part of a larger sequence of projects, the proponent shall outline the larger context and present the relevant references, if available. The project location should be described in conjunction with surrounding land uses and infrastructure. The intent of this overview is to provide the key components of the Project, not a detailed description, which is outlined in Section 5 of this document.

4.3 Participants in the Environmental Assessment

The EIS shall clearly identify the main participants in the EA including jurisdictions other than the federal government, Aboriginal groups, community groups, environmental organizations etc.

4.4 Regulatory Framework and the Role of Government

To understand the context of the EA, this section should identify, for each jurisdiction, the government bodies involved in the EA as well as the EA processes. More specifically it shall identify:

- the environmental and other specific regulatory approvals and legislation that are applicable to the Project at the federal, provincial, regional and municipal levels;
- government policies, resource management, planning or study initiatives pertinent to the Project and/or EA and discuss their implications;
- policies and guidelines of the Aboriginal groups being consulted that are pertinent to the Project and/or EA and discuss their implications;
- any treaty or self government agreements with Aboriginal groups that are pertinent to the Project and/or EA;
- any relevant Land Use Plans, Land Zoning, or Community Plans;
- major components of the Project and identify those being applied for and constructed within the duration of approvals under provincial and federal legislation; and
- in a summary form the (national, provincial and / or regional) objectives, standards or guidelines that have been used by the proponent to assist in the evaluation of any predicted environmental effects.

5 Project Description

5.1 Purpose of and Need for the Project

The ‘purpose of’ and ‘need for’ the project should be established from the perspective of the project proponent and in the context provided for consideration of alternatives to the project.

The project will be designed to achieve specific objectives established by the proponent. These objectives should be described. The “purpose of” the project can be described by an answer to the question: *What is to be achieved by carrying out the project?*

For the purpose of the comprehensive study, the proponent must clearly describe the need for the proposed project. The “need for” the project can be described by an answer to the question: *What is the problem or opportunity the project is intended to solve or satisfy?* The ‘need for’ will establish the fundamental rationale of the project.

Responses to this section of these guidelines should be established from the perspective of the proponent. The analysis in this section of the EIS should identify requirements of the proposed purchaser of the power to be produced by the Project. These requirements should be concisely described.

5.2 Description

5.2.1 Location

Include a description of the Project's site location using maps of appropriate scale. The location map should include the boundaries of the proposed site including UTM coordinates, the major existing infrastructure, adjacent land uses and any important environmental features. In addition, site plans/sketches and photographs showing project location, site features and the intended location of project components should be included.

5.2.2 Components

Provide a detailed description of all project components, ancillary works and activities.

As appropriate to convey the information, the EIS shall present descriptions, locations, plans, figures and/or drawings for each of the components or facilities.

5.2.3 Activities

The EIS shall include expanded descriptions of activities associated with the construction, operation, maintenance, foreseeable modifications, and where relevant, closure, decommissioning and reclamation of sites and facilities associated with the proposed project.

This would include detailed descriptions of the activities to be carried out during each phase, the location of each activity, expected outputs and an indication of the activity's magnitude and scale.

Although a complete list of project activities is required, the emphasis should be on activities with the greatest potential to result in adverse environmental effects. Sufficient information should be included to predict environmental effects and address identified public concerns. Activities should be highlighted that involve periods of increased environmental disturbance or the release of materials into the environment.

Activities and project components associated with fish habitat compensation works must be detailed.

5.2.4 Schedule

Include a detailed schedule with the time of year, frequency, and duration for all project activities.

6 Scope of the Assessment

6.1 Factors to be Considered

The proponent will include a consideration of the following factors:

- the environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project;

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- for the purpose of the comprehensive study, environmental effects also include any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out;
- the significance of the environmental effects referred to above;
- comments from the public that are received during the EA;
- comments from Aboriginal groups that are received during the EA;
- measures that are technically and economically feasible intended to be undertaken to accommodate any adverse impact of the project on potential or established Aboriginal and Treaty rights;
- measures that are technically and economically feasible and proposed to mitigate any significant adverse environmental effects of the Project;
- the purpose of the Project;
- alternative means of carrying out the Project that are technically and economically feasible and the environmental effects of any such alternative means;
- the need for, and the requirements of, any follow-up program in respect of the project; and
- the capacity of renewable resources that are likely to be significantly affected by the Project to meet the needs of the present and those of the future.

For the purpose of the comprehensive study, the EIS shall include an assessment of the “need for” the project and “alternatives to” the project (see sections 5.1 and 6.3.1). It shall also include an assessment of the indirect effects to navigation that would result from undertaking the Project.

6.2 Scope of the Factors

Scoping establishes the boundaries of the EA and focuses the assessment on relevant issues and concerns. By defining the spatial and temporal boundaries, a frame of reference for identifying and assessing the environmental effects associated with the Project will be established. Different boundaries may be appropriate for each valued ecosystem component (VEC).

A description of the boundaries of the proposed project in a regional context showing existing and planned land use, Aboriginal traditional territories/treaty lands/Indian Reserves, current infrastructure and proposed improvements to these infrastructure, including transportation (all modes), power distribution corridors and lines, and urban areas, must be provided.

6.2.1 Determination of Valued Ecosystem Components (VECs)

The EIS must explain and justify methods used to predict the effects of the Project on each VEC, which includes biophysical and socio-economic components, the interactions among these components and on the relations of these components to the environment. This information presented must be substantiated.

The proponent will describe how the VECs were selected and what methods were used to predict and assess the adverse environmental effects of the Project on these components. For consultations associated with the identification of VECs, the proponent shall identify

those VECs, processes, and interactions that either were identified to be of concern during any workshops or meetings held by the proponent or that the proponent considers likely to be affected by the Project. In doing so, the proponent should indicate to whom these concerns, including social, economic, recreational, and aesthetic considerations, are important and the reasons why. The proponent must describe any issues raised or comments noted regarding the nature and sensitivity of the area within and surrounding the Project and any planned or existing land and water use in the area. The proponent must also indicate the specific geographical areas or ecosystems that are of particular concern to interested parties, and the relationship of these areas to the broader regional environment and economy.

6.2.2 Spatial Boundaries

Clearly indicate the spatial boundaries (local and regional study areas) to be used in assessing the potential adverse and beneficial environmental effects of the proposed project. The EIS must contain a justification and rationale for all boundaries chosen. It is important to note that the spatial boundaries for the VEC may vary.

Study boundaries must be defined taking into account (where applicable) the spatial extent of potential environmental effects, traditional and local knowledge, current and proposed land use by Aboriginal groups and ecological, technical and social and cultural considerations. These boundaries must also indicate the range of appropriate scales at which particular baseline descriptions and the Project's assessment of environmental effects are presented. The description of the Project setting must be presented in sufficient detail to address the relevant environmental effects of the Project.

The proponent must take into account public comments when establishing boundaries and is advised to consult with federal and provincial departments and agencies, local government and Aboriginal groups to confirm the spatial boundaries used in the EIS.

The EIS shall identify the proposed spatial study boundaries for the VEC groups outlined in section 6.2.1.

6.2.3 Temporal Boundaries

The temporal boundaries of the Project should span all phases of the Project: construction, operation, maintenance, decommissioning and reclamation of the sites affected by the project. Temporal boundaries shall also consider seasonal and annual variations related to VECs for all phases of the Project, where appropriate.

If the full temporal boundaries are not used, the EIS shall identify the boundaries used and provide a rationale for the temporal boundaries selected.

6.3 Project Alternatives

Responses to this section of these guidelines should be established from the perspective of the proponent. The analysis in this section of the EIS should identify requirements of the proposed purchaser of the power to be produced by the Project. These requirements should be concisely described.

6.3.1 Alternatives to the Project

The EIS must include an analysis of alternatives to the Project which describe functionally different ways to meet the project need and achieve the project purpose from the perspective of the proponent. Analysis of “alternatives to” a project should validate that the preferred alternative is a reasonable approach to meeting need and purpose.

The proponent will:

- clearly describe its objectives in undertaking the Project;
- identify from the perspective of the proponent alternatives to the Project that were considered;
- develop criteria to identify the major environmental, economic and technical costs and benefits of the alternatives; and
- identify the preferred alternatives to the Project based on the relative consideration of the environmental, economic and technical costs and benefits.

Analysis of alternatives to the Project should describe the process the proponent used to determine that the Project is viable (technically, economically and environmentally). The level of assessment should reflect the more conceptual nature of the alternatives to the Project at this stage of the process.

When assessing project alternatives, the proponent is encouraged to take into account the relations and interactions among various components of the ecosystem, including affected Aboriginal and other communities, and any adverse impacts on current use lands and resources for traditional purposes by Aboriginal peoples, including but not limited to hunting, fishing, trapping and gathering. Further, the proponent is encouraged to demonstrate how the preferred alternative contributes to sustainable development.

6.3.2 Alternative Means of Carrying out the Project

The EIS must identify and describe alternative means of carrying out the Project that were determined to be technically and economically feasible. The analysis will include:

- identifying the alternative means to carry out the Project.
 - Developing criteria to determine the technical and economic feasibility of the alternative means considered;
 - Describing each alternative means in sufficient detail to facilitate the analysis; and,
 - Listing those alternative means that are technically and economically feasible.
- identifying the environmental effects of each alternative means.
 - Identifying at a conceptual level those elements of each alternative means considered, and provide sufficient detail to allow a comparison with the environmental effects of the project.
- identifying the preferred means.
 - Identifying the preferred means based on the relative consideration of environmental effects; and of technical and economic feasibility;

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- Determining and apply criteria that identify alternative means as unacceptable on the basis of significant adverse environmental effects; and,
- Determining criteria to examine the environmental effects of each remaining alternative means to identify the preferred alternative.

Any potentially adverse environmental effects of the technically and economically feasible alternatives on current use lands and resources for traditional purposes by Aboriginal peoples, including but not limited to hunting, fishing, trapping and gathering.

At a minimum, the discussion of alternative means of carrying out the Project will include a consideration of the following:

- arrangement of the generation station including locations on the river;
- dyking arrangements;
- reservoir elevations and generating station size (i.e production capacity);
- hydroelectric technologies considered (i.e. including number and types of turbines);
- fish passage upstream and downstream;
- planning for ancillary features such as access roads, borrow sites, etc;
- operating patterns; and
- reservoir preparation strategies

7 Consultation

7.1 Public Participation

For any consultations undertaken with the general public, the proponent shall describe any consultation undertaken. The proponent shall also describe planned or on-going consultation with respect to the Project. It shall provide a summary of discussions, indicating the methods used for consultation and relevance to the Project, locations, the persons and organizations consulted, the concerns raised, the extent to which this information was incorporated in the design of the project as well as in the EIS, and the resultant changes. Moreover, the proponent shall describe any outstanding issues and describe ways to address these issues. The proponent will also provide a description of efforts made to distribute project information and provide a description of information and materials that were distributed during the consultation process.

7.2 Aboriginal Consultation

The proponent will actively solicit Aboriginal concerns during the course of the EA. The proponent will examine opportunities to mitigate the environmental effects of the project on Aboriginal groups' current use of lands and resources for traditional purposes and other Aboriginal interests.

The EIS should outline for each Aboriginal group consulted by the proponent:

- contact information;
- description of the consultation process on factors to be considered in the EIS;

Draft EIS Guidelines for the Keeyask Generation Project

- list of all factors suggested for inclusion in the EIS, whether or not the factors were included, and the rationale for any exclusions;
- description of the traditional territory and potential or established Aboriginal and treaty rights that are exercised in relation to the assessment area;
- potential adverse impacts to the Aboriginal rights resulting from the Project;
- proposed accommodation measures to avoid or mitigate the impacts to Aboriginal rights; and,
- efforts made to solicit the above information from Aboriginal groups if the proponent is unable to obtain all the information.

For any consultations undertaken with Aboriginal groups, provide all relevant information as outlined above.

7.3 Government Agency Consultation

The proponent shall provide all relevant information related to consultations undertaken with government agencies as outlined above.

8 Existing Environment

The EIS will provide a description of the existing environmental setting of the study area(s), from a local and regional perspective, to provide context for an understanding of the potential effects of the Project. The EIS will also describe trends and conditions in the current environmental setting. The description shall be in sufficient detail to permit the identification, assessment and determination of the significance of potentially adverse environmental effects that may be caused by the Project, to adequately identify and characterize the beneficial effects of the Project, and provide the data necessary to enable effective testing of predictions during the follow-up program.

Information on the environmental setting will be organized into the broad topics follow:

- Biophysical environment (i.e., physical, aquatic and terrestrial);
- Socio-economic environment (including resource use and heritage resources).

8.1 Biophysical Environment

8.1.1 Physical Environment

Atmosphere

The EIS will describe the following attributes in the relevant study area(s):

- precipitation, temperature, and wind speed/direction;
- trends in climate change;
- existing air quality and sources of air contaminants, including greenhouse gas emissions; and
- existing ambient noise level.

Land

The EIS will describe the following attributes in the relevant study area(s):

- local and regional physiography, geology and soil;
- physical and chemical properties of rock and borrow material sources;
- permafrost conditions;
- regional seismicity and seismic activity;
- shoreline conditions and the rate of shoreline erosion and recession;
- peatland disintegration along shorelines and inland areas; and
- shoreline debris.

Surface Water and Groundwater

The EIS will describe the following attributes in the relevant study area(s):

- hydrology and spatial extent of the local and regional watersheds in the Split Lake to Gull Rapids reach;
- existing water regime and conditions;
- existing range of flows and water levels in the context of the operation of the Churchill River Diversion (CRD) and Lake Winnipeg Regulation (LWR);
- longitudinal profiles of water levels and bathymetry of the Nelson River from the outlet of Split Lake to the inlet to Stephens Lake;
- ice conditions, including changes during the winter and variability from year to year;
- dissolved oxygen and temperature conditions;
- groundwater movement, levels and regime;
- nature and extent of suspended sediment transport and deposition; and
- hydrologic and hydraulic models, including a detailed assessment of instream flow needs.

8.1.2 Aquatic Environment

Water Quality and Sediment Quality

The EIS will describe the following attributes in the applicable study area(s):

- concentrations of water and sediment quality parameters that affect the suitability of the environment for aquatic life;
- seasonal variations in water quality;
- parameters that affect the suitability of water for other uses (e.g., recreation, drinking water, etc.); and
- susceptibility to erosion and sedimentation.

Aquatic Habitat

The EIS will describe the following attributes in the applicable study area(s):

- aquatic habitat based on water depth, velocity, substratum, and presence of cover (e.g., aquatic macrophytes);
- aquatic habitat classified into categories relevant to use by aquatic biota; and
- quantification of existing habitat, including description of changes due to seasonal and year-to-year variation in water flows; and

Intactness

The EIS will describe the following attributes in the applicable study area(s):

- fragmentation resulting from human linear features and other human footprints;
- distribution of linear features by feature type; and
- distribution and abundance of core areas.

Algae and Aquatic Plants

The EIS will describe the following attributes in the applicable study area(s):

- species composition and biomass of phytoplankton, including seasonal changes and relation to characteristics of the waterbody;
- distribution of attached algae in relation to habitat;
- species composition and distribution of aquatic macrophytes, in relation to habitat; and
- distribution, abundance and habitat associations of invasive aquatic plant species.

Aquatic Invertebrates

The EIS will describe the following attributes in the applicable study area(s):

- species composition and abundance of zooplankton, including seasonal changes and relation to characteristics of the waterbody;
- species composition and abundance of benthic invertebrates, in relation to habitat; and
- distribution, abundance and habitat associations of invasive aquatic invertebrate species.

Fish

The EIS will describe the following attributes in the applicable study area(s):

- species composition and relative abundance;
- life history parameters, including spawning and feeding biology;
- habitat use;
- short-term and long-term patterns of fish movements between and within waterbodies, including spawning migrations and movements over habitat potentially affected by the Project; and
- distribution, abundance and habitat associations of invasive aquatic fish species.

- Mercury Concentrations and Other Characteristics of Fish Quality

The EIS will describe the following attributes in the applicable study area(s):

- mercury levels for key domestic and commercial fish species (e.g., walleye, northern pike, and lake whitefish);
- other characteristics of fish quality that affect the commercial sale of fish; and
- the taste, texture, and palatability of fish species (e.g., walleye, northern pike, and lake whitefish) utilized by local Aboriginal people.

8.1.3 Terrestrial Environment

Soil Quantity and Quality

The EIS will describe the following attributes in the applicable study area(s):

- distribution and abundance of soil types classified into soil quality categories; and
- parameters that affect the suitability of soils to perform ecosystem functions (e.g., primary productivity).

Terrestrial Habitat

The EIS will describe the following attributes in the applicable study area(s):

- terrestrial habitat based on vegetation, site conditions, groundwater depth, surface water depth, permafrost, topography and disturbance or instability regime;
- terrestrial habitat classified into upland and wetland categories relevant to use by terrestrial biota; and
- quantification of existing habitat, including description of changes due to temporal variations in water levels and flows, historical human impacts, vegetation succession and large fires.

Fire Regime

The EIS will describe the following attributes in the applicable study area(s):

- fire history; and
- fire regime parameters relevant for vegetation, wildlife and ecosystem functions.

Ecosystem Diversity

The EIS will describe the following attributes in the applicable study area(s):

- distribution and abundance of stand and landscape level ecosystem types; and
- distribution, abundance and environmental associations of ecosystem types requiring special consideration such as rare or highly diverse types.

Wetland Function

The EIS will describe the following attributes in the applicable study area(s):

- distribution, abundance and environmental associations of peatlands and wetland types making disproportionately high contributions to wetland function such as

Draft EIS Guidelines for the Keeyask Generation Project

- highly productive types or types that provide high quality habitat for waterfowl or aquatic furbearers; and
- parameters that affect wetland functions.

Carbon Storage

The EIS will describe the following attributes in the applicable study area(s):

- carbon stored in terrestrial vegetation and soils; and
- parameters that affect the ability of vegetation and soils to store carbon.

Intactness

The EIS will describe the following attributes in the applicable study area(s):

- fragmentation resulting from human linear features and other human footprints;
- distribution of linear features by feature type; and
- distribution and abundance of core areas.

Terrestrial Plants

The EIS will describe the following attributes in the applicable study area(s):

- species composition, distribution and relative abundance of vascular plants, in relation to habitat;
- species composition, distribution and relative abundance of the common ground mosses and lichens, in relation to habitat; and
- distribution, abundance and habitat associations of invasive plant species.

Terrestrial Invertebrates

The EIS will describe the following attributes in the applicable study area(s):

- species composition and habitat associations of terrestrial invertebrates (e.g., worms, snails, spiders, insects).

Amphibians and Reptiles

The EIS will describe the following attributes in the applicable study area(s):

- species composition and distribution of amphibians;
- habitat associations and seasonal use by amphibians; and
- species and presence of reptiles (if applicable).

Birds

The EIS will describe the following attributes in the applicable study area(s):

- species composition, distribution and relative abundance of songbirds, raptors, upland gamebirds and waterbirds, including migratory birds, in relation to habitat including seasonal changes.

Mammals

The EIS will describe the following attributes in the applicable study area(s):

- species composition, distribution and relative abundance of small mammals, furbearers, large carnivores and ungulates, in relation to habitat including seasonal changes.

Mercury in Wildlife

The EIS will describe the following attributes in the applicable study area(s):

- mercury levels for key bird species (e.g., Canada goose, mallard); and
- mercury levels for key mammal species (e.g., beaver, muskrat, otter and mink).

Species of Conservation Concern

The EIS will identify plants and animals named under the *Species at Risk Act* (Canada) and/or *The Endangered Species Act* (Manitoba), listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), and identified as S1 and S2 species by the Manitoba Conservation Data Centre. The EIS will include information on composition, distribution, relative abundance, seasonal movements, movement corridors, habitat requirements, key habitat areas, and general life history for the identified species.

8.2 Socio-Economic Environment

8.2.1 Economy

The EIS will describe the following attributes in the relevant study area(s):

- the Manitoba and Canadian economies, including GDP and employment (i.e., person years and income);
- the regional economy, in particular local Aboriginal and non-Aboriginal communities and the regional centre, with an emphasis on the labour force, employment, unemployment, income, and education and training, and with a profile of local business capacity (e.g., goods and services);
- a profile of key resource use sectors potentially affected by the Project (see Land and Resource Use), with an emphasis on the commercial sectors; and
- cost of living.

8.2.2 Population, Infrastructure and Services

The EIS will describe the following attributes in the relevant study area(s):

- existing population distribution and demographics; and
- existing infrastructure and services of Aboriginal and other in-vicinity communities, including:
 - housing/accommodation supply;
 - water and sewer infrastructure;
 - transportation infrastructure;

- education;
- emergency services;
- social services; and
- public health infrastructure and health and social services that may be relied upon during Project construction and operation.

8.2.3 Personal, Family and Community Life

The EIS will describe the following attributes in the relevant study area(s):

- public safety;
- travel, access and safety;
- aesthetics;
- health status and health issues (to include methylmercury contamination in country food);
- culture and spirituality; and
- governance, goals and plans.

8.2.4 Land and Resource Use

In describing the socio-economic environment, the EIS will focus on the following land and resource use attributes in the relevant study area:

- land use context (recreation, navigable waters, etc.)
- description of lands including:
 - land acquisition focusing on Crown land requirements and private land acquisition requirements for the Project;
 - description of Reserve lands and Treaty Land Entitlement; and
 - lands with special designation (proposed and existing), focusing on the following:
 - Federal and Provincial park lands;
 - Wildlife Management Areas;
 - Areas of Special Interest (Manitoba Protected Areas Initiative);
 - Ecological Reserve lands; and
 - Scientific sites.
- based on information provided by Aboriginal groups or, if Aboriginal groups do not provide this information, on available information from other sources, a description of the following:
 - Current and proposed uses of land and resources by Aboriginal groups for traditional purposes, i.e., hunting, fishing, trapping, cultural and other traditional uses of the land (e.g., collection of medicinal plants and uses of sacred sites); and

Draft EIS Guidelines for the Keeyask Generation Project

- Land and water access into the area by Aboriginal people.
- Navigation and navigation safety.
- description of commercial resource use and lands including:
 - Commercial use of resources by Aboriginal and non-Aboriginal groups, focusing on the following:
 - Commercial fishing;
 - Commercial trapping;
 - Resource tourism including lodge and outfitting operations and eco-tourism;
 - Commercial mining activities, leases, licenses and lands; and
 - Forestry and forested lands.
- description of recreational resource use including:
 - Use of lands and waters by non-Aboriginal peoples for the purposes of sports fishing, hunting, recreational cabin uses and associated travel routes and travel safety concerns.
 - Navigation and navigation safety.
- description of use of potable water for drinking water purposes.

8.2.5 Heritage Resources

The EIS will focus on the following heritage resources in the relevant study area(s):

- historical land use and occupancy;
- archaeological sites and culturally important sites, focusing on shoreline sites that could potentially be affected by erosion;
- location of known and potential burial sites (if any); and
- structures, sites or things of historical, archaeological, paleontological or architectural significance that will be affected by the Project.

8.2.6 Traditional and Local Knowledge

The proponent must incorporate into the EIS the traditional and local knowledge to which it has access or that it may reasonably be expected to acquire through applying the appropriate due diligence, in keeping with appropriate ethical standards and without breaching obligations of confidentiality, as set out in section 2 of this document.

Agreement should be obtained from Aboriginal groups regarding the use, management and protection of their existing Aboriginal traditional knowledge information during and after the EA.

9 Environmental Effects Assessment

9.1 Assessment Methodology

This section will describe the Project's potential environmental effects of all components of the Project. The proponent shall identify the Project's likely adverse environmental effects during construction, operation, maintenance, decommissioning and reclamation of sites and facilities associated with the Project, and describe these effects using appropriate criteria.

This documentation should include, for each potential project-related adverse environmental effect, an indication of the nature of the effect, mechanism, magnitude, direction, duration, frequency and timing, geographic extent, and the degree to which it may be reversible. The proponent shall consider both the direct and indirect, reversible and irreversible, short- and long-term and cumulative environmental effects of the Project. In predicting and assessing the Project's effects, the proponent shall indicate important details and clearly state the elements and functions of the environment that may be affected, specifying the location, extent and duration of these effects and their overall impact.

In undertaking the environmental effects assessment, the proponent will use best available information and methods. All conclusions must be substantiated. Predictions shall be based on clearly stated assumptions. The proponent shall describe how it has tested each assumption. With respect to quantitative models and predictions, the proponent shall discuss the assumptions that underlie the model, the quality of the data and the degree of certainty of the predictions obtained.

The assessment of the effects of each of the components and activities, in all phases, shall be based on a comparison of the biophysical and human environments between the predicted future conditions with the Project in place and the predicted future conditions without the Project in place. The assessment shall reveal the environmental effects of the Project, the technically and economically feasible mitigation measures proposed to be implemented and an assessment of the effectiveness of those measures. Where mitigation measures are proposed to be implemented for which there is little experience or for which there is some question as to their effectiveness, the potential risks and effects to the environment should those measures not be effective should be clearly and concisely described.

The consideration of views from the public and Aboriginal groups, including any perceived changes attributed to the Project, must be recognized and addressed in the assessment method.

9.1.1 Precautionary Approach

The EIS will demonstrate that the Project has been examined in a careful and precautionary manner. In determining whether the Project is likely to cause significant adverse environmental effects, the proponent shall:

- demonstrate that all aspects of the Project have been examined and planned in a careful and precautionary manner in order to ensure that they would not cause

- serious or irreversible damage to the environment, especially with respect to environmental functions and integrity, considering system tolerance and resilience, and/or the human health of current or future generations;
- outline and justify the assumptions made about the effects of all aspects of the Project and the approaches to minimize these effects;
 - evaluate alternative means of carrying out the Project and compare them in light of risk avoidance and adaptive management capacity;
 - ensure that in designing and operating the Project, priority has been and would be given to strategies that avoid the creation of adverse environmental effects;
 - develop contingency plans that explicitly address accidents and malfunctions;
 - identify any proposed follow-up and monitoring activities, particularly in areas where scientific uncertainty exists in the prediction of effects; and,
 - present public views on the acceptability of all of the above.

In doing so, the proponent shall consider the guiding principles set out in the Government of Canada *Framework for the Application of Precaution in Science-based Decision Making About Risk* (2003).

9.1.2 Impact Matrix

An impact matrix methodology in combination with identification of VECs should be used to evaluate the adverse environmental effects of the Project, as well as the impact to Aboriginal rights. The assessment should include the following general steps:

- listing the activities and components of the Project;
- identifying the potential interactions between the project activities and components and the environment during all phases of the project.
- predicting and evaluating the likely effects on identified valued ecosystem components;
- identifying technically and economically feasible mitigation measures for any significant adverse environmental effects;
- identifying any residual environmental effects;
- ranking of each residual adverse environmental effect based on various criteria; and
- determining the potential significance of any residual environmental effect following the implementation of mitigation.

The results of the assessment process should be clearly documented in the text as well as in summary matrices and tables. The analysis must be documented in a manner that readily enables conclusions on the significance of the environmental effects to be drawn.

9.1.3 Potential Effects on Aboriginal Groups

Based on information provided by Aboriginal groups, or, if Aboriginal groups do not provide this information, on available information from other sources, the proponent will identify:

- any potential social and/or economic effects to Aboriginal groups that may arise as a result of the Project;

Draft EIS Guidelines for the Keeyask Generation Project

- any potential effects on current and proposed uses of land and resources by Aboriginal groups for traditional purposes;
- any effects on hunting, fishing, trapping, cultural and other traditional uses of the land (e.g. collection of medicinal plants, use of sacred sites), as well as related effects on lifestyle, culture and quality of life of Aboriginal groups and measures to avoid, mitigate, compensate or accommodate effects on traditional uses;
- any effects of alterations to access into the area on Aboriginal groups, including deactivation or reclamation of access roads;
- any effects of the project on heritage and archaeological resources in the project area that are of importance or concern to Aboriginal groups;
- a discussion of any factors that may inhibit or foster the flow of economic and other benefits to Aboriginal communities; and
- any effect the Project may have on current use lands and resources for traditional purposes by Aboriginal peoples, including but not limited to hunting, fishing, trapping and gathering.

9.2 Mitigation Measures

The EIS must consider measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the Project.

As a first step, the proponent is encouraged to use an approach based on the avoidance and reduction of the effects at the source. Such an approach may include modification of the design of the Project or relocation of project components.

The proponent shall describe the standard mitigation practices, policies and commitments that constitute technically and economically feasible mitigation measures and that will be applied as part of standard practice regardless of location. The proponent shall then describe its environmental protection plan and its environmental management system, through which it will deliver this plan. The plan shall provide an overall perspective on how potentially adverse environmental effects would be minimized and managed over time. As well, the proponent shall describe its commitments, policies and arrangements directed at promoting beneficial or mitigating adverse socioeconomic effects. The proponent shall discuss the mechanisms it would use to require its contractors and sub-contractors to comply with these commitments and policies and with auditing and enforcement programs.

The EIS shall specify the actions planned during the Project's various phases (construction, operation, maintenance, decommissioning, reclamation or other undertaking related to the project) to eliminate or reduce the significance of adverse effects. The impact statement shall also present an assessment of the likely effectiveness of the proposed technically and economically feasible mitigation measures. The reasons for determining if the mitigation measure reduces the significance of an adverse environmental effect shall be made explicit.

The proponent must identify who is responsible for the implementation of these measures and a system to ensure accountability.

Pursuant to subsection 79(1) of the *Species at Risk Act* (SARA), RAs must notify the appropriate federal Minister if any listed wildlife species, its critical habitat or the

residences of individuals of that species may be adversely impacted by the Project. Pursuant to subsection 79(2) of the SARA, RAs must also ensure that measures are taken to avoid or lessen those effects and to monitor them. These measures must be taken in a way that is consistent with any applicable recovery strategy and action plans. Therefore, the proponent must include information in the EIS that will allow the Agency, (performing the duties of the RA) to meet these requirements.

9.3 Residual Effects

After having established the technically and economically feasible mitigation measures, the EIS should present any residual adverse environmental effects of the Project on the biophysical and human environments after these mitigation measures have been taken into account. The residual effects, even if very small or deemed insignificant should be described.

The EIS shall include a summary of the Project's residual effects so that the reader clearly understands the real consequences of the Project, the degree to which adverse environmental effects can be mitigated and which adverse environmental effects cannot be mitigated or compensated.

9.4 Determination of the Significance of Residual Effects

The EIS must identify the criteria used to assign significance ratings to any predicted adverse environmental effects. The EIS must contain a detailed analysis of the significance of any predicted potential residual adverse environmental effects. It must contain clear and sufficient information to enable the Agency, technical and regulatory agencies, Aboriginal groups and the public to understand and review the proponent's judgment of the significance of the effects. The proponent must define the terms used to describe the level of significance.

The following elements should be used in determining the significance of residual effects:

- magnitude;
- geographic extent;
- timing, duration and frequency;
- reversibility;
- ecological and social context; and
- existence of environmental standards, guidelines or objectives for assessing the impact.

In assessing significance against these criteria, the EIS must, where possible, employ relevant existing regulatory documents, environmental standards, guidelines, or objectives such as prescribed maximum levels of emissions or discharges of specific hazardous agents into the environment or maximum acceptable levels of specific hazardous agents in the environment. The EIS should contain a section which explains the assumptions, definitions and limits to the criteria mentioned above in order to maintain consistency between the effects on each VEC.

The analysis of the significance of the effects shall contain sufficient information to allow the Agency, technical and regulatory agencies, Aboriginal groups and the public to understand and evaluate the reasoning of the proponent. The proponent will provide a summary of the regional, provincial, Aboriginal or national objectives, standards or guidelines that have been used to assist in the evaluation of the significance of adverse environmental effects.

If significant adverse environmental effects are identified, the proponent shall determine the probability (likelihood) that they will occur. The proponent shall also address the degree of scientific uncertainty related to the data and methods used within the framework of its environmental analysis.

The EIS must clearly explain the method and definitions used to describe the level of the adverse environmental effect (e.g. low, moderate, high) for each of the above categories and how these levels were combined to produce an overall conclusion on the significance of adverse environmental effects for each VEC. This method must be transparent and reproducible.

9.5 Effects of the Environment on the Project

The EIS must predict how local conditions and natural hazards, such as severe and/or extreme weather conditions and external events (e.g., flooding, ice jams, rock slides, landslides, fire, outflow conditions and seismic events) could adversely affect the Project and how this in turn could result in impacts to the environment (e.g., extreme environmental conditions result in malfunctions and accidental events). These events should be considered in different probability patterns (i.e. 5 year flood vs. 100 year flood). Longer-term effects of climate change must also be discussed up to the projected post-closure phase of the Project. This discussion should include a description of climate data used.

The sensitivity of the Project to long-term climate variability and effects must be identified and discussed.

The EIS must provide details of a number of planning, design and construction strategies intended to minimize the potential adverse environmental effects of the environment on the Project. Potential impacts should be mitigated, as appropriate and/or feasible.

9.6 Effects of Potential Accidents and Malfunctions

The proponent must identify the probability of potential accidents and malfunctions related to the Project, including an explanation of how those events were identified, potential consequences (including the environmental effects), the worst case scenarios and the effects of these scenarios.

The geographical and temporal boundaries for the assessment of malfunctions and accidents may be different than those in the scope of factors for each VEC. This analysis must include an identification of the magnitude of an accident and/or malfunction, including the quantity, mechanism, rate, form and characteristics of the contaminants and other materials likely to be released into the environment during the accident and malfunction events.

The EIS must also describe the safeguards that have been established to protect against such occurrences and the contingency and emergency response procedures in place if an accident or malfunction does occur.

9.7 Capacity of Renewable Resources

The EIS must describe the effects of the Project on the capacity of renewable resources to meet the needs of the present and those of the future. The EIS must identify those resources likely to be significantly affected by the Project, and describe how the Project could affect their sustainable use. The EIS must also identify and describe any criteria used in considering sustainable use. Sustainable use may be based on ecological considerations such as integrity, productivity, and carrying capacity.

9.8 Cumulative Environmental Effects

The proponent shall identify and assess the Project's cumulative effects. Cumulative effects are defined as changes to the environment due to the project when considered combination with the effects of other works or other past, present and reasonably foreseeable future projects.

Cumulative effects may result if:

- implementation of the Project being studied caused direct residual negative effects on the environmental components, taking into account the application of technically and economically feasible mitigation measures; and/or
- the same environmental components are affected by other past, present or reasonably foreseeable future actions (projects or activities).

Environmental components that would not be affected by the Project can, therefore, be omitted from the cumulative effects assessment. A cumulative effect on an environmental component may, however, be important even if the assessment of the project's effects on this component reveals that the adverse environmental effects of the Project are minor.

The EIS must describe the analysis of the total cumulative effect on a VEC over the life of the Project, including the incremental contribution of all current and proposed projects and activities, in addition to that of the Project. The EIS must include different forms of effects (e.g. synergistic, additive, induced, spatial or temporal) and identify impact pathways and trends.

The EIS shall explain the approach and methods used to identify and assess the cumulative effects and provide a record of all assumptions and analysis that support the conclusions, including the level of confidence in the data used in the analysis. The Agency guidance documents *Operational Policy Statement OPS-EPO/3-1999 Addressing Cumulative Environmental Effects Under the Canadian Environmental Assessment Act*, and *Cumulative Effects Assessment Practitioners Guide* should also be consulted regarding the scope of cumulative adverse environmental effects to be evaluated in the EIS. The general framework for the assessment should comprise scoping, analysis, mitigation, determining the significance of the residual cumulative adverse environmental effects, and follow-up.

The proponent shall discuss the data and methodology to be used in the cumulative effects assessment in the scoping phase (list of other projects to be considered, residual effects of the proposed project to be considered in this assessment, etc.) and prior to the completion of the cumulative effects assessment to ensure that the assessment will meet the needs of the Act.

The proponent shall provide a map that shows all the past, present and future projects it has considered in the cumulative effects assessment.

9.9 Summary

For all key VECs that were assessed, the EIS should contain a table summarizing the following key information:

- concise summary of potential adverse environmental effects;
- summary of proposed mitigation and compensation measures;
- a brief description of potential residual adverse environmental effects;
- a brief description of potential cumulative adverse environmental effects;
- any applicable standards or guidelines;
- comments from the public and responses;
- comments from Aboriginal groups and individuals and responses;
- relationship of the VEC to an Aboriginal group's potential or established Aboriginal and Treaty right; and
- a list of proposed commitments, summarizing the timing and responsibility of each of the actions for which a commitment (including special management practices or design features) has been made by the proponent.

10 Economic and Social Benefits of the Project

Information on the predicted economic and social benefits of the Project should be presented. This information will be considered by the Agency, technical and regulatory agencies in assessing the justifiability of any significant adverse environmental effects, if necessary.

11 Benefits to Canadians

For the purpose of the comprehensive study, the proponent will describe how Canadians benefit from the information gathering process undertaken by the proponent as part of the environmental assessment. Factors to be considered may include:

- maximized environmental benefits
 - Describe the environmental benefits created as a result of the Project going through the EA process
- contribution of the EA to support sustainable development
 - Describe how the EA process for the Project contributed to the concept of sustainable development for a healthy environment and economy.
- public participation

Draft EIS Guidelines for the Keeyask Generation Project

- Describe how public participation in the EA influenced the Project design and the environmental effects analysis.
- technological innovations
 - Identify any new technologies that were developed to address environmental impacts that could be used for other projects.
- increases in scientific knowledge
 - Describe any new scientific information collected through the EA that could benefit the assessment of other projects.
- community and social benefits
 - Describe any changes in project design that resulted in indirect benefits to communities and/or social benefits (e.g., enhanced access to wilderness areas for recreation).

12 Environmental Management

12.1 Planning

The purpose of the environmental management plans (EMPs) is to ensure that proper measures and controls are in place in order to decrease the potential for environmental degradation during all phases of project development, and to provide clearly defined action plans and emergency response procedures to account for human and environmental health and safety. Furthermore, analysis of the data obtained as a result of enacting the EMPs can be used to confirm any project specific assumptions and make corrective plans where necessary. The EMPs will serve to provide guidance on specific actions and activities that will be implemented to decrease the potential for environmental degradation during construction and operation, and to clearly define the proponent's ongoing environmental commitment.

The EIS shall describe the proposed EMPs for all stages of the Project and include a commitment by the proponent to implement the EMPs should the Project proceed. The finalization of detailed EMPs will occur through consultation with federal and provincial government agencies, Aboriginal groups, the public and other stakeholders. This may occur after the EA but must be consistent with the information presented in the EIS.

Pertinent legislation, regulations, industry standards, documents and legislative guides shall be used in the development of the EMPs.

12.1.1 Decommissioning and Reclamation Plan

The EIS shall provide a preliminary outline of a decommissioning and reclamation plan for any components associated with the Project. This shall include ownership, transfer and control of the different project components as well as the responsibility for monitoring and maintaining the integrity of some of the structures. The full preparation and submission of the plan to appropriate authorities will occur prior to the decommissioning of the temporary components of the Project. The plan would serve to provide guidance on specific actions and activities to be implemented to decrease the

potential for environmental degradation in the long-term during decommissioning and abandonment activities for temporary facilities, and to clearly define the proponent's ongoing environmental commitments. For permanent facilities, a conceptual discussion on how decommissioning may occur shall be provided.

12.2 Follow-Up Program

The EIS shall describe the proposed follow-up program plan in sufficient detail to allow independent judgment as to the likelihood that it will deliver the type, quantity and quality of information required to reliably verify predicted effects (or absence of them), and to confirm both the EA assumptions and the effectiveness of mitigation.

The follow-up program must be designed to incorporate baseline data, compliance data (such as established benchmarks, regulatory documents, standards or guidelines) and real time data (such as observed data gathered in the field). The proponent must describe the compliance reporting methods to be used, including reporting frequency, methods and format.

Environmental assessment effects predictions, assumptions and mitigation actions that are to be tested in the follow-up monitoring program must be converted into field-testable monitoring objectives. The monitoring design must include a statistical evaluation of the adequacy of existing baseline data to provide a benchmark against which to test for project effects, and the need for any additional pre-construction or pre-operational monitoring to establish a firmer project baseline.

The follow-up program shall include a schedule indicating the frequency and duration of effects monitoring. This schedule is to be developed after an evaluation of the length of time needed to detect effects given estimated baseline variability, likely magnitude of environmental effect and desired level of statistical confidence in the results (Type 1 and Type 2 errors).

The description of the follow-up program must include any contingency procedures/plans or other adaptive management provisions as a means of addressing unforeseen effects or for correcting exceedances as required to comply or to conform to benchmarks, regulatory standards or guidelines.

The EIS must provide the following:

- a discussion of the proposed follow-up program and its objectives;
- a description of the main components of the program and each monitoring activity under that component;
- a discussion of the objectives the monitoring activity is fulfilling (i.e. confirmation of mitigation, confirmation of assumptions; verification of predicted effects);
- the structure of the program;
- a schedule for the finalization and implementation of the follow-up program;
- a description of the roles and responsibilities for the program and its review process, by both peers, Aboriginal groups, and the public;
- possible involvement of independent researchers;
- the sources of funding for the program; and

- information management and reporting.

Follow up programs provide an excellent opportunity to monitor the implementation of commitments made as part of the Aboriginal consultation process. RAs may have included conditions in authorizations, permits, contracts, leases or other binding documents that relate to specific mitigation and follow-up measures meant to accommodate adverse impacts to Aboriginal rights.

Aboriginal consultation can be incorporated into the EA follow-up program and can be used to:

- verify predictions of environmental effects identified in the EA and residual impacts that could not be accommodated on Aboriginal rights;
- determine the effectiveness of mitigation measures as they relate to environmental effects and accommodation measures in order to modify or implement new measures where required;
- support the implementation of adaptive management measures to address previously unanticipated adverse environmental effects or unanticipated adverse impacts to Aboriginal rights; and,
- provide information on environmental effects and mitigation and accommodation measures/impacts on Aboriginal rights that can be used to improve and/or support future EAs and Aboriginal Crown-Consultation processes, including cumulative environmental effects assessments.

13 Summary and Conclusions

The EIS must summarize the overall findings of the EA with emphasis on the main environmental issues identified. It should make predictions on the significance of adverse environmental effects likely to occur as a result of the implementation of the Project.

14 References

- Barnthouse, L.W., W. R. Munns Jr. and M. T. Sorensen. 2008. "Population-Level Ecological Risk Assessment". CRC Taylor and Francis, NY. Society of Environmental Toxicology and Chemistry.
- Canada. 2003. A Framework for the Application of Precaution in Science-based Decision Making About Risk. Accessed January 15, 2009. <http://www.pco-bcp.gc.ca/docs/information/Publications/precaution/Precaution-eng.pdf>
- Canadian Environmental Assessment Agency. Operational Policy Statement. 2007. Addressing "Need for", "Purpose of", "Alternatives to" and "Alternative Means" under the *Canadian Environmental Assessment Act*. [Canadian Environmental Assessment Agency - Policy & Guidance - Operational Policy Statement - Addressing "Need for", "Purpose of", "Alternatives to" and "Alternative Means" under the CEAA Act](#)
- Canadian Environmental Assessment Agency. Operational Policy Statement. 2007. Addressing Cumulative Environmental Effects under the *Canadian Environmental Assessment Act*. [Canadian Environmental Assessment Agency - Policy & Guidance - Operational Policy Statement - Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act](#)
- Canadian Environmental Assessment Agency. Procedural Guide. 2003. "Incorporating Climate Change Considerations in Environmental Assessment: General Guidance for Practitioners", prepared by: The Federal-Provincial-Territorial Committee on Climate Change and Environmental Assessment. [Canadian Environmental Assessment Agency - Policy & Guidance - Incorporating Climate Change Considerations in Environmental Assessment: General Guidance for Practitioners](#)
- Canadian Environmental Assessment Agency, Reference Guide 1994: Addressing Cumulative Environmental Effects. [Canadian Environmental Assessment Agency - Policy & Guidance - The Responsible Authority's Guide](#)
- Canadian Environmental Assessment Agency. Procedural Guide. 1999 "Cumulative Effects Assessment Practitioners Guide", Hegmann, G., C. Cocklin, R. Creasey, S. Dupuis, A. Kennedy, L. Kingsley, W. Ross, H. Spaling and D. Stalker. Prepared by: The Cumulative Effects Assessment Working Group and AXYS Environmental Consulting Ltd. <http://dsp-psd.pwgsc.gc.ca/Collection/En106-44-1999E.pdf>