# ENVIRONMENTAL IMPACT STATEMENT GUIDELINES

# for the

# KAMI IRON ORE PROJECT

Prepared by:

The Canadian Environmental Assessment Agency

and

The Newfoundland and Labrador Department of Environment and Conservation

February 6, 2012 (Draft)

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## Glossary of Acronyms and Abbreviations

| | |
|---|---|
| AANDC | Aboriginal Affairs and Northern Development Canada |
| ACCDC | Atlantic Canada Conservation Data Centre |
| ARD | Acid Rock Drainage |
| BACT | Best Available Control Technology |
| CEAA | *Canadian Environmental Assessment Act* |
| CEAR | Canadian Environmental Assessment Registry |
| CEPA | *Canadian Environmental Protection Act* (1999) |
| CFA | Chemin de Fer Arnaud (Railway) |
| COSEWIC | Committee on the Status of Endangered Wildlife in Canada |
| CTA | Canadian Transportation Agency |
| DFO | Fisheries and Oceans Canada |
| EA | Environmental Assessment |
| EC | Environment Canada |
| EIS | Environmental Impact Statement |
| EMP | Environmental Management Plan |
| EPP | Environmental Protection Plan |
| EPR | Environmental Preview Report |
| FA | Federal Authority (as defined in CEAA) |
| HC | Health Canada |
| ML | Metal Leaching |
| NLDOEC | Newfoundland and Labrador Department of Environment and Conservation |
| NLEPA | Newfoundland and Labrador *Environmental Protection Act* |
| NLESA | Newfoundland and Labrador *Endangered Species Act* |
| NPAG | Non-Potentially Acid Generating |
| NRCan | Natural Resources Canada |
| NWPA | *Navigable Waters Protection Act* |
| $NO_x$ | Nitrogen Oxides |
| PAH | Polycyclic Aromatic Hydrocarbon |
| PAG | Potentially Acid Generating |
| PLS | Plain Language Summary |
| $PM_{2.5}$, $PM_{10}$ | Particulate Matter (subscript indicates size threshold, in microns) |
| QNSL | Quebec North Shore and Labrador (Railway) |
| TC | Transport Canada |
| t/d | Tonnes per day |
| T/yr | Tonnes per year |
| TMF | Tailings Management Facility |
| RA | Responsible Authority (as defined in CEAA) |
| SAR | Species at Risk |
| SARA | *Species at Risk Act* |
| SIPA | Sept-Îles Port Authority |
| $SO_2$ | Sulphur Dioxide |
| VOC | Volatile Organic Compounds |

# 1.0 INTRODUCTION

Alderon Iron Ore Corp. (Alderon) proposes to develop an iron ore mine in western Labrador, and build associated infrastructure at the Port of Sept-Îles, Québec (the Project). The mine Property is located 6 km south of the Wabush Mines mining lease owned by Cliffs Natural Resources Inc. (Cliffs) and in the vicinity of the towns of Wabush, Labrador City and Fermont.

The Kami Iron Ore Mine and Rail Spur is located entirely within Labrador, and includes construction, operation, and rehabilitation and closure of an open pit, waste rock disposal areas, processing infrastructure, a tailings management facility (TMF), ancillary infrastructure to support the mine and process plant, and a rail transportation component.

The mine will produce up to 16 million metric tonnes of iron ore concentrate per year. Concentrate will be transported by existing rail (the Quebec North Shore and Labrador (QNSL) Railway and Chemin de Fer Arnaud (CFA) Railway) to the Sept-Îles, where Project-related components will be located on land within the jurisdiction of the Sept-Îles Port Authority (SIPA). There will be no Project infrastructure or other physical works in the marine environment.

The Project requires environmental assessment (EA) under both the *Canadian Environmental Assessment Act* and the Newfoundland and Labrador *Environmental Protection Act*. Specifically, a comprehensive study is required under federal legislation, and the preparation of and Environmental Impact Statement (EIS) is required in both jurisdictions. These requirements are discussed in further detail in Section 2.2.

## 1.1 Purpose of the Environmental Impact Statement Guidelines

These guidelines have been prepared jointly by the Governments of Canada and Newfoundland and Labrador to identify for the proponent the nature, scope and minimum information and analysis required in preparing its EIS. The EIS is intended to address the requirements of both jurisdictions, including those that both jurisdictions have in common and those that are uniquely federal, or provincial.

These guidelines shall not be regarded as either restrictive or exhaustive. Concerns other than those identified herein may arise during the investigations associated with the EIS. The federal and provincial governments are prepared to provide advice and assistance throughout the preparation of the EIS with regard to the identification of environmental concerns and appropriate assessment methodology.

## 1.2 Guiding Principles

### 1.2.1 Environmental Assessment as a Planning Tool

Environmental assessment is a planning tool used to ensure that projects are considered in a careful and precautionary manner in order to avoid or mitigate the possible adverse effects of development on the environment. EA also encourages decision makers to take actions that promote sustainable development and thereby achieve or maintain a healthy environment and a healthy economy.

The EA of this project shall, in a manner consistent with the purposes above:

- consider and evaluate alternatives;
- document consultation activities;
- propose measures to mitigate adverse effects; and
- predict whether or not the project is likely to cause significant adverse environmental effects after mitigation measures are implemented.
- describe significant environmental effects that are beneficial or harmful that are likely to be caused by the undertaking regardless of the proper application of all control, mitigation and remedial measures to be proposed in the EIS.
- specifically list and cite all sources of information in the environmental impact statement;
- outline the design of studies necessary to provide additional information for the preparation of an environmental impact statement;
- address the concerns identified during the public information sessions by including within the environmental impact statement specific responses to those concerns and, where appropriate, specific proposals for measures to deal with them; and

- provide to the minister copies of all reports on studies undertaken in order to satisfy the guidelines and those reports shall be provided to the minister as soon as they are completed.

### 1.2.2 Traditional and Local Knowledge

Traditional and local knowledge refers to the broad base of knowledge held by individuals and collectively by communities that may be based on spiritual teachings, personal observation and experience or passed on from one generation to another through oral and/or written traditions.

Traditional and local knowledge, in combination with other information sources, can help in achieving a better understanding of potential effects of projects. Traditional and local knowledge may, for example, contribute to the description of the existing physical, biological and human environments, natural cycles, resource distribution and abundance, long and short-term trends, and the use of lands and water resources. It may also contribute to project site selection and design, identification of issues, the evaluation of potential effects and their significance, the effectiveness of proposed mitigation, cumulative effects and the consideration of follow-up and monitoring programs.

Traditional knowledge, which is rooted in the traditional life of Aboriginal people, has an important contribution to make to an EA. Certain issues relevant to the review process are firmly grounded in traditional knowledge such as harvesting, use of lands and resources for traditional purposes, cultural well-being, land use and heritage resources. Although the basis for traditional and local knowledge and science-based knowledge can differ, they may on their own or together, contribute to the understanding of these issues.

The proponent shall incorporate into the EIS the traditional and local knowledge to which it has access or that it may reasonably be expected to acquire through appropriate due diligence, in keeping with appropriate ethical standards and without breaching obligations of confidentiality.

### 1.2.3 Sustainable Development

Sustainable development, as defined in the *Canadian Environmental Assessment Act* (CEAA) and the *Newfoundland and Labrador Sustainable Development Act*, means development that meets the needs of the present, without compromising the ability of future generations to meet their own needs. The EIS shall consider the extent to which the Project would meet this objective.

Environmental assessment provides a systematic approach for identifying, predicting and evaluating the potential environmental effects of projects before decisions are made. In addition, EA provides the means to identify mitigation measures for adverse effects. Environmental assessment provides an effective means of integrating environmental factors into the planning and decision-making process in a manner that promotes sustainable development and contributes to decision making that can ultimately provide net ecological, economic and social benefits to society.

A project that is supportive of sustainable development strives to integrate ecological, economic and social benefits to society in the planning and decision-making process, as well as incorporating citizen participation. The Project, including its alternative means, shall take into account the relationships and interactions among the various components of the ecosystems, including the extent to which biological diversity may be affected by the Project, and how the Project meets the needs of the present as well as future populations.

### 1.2.4 Precautionary Approach

One of the purposes of environmental assessment is to ensure that projects are considered in a careful and precautionary manner before authorities take action in connection with them, to ensure that such projects do not cause significant adverse environmental effects.

The Government of Canada document, *A Framework for the Application of Precaution in Science-based Decision Making About Risk* (GOC 2003), sets out guiding principles for the application of precaution to science-based decision-making in areas of federal regulatory activity for the protection of health and safety, the environment and the conservation of natural resources.

The proponent shall indicate how the precautionary principle was considered in the design of the Project in at least the following ways:

- 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;
- in designing and operating the Project, demonstrate that priority has been given to strategies that avoid the creation of adverse 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 or effectiveness of proposed mitigation measures; and
- present public views on the acceptability of all of the above.

# 2.0 THE ENVIRONMENTAL ASSESSMENT PROCESS

## 2.1 Contacts for the Environmental Assessment

Federal and Newfoundland and Labrador contacts for the EA, respectively, are:

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Canadian Environmental Assessment Agency
1801 Hollis Street, Halifax, NS B3J 3N4
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bkeeping@gov.nl.ca

## 2.2 Environmental Assessment Requirements

### 2.2.1 *Canadian Environmental Assessment Act*

The Federal environmental assessment (EA) process is prescribed in the *Canadian Environmental Assessment Act* (CEAA) and associated regulations. The process applies to federal government decision-making for projects. Subsection 2(1) of CEAA contains a definition of "project"; the proposed Project meets this definition.

Under CEAA, a federal environmental assessment may be required if a federal authority:

a) carries out a project;
b) provides financial assistance to enable a project to be carried out;
c) sells leases or otherwise transfers control or administration of land to enable a project to be undertaken; or
d) permits, approves or takes any other action specified in the *Law List Regulations* under CEAA to enable a project to be carried out.

These four types of federal decisions are commonly referred to as "triggers". The federal government is not a proponent of the Project, nor does it intend to provide financial assistance. Therefore triggers (a) and (b) do not apply. No federal land is required for the Labrador portion of the Project, but the rail loop and the concentrate storage and load-out facility at Sept-Îles, Quebec will be located on federal land within the jurisdiction of the SIPA, for which a lease or other form of access may be required. In addition, the Project will require approvals that are named in the *Law List Regulations*, as listed in Table 1. The specific components of the Project that trigger federal EA must be described in the EIS.

***Table 1 CEAA Law List Regulations Triggers and their Relevance to the Project***

| Triggers | Nature of Authorization | Relevance to Project | Relevant Federal Authority |
|---|---|---|---|
| ***Fisheries Act* (applies to Project components in both Labrador and Quebec)** | | | |
| 32 | Unauthorized destruction of fish (mortality) by means other than fishing | Applicable due to interference with water bodies | Fisheries and Oceans Canada |
| 35(2) | Harmful alteration, disruption or destruction (HADD) of fish habitat | Applicable due to interference with fish habitat | Fisheries and Oceans Canada |
| ***Navigable Waters Protection Act* (applies to Project components in both Labrador and Quebec)** | | | |
| Part 1, Section 5 | If the Minister considers that the work would interfere with navigation | Applicable due to potential interference with the navigability of water bodies | Transport Canada |
| ***Explosives Act* (applies to Project components in Labrador only)** | | | |
| 7(1)(a) | Issuance of a licence for explosives factories and magazines | Potentially applicable due to storage of explosives on site | Natural Resources Canada |
| ***Canada Transportation Act* (applies to Project components in Labrador and potentially in Quebec)** | | | |
| 98 | Authorization to construct a railway | May be applicable depending on results of land ownership search | Canadian Transportation Agency |

Federal authorities whose decisions are required to enable the project to proceed, and are therefore required to ensure that a federal EA is carried out, are referred to as responsible authorities, or RAs.

CEAA *Comprehensive Study List Regulations* identify those projects and classes of projects for which a comprehensive study is required. The *Comprehensive Study Regulations*, Section 3, Part V, Mineral and Mineral Processing, Subsection 16(a), states that a comprehensive study is required for "a metal mine, other than a gold mine, with an ore production capacity of 3,000 t/d or more". In order to produce approximately 44,000 t/d of iron ore concentrate, the mine must produce more than 3,000 t/d of raw ore; thus the federal EA must proceed as a comprehensive study. In addition, the *Establishing Timelines for Comprehensive Studies Regulations* requires the Agency to provide the proponent with EIS guidelines.

### 2.2.2 **Newfoundland and Labrador** *Environmental Protection Act*

Any mining of a mineral as defined in the *Mineral Act* in Newfoundland and Labrador is subject to environmental assessment under the province's *Environmental Protection Act* (NLEPA) and *Environmental Assessment Regulation.* The Environmental Assessment Division of the Newfoundland and Labrador Department of Environment and Conservation (NLDOEC) administers the process including:

- consulting at every stage with interested government departments and the public;
- evaluating submissions by proponents and reviewers;
- advising the Minister on potential environmental effects prior to decisions; and
- monitoring released projects to ensure compliance and effectiveness of mitigation.

An undertaking that is subject to the NLEPA is required to be registered for examination by the NLDOEC. The registration outlines the proposed project and describes how it will affect the bio-physical and socio-economic environments. The Registration is circulated to provincial and federal government departments for review, and is made publicly available for comment. At the conclusion of the review period, the Minister advises the proponent whether the undertaking has been released from further assessment or will require an Environmental Preview Report (EPR), an EIS, or if it has been rejected. On December 8, 2011, the Minister advised Alderon Iron Ore Corp. that an EIS is required.

Pursuant to subsection 17(1) of CEAA, and consistent with the requirements of Section 51(1)(b) of the NLEPA, the proponent has been delegated the task of preparing the EIS. The EIS should be prepared according to these guidelines. Once completed, the proponent shall submit printed and electronic copies of the EIS to the involved federal and provincial agencies in the quantities specified in Table 2. In addition, the proponent shall make printed copies of the EIS and the Plain Language Summary (PLS) of the EIS available at public viewing centers (to be designated) in the project vicinity.

In accordance with the requirements of the Government of Newfoundland and Labrador, Component Studies will be conducted to define baseline conditions, and to support the evaluation of environmental effects and/or the development of mitigation measures as well as monitoring and follow up programs.

***Table 2 Environmental Impact Statement Copy Requirements***

| Organization | Electronic Copies ** | | Printed copies | |
|---|---|---|---|---|
| | EIS * | PLS | EIS * | PLS |
| Agency | 1 | 1 English, 1 French | 3 | 5 English, 5 French |
| NLDOEC | 15 | 1 English, 1 French | 15 | 5 English, 3 French |
| DFO | 1 | 1 English, 1 French | 1 | 1 English, 1 French |
| NRCan | 1 | 1 English, 1 French | 1 | 1 English, 1 French |
| EC | 2 | 2 English, 2 French | 2 | 2 English, 2 French |
| TC | 1 | 1 English, 1 French | 1 | 1 English, 1 French |
| Sept-Îles Port Authority | 1 | 1 English, 1 French | 1 | 1 English, 1 French |
| HC | 1 | 1 English, 1 French | 1 | 1 English, 1 French |
| Public Viewing Locations (TBD) | NA | NA | NA | 1 English, 1 French at each location |

* EIS available in English only

**Electronic copies to be provided on CD

## 2.3 Federal-Provincial Cooperation

The Governments of Canada and of Newfoundland and Labrador intend to conduct their respective EA reviews in a coordinated and cooperative manner, but retain separate decision making. The process will feature joint EIS guidelines (this document), joint public comment periods, and an EIS that is intended to fulfill the requirements of both jurisdictions.

## 2.4 Public Consultation

The public will have several opportunities to participate in the EA and provide their views on the environmental effects of the Project. These are outlined in Table 3.

***Table 3 Public Participation Opportunities***

| Opportunity | Duration | Canada | Newfoundland and Labrador |
|---|---|---|---|
| Comment on Draft EIS guidelines, the Project, and the conduct of the comprehensive study | 40 days | Yes | Yes (draft EIS Guidelines only) |

| Opportunity | Duration | Canada | Newfoundland and Labrador |
|---|---|---|---|
| Comment on Component Studies | 35 days | No | Yes |
| Comment on proponent's EIS, or Plain Language Summary (PLS) | 50 days | Yes (PLS only) | Yes |
| Comment on Comprehensive Study Report (CSR) | 30 days | Yes | Not applicable |

The comment periods for the EIS Guidelines and the EIS/PLS will conducted jointly. Documents for public review will be made available by the Agency, NLDOEC, or both. Electronic and hard copy versions will be available. Key documents will be available on both the Canadian Environmental Assessment Registry (CEAR) Internet Site and the NLDOEC Environmental Assessment Internet Site.

To support public participation in the EA, the Agency will provide financial assistance under its Participant Funding Program. The funding will apply to the comment periods on the PLS and CSR.

Public comment periods will be announced in newspapers and on the Internet sites mentioned above. Interested parties may contact Mr. McDonald or Mr. Keeping if they wish to be notified when a comment period will start.

During the preparation of the EIS, the proponent must hold public information sessions in Labrador City, Wabush and Fermont to provide information concerning the Project to the people whose environment may be affected by the undertaking. The Proponent must record and respond to the concerns of the local community regarding the environmental effects of the Project. Appendix B provides additional information on the notification requirements for the information sessions.

# 3.0 SCOPE OF PROJECT, FACTORS TO BE CONSIDERED AND SCOPE OF THE FACTORS

## 3.1 Scope of Project

The EIS will examine all activities and physical works associated with the construction, operation and decommissioning of the proposed Project, as described in the proponent's project description dated October 2011, including, but not limited to, the activities listed in Sections 3.1.1 and 3.1.2.

### 3.1.1 Labrador

The mine and associated facilities will be located wholly within Labrador. The Labrador component of the project will include construction, operation, and closure/decommissioning of the following components:

- open pit (Rose Pit, incorporating the former Rose Central and Rose North Pits);
- waste rock disposal areas (Rose North and Rose South);
- processing infrastructure includes crushing, grinding, spiral concentration, magnetic separation, and tailings thickening areas;
- tailings management facility (TMF);
- ancillary infrastructure to support the mine and process plant (gate and guardhouse, reclaim water pumphouse, truck wash bay and shop, electrical substation, explosives magazine storage, administration / office buildings, maintenance offices, warehouse area and employee facilities, conveyors, load-out silo, stockpiles, sewage and water treatment units, mobile equipment, and transmission lines);
- a rail transportation component including spur line construction to connect the mine site to the Québec North Shore & Labrador (QNSL) Railway; and
- electrical transmission line from the Wabush Terminal to the mine site.

### 3.1.2 Quebec

The Quebec Project components consist of a concentrate storage and load-out facility (located wholly within federal lands under the jurisdiction of the SIPA), and the construction, operation, and closure / decommissioning of approximately 3 km of new railway

infrastructure (a rail loop). The rail will not be owned by the proponent, and will be operated by CFA. Concentrate will be transferred from the concentrate storage and load-out facility to ocean-going vessels by a conveyor system.

## 3.2 Factors to be Considered

The EIS shall consider:

- the environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project and 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;
- comments from the public that are received in accordance with CEAA and NLEPA regulations;
- measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project;
- the need for the project;
- alternatives to 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 requirements of a follow-up program for 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.

"Environment" means the components of the Earth, and includes:

a) land, water and air, including all layers of the atmosphere;
b) all organic and inorganic matter and living organisms, including human life;
c) the interacting natural systems that include components referred to in paragraphs (a) and (b);
d) the social, economic, recreational, cultural and aesthetic conditions and factors that influence the life of humans or a community;
e) a building, structure, machine or other device or thing made by humans;

f) a solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from the activities of humans; or
g) a part or a combination of those things referred to in subparagraphs (a) to (f) and the interrelationships between 2 or more of them.

"Environmental effect" means, with respect to a project:

a) any change that the project may cause in the present or future environment, including any change it may cause to a listed wildlife species, its critical habitat or the residences of individuals of that species, as those terms are defined in subsection 2(1) of the *Species at Risk Act* (SARA),
b) any effect of any change referred to in paragraph (a) on
    (i) health and socio-economic conditions,
    (ii) physical and cultural heritage,
    (iii) the current use of lands and resources for traditional purposes by aboriginal persons, or
    (iv) any structure, site or thing that is of historical, archaeological, paleontological or architectural significance; and
c) any change to the project that may be caused by the environment.

## 3.3 Scope of the Factors to be Considered

In addition to the factors listed above, the EIS shall document any additional issues or concerns that may be identified through regulatory, stakeholder, Aboriginal and public consultation.

The assessment of environmental effects shall focus on valued ecosystem components (VECs). A VEC is a component or attribute that is important for its ecological, legal, scientific, cultural, economic or aesthetic values. VECs for the project should be selected based on defined criteria, and their selection justified. The assessment shall consider potential environmental effects that the Project may have on each VEC.

The EIS will define the study areas and time frames, or spatial and temporal boundaries used in the analysis of environmental effects. It is expected that the spatial and temporal

boundaries shall vary between VECs to reflect the nature of both the VEC and the predicted effects. Temporal and spatial boundaries must reflect:

- the geographic range over which the project's environmental effects may occur, recognizing that some effects shall extend beyond the project area.
- timing/scheduling of project activities;
- natural variations of each VEC;
- the time required for recovery from an impact; and
- cumulative effects.

The VECs to be considered must include:

- atmospheric environment;
- landforms and soils;
- water resources (surface water and ground water);
- wetlands;
- fish and fish habitat;
- birds, other wildlife and their habitats;
- Species at Risk and species of conservation concern;
- historic and cultural resources;
- current Aboriginal use of lands and resources for traditional purposes by Aboriginal persons;
- other current use of lands and resources;
- communities; and
- economy, employment and business.

The proponent may add other VECs. Rationale for the selection of the above VECs, as well as a proposed study approach, is provided in Section 4 of these guidelines and is to be presented in the EIS for all VECs. The EIS shall describe, in detail, study methods and analytic methods, including incorporation of information gathered through consultation and traditional knowledge.

# 4.0 PREPARATION OF THE EIS

The EIS is a statement of the proponent's environmental conclusions and commitments related to the Project; it must be explicitly endorsed by the proponent. The EIS and all associated reports and studies shall use System International (SI) units of measure and terminology throughout. The EIS shall employ the clearest language possible. However, where the complexity of the issues addressed requires the use of technical language, a glossary defining technical words and acronyms shall be included. The proponent must also prepare a Plain Language Summary (PLS) to accompany the EIS. The PLS, which must be provided in both official languages, is described in Section 4.2 and will be used to facilitate Aboriginal consultation and aid public review of the conclusions of the EIS.

The EIS shall be a stand-alone document upon which a critical review can be undertaken. Where external sources of information or data are used, they shall be referenced within the body of the EIS, and listed completely the end. Where conclusions that are critical to the assessment of environmental impacts are cited from other reports, the EIS shall provide sufficient detail of the originating data and analysis to enable a critical review of that material, and submit reference material as an appendix to the EIS.

It is recommended that the EIS be presented in the sequence outlined in these Guidelines. If a different sequence is used, the EIS shall include a Table of Concordance to these Guidelines, so that information requirements identified herein can be easily located in the EIS. The EIS shall refer to, rather than repeat, information previously presented in other sections of the document. However, it is important that underlying limitations, uncertainties, and assumptions of all environmental predictions, especially those that support major statements or conclusions, be described in the body of the EIS rather than simply referencing supporting studies. A key subject index is to be provided giving locations in the text by volume, section and sub-section.

The EIS shall provide charts, diagrams and maps wherever useful to clarify the text, including a depiction of how the developed Project sites will appear from both an aerial and terrestrial perspective. Where possible, maps shall use common scales to allow for comparison and overlay of mapped features and shall indicate common and accepted local place names.

Where technically feasible, provide geographic information in standard Geographic Information System (GIS) mapping (digital) format.

The following sections describe the different topics to be addressed in the EIS. The EIS must provide sufficient information to allow readers to understand the potential environmental effects of the Project, focusing on the most significant potential effects as identified by the proponent and through these guidelines. The EIS must provide an acceptable rationale for not fully addressing any issue identified in the guidelines, and must highlight key impacts that require more intensive investigation.

Section 4 is organized into two parts:

- PART I: CONTENT OF THE EIS describes the layout and required content of the EIS; and
- PART II: DETAILED GUIDANCE ON SELECT ENVIRONMENTAL COMPONENTS provides an overview of the recommended studies and approach for each VEC.

The information included in this document is not intended to be exhaustive and additional detail, studies, or examination of additional components may be required.

## PART I: CONTENT OF THE EIS

### 4.1 Executive Summary

The EIS should begin with an Executive Summary, including a concordance table that describes where each information requirement of the EIS Guidelines has been addressed in the EIS.

### 4.2 Plain Language Summary

In order to enhance understanding of the EIS and facilitate consultation activities, a Plain Language Summary (PLS) of the EIS must be prepared. The PLS, to be provided in both English and French, will summarize the Project and the major findings and conclusions of the EIS. It must be a stand-alone document no longer than approximately 50 pages, excluding annexes and appendices. It should clearly describe the proponent, the Project (including

decommissioning and reclamation activities), and the environmental impacts of the Project. Maps at appropriate sizes and scales must be included to clearly show the location of all Project components and/or environmental components. As the name implies, the PLS should avoid unnecessary use of technical terms or jargon and be written so that an average reader with no specialist knowledge of mining or environmental assessment can comprehend the Project, the analysis of environmental effects, the conclusions reached, and the supporting rationale. The PLS should be organized as follows:

**Introduction**

- Project Overview
- Environmental Assessment Process
    - Purpose of the EIS
    - Federal EA Requirements
    - Provincial EA Requirements
    - Cooperative EA Process

**Project Description**

- Purpose of and Need for the Project
- Project Description
    - Location
    - Components
    - Activities
    - Schedule

**Scope of the Assessment**

- Scope of the Project
- Factors to be Considered
- Scope of the Factors
    - Identification of VECs
    - Spatial and Temporal Boundaries

**Project Alternatives**

- Alternatives to the Project
- Alternative Means of Carrying out the Project
    - Description of Alternative Means
    - Environmental Effects of Technically and Economically Feasible Alternative Means
    - Selection of a Preferred Alternative Means

**Consultation**

- Public and Aboriginal Consultation and Engagement Activities undertaken for the EA (Proponent and Government)

**Existing Environment**

**Environmental Effects Assessment**

- Method and Approach
- Valued Ecosystem Components (impact matrix should be provided)
    - Potential Environmental Effects
    - Mitigation Measures
    - Residual Environmental Effects
    - Government, Public and Aboriginal Comments and Proponent's Response
- Effects of the Environment on the Project
    - Method and Approach
    - Potential Effects
    - Mitigation
    - Residual Effects
    - Government, Public and Aboriginal Comments and Proponent's Response
- Effects of Possible Accidents or Malfunctions
    - Method and Approach
    - Potential Effects
    - Mitigation
    - Residual Effects
    - Government, Public and Aboriginal Comments and Proponent's Response
- Effects on Capacity of Renewable Resources
- Cumulative Environmental Effects
    - Approach
    - Scoping
    - Potential cumulative effects
    - Mitigation measures
    - Residual Effects
    - Government, Public and Aboriginal Comments and Proponent's Response

**Follow-Up Program**

**Benefits of the EA to Canadians**

**Overall Conclusions of the Proponent**

It is understood that the Proponent can only provide Government, Public and Aboriginal comments and the Proponent's responses to the extent known at the time of writing, as there will be further comment periods after the EIS.

## 4.3 Project Introduction

### 4.3.1 The Proponent

The EIS shall:

- identify the proponent and the name of the legal entity that would develop, manage and operate the Project;
- provide contact information for the proponent (e.g., name, address, phone, fax, email);
- explain corporate and management structures, as well as insurance and liability management related to the Project;
- specify how the Proponent would ensure that corporate policies are implemented and respected for the Project;
- summarize key elements of its environmental management system and how it would be integrated into the Project; and
- identify key personnel, contractors, and/or sub-contractors responsible for preparing the EIS. The qualifications of biologists conducting surveys for migratory birds, species at risk and species of conservation concern, and wetland delineations should be provided in an appendix to the EIS.

### 4.3.2 Project Overview

The EIS shall briefly summarize the development proposal. If the Project is part of a larger sequence of projects, the EIS shall outline the larger context and present the relevant references, if available. The Project location should be described in the context of surrounding land uses and infrastructure. The intent of this overview is to provide the key components and the location of the Project, rather than a detailed description, which shall follow as described in Section 4.4.5 of this document.

### 4.3.3 Regulatory Framework and the Role of Government

To understand the context of the EA, the EIS should identify, for each jurisdiction, the government bodies involved in the assessment as well as the EA processes. The EIS shall:

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

### 4.3.4 Non-Government Participants in the Environmental Assessment

The EIS shall identify the main participants in the EA including Aboriginal groups, community groups, and environmental organizations.

## 4.4 Project Description

### 4.4.1 Purpose of and Need for the Project

The EIS shall state the purpose of the Project, from the proponent's perspective, and clearly describe the need for the Project (i.e., the problem or opportunity the Project is intended to solve or satisfy). This is the fundamental rationale for the Project and provides the context for the consideration of alternatives to the Project.

### 4.4.2 Alternatives to the Project

The EIS must include an analysis of alternatives to the Project; describing functionally different ways to meet the Project's need and purpose. The EIS shall:

- identify the 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.

The level of detail for this analysis must be sufficient to allow the reader to understand the alternatives and how they compare to the Project. The EIS shall demonstrate how the preferred alternative contributes to sustainable development.

The analysis of the Project purpose, need and alternatives shall be consistent with guidance offered in: *Addressing "Need for", "Purpose of", "Alternatives to" and "Alternative Means" under the Canadian Environmental Assessment Act* (Agency 2007).

### 4.4.3 Project Location

The EIS shall provide a concise description of the geographical setting in which the Project shall take place. The description shall focus on aspects of the environment that are important for understanding the potential environmental effects of the Project, including:

- any existing designated or planned environmentally sensitive or significant areas; national, provincial and regional parks; protected natural areas and watersheds; ecological reserves; wetlands; riverine and lacustrine fish habitats; mature and interior forest habitat for migratory birds; and habitats of provincially- or federally-listed species at risk, including critical habitat for species at risk; areas of concentration of migratory birds or other wildlife; and other sensitive areas and habitat;
- the current land use in the area and the relationship of the Project facilities and components with any existing land use including traditional, private and crown lands; and

- a description the nearest potentially sensitive human receptors such as residences, cabins, sacred sites, places of worship, etc. and of local communities that may be affected by project activities.

The location of the mine site and transportation corridors shall be described and clearly indicated on maps of appropriate scale. The location map should include the boundaries of the proposed site and transportation corridors, major existing infrastructure, the Town of Wabush drinking water supply area (protected and unprotected), adjacent land uses and important environmental features. In addition, site plans/sketches and photographs showing project location, site features and the intended locations of project components should be included.

### 4.4.4 Project Description

#### 4.4.4.1 Facilities and Components

The EIS shall describe all of the Project's facilities and components in detail, focusing on those with the most potential for environmental interactions and risk (e.g., Project "footprint" wastes and emissions and associated zones of influence). As appropriate to convey the information (i.e., environmental interactions), the EIS shall present descriptions, locations, plans, figures and/or drawings for each facility, including:

- tailings management facilities;
- waste rock storage (including discussion of ore contaminants (e.g. manganese) that may affect processing and volume of waste rock);
- all effluent generation, treatment systems, handling and discharge locations, as well as all anticipated effluents and contaminants, including ammonia residue from blasting operations;
- air emission sources (e.g. diesel generators, equipment, roads, waste rock/tailings lift-off, crushing, grinding, process heaters, conveyors, etc.);
- ambient air sampling stations and their locations;
- noise sources, expected noise levels and noise monitoring locations;
- water control structures or diversions that may be required to facilitate the project.
- transmission lines, including towers, poles, and aerial crossings over water bodies; and

- bridges and watercourse crossings (including conveyors) along proposed access roads and railway, including any preliminary designs for crossing structures;
- permanent and temporary access infrastructure (including road and rail) to be constructed; and
- fuel storage systems, including secondary containment (dykes) and a list of fuels.

#### 4.4.4.2 Activities

The EIS shall include descriptions of the construction, operation, maintenance, foreseeable modifications, including the expansion and lengthening of the operation and, where relevant, closure, decommissioning and reclamation of sites and facilities associated with the Project. Detailed descriptions of activities to be carried out during each phase of the Project should include the location, magnitude and scale of each activity. A schedule must be provided, showing time of year, frequency, and duration of project activities.

The description of the construction and operation activities shall include:

- estimates of emission quantities (T/yr);
- solid waste and waste reduction strategies;
- spill potentials and prevention strategies (e.g. hydraulic hose ruptures, fuelling, tank failure); and
- re-vegetation strategy for tailings storage or other areas.

The EIS should describe any regular maintenance that may be required for proposed bridges, transmission lines, and conveyors installed over navigable waterways. Activities involving periods of increased environmental disturbance or the release of materials into the environment are to be highlighted.

The level of detail in the description of the Project's facilities and activities shall be sufficient to enable prediction of environmental effects.

### 4.4.5 Alternative Means of Carrying out the Project

The EIS must identify and describe alternative means of carrying out the Project that are technically and economically feasible, taking into consideration the guidance provided in the Agency's document *Addressing "Need for", "Purpose of", "Alternatives to" and "Alternative Means" under the Canadian Environmental Assessment Act* (Agency 2007). The analysis shall describe:

- the alternative means considered, whether they are technically and economically feasible, and the rationale for rejecting alternatives;
- the environmental effects of the technically and economically feasible alternatives, in sufficient detail to allow comparison with the effects of the Project; and
- the preferred means of carrying out the Project based on the relative consideration of environmental effects including the criteria and rationale for their selection.

Any potentially adverse impacts of the technically and economically feasible alternatives on potential or established Aboriginal and Treaty rights must also be identified.

At a minimum, the discussion of alternative means of carrying out the Project shall include:

- tailings management;
- waste rock storage management and location;
- transportation, including alternative rail routes outside the Town of Wabush water supply area;
- power; and
- mining methods (e.g., open pit versus others).

## 4.5 Description of the Existing Environment

The EIS shall provide a description of the environment that could be affected by the Project, both in the immediate vicinity and beyond. This shall include the components of the existing environment, and environmental processes, their interrelations and interactions, as well as their variability over time scales appropriate to the effects analysis. The level of detail shall be sufficient to:

- identify, assess and determination of the significance of adverse environmental effects that may be caused by the Project;
- identify and characterize the beneficial effects of the Project; and
- provide the data necessary to enable effective follow-up.

The baseline description shall characterize environmental conditions resulting from historical and present activities in the local and regional study area. The physical and biological environments shall be described based on an ecosystem approach that considers both scientific and traditional knowledge and perspectives regarding ecosystem health. The EIS must identify and justify the selected indicators and measures of ecosystem health (i.e., measurable parameters). These indicators should be transferable to future project monitoring and other follow-up.

In assessing impacts to the biological environment, the EIS shall consider the resilience of relevant species populations, communities and their habitats. It shall summarize all pertinent historical information on the size and geographic extent of relevant animal or floral populations as well as density, based on best available information. Where little or no information is available, and when appropriate, specific studies shall be designed to gather information on species populations and densities that could be adversely affected by the Project. Habitat at regional and local scales must be defined when mapping aquatic and terrestrial vegetation types and/or communities.

Habitat use at regional and local scales should be characterized by type of use (e.g., spawning, breeding, migration, feeding, nursery, rearing, wintering), frequency and duration. Emphasis must be on those species, communities and processes most sensitive to project impacts. However, the interrelations of these components to the greater ecosystem and communities of which they are a part must be indicated. The EIS must address issues such as habitat, nutrient and chemical cycles, food chains, and productivity, to the extent that they are appropriate to understanding the effects of the Project. Range and probability of natural variation over time must also be considered.

The EIS must provide a description of the rural, Aboriginal and urban communities likely to be affected by the Project, and indicate the Project's proximity to sensitive features such as residences, cabins, public drinking water supplies, sacred sites, places of worship, and

locations of hunting and gathering activities (i.e. country foods collection). Depending on the type of potential effect the project may have on these receptors, appropriate baseline evaluation should be undertaken (e.g. baseline noise, air quality, drinking water, country foods evaluation).

The EIS must also describe existing geology, geochemistry, soils and terrain at the mine site and in the immediate vicinity.

The EIS must explain any extrapolation, interpolation or other manipulation applied to the baseline data used to describe environmental conditions in the study area.

## 4.6 Effects Assessment

The EIS shall describe the Project's effects on the environment, including but not limited to the effect of any environmental change on health, socio-economic conditions, and heritage values and on the current use of land and resources by Aboriginal people. Potential effects from all components of the Project at the site and within the Project's zone of influence shall be discussed. The EIS shall predict the Project's effects during all project phases (e.g., construction, operation, maintenance, foreseeable modifications, closure, decommissioning and reclamation), and describe them using appropriate criteria.

The environmental effects assessment in the EIS shall be based on best available information and methods. The methods employed shall be clearly explained. All conclusions must be substantiated, and the supporting logic clearly traceable. All assumptions made when predicting effects shall be clearly stated. For quantitative models and predictions, the EIS shall discuss the assumptions that underlie the model, the quality of the data and the degree of certainty of the predictions obtained. Modelling methods and equations presented must include information on margins of error and other relevant statistical information (e.g., confidence intervals, possible sources of error).

Views of the public and Aboriginal groups relative to the EA, including any perceived changes in the environment from the Project, must be acknowledged and considered. The EIS shall clearly articulate how relevant issues raised by the public or Aboriginal groups have been

considered, including any changes to the Project, or mitigation or follow-up measures arising from such consideration.

### 4.6.1 Accidents and Malfunctions

The EIS shall identify and describe accidents and malfunctions that may occur as a result of project activities, and assess the significance of associated environmental effects. It should identify potential accidents, malfunctions, unplanned events (e.g., premature or permanent shutdown), or emergency situations that could be associated with all phases of the Project, including product spills during loading of ships, train derailments and fuel transportation and storage, as well as the probabilities and hazards associated with them; the safeguards that have been established to protect against such occurrences and the contingency/emergency response procedures in place in the event that an accident/malfunction occurs. Factors which contribute to the uncertainty of detecting and mitigating impacts associated with accidents and malfunctions must be assessed. Special consideration must be given to the potential of malfunctions and accidental events that could impact Stewardship Wetland Management Units or local water supplies (e.g. Wahnahnish Lake).

### 4.6.2 Capacity of Renewable Resources

The EIS shall consider 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. The EIS shall identify any VECs predicted to experience significant adverse residual environmental effects, describe how the Project could affect their sustainable use and describe the criteria used in the analysis.

## 4.7 Mitigation Measures

Mitigation is defined as the elimination, reduction or control of the adverse environmental effects of the Project. It includes restitution for any damage to the environment caused by such effects through replacement, restoration, compensation or any other means. The EIS must consider measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the Project. The approach to mitigation shall be premised on a preference for avoidance and reduction of effects at their

source, including modifying the Project design, or relocating its components, where technically and economically feasible.

The EIS shall describe the standard mitigation practices, policies and commitments that constitute technically and economically feasible mitigation measures and that will be applied. It shall describe the proponent's environmental protection plan (EPP) and the environmental management system through which it will be delivered. The EPP shall provide an overall perspective on how potentially adverse 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, and explain how it will ensure compliance among its contractors and sub-contractors, and how compliance will be audited and enforced.

The EIS shall specify the actions, works, minimal disturbance footprint techniques, best available technology, corrective measures or additions planned during the Project's phases (construction, operation, modification, decommissioning, abandonment or other undertaking related to the Project) to eliminate or reduce the significance of adverse effects. The EIS shall also present an assessment of the effectiveness of the proposed technically and economically feasible mitigation measures.

If there are technically and economically feasible mitigation measures that were considered and rejected, the EIS must discuss these and explain why they were rejected. Trade-offs between cost savings and effectiveness of the various forms of mitigation must be justified. The proponent must identify who is responsible for the implementation of these measures and the system of accountability.

Subsection 79(2) of the *Species at Risk Act* requires that, if the Project is carried out, RAs ensure that measures are taken to avoid or lessen any potential adverse effects, regardless of their significance, on listed wildlife species, their critical habitat or the residences of individuals of those species. Potential effects must be monitored and mitigation must be consistent with any applicable recovery strategy and action plans. The EIS must include information that will allow the RAs to meet this requirement.

In addition, the EIS will identify the extent to which technology innovations will help mitigate environmental effects. Where possible, it will provide detailed information on the nature of these measures, their implementation and management, as well as whether follow-up will be required.

## 4.8 Cumulative Impact Assessment

Cumulative effects are residual effects of a project on the environment (i.e., impacts that occur after mitigation measures have been put in place) that are likely to arise from the project in combination with other projects or activities that have been or will be carried out. A cumulative effect on a VEC may be important even if the assessment of the Project's effects indicates that the effects of the Project on the VEC will be minor.

The EIS must include an analysis of cumulative effects. The analysis must consider different types of effects (e.g., synergistic, additive, induced, spatial or temporal) and identify impact pathways and trends. To the extent that information is available to assess the environmental effects of other projects and activities, which may be more conceptual and less detailed compared to the Project, the EIS shall assess the significance of the residual cumulative environmental effects that remain after mitigation has been implemented.

Cumulative effects assessment in the EIS should be consistent with the Agency's:

- *Operational Policy Statement - Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act* (2007); and
- *Cumulative Effects Assessment Practitioners Guide* (1999).

Past and present projects and ongoing activities shall be reviewed under the description of existing conditions for each VEC. Projects and activities which may potentially interact cumulatively with the Project include:

- Labrador Operation - Iron Ore Company of Canada;
- Wabush Mines - Cliffs Resources;
- Mount Wright Mine – Arcelor Mital
- Bloom Lake Mine and Rail Spur – Cliffs Resources;
- Schefferville Iron Ore Mine - Labrador Iron Mines;

- DSO Iron Ore Project – Tata Steel Minerals Canada (formerly New Millennium)
- Lower Churchill Generation Project; and
- Infrastructure or other projects at the Port of Sept-Îles.

Any known planned expansions or extensions to any of the above projects must also be considered.

## 4.9 Effects of the Environment on the Project

The definition of an "environmental effect" under the Act includes any change to the Project that may be caused by the environment. The EIS should describe the climatic conditions at the project site and in local and regional study areas and provide a description of seasonal variations and trends in climatic conditions, to allow the assessment of effects on the Project. Any use of off-site data must be described, including an analysis of the degree of representativeness of the data of conditions at the Project site. The use of the data should be qualified with an understanding of local and regional variability and the geographic locations of any onsite and offsite meteorological stations. The geographic locations of any onsite and offsite meteorological stations must be provided. Climate data should also be provided and taken into account when evaluating impacts of the project on air quality, hydrology and water management. The influence of local and regional topography or other features that could affect conditions in the study area should also be considered, as appropriate. Specifically, the EIS shall include a description of the following components:

- Physiography: topography, drainage network;
- Climate: historical records of total precipitation (rain and snow), mean, max and min temperatures;
- Geological context: bedrock and surficial cover stratigraphy and composition, geomechanic properties, and structural geology features such as fractures and faults, in the mine area and where major project infrastructures and earthworks are proposed (e.g. mine open pit, infrastructures, cutting and tunnelling locations along the railway route etc.);
- Hydrogeological context: hydrogeological characteristics of the different geological units (hydraulic conductivities, porosity, storage coefficients) ; groundwater

geochemistry, and groundwater levels for the areas that will be disturbed by major project components;

- Streamflow data records (levels and yields) of surroundings lakes, rivers and brooks;
- Geotechnical properties of Quaternary sediments, such as slope stability and bearing capacity of facility foundations and the railway line route under both static and dynamic conditions, including ground ice and thermal conditions.

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 affect the environment (e.g., environmental emergencies due to extreme environmental conditions). The EIS should describe measures that will be implemented to prevent and respond to such events. The EIS should discuss the sensitivity of the project to changes in specific climate and related environmental parameters, including total annual rainfall, total annual snowfall, frequency and/or severity of precipitation extremes, watercourse levels and stream flow.

In addition, the EIS shall discuss:

- potential geotechnical and geophysical hazards within the Project area, including potential seasonal subsidence, seismicity and faulting, risks associated with cut/fill slopes and constructed facilities. Where appropriate, the assessment should be supplemented by illustrations such as maps, figures, cross sections and borehole logs; and
- potential effects on foundation stability of major Project components from geological fractures and faults, and associated implications of these features on project planning and engineering design. Those Project components assessed shall include, but are not limited to railway embankments, tunnels, major watercourse crossings, and open pits.
- Potential effects of the groundwater level on mining operations

The sensitivity of the Project to long-term climate variability and effects must be identified and discussed. The Agency Procedural Guide, *Incorporating Climate Change Considerations in Environmental Assessment: General Guidance for Practitioners* (Agency 2003) provides guidance for incorporating climate change considerations in an EA. Consideration should be

given to the effects of climate change on project designs, and closure and reclamation of the site.

The EIS must provide measures and strategies to mitigate the potential effects of the environment on the project.

## 4.10 Environmental Management

### 4.10.1 Planning

The EIS shall describe the proposed Environmental Management Plans (EMPs) for all stages of the Project and include a commitment by the proponent to implement the EMPs, should the Project proceed. EMPs must be developed in 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 when developing EMPs.

The EIS shall also outline a preliminary decommissioning and reclamation plan for the Project. The plan must address ownership, transfer and control of the different Project components, as well as the responsibility for monitoring and maintaining structures. The EIS shall include a conceptual discussion of how decommissioning of permanent facilities may occur.

### 4.10.2 Follow-Up Program

The EIS must include a framework upon which follow-up, including effects monitoring, would be based throughout the life of the Project, including the post-closure phase. A follow-up program must be designed to verify the accuracy of the effects predictions and to determine the effectiveness of the measures implemented to mitigate the adverse environmental effects of the Project.

The follow-up program must be designed to incorporate pre-project baseline information, as well as compliance data (e.g., established benchmarks, regulatory documents, standards or guidelines) and real-time data (e.g., observed data gathered in the field). Effects predictions,

assumptions and mitigation actions that will be tested as part of the follow-up program must be framed as field-testable monitoring objectives. The monitoring design should 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 augment baseline data.

A schedule for follow-up frequency and duration is to required 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 should include;

- the requirements and objectives of the follow-up program;
- a description of the main components of the program, each monitoring activity under that component, and the objectives of each monitoring activity (i.e., confirmation of mitigation, confirmation of assumptions, and verification of predicted effects);
- 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 government, Aboriginal people and the public;
- a discussion of possible involvement of independent researchers;
- any contingency procedures/plans or other adaptive management provisions for dealing with unforeseen effects, or situations where benchmarks, regulatory standards or guidelines are exceeded; and
- a description of how results will be managed and reported.

Sufficient detail shall be provided to allow independent judgment as to the likelihood that the follow-up program will provide the quantity and quality of information required to achieve its objectives.

In addition, the *Species at Risk Act* (SARA) contains provisions requiring that measures are taken to monitor the adverse effects of a project on listed wildlife species and their critical habitat. If potential adverse effects on a listed wildlife species or its critical habitat are identified, a monitoring plan must be developed to identify the circumstances under which

corrective measures may be needed to address any issue or problem identified through the monitoring (i.e., if unanticipated effects occur or the importance of effects is greater than anticipated). The monitoring plan should clearly describe how government departments responsible for the species in questions would be engaged in reviewing proposed adaptive management measures, in the event that mitigation measures are not effective.

## 4.11 Significance of Residual Adverse Environmental Effects

The EIS must describe any expected residual (post-mitigation) effects of the Project on the biophysical and human environments, after technically and economically feasible mitigation measures have been applied. The residual effects, even if deemed insignificant, should be described. The EIS shall provide sufficient detail so that the environmental effects of the Project, and the degree to which they can be mitigated, can be clearly understood.

The criteria for evaluating the significance of the residual effects (including cumulative effects) shall be described, including pre-defined significance thresholds for each VEC (e.g. existing federal and provincial regulatory and industry standards and guidelines). The criteria may include: magnitude; duration and frequency; ecological context; geographic extent; and degree of reversibility. Further guidance on how these may be applied, including the consideration of likelihood and confidence level, or scientific certainty, of conclusions, is contained in the Agency's reference guide *Determining Whether A Project is Likely to Cause Significant Adverse Environmental Effects* (November 1994). Professional expertise and judgment may also be applied. The EIS must contain enough detail to enable readers to follow the reasoning and process by which the proponent assessed the significance of effects.

The EIS must state the proponent's conclusion, for each VEC, as to whether the Project is likely to cause significant adverse effects. Residual effects significance criteria shall be presented for each VEC in the EIS along with the analysis to support the conclusion of significance.

## 4.12 Consultation

### 4.12.1 Aboriginal Consultation

When the Government of Canada or the Government of Newfoundland and Labrador contemplates conduct that may potentially adversely affect established or asserted Aboriginal and/or treaty rights, it has a legal duty to consult Aboriginal peoples before making a decision to proceed with the proposed conduct. The Supreme Court of Canada has held, in several decisions, that the Crown (whether federal or provincial) has a duty to consult with, and if applicable, accommodate Aboriginal peoples if the Crown has knowledge of real or asserted Aboriginal or treaty rights and it exercises a power, duty or function that may adversely affect such rights. The federal and provincial governments discharge their duty to consult Aboriginal peoples in a variety of ways, including through the EA process. Where possible, the federal and provincial governments will coordinate their Aboriginal consultation obligations through the EA of the Project.

The Government of Canada's policy and procedures with respect to this obligation are set forth in its publication entitled *Aboriginal Consultation and Accommodation - Updated Guidelines for Federal Officials to Fulfill the Duty to Consult, March 2011* (INAC 2011). These guidelines form the basis for the Government of Canada's actions in the evaluation of the existence of asserted rights, current traditional use, and the strength of any claim in relation to the Project. The guidelines can be viewed at: http://www.aadnc-aandc.gc.ca/eng/1100100014664.

In addition to the federal Crown's broader obligations, the CEAA requires that a federal EA consider how any change in the environment caused by the Project will affect current use of land and resources for traditional purposes by Aboriginal persons. The CEAA also requires consideration of the effect of any Project-induced environmental change on physical and cultural heritage, as well as any structure, site or thing that is of historical or archaeological significance, such as sites historically occupied by Aboriginal peoples.

To assist the federal and provincial governments in their consultation processes, the EIS must describe the concerns raised by Aboriginal peoples through their representative organizations in respect of the Project, and where applicable, how they have been, or will be, considered

and, where appropriate, addressed. This should include a summary of discussions, as well as issues or concerns raised and any asserted Aboriginal rights, as conveyed to the proponent by Aboriginal representative organizations or the federal or provincial Crown. The EIS must document any significant adverse environmental effects on current use of land and resources for traditional purposes by Aboriginal persons that would be caused by a Project-induced change in the environment, as well as any measures taken or recommended that would prevent, mitigate, or otherwise accommodate these effects. This information will be used by governments towards fulfilling their duty to consult Aboriginal peoples about the Project. In addition to proponent-involved Aboriginal engagement, the provincial and federal governments may undertake additional engagement activities directly with Aboriginal representative organizations.

### 4.12.2 Public Consultation

The EIS must describe all public consultation activities undertaken by the proponent prior to, during, or planned after the EA. It should describe key stakeholder groups, summarize comments heard, identify key issues of concern raised by the public, and the proponent's responses.

## 4.13 Economic and Social Benefits of the Project

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

## 4.14 Benefits of the EA to Canadians

The EIS must describe how the EA process for the Project benefits Canadians, focusing on aspects such as:

- maximized environmental benefits: What expected environmental benefits will be created as a result of the project being assessed (e.g., will the project reduce habitat fragmentation of a species-at-risk?);

- contribution of the EA to sustainable development: Describe how the EA process for the project is expected to contribute to the concept of sustainable development for a healthy environment and economy;
- public participation: How is public participation in the EA expected to influence the project design and the environmental effects analysis?;
- technological innovations: Are new technologies expected to be developed to address environmental impacts that could be used for other projects?;
- increases in scientific knowledge: Is any new scientific information expected to be collected through the EA or follow-up that could benefit the assessment of other projects?; and
- community and social benefits: Describe any expected changes in project design that would result in indirect benefits to communities and/or social benefits (e.g., enhanced access to wilderness areas for recreation).

## 4.15 Assessment Summary and Conclusions

The EIS must summarize the overall findings of the EA, with emphasis on the main environmental issues identified. It must predict the likely significance of adverse environmental effects, including accidents and malfunctions, caused by the Project.

For all VECs, the EIS must include a table that summarizes:

- the Project's potential adverse environmental effects;
- proposed mitigation and compensation measures;
- proposed follow-up;
- potential residual effects;
- potential cumulative effects;
- potential effects of accidents and malfunctions on the VEC;
- 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
- commitments made by the proponent, including the timing and responsibility of each.

## PART II: DETAILED GUIDANCE ON SELECT ENVIRONMENTAL COMPONENTS

The following section provides an overview of the proposed studies and approach to be undertaken in the EIS for each VEC. Detailed study approaches and analytic methods and assumptions shall be provided in the EIS.

### 4.16 Atmospheric Environment

The effects of the Project on atmospheric environment will be assessed within the area that can reasonably be affected by the Project, based on the distance to sensitive receptors.

#### 4.16.1 VEC Definition and Rationale for Selection

Atmospheric environment is defined as ambient air quality and the acoustic environment (noise) within the vicinity of the Project. Atmospheric environment has been selected as a VEC based on:

- protection of human health and safety, as well as ecological health and aesthetics;
- potentially sensitive human and wildlife receptors;
- provisions of the *Canadian Environmental Protection Act (1999)*(CEPA), the *Air Quality Regulations* under the NLEPA; and the *Règlement sur l'assainissement de l'atmosphère* under Quebec's *Loi sur la qualité de l'environnement* (Environment Quality Act*)*; and
- the potential for greenhouse gas emissions.

#### 4.16.2 Potential Project-VEC Interactions

Potential Project-VEC interactions include:

- effects on ambient air quality due to:
    - particulate matter (e.g. dust) releases caused by mining operations;
    - dust and other matter released during concentrate storage, handling or loading and unloading, in both Labrador and Quebec; and
    - vehicle emissions, including rail locomotives;

- effects on ambient sound levels associated with:
    - mining and concentrating operations (including blasting) and transportation of concentrate on-site; and
    - transfer of concentrate from rail to container ships at the Port of Sept-Îles.

### 4.16.3 Existing Environment

The EIS must describe ambient air quality in the Project areas and, for the mine site, the results of a baseline survey of ambient air quality, focusing on the contaminants $PM_{2.5}$, $PM_{10}$ and $NO_x$. The EIS must also describe current ambient noise levels at both sites and within the local area, including the results of a baseline ambient noise survey. Information on typical sound sources, geographic extent and temporal variations must be included.

### 4.16.4 Effects Assessment and Mitigation

The adverse environmental effects of the Project on the atmospheric environment must be assessed for all phases of the Project. In addition, the effects of potential accidents and malfunctions, and cumulative effects associated with other industrial use of the area, must be assessed.

All potential Project emissions must be estimated, including greenhouse gases (GHG), and an emissions inventory table must be included in the EIS, listing emission sources, operating periods, pollution control equipment (where applicable), predicted stack concentrations and total emissions. Typical construction and operation-related emissions include, but are not limited to, particulates ($PM_{10}$ and $PM_{2.5}$) and metals in dusts, and fuel combustion by-products such as sulphur dioxide ($SO_2$), nitrogen oxides ($NO_x$), carbon monoxide (CO), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and metals. Potential odours from Project emissions at a local level (i.e. near Project equipment) must be discussed and assessed. GHG quantities are to be expressed in carbon dioxide equivalents (T/yr) and should be compared with provincial and national totals, and mining sector totals. The boundary for the inventory should be the point of shipping from the Project-owned rail spur.

For the mine site, dispersion modeling must be conducted in compliance with guidelines issued by the NLDOEC. Modeling shall be in accordance with the requirements of the *Air*

*Pollution Control Regulations* of the NLEPA, and will include the $PM_{2.5}$ and $PM_{10}$ fraction of particulate matter, $NO_x$ emissions from operational equipment and any other emissions of concern that are identified. The modeling should specify all assumptions with respect to emission rates and dust control applications. The analysis must account for prevailing meteorological conditions, and reflect the requirements and standards contained in pertinent legislation, policies, guidelines and directives relating to the atmospheric environment (e.g. National Ambient Air Quality Objectives, Canada Wide Standards, applicable provincial ambient air quality criteria). Modeling should be for the Project alone, and cumulative effects will be estimated on the basis of the existing air quality monitoring networks, where available.

The two primary crushers and any other significant particulate emission sources will be required to have Best Available Control Technology (BACT) for dust suppression. A description of proposed emission controls should be included in the EIS.

The EIS must assess potential noise impacts at the site and within the local area. Specifically, the EIS must:

- identify and quantify potential noise sources during construction and operation phases;
- identify potential receptors and describe the proximity of identified receptors to the Project area including identifying and describing whether particular receptors may have a heightened sensitivity to noise exposure (e.g. schools, child care centres, hospitals workers accommodations near the mine installations and residents along the Quebec North Shore and Labrador and Chemin de Fer Arnaud rail line and the port in the area of Sept-Iles.) or expectation of peace and quiet (e.g. recreational areas);
- include a map illustrating estimated noise levels from the Project at key receptors; and
- describe mitigation and noise management measures including the conditions for mitigation, and evaluate Project compliance with appropriate noise guidelines such as those provided by Health Canada for application to projects undergoing federal environmental assessment (see Health Canada's *Useful Information for Environmental Assessments* at http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/environ_assess-eval/index-eng.php for more information).

Technically and economically feasible mitigation measures must be proposed to reduce or minimize adverse effects. The EIS will provide a prediction of adverse residual effects and their significance.

## 4.17 Landforms and Soils

### 4.17.1 VEC Definition and Rationale for Selection

Landforms and Soils are defined as the landforms and soils within the vicinity of the Project. They have been included as a VEC because of their importance to project planning and potential to be impacted by Project activities.

### 4.17.2 Potential Project-VEC interactions

Potential Project-VEC interactions include:

- Acid Rock Drainage/Metal Leaching arising from Project activities;
- impacts to the quality or quantity of soils; and
- impacts of landform and soils on the Project.

### 4.17.3 Existing Environment

The description of the existing environment in the EIS shall include:

- existing unique or valuable landforms (e.g., eskers, fragile landscapes, wetlands), including details regarding their ecological functions and distribution in the local study area;
- existing or proposed protected areas, special management areas, and conservation areas in the regional study area;
- geomorphology and topography at areas proposed for construction of major project components, including the type, thickness, and distribution of soils as applicable;
- bedrock lithology, morphology, geomorphology and soils where earthworks are proposed;
- potential for ground and rock instability (e.g., slumping, landslides, and potential slippage) at areas planned for Project facilities and infrastructure;
- suitability of topsoil and overburden for use in the re-vegetation of surface-disturbed areas.

- sites of paleontological or palaeobotanical significance.

#### 4.17.3.1 Acid Rock Drainage and Metal Leaching

If there is a potential for Acid Rock Drainage/Metal Leaching (ARD/ML) to occur as a result of the Project, the EIS should include an investigation of the associated potential from overburden, mine waste rock, ore, and tailings. This investigation should include:

- population assessments for each lithological/alteration/waste management unit. Assessments should account for vertical and horizontal distribution, as well as sampling biases, to proper characterization over the unit's range of variability;
- a chronology of ARD/ML investigations and the design of an ARD/ML characterization program, including all static and kinetic test work conducted to date. The rationale, advantages and disadvantages of, detailed description, sample selections and methodology for all test work;
- predictions of the ARD/ML potential of all materials (bedrock and surficial) to be disturbed or created during all phases (construction, operation, decommissioning, reclamation and post-closure) of the proposed project. This must include estimation of risk for the onset of ARD for each lithological/alteration/waste management unit and mine component, metal leaching and the predicted drainage chemistry for each mine component, including the types and concentrations of major trace elements; and
- clear, concise cross-sections which relate the ARD/ML assessment (static/kinetic sample locations and results), geology and development plans.

### 4.17.4 Effects Assessment and Mitigation

In conducting the analysis, the EIS shall consider pertinent acts, policies, guidelines and directives. The EIS shall provide a description of measures to mitigate effects and list potential residual effects and their significance. The discussion should include a list of:

- rehabilitation measures for borrow sources;
- an erosion and sediment control plan; and
- measures to mitigate changes to local drainage patterns.

Specifically, the EIS shall discuss the following:

- general impact on landform as a result of Project development, borrow resource extraction, with a focus on sensitive landforms, and those serving as wildlife habitat;

- implications to the Project planning and design of baseline information related to terrain conditions;
- potential impacts on the stability of terrain in the vicinity of Project facilities and infrastructure. Discussion should focus on the potential for impacts arising from surface disturbances due to construction (e.g., overburden stripping, cuts/fills), and any associated implications for Project design and management of project components, including railway embankments, tunnels, access roads, watercourse crossings, ore/waste rock piles, etc.;
- the potential for the occurrence, frequency and distribution of terrain hazards, including snow drifts and snow banks, as a result of construction activities (e.g. cut/fill, extraction of construction materials);
- potential for soil erosion, including stream bank erosion, resulting from surface disturbances associated with the construction, operation and maintenance of Project components;
- proposed commitments to preserve, store and reuse soil (including humus layers and organic soils), as applicable for site rehabilitation; and
- potential contamination of soils due to the deposition of air emissions and airborne fugitive dust-fall from the Project.

#### 4.17.4.1 Acid Rock Drainage and Metal Leaching

The ARD/ML prediction information and historical site databases and experience will be used to assess the potential leachate risks and determine mitigation requirements for the project. Additional information should be provided for:

- mine waste rock, tailings, ore characterization, volumes, segregation/disposal methods, mitigation/management plans, contingency plans, operational and post-closure monitoring and maintenance plans;
- the feasibility of successfully segregating Potentially Acid Generating (PAG) and Non-Potentially Acid Generating (NPAG) waste materials during operations, proposed geochemical segregation criteria, and identification of operational methods that will be required to achieve geochemical characterization during operations (i.e., geochemical surrogates, on site lab, procedures needed etc);
- sensitivity analysis to assess the effects of imperfect segregation of waste rock;

- estimates of potential lag time to ARD/ML onset for PAG materials (including various waste rock, tailings, ore) and ability to fully saturate appropriate PAG materials during operation and post-closure based on regional experience, if any;
- pit water chemistry (existing, during operation, post-closure) and pit closure management measures (e.g., flooding). This should include geochemical modeling of pit water quality in the post-closure period;
- surface and seepage water quality from the mine waste rock stockpiles, other stockpiles and other infrastructure during operation and post-closure; and
- ARD/ML prevention/management strategies under a temporary or early closure scenario, including ore.

The manual produced by the Mine Environment Neutral Drainage (MEND) Program, entitled, *MEND Report 1.20.1, Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials, Version 0 - December 2009* is a recommended reference for use in ARD/ML prediction.

## 4.18 Water Resources

The effects of the Project on water resources will be assessed within the local drainage areas that can be reasonably expected to be affected by the Project.

### 4.18.1 VEC Definition and Rationale for Selection

Water resources include the quality and quantity of groundwater and surface water resources in the vicinity of the Project. It has been selected as a VEC because of:

- its importance to ecosystem function and human use (including potable water supplies; recreational use and protection of aquatic life);
- concerns regarding potential for release of hazardous materials on-site and potential contamination associated with mine and process water management;
- possible lowering of water table and effects on surface water / groundwater interactions (e.g., wetlands); and,
- provisions of the NL *Water Resources Act*.

### 4.18.2 Potential Project-VEC Interactions

Potential Project-VEC interactions include:

- effects related to mine water management as well as effects on water quality from effluent discharges and seepage;
- potential ammonia contamination from incomplete combustion of exploded materials (e.g. directly to surface waters, or to groundwater via bedrock fractures);
- effects on water quantity and hydrology/hydrogeology;
- effects related to mine water use (demand); and
- erosion and sedimentation, including dust deposition.

### 4.18.3 Existing Environment

#### 4.18.3.1 Groundwater

For the mine site, the EIS must describe the hydrogeologic conditions at the mine site. It must examine all available existing hydrogeology information required to assess the effects of the Project. Where knowledge gaps exist, the proponent must collect additional baseline information and provide it in the EIS.

The EIS must include:

- a review of the physical geography and the geology of the mine site project area as it pertains to local and regional groundwater flow systems in the mine area (see list in section 4.8);
- the physical and geochemical properties of hydrogeological units, such as aquitards and aquifers (see list in section 4.8);
- groundwater levels and a piezometric map for each aquifer;
- bedrock fracture sizes and orientations in relation to groundwater flow, including any preferential flow paths for groundwater (both shallow and deep);
- hydrogeologic maps and cross-sections for the mine area that outline the extent of aquifers, including stratigraphy, piezometric levels at different depths (to estimate vertical hydraulic gradients and show confined aquifers)/ potentiometric contours, locations of wells, boreholes, springs, lakes and streams, groundwater flow direction;

- groundwater flow patterns and chemistry, identifying recharge and discharge areas, and identifying groundwater interaction with surface waters;
- evaluation of discharge rates;
- assessment of groundwater quality in the different aquifers; and
- a description of any local and regional potable groundwater resource in the area.

Baseline information must include existing water supply wells (if any) identified within the area of influence of the Project property. Attention should be given to the (Wetlands) Habitat Management Units where drainage patterns may be altered as a result of Project-related activities and impacts on nearby water supplies, especially for the Town of Wabush.

#### 4.18.3.2 Surface Water

The EIS should describe surface water quality, hydrology and sediment quality within the area of influence of the Project. The baseline should provide the basis for the assessment of potential effects to surface water, presenting the range of water and sediment quality and surface water hydrology. A time-series graph of key variables and stream flows must be provided to illustrate patterns and variability. The full range of stream flow characteristics, in addition to mean values, should be described.

Furthermore, the EIS must:

- include delineation of drainage basins, at appropriate scales;
- describe and present monitored hydrological data, such as water levels and flow rates in local streams and selected local lakes;
- describe and assess hydrological regimes, including monthly, seasonal and year-to-year variability, normal flows , low flows, environmental (maintenance) flows and flood flows for selected return period flood events;
- include flows or design peak flows for selected periods for the Project area, bridge and culvert design at stream crossings for access roads and railway lines, and an assessment of potential ice problems;
- describe the interactions between surface water and groundwater flow systems under pre-development conditions and potential impacts on these interactions during the various phases of the Project;

- describe any local and regional potable surface water resource (e.g., from Wahnahnish Lake);
- provide seasonal water quality field and lab analytical results and interpretation at several representative local stream and lake monitoring stations established at the Project site.

### 4.18.4 Effects Assessment and Mitigation

The adverse environmental effects of the Project on Water Resources must be assessed for all phases of the Project and potential accident scenarios.

#### 4.18.4.1 Groundwater

The EIS must assess the effects of the Project on groundwater at the mine site. The effects assessment should provide a quantitative groundwater analysis to determine how Project-related facilities and activities will affect groundwater flows, quality and quantity, such as any effects to private drinking water wells or municipal supplies, as well as nearby lakes and streams, during all Project phases, including day-to-day operations, and for malfunctions and accidental events. The assessment should describe the duration, frequency, magnitude and spatial extent of any effects and outline the need for mitigation and/or monitoring measures. Seepage rates, locations, quality, and direction into or from the pit, overburden/waste rock/ore stockpiles, TMF, settling pond, and effects on groundwater stream flows and groundwater quality within the Project area should be assessed. Potential seepage to existing water bodies should be assessed (in relation to potential effects to fish and fish habitat). Mitigation strategies should be proposed.

The environmental considerations, including effects on groundwater resources that have influenced the location and management of proposed groundwater monitoring and water supply wells, shall be provided.

In summary, the following components should be provided:

- a monitoring plan for groundwater levels and quality, before, during and after the Project;
- estimation of water inflows into the open pit and withdrawal rates from the open pit;

- assessment of a hydrological budget, including runoff, evapotranspiration, and recharge rates under the various operation phases of the mine;
- a description of the duration, frequency, magnitude and spatial extent of any effects to surface and groundwater resources caused by the Project (e.g., use maps and cross-sections developed in section 4.18.3.1 to show effects);
- a description of potential cumulative and residual effects of the overall Project on water resources and their significance

The discussion of impacts to groundwater must include an analysis of impacts of malfunctions and accidents events, taking into account:

- the proposed rail line that would pass through the Wetland Habitat Area at the Jean Lake Rapids Management Unit and adjacent to the Wahnahnish Lake (Town of Wabush water supply). The EIS should describe the potential for impacts to the Jean Lake Rapids Management Unit and local water supplies, taking into account the potential for accidents and malfunctions, including train derailments;
- transportation of fuel for the Project (e.g., mine trucks, boilers) by rail from Sept-Îles. The EIS must describe potential accidents and malfunctions associated with the transportation and storage of fuel along the rail and on the Project site. Particular attention should be given to the potential for a spill to affect the Town of Wabush Water Supply and watershed area; and
- the management, storage and disposal of used oil and associated potential for malfunctions and accidents events.

The EIS must also specify what groundwater supply wells, if any, are proposed on site as part of the Project, and how they will be constructed and located in relation to the various mining activities in order to minimize effects on groundwater quality.

The analysis must be based on acts, policies, guidelines and directives relating to groundwater quality and quantity, such as the *Guidelines for Canadian Drinking Water Quality* (http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/2010-sum_guide-res_recom/index-eng.php). It should also refer to the Town of Wabush Municipal Plan. The EIS must describe measures to mitigate effects on groundwater quality and quantity, and predict adverse residual effects and their significance.

#### 4.18.4.2 Surface Water

The EIS must assess the effects of the Project on surface water quality and quantity within the Project's zone of influence, including potential impacts to the pond located within the proposed Rose Pit area (RP01) and the four ponds south of Rose Pit (RP02 – RP05). Potential watershed management impacts associated with the creation of the tailings management facility must be described. The assessment should describe the duration, frequency, magnitude and spatial extent of any effects and outline the need for mitigation and/or monitoring measures. The analysis of impacts to surface water should include malfunctions and accidents events. The EIS shall:

- include a detailed environmental water balance for the mine site, focused on predicted water balance inputs/outputs for a climate normal condition, dry- and wet-year conditions undertaken for major Project facilities including the open pit, waste rock storage areas, tailings disposal area and mill/processing area. This must include Project impacts to water volumes in Pike Lake and Pike Lake North. For Project areas whose footprint will expand over time, the EIS will assess the respective change in environmental water balance over Project life including the decommissioning and post-closure period;
- provide a detailed operational and post-closure water balance or mine water management plan identifying Project water demands/uses and water source(s), potential effects on water sources and proposed mitigation to avoid or minimize effects;
- consider transportation of fuel for the Project (e.g., mine trucks, boilers) by rail from Sept-Îles, including potential accidents and malfunctions associated with the transportation and storage of fuel along the rail and on the Project site. Particular attention should be given to the potential for a spill to affect the Town of Wabush Water Supply and watershed area;
- identify water and sediment quality objectives ,including the receiving water criteria of the Canadian Council of Ministers of the Environment (CCME) including the *Canadian Environmental Quality Guidelines for the Protection of Aquatic Life* for and the *Guidelines for Canadian Drinking Water Quality*, as applicable; and

- describe the potential for the phenomenon known locally as "Red Water" to be associated with tailings management and associated impacts to water; and
- assess predicted wastewater effluent quality in relation to the requirements of the *Metal Mining Effluent Regulations* of the *Fisheries Act*. The assessment should detail how proposed effluent is predicted to mix in the receiving environment for effluents discharged from the Project.

In conducting the analysis, the proponent should consider pertinent acts, policies, guidelines and directives relating to surface water quality and quantity. The EIS must describe technically and economically feasible measures to mitigate effects to surface water quality and quantity, and predict adverse residual effects and their significance.

## 4.19 Wetlands

The effects of the Project on wetlands must be assessed within the Project footprint and for areas that could be reasonably expected to be affected by the Project.

### 4.19.1 VEC Definition and Rationale for Selection

Wetlands are defined as lands having the water table at, near, or above ground surface, or are saturated long enough to promote wetland aquatic processes (i.e., bogs, fens, marshes, swamps, shallow water), as indicated by wet soils, hydrophilic vegetation and various kinds of biological activity that are adapted to wetland environments (NL *Water Resources Act*).

Wetlands help maintain ecological integrity and contribute to ecological, hydrologic (water quantity), biochemical (water quality) and habitat (as habitat for waterfowl, fish and other wildlife) functions and processes.

Municipal Wetland Stewardship Agreements and Wetland Habitat Conservation Plans have been signed by both the Town of Labrador City and Wabush. These plans identify areas of important waterfowl habitat that are designated as "no loss" areas to ensure the protection of sensitive habitat and the protection of waterfowl for future generations. The Project will occur in or near areas identified as management units in the plans, including the Jean Lake

Rapids and Elephant Head Management Units under the Town of Wabush stewardship agreement, and the Pike Lake South Management Unit under the Town of Labrador City stewardship agreement. The potential impacts of the Project on these wetlands must be assessed.

### 4.19.2 Potential Project-VEC Interactions

Wetlands may be affected by Project activities associated with the mine, concentrating facilities, rail loop at the existing railway and infrastructure associated with the Project that will result in clearing of or disturbance to natural vegetation, or ground disturbance (e.g., grubbing, grading, and excavation).

Potential Project-VEC interactions include:

- alteration or loss of wetland quantity due to vegetation clearing, infilling, heavy equipment use and other vehicle traffic;
- alteration of wetland quality (including ecosystem integrity and ability to function) due to changes in surface water hydrology, such as ponding or surface water diversion; and
- alteration of surface water and/or groundwater quality resulting from construction and/or operation (e.g. siltation, effluent discharge, spills and subsequent indirect effects to plant communities).

### 4.19.3 Existing Environment

Wetlands that may be affected by Project activities must be characterized according to their location, size, type (wetland class and form), species composition and ecological function.

Wetlands within the Project areas will be classified according to the *Canadian Wetland Classification System* (CWCS) (National Wetlands Working Group [NWWG] 1997). Wetlands that occur within the Stewardship Habitat Management Units designated under the (Wetland) Habitat Conservation Plans will be explicitly identified and characterized. Efforts should focus on collection of data for wetlands with the greatest potential to be affected (i.e., within the Project footprint), while collecting data at the appropriate scale for regional comparisons.

### 4.19.4 Effects Assessment and Mitigation

The adverse environmental effects of the Project on wetlands must be assessed for all phases of the Project, as well as accidental events. Wetland alteration is defined as changes to the wetland class or form, or changes to the performance of wetland functions resulting from disturbance to vegetation, soils, or hydrology. Wetland loss is defined as conversion of wetland to non-wetland (e.g., upland, lake, pond or watercourse) due to infilling, excavation or alteration to the hydrology. Wetland loss and wetland alteration must be assessed within the context of wetland supply and wetland function.

The EIS must describe the technically and economically feasible measures that will be applied to mitigate effects on wetlands and predict residual adverse effects and their significance. Proposed mitigation should be consistent with the *Federal Policy on Wetland Conservation,* including no net loss of wetland function. Provide justification for situations where avoidance of wetlands is not possible. The EIS should pay particular attention to the potential for impacts in the Jean Lake Rapids Management Unit, the Elephant Head Management Unit and the Pike Lake South Habitat Management Unit designated under (Wetland) Habitat Conservation Plans.

In conducting the analysis, consider pertinent federal, provincial, municipal and local acts, policies, guidelines and directives relating to Wetlands, including the Town of Wabush Municipal Plan and Habitat Conservation Plans.

Further guidance related to the assessment of effects to wetlands can be found in the Environment Canada publication *Wetland Ecological Functions Assessment: An Overview of Approaches* (Hanson *et al*., 2008).

## 4.20 Freshwater Fish, Fish Habitat and Fisheries

The upstream and downstream effects of the Project on fish, fish habitat and fisheries will be assessed for all potentially-affected water bodies.

### 4.20.1 VEC Definition and Rationale for Selection

Freshwater fish and fish habitat means freshwater fish species and the habitat upon which they depend. In accordance with Section 34 (1) of the *Fisheries Act*, fish habitat is defined as "spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes". The quantity and quality of available freshwater fish and fish habitat is an indicator of aquatic ecosystem health, and has socio-economic implications.

Fisheries are defined as the commercial, recreational, Aboriginal and subsistence fisheries which have the potential to be impacted at the Labrador and Quebec Project sites.

### 4.20.2 Potential Project-VEC Interactions

Potential Project-VEC interactions include:

- impacts to fish habitat and/or fish mortality and fisheries associated with:
    - the construction of Project facilities or infrastructure including but not limited to Rose Pit, Rose North Dump Site, Rose South Dump Site, Tailings Impoundment Area and watercourse crossings associated with the spur rail line, rail loop and roads;
    - water use, effluent discharge, use of tailings management area and mining activities during operations; and
- turbidity, siltation and other contamination from surface runoff.

### 4.20.3 Existing Environment

The EIS must describe the limnology, hydrology, freshwater biota, presence of fish and other freshwater species, associated habitats and habitat distribution and fisheries in potentially affected surface waters, based on available published information, information resulting from community consultation, and/or results of on-site baseline surveys. Baseline surveys should be conducted in accordance with direction as provided by DFO and shall be designed to:

- contribute to the development of mitigation measures and fish habitat compensation plans for the Project;
- contribute to the development of a conceptual reclamation and closure plan;

- provide necessary baseline data to support on-going monitoring programs that assess the effectiveness of mitigation measures and compensation plan; and
- provide necessary baseline data to support assessment of effects on the recreational, commercial and Aboriginal fisheries and their habitats.

Furthermore, the EIS must:

- characterize fish populations on the basis of species and life stage for affected water bodies (i.e., project footprint, upstream and downstream);
- classify and quantify fish habitat, as per the:
    - *Standards methods guide for the classification/quantification of lacustrine habitat in Newfoundland and Labrador*; and
    - *Standards Methods Guide for the Classification and Quantification of Fish Habitat in Rivers of Newfoundland and Labrador for the Determination of Harmful Alteration, Disruption or Destruction of Fish Habitat (Draft)*.
- enumerate stream discharge measurements and water quality parameters upstream and downstream of affected water bodies; and
- list any rare fish species that are known to be present.

### 4.20.4 Effects Assessment and Mitigation

The adverse environmental effects of the Project on fish and fish habitat must be assessed for all phases of the Project, as well as for accidents and malfunctions. The EIS must describe technically and economically feasible measures to mitigate effects to fish and fish habitat and predict residual adverse effects and their significance, including:

- measures to mitigate adverse effects to fish and fish habitat due to project related construction and operation related activities including but not limited to Rose Pit, Rose North Dump Site, Rose South Dump Site, the Tailings Impoundment Area, blasting, dewatering and watercourse crossings associated with the spur rail line, rail loop and roads;
- measures to prevent adverse effects to fish, fish habitat and water quality resulting from site water run-off or soil erosion;

- measures to mitigate flow changes resulting from mine water management, dewatering activities, stockpiling and waste management, and diversions, including upstream and downstream; and
- a description and quantification of all Harmful Alteration, Disruption or Destruction of fish habitat (HADD) and, where HADD is unavoidable, provision of an acceptable fish habitat compensation strategy to ensure that the Project will not result in a net loss of the productive capacity of fish habitat, in accordance the *Policy for the Management of Fish Habitat*.

## 4.21 Birds, Other Wildlife and Their Habitats

The effects of the Project on birds, other wildlife and their habitats will be assessed within the Project footprint (i.e. cleared areas) and areas that could reasonably be affected by the Project activities.

### 4.21.1 VEC Definition and Rationale for Selection

Birds, other wildlife and their habitat refers to migratory and non-migratory species that are potentially feeding, breeding, moving and/or migrating through the Project area. It has been selected as a VEC because of the need to protect ecosystems, species diversity, important habitats and ecosystems. In addition, species and other ecosystem components are important to local residents, regional stakeholders, and regulatory authorities (i.e., municipal, provincial and federal) for recreation, economic and/or management considerations.

### 4.21.2 Potential Project-VEC Interactions

Potential Project-VEC interactions include:

- habitat loss or degradation due to construction and operation of Project facilities and associated infrastructure;
- effects on the physical condition of individuals due to emissions/discharges from the Project;
- mortality due to construction, operation and/or decommissioning and/or accidents and malfunctions during these Project phases; and

- disruption of feeding, breeding, movement and/or migratory patterns due to noise, lights and/or presence of Project facilities.

### 4.21.3 Existing Environment

The EIS must describe migratory and non-migratory birds (including waterfowl, raptors, shorebirds, marsh birds and other landbirds), ungulates, furbearers, amphibians, small mammals, and their habitat at the Project site and within the local and regional areas. The results of any baseline surveys must be included.

#### 4.21.3.1 Migratory Birds

Migratory birds are protected under the *Migratory Birds Convention Act* (MBCA) and associated regulations. Preliminary data from existing sources should be gathered on year-round migratory bird use of the area (e.g., winter, spring migration, breeding season, fall migration). In addition to information obtained from the Atlantic Canada Conservation Data Centre (ACCDC) and naturalists, other relevant datasets should be consulted, such as those available from:

- Bird Studies Canada's "Nature Counts" web portal (http://www.birdscanada.org/birdmon/default/datasets.jsp);
- the *Quebec Breeding Bird Atlas 1984-89* (*Les oiseaux nicheurs du Québec: atlas des oiseaux nicheurs du Québec méridional)*. A copy of this atlas is available at: http://www.atlas-oiseaux.qc.ca/1eratlas_en.jsp; and
- other data and projects, based on consultation with government and other agencies.

Existing data should be supplemented by surveys, where necessary. Surveys should be designed with reference to the Canadian Wildlife Service's Technical Report No. 508, *A Framework for the Scientific Assessment of Potential Project Impacts on Birds* (Hanson *et al*. 2010). Appendix 3 of the Framework provides examples of project types and recommended techniques for assessing impacts on migratory birds.

Waterfowl use of the Stewardship Habitat Management Units designated under the Habitat Conservation Plans should be characterized.

#### 4.21.3.2 Other Wildlife

Other wildlife includes:

- Amphibians and small mammals
- Non-migratory birds include waterfowl, raptors, shorebirds, marsh birds and other landbirds.
- Ungulates include boreal sedentary or migratory caribou populations in the region, and moose.
- Furbearers refer to species such as black bear, wolf, marten, red fox, beaver and otter.

Other wildlife and their habitat that could be impacted by Project activities must be characterized using existing data, supplemented by surveys as appropriate. The proponent should contact the NLDOEC for further detail on the information requirements.

The EIS should give particular consideration to areas of concentration of migratory animals, such as breeding, denning and/or wintering areas, as well as breeding areas of species low in number and high in the food chain (e.g. furbearers such as black bear and wolf).

### 4.21.4 Effects Assessment and Mitigation

The adverse environmental effects of the Project on birds, other wildlife and their habitats should be assessed for all phases of the Project, and for malfunctions and accidental events. The EIS shall present an analysis of the Project's effects on habitats, giving consideration to, and demonstrating linkages to predicted physical and biological changes resulting from the Project. Management tools (i.e., federal and provincial laws and policies, guidance, and provincial or regional strategies and plans) applicable to the protection of wildlife and/or wildlife habitat must be considered in the EIS. The EIS must:

- quantify and describe overall loss or alteration of terrestrial habitat that could result from the Project and its effect on key species. Where possible, rank habitat quality for each VEC species so that the loss of high-quality habitat can be assessed in the context of its regional availability. Regional boundaries for assessment of relative habitat loss should be based on major watershed boundaries and eco-sections;
- assess the Project's potential effects on wildlife behaviour, such as feeding, breeding, migration and movement, with respect to:

    - physical hazards and attractants for wildlife (e.g., roads, pits, and other structural features);
    - chemical hazards and attractants for wildlife (e.g., identified contaminants of potential concern); and
    - sensory disturbance causing wildlife attraction or deterrence (e.g., noise, light, and human presence;
- assess the Project's effects on the Stewardship Habitat Management Units designated under existing Habitat Conservation Plans, and effects on waterfowl usage;
- assess the potential effects on species known to be important to Aboriginal people;
- describe the potential siltation associated with tailing management and the impacts on wildlife and habitat.

The EIS must describe technically and economically feasible measures to mitigate effects on birds, other wildlife, and their habitats and predict adverse residual effects and their significance. This includes plans and predictions for re-vegetation of the Project area, taking into account growth rates of local vegetation.

## 4.22 Species at Risk and Species of Conservation Concern

The effects of the Project on animal and plant Species at Risk (SARs) and species of special conservation concern will be assessed within the Project footprint (i.e. cleared areas) and areas that could reasonably be affected by the Project activities.

### 4.22.1 VEC Definition and Rationale for Selection

SARs include:

- species that are listed under the *Species at Risk Act* (SARA) and relevant provincial legislation such as the NL *Endangered Species Act* (ESA) and the Québec *Loi sur les espèces menacées ou vulnérables*; and
- species recommended for legal listing by COSEWIC, the NL Species Status Advisory Committee (SSAC), and ranked by the Atlantic Canada Conservation Data Centre (ACCDC) as S1, S2, or S3 or general status (NL Department of Environment and Conservation – Wildlife Division General Status of Wildlife Ranks )as maybe at risk or undetermined.

Preservation of SARs is important for maintaining ecological integrity and species biodiversity. There are also legislative and policy requirements to protect SARs and their habitats. For example, SARA requires every federal EA to identify any adverse effects on a listed species or its critical habitat be identified, and that measures be taken to mitigate and monitor those effects. Measures undertaken must be consistent with applicable federal recovery strategies, federal action plans, or provincial recovery plans.

### 4.22.2 Potential Project-VEC Interactions

Potential Project-VEC interactions for SARs include:

- habitat loss or degradation due to construction and operation of Project facilities and associated infrastructure;
- effects on the physical condition of individuals due to emissions/discharges from the Project;
- mortality associated with construction, operation and/or decommissioning and/or accidents and malfunctions during all Project phases; and
- disruption of feeding, breeding, movement and/or migratory patterns due to noise, lights and/or presence of Project facilities.

Project activities that will result in clearing of or disturbance to natural vegetation, or ground disturbance (e.g., grubbing, grading, and excavation) may affect rare plant species by:

- altering or destroying individual rare plants, or habitat capable of supporting rare plant species;
- altering preferred habitat due to changes in surface water hydrology (e.g., ponding, surface water runoff patterns);
- destroying plants, or reducing health conditions of individuals and /or their habitat due to soil erosion, structural soil changes, or soil contamination; or
- displacing rare plants due to non-native and invasive species introduction.

### 4.22.3 Existing Environment

As background for the analysis of the Project's effects on SARs, the EIS must:

- identify all SARs that may be affected by the Project, using existing data and literature as well as surveys to provide current field data, as appropriate;
- provide assessments of regional importance, abundance and distribution that optimize the ability to detect all species at risk and sufficient survey effort to obtain comprehensive coverage; and
- identify residences, seasonal movements, movement corridors, habitat requirements, key habitat areas, identified critical habitat and/or recovery habitat (where applicable) and general life history of SARs that may occur in the Project area, or be affected by the Project.

The following information sources on species at risk and species of conservation concern should be consulted:

- SARA (www.sararegistry.gc.ca);
- NLESA;
- COSEWIC;
- SSAC;
- NLDOEC – Wildlife Division General Status of Wildlife Ranks
- ACCDC
- Québec *Loi sur les espèces menacées ou vulnérables*;
- Relevant Government agencies;
- Local naturalist and interest groups; and
- Aboriginal groups and First Nations.

### 4.22.4 Effects Assessment and Mitigation

The EIS should identify the adverse effects of the Project on SARs, including individuals, critical habitat, recovery habitat, important habitat, and residences of species listed under SARA and NLESA, species recommended for legal listing by COSEWIC, the SSAC, as well as adverse effects on species of conservation concern ranked by the ACCDC as S1, S2, or S3.

The EIS should describe specific measures that will be taken to avoid or reduce adverse effects and to monitor them (consistent with any applicable federal recovery strategy, federal action plans, and/or provincial recovery/management plan). The effects analysis must include project-specific impacts and cumulative effects on SARs and their critical habitat, recovery habitat, important habitat, and/or residences. The likely significance of the Project's potential adverse environmental effects on SARs and species of conservation concern must be predicted.

Analysis must take into account pertinent acts, policies, guidelines and directives relating to species at risk, such as:

- *Addressing Species at Risk Act Considerations Under the Canadian Environmental Assessment Act for Species Under the Responsibility of the Minister responsible for Environment Canada and Parks Canada* (SARA-CEAA 2010);
- *The Species at Risk Act Environmental Assessment Checklists for Species Under the Responsibility of the Minister Responsible for Environment Canada and Parks Canada;*
- *Support Tool for the Required Information Elements Under the Species at Risk Act for Environmental Assessments Conducted Under the Canadian Environmental Assessment Act (Environment Canada –Parks Canada 2010);*
- *Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada* (Environment Canada 2004) and
- *Newfoundland and Labrador: A Provincial Policy Regarding the Conservation of Species at Risk.*

## 4.23 Historic and Cultural Resources

The effects of the Project on historic and cultural resources must be assessed within the Project footprint.

### 4.23.1 VEC Definition and Rationale for Selection

Historic resources are defined pursuant to the NL *Historic Resources Act*, as a work of nature or of humans that is primarily of value for its archaeological, prehistoric, historic, cultural,

natural, scientific or aesthetic interest, including an archaeological, prehistoric, historic or natural site, structure or object.

Cultural Heritage (patrimoine culturel) is defined pursuant to the Québec *Loi sur le patrimoine culturel* as: Le patrimoine culturel, reflet de l'identité d'une société, est constitué de personnages historiques décédés, de lieux et d'événements historiques, de documents, d'immeubles, d'objets et de sites patrimoniaux, de paysages culturels patrimoniaux et de patrimoine immatériel.

CEAA requires consideration of the effect of any change in the environment caused by the project on physical and cultural heritage, as well as any structure, site or thing that is of historical, archaeological, paleontological or architectural significance. Palaeontological resource means a construct, structure or work of nature consisting of or being evidence of prehistoric multicellular organisms and palaeontological resources that are designated by regulation. These resources are important for their historic, cultural, spiritual, and scientific value.

### 4.23.2 Potential Project-VEC Interactions

Potential Project-VEC interactions are related to disturbance to, and loss of, archaeological sites resulting from site clearing, grubbing and grading activities.

### 4.23.3 Existing Environment

The EIS must identify any terrestrial and aquatic areas within the project footprint that are known to contain features of historical, archaeological, paleontological, architectural, spiritual or cultural significance. A description of the nature of the features located in those areas must be provided. Informant interviews must be conducted with individuals familiar with the Project Area. Particular attention must be given to Aboriginal cultural, archaeological and historic resources, in consultation with Aboriginal people. The potential for archaeological and historic resources to be present in the project areas must be assessed and presented.

### 4.23.4 Effects Assessment and Mitigation

The adverse environmental effects of the Project on historic and cultural resources will be assessed for all phases of the Project, as well as for accidents and malfunctions. The analysis should include an archaeological impact assessment of the Project area. The EIS must provide technically and economically feasible measures to mitigate effects and predict adverse residual effects and their significance, taking into consideration pertinent legislation (i.e., NL *Historic Resources Act*, *Cultural Property Act*), policies, guidelines and directives. The analysis should include an archaeological impact assessment of the proposed Project areas, with particular emphasis on the mine site, and associated infrastructure (i.e., roads, transmission lines, railway).

## 4.24 Current Use of Lands and Resources for Traditional Purposes by Aboriginal Persons

The EIS must assess the effects on current use of lands and resources for traditional purposes by Aboriginal persons, if the effect results from a change in the environment caused by the Project.

### 4.24.1 VEC Definition and Rationale for Selection

Current use of lands and resources for traditional purposes by Aboriginal persons means use of lands and resources of specific social, cultural or spiritual value to Aboriginal communities of Labrador and Québec, with focus on current direct and indirect use by Aboriginal people for traditional purposes (i.e., fishing, hunting, and gathering). It is a VEC because of the importance of protecting these aspects, and also because it is part of the CEAA definition of environmental effect.

Spatial boundaries for this VEC shall be defined in consideration of areas and resources potentially affected by Project activities (e.g., fishing, hunting and gathering).

Temporal boundaries for the assessment shall include those applicable to the regulatory criteria and guidelines, and include Project construction, operation, decommissioning and

reclamation. Temporal boundaries shall also consider periods of enhanced biological sensitivity for resource species and times used for resource harvesting.

### 4.24.2 Potential Project-VEC Interactions

Potential Project-VEC interactions will arise from construction and operation activities that:

- alter or destroy wildlife and fish habitat;
- contaminate country foods or drinking water supplies;
- result in restricted access to the site; or
- modify the existing use of the Project area as a result of diminished air quality, noise and other disturbances.

Any of the above could restrict or otherwise affect Aboriginal uses such as fishing, hunting or harvesting opportunities. The potential for malfunctions and accidental events may also have interactions with this VEC throughout all phases of the project.

### 4.24.3 Existing Environment

The EIS must describe current use of lands and resources for traditional purposes by Aboriginal persons at the Project area and within the region. It should identify past, current and any known planned land use(s) that may be affected by any change in the environment caused by the Project.

The EIS must:

- identify lands, waters and resources of specific social, economic, archaeological, cultural or spiritual value to Aboriginal persons that may be affected by the Project's environmental effects;
- provide available information about current use of those lands, water and resources for traditional purposes, including activities for food, social, ceremonial and other cultural purposes, fishing, hunting, trapping, and plant harvesting and navigation; and
- include a map of the study area showing the project's components and all relevant Aboriginal uses and features as listed above.

Traditional activities carried out by Aboriginal people should be described based on information provided by Aboriginal groups or, if Aboriginal groups do not provide this information, on available information from other sources (to be cited).

### 4.24.4 Effects Assessment and Mitigation

The adverse effects of the Project-induced changes in the environment on current use of lands and resources for traditional purposes by Aboriginal persons will be assessed for all phases of the Project, and for malfunctions or accidental events. The EIS must describe:

- any change in the environment due to the Project that would in turn adversely affect:
- hunting, fishing, trapping and cultural 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; or
- Aboriginal groups of changes to area access, including deactivation or reclamation of access roads;
- the proponent's efforts to identify the issues and concerns of Aboriginal persons about the Project;

In conducting its analysis, the proponent shall consider relevant legislation, policies, guidelines and directives. The EIS shall provide a description of technically and economically feasible measures to avoid, mitigate, compensate or accommodate these effects, and predict potential residual effects and their significance.

## 4.25 Other Current Use of Lands and Resources

The effects of the Project on other current use of lands and resources will be assessed within the Project property boundaries, and along the right-of-way of associated infrastructure.

### 4.25.1 VEC Definition and Rationale for Selection

Other current use of lands and resources is defined as use of land and resources, including industrial uses, within the Project property boundaries and along the right-of-way of associated infrastructure. It was selected as a VEC due to its socio-economic importance. In

particular, the Project area in Labrador is important to cabin owners and to area residents for recreational purposes.

### 4.25.2 Potential Project-VEC Interactions

In Labrador, potential Project-VEC interactions will result from construction and operation activities that alter or destroy wildlife and fish habitat, contaminate country foods, contaminate drinking water supplies, result in restricted access, or modify the existing use of the Project area as a result of diminished air quality, noise and other disturbances. At Sept-Îles, potential Project-VEC interactions could result from the exclusion / promotion of industrial development at the site.

### 4.25.3 Existing Environment

The EIS must describe land use at the Project sites and within the regional areas. It should identify past, current and any known planned land use(s) of the Project area that may be affected by the Project. Local land and resource users should be consulted to help characterize existing land and resource use patterns. The aspects listed below are to be considered to the extent that they are applicable to the site of either the Project in Labrador, or Port operations at Sept-Îles:

- **Residential and Recreational Property**: The EIS must identify any property whose value may be adversely affected by any change in the environment caused by the Project. The occurrence of houses and cabins in the vicinity of the proposed mine site should be described;
- **Fishing**: aboriginal, commercial, recreational and subsistence fisheries at the Labrador and Quebec project sites are addressed under the freshwater fish, fish habitat and fisheries VEC (Section 4.20);
- **Outdoor Recreation and Tourism**: An overview of the current access and use of the mine site for recreation and the tourist industry (e.g., berry picking, plant harvesting, hiking, snowmobiling and parks, recreational use of water bodies), must be provided;
- **Hunting, Trapping and Guiding**: the current and projected value of the hunting, trapping and guiding industry close to or within the mine site must be provided;

- **Forestry:** The current forest resources and activities at the mine site should be identified;
- **Mineral Exploration:** The current mineral resources and exploration activities in the mine area must be identified;
- **Agriculture:** The EIS must identify current agricultural resources and activities, if any, that could be affected by the mine;
- **Navigation:** The EIS should provide an overview of the current navigational use in waters that could be affected in Labrador; and
- **Labrador Rail Transportation Component:** Identify any railway construction and/or operation that are subject to the NL *Rail Service Act*.

### 4.25.4 Effects Assessment and Mitigation

The EIS must describe the adverse effects on components identified in the previous section that may arise from changes in the environment caused by the Project, taking into consideration pertinent legislation, policies, guidelines and directives relating to land and resource use.

Effects of the proposed transmission line on residential communities and recreation in the area (e.g., Jean Lake walking trail) must be considered, as well as conformance with, or effects on, the Town of Wabush Municipal Plan.

The EIS must describe technically and economically feasible measures that would be employed to mitigate effects on other current use of lands and resources, as well as predicted adverse residual effects and their significance.

## 4.26 Community Services and Infrastructure

The effects of the Project on the community services and infrastructure of Labrador City and Wabush will be assessed, in accordance Newfoundland and Labrador requirements.

### 4.26.1 VEC Definition and Rationale for Selection

Community Services and Infrastructure includes:

- employment and social services;
- health services;
- training and education;
- safety and security;
- housing and accommodation;
- municipal administrative capacity;
- municipal services and infrastructure; and
- transportation infrastructure.

These services are important to area residents and their availability may be reduced due to the Project.

### 4.26.2 Potential Project-VEC Interactions

The interaction of the Project with community services and infrastructure is related to the Project's labour force. Project employment related effects will likely incur demographic change, and a subsequent increase in demand on services and infrastructure.

### 4.26.3 Existing Environment

Baseline conditions for population demographics and labour force, as well as existing community services and infrastructure, must be defined through a review of information from the Governments of Newfoundland and Labrador and Canada, and other relevant agencies and organizations (e.g., municipalities, local service districts, emergency service providers and tourism and accommodation agencies). Where additional information is required, field surveys and/or interviews with local individuals shall be conducted. In establishing the baseline for community services and infrastructure, particular attention should be paid to the capacity to handle any Project-induced increase in demand.

### 4.26.4 Effects Assessment and Mitigation

The EIS must describe:

- the existing inventory of infrastructure for both men and women in the community;
- the effects of Project-related demand on community services and infrastructure;
- the potential traffic increase on Grenfell Drive due to the Project, and associated health and safety implications;
- potential increase in passenger and freight traffic through the Wabush Airport due to the Project; and
- plans for supplying worker accommodations during construction and operation of the Project.

The EIS must describe technically and economically feasible measures to mitigate effects on Community Services and Infrastructure for both the construction and operation phases, as well as predicted adverse residual effects and their significance.

Pertinent acts, policies, guidelines and directives relating to community services and infrastructure must be considered, including the Municipal Plans of the Towns of Wabush and Labrador City.

## 4.27 Economy, Employment and Business

The effects of the Project on economy, employment and business will be assessed at the local (Newfoundland and Labrador Economic Zone 2 - Hyron Regional Economic Development Corporation) and provincial scales, in accordance with Newfoundland and Labrador requirements.

### 4.27.1 VEC Definition and Rationale for Selection

Economy, employment and business is defined as:

- economy of Labrador and the rest of the Province;
- taxes and royalties;
- gross domestic product (GDP);
- employment in Labrador and in the rest of the Province;

- skilled and unskilled labour supply in Labrador and the rest of the Province;
- expenditures in Labrador and the rest of the Province;
- employment equity and diversity including under-represented groups (e.g., women, persons with disabilities, aboriginal groups); and
- business capacity: goods and services.

Understanding the Project's effects on economy, employment and business is fundamental to assessing socio-economic implications for the lives of residents and of revenues to governments.

### 4.27.2 Potential Project-VEC Interactions

The interaction of the Project with economy, employment and business is related to the Project's expenditures and employment. Project expenditures and employment will contribute positively to economic, employment and business opportunities.

### 4.27.3 Existing Environment

Baseline conditions for Economy, Employment and Business will be determined through a review of information from the Governments of Newfoundland and Labrador, and Canada, and other relevant agencies and organizations (e.g., Regional Economic Development Boards, Chambers of Commerce, and Boards of Trade; Statistics Canada 2006 census) within Economic Development Zone 2. Where additional information is required, field surveys shall be conducted. Baseline conditions will be characterized for:

- existing employment and income conditions;
- GDP for the Province;
- income levels;
- sources of income;
- labour force indicators including labour force, employment, unemployment and employment, unemployment and participation rates;
- business and industry profile (including industries of specific importance such as mineral exploration and mining); and,
- employment by sector.

### 4.27.4 Effects Assessment and Mitigation

The EIS must assess the effects of Project-related effects on economic, employment and business conditions and opportunities, focusing on Economic Development Zone 2. Given the large number of workers required to complete the project, the EIS must provide:

- the National Occupation Classification (NOC) codes (at the 4-digit level) associated with each position for all phases of the project, including the number of positions associated with each NOC code;
- the approximate timelines for each of the positions during the construction and operations phases of the project, including the number of positions for each 4-digit NOC code throughout the project at specified time intervals (monthly, or at least quarterly) to show levels of employment throughout the Project timeline;
- an indication of whether the positions are full-time equivalent, or the actual number of positions; if the latter, specify how many are full-time vs. part-time;
- an estimate of the number of apprentices (by level) and journeypersons required;
- the anticipated source of the workforce, including an estimate of local employment (local area, provincial) and any strategies for recruitment;
- expected impacts on the local labour force in Labrador; and
- technically and economically feasible measures to mitigate adverse effects, and to optimize beneficial effects.

The EIS must include commitments to:

- develop Gender Equity and Diversity Plans that meet the approval of the Minster of Natural Resources and the Minister Responsible for the Status of Women. The plans will include an employment plan and a business access strategy for women and for other under represented groups;
- provide quarterly reports during the construction phase, as well as for the duration of the operations phase, including information on the number employed (by 4-digit NOC), the number of full-time/part-time employees, the number of apprentices (by level) and journeypersons, gender, and source of the workforce; and
- submit a Newfoundland and Labrador Benefits Plan to the Department of Natural Resources.

Pertinent acts, policies, guidelines and directives relating to economy, employment and business must be taken into account.

## 4.28 Commitments made in the EIS

Provide a list of all commitments made in the EIS regarding environmental mitigation, monitoring and follow-up. Each commitment must be cross-referenced to the section of the EIS where it is made.

## 4.29 Component Studies

Component Studies shall address baseline data requirements to support the evaluation of environmental effects and/or the development of mitigation measures as well as monitoring and follow up programs. In accordance with section 12 of the Newfoundland and Labrador Environmental Assessment Regulations, 2003, Component Studies shall be prepared for:

- freshwater fish, fish habitat and fisheries;
- fresh water quality and quantity (groundwater and surface water); and
- socio-economics (including housing, employment demands, local infrastructure).

Where new information becomes available as a result of baseline studies, additional Component Studies may be required.

Component studies generally have the following format:

- Rationale/Objectives: In general, Component Studies are conducted to obtain additional data for use in determining the potential for significant effects on a VEC due to the proposed undertaking, and to provide the necessary baseline information for monitoring programs.
- Study Area: The boundaries of the study area shall be defined depending on the characteristics of the VEC being investigated.

- Methods: Methods shall be proposed by the Proponent, in consultation with resource agencies, as appropriate. The methods used in each component study shall be described in the EIS.
- Study Outputs:
    - Study outputs shall be proposed by the Proponent. Information and data generated shall be sufficient to adequately predict the effects on the VEC and to determine monitoring and follow-up requirements.
    - Identification of information sources.
    - Appendix of raw data in electronic tabular form for the bio-physical component studies.

# Appendix A: Data and Information Sources

*Wetland Stewardship Agreement: Habitat Conservation Plan for the Town of Labrador City*. Prepared By the Town of Labrador City with Assistance from Staff of the Wildlife Division (Eastern Habitat Joint Venture) 2010

*Wetland Stewardship Agreement: The Town of Wabush Habitat Conservation Plan*. Prepared by the Town of Wabush With Assistance from Staff of the Eastern Habitat Joint Venture 2009.

Canadian Environmental Assessment Agency. 1992. *Canadian Environmental Assessment Act* and Regulations. http://laws-lois.justice.gc.ca/eng/acts/C-15.2/

Canadian Environmental Assessment Agency. 1996. *Reference Guide on Physical and Cultural Heritage Resources*. http://www.ceaa.gc.ca/default.asp?lang=En&n=1BE75513-1

Canadian Environmental Assessment Agency. 1999. Cumulative Effects Assessment Practitioners Guide. Canadian Environmental Assessment Agency – Policy & Guidance – Cumulative Effects Assessment Practitioners' Guide.

Canadian Environmental Assessment Agency. 2003. *Incorporating Climate Change Considerations in Environmental Assessment: General Guidance for Practitioners*. http://ceaa.gc.ca/default.asp?lang=En&n=DACB19EE-1

Canadian Environmental Assessment Agency. 2007. Operational Policy Statement: Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act. http://www.ceaa.gc.ca/default.asp?lang=En&n=1F77F3C2-1

Canadian Environmental Assessment Agency. 2007. *Addressing "Need for", "Purpose of", "Alternatives to" and "Alternatives Means" under the Canadian Environmental Assessment Act*. http://www.ceaa-acee.gc.ca/default.asp?lang=En&n=5C072E13-1

Canadian Environmental Assessment Agency. 2011. *Guidelines for the Preparation of an Environmental Impact Statement for the Comprehensive Study Process Pursuant to the Canadian Environmental Assessment Act*.

Environment Canada, 1991. Birds Protected in Canada under the Migratory Birds Convention Act, Canadian Wildlife Service Occasional Paper No. 1. http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=97AC4B68-69E6-4E12-A85D-509F5B571564

Environment of Canada. 1991. The Federal Policy on Wetland Conservation. Canadian Wildlife Services, Environment Canada, Ottawa, Ontario. 15 pages. http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=BBAAE735-EF0D-4F0B-87B7-768745600AE8

Environment Canada. Sept 2003 (updated: March, 2004). Implementation Guidelines for Part 8 of the Canadian Environmental Protection Act, 1999 - Environmental Emergency Plans. 58 pages. http://www.ec.gc.ca/lcpe-cepa/default.asp?lang=En&n=D6ADAD2D-1

Environment Canada. 2004. Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada. First Edition, Canadian Wildlife Service, Environment Canada. 68 Pages.

Environment Canada. 2008. Environment Canada Guidance Related to the Environmental Assessment of Aggregate Pit Mines and Quarries in the Atlantic Provinces. 13 Pages.

Environment Canada –Parks Canada. 2010. *The Species at Risk Act Environmental Assessment Checklists for Species Under the Responsibility of the Minister Responsible for Environment Canada and Parks Canada – Support Tool for the Required Information Elements Under the Species at Risk Act for Environmental Assessments Conducted Under the Canadian Environmental Assessment Act*: http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=DA30C3BC-F7ED-45F2-868B-17A0B33B6FDF

Fisheries and Oceans Canada. 1986. *Policy for the Management of Fish Habitat* http://www.dfo-mpo.gc.ca/habitat/role/141/1415/14155/fhm-policy/index-eng.asp

Government of Canada. 2003. *A Framework for the Application of Precaution in Science-based Decision Making About Risk*.

Hanson, A., L. Swanson, D. Ewing, G. Grabas, S. Meye, L. Ross, M. Watmough, and J, Kirby. 2008. *Wetland Ecological Functions Assessment: An Overview of Approaches*. Canadian Wildlife Service Technical Report Series No. 497. Atlantic Region. 59 pp. http://www.ec.gc.ca/Publications/default.asp?lang=En&xml=B8737F25-B456-40ED-97E8-DF73C70236A4

Hanson, A., I. Goudie, A. Lang, C. Gjerdrum, R. Cotter and G. Donaldson. 2009. *A Framework for the Scientific Assessment of Potential Project Impacts on Birds*. Canadian Wildlife Service's Technical Report Series No. 508. Atlantic Region. 61 pp.

Health Canada. 2010. *Useful Information for Environmental Assessments*. Ottawa, Ontario. 17 pages. http://www.hc-sc.gc.ca/ewh-semt/pubs/eval/environ_assess-eval/index-eng.php

Minister of the Department of Indian Affairs and Northern Development. March 2011. *Aboriginal Consultation and Accommodation - Updated Guidelines for Federal Officials to Fulfill the Duty to Consult*. http://www.ainc-inac.gc.ca/eng/1100100014664

National Wetlands Working Group (NWWG). 1997. *The Canadian Wetland Classification System, second edition*, B.G. Warner and C.D.A. Rubec (ed.). Wetlands Research Centre, University of Waterloo, Waterloo. 68 p.

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Explosives Act: http://laws.justice.gc.ca/eng/acts/E-17/index.html

*Canada Transportation Act*: http://laws.justice.gc.ca/eng/acts/C-10.4/index.html

*Règlement sur l'assainissement de l'atmosphère* under Quebec's *Loi sur la qualité de l'environnement*.

*Navigable Waters Protection Act*: http://laws.justice.gc.ca/eng/acts/N-22/

Newfoundland and Labrador *Environmental Protection Act*:
http://assembly.nl.ca/Legislation/sr/statutes/e14-2.htm#58_

Newfoundland and Labrador *Sustainable Development Act*:
http://assembly.nl.ca/Legislation/sr/statutes/s34.htm

Newfoundland and Labrador *Water Resources Act*:
http://assembly.nl.ca/Legislation/sr/statutes/w04-01.htm

Newfoundland and Labrador *Mineral Act*: http://assembly.nl.ca/Legislation/sr/statutes/m12.htm

Newfoundland and Labrador *Endangered Species Act*:
http://assembly.nl.ca/Legislation/sr/statutes/e10-1.htm

# Appendix B: Public Notices

Under the provisions of the *Environmental Assessment Regulations 2003*, Section 10, and where the approved Guidelines require public information session(s), the following specified public notification requirements must be met by the proponent prior to each meeting:

Public Notice

Public Information Session on the Proposed

*Name of undertaking*

*Location of undertaking*

Shall be held at

*Date and Time*

*Location*

This session shall be conducted by the Proponent,

*Proponent name and contact phone number,*

as part of the environmental assessment for this Project,

to describe the activities associated with, and to provide an opportunity for all interested persons to request information or state their concerns.

**ALL ARE WELCOME**

Minimum information content of public advertisement - (Proponent to substitute appropriate information for italicized items).

Minimum newspaper ad size: 2 column widths.

Minimum posted ad size: 7" x 5"

Minimum newspaper ad coverage: Weekend preceding meeting and 3 consecutive days prior to meeting date; to be run in newspaper locally distributed within meeting area or newspaper with closest local distribution area.

Minimum posted ad coverage: Local Town or City Hall or Office, and local Post Office, within town or city where meeting is held, to be posted continually for 1 full week prior to meeting date.

Any deviation from these requirements for any reason must receive prior written approval of the Minister of Environment and Conservation.