

WABUSH 3 OPEN PIT MINE PROJECT

Environmental Impact Statement

Plain Language Summary

Submitted by:

Iron Ore Company of Canada

1000 Sherbrooke West, Suite 1920
Montreal, Québec
Canada H3A 3G4

2 Avalon Drive
Labrador City, Newfoundland & Labrador
Canada A2V 2Y6

Prepared with the assistance of:

AMEC Environment & Infrastructure

A Division of AMEC Americas Limited
133 Crosbie Road, PO Box 13216
St. John's, Newfoundland and Labrador
Canada A1B 4A5

AMEC TF1443040

August 2014

This page has been intentionally left blank for double-sided printing

TABLE OF CONTENTS

		Page No.
1	INTRODUCTION	1
	1.1 Project Overview	1
	1.2 Environmental Assessment Process	4
	1.2.1 Purpose of the EIS.....	4
	1.2.2 Provincial EA Requirements	5
2	PROJECT DESCRIPTION.....	6
	2.1 Purpose of and Need for the Project.....	6
	2.2 Project Description	6
	2.2.1 Location	6
	2.2.2 Components	6
	2.2.3 Activities	7
	2.2.4 Labour Force Requirements	8
	2.2.5 Project Schedule	9
3	SCOPE OF THE ASSESSMENT.....	10
	3.1 Scope of the Project	10
	3.2 Factors to be Considered.....	10
	3.3 Scope of the Factors	11
	3.3.1 Identification of Valued Environmental Components.....	11
	3.3.2 Spatial and Temporal Boundaries	11
4	PROJECT ALTERNATIVES.....	13
	4.1 Alternatives to the Project.....	13
	4.2 Alternative Means of Carrying out the Project	14
	4.2.1 Description of Alternatives and Associated Technical, Economic and Environmental Considerations	14
	4.2.2 Selection of a Preferred Option.....	15
5	CONSULTATION	16
	5.1 Governmental Consultation	16
	5.2 Aboriginal Engagement	16
	5.3 Public and Stakeholder Consultation	17
6	EXISTING ENVIRONMENT	18
	6.1 The Natural Environment	18
	6.2 The Human Environment.....	19
	6.3 Environmental Baseline Studies and Other Information Sources	21
7	ENVIRONMENTAL EFFECTS ASSESSMENT.....	22
	7.1 Approach and Methods.....	22
	7.2 Valued Environmental Components (VECs)	22
	7.2.1 Atmospheric Environment.....	23
	7.2.1.1 Potential Environmental Effects.....	23
	7.2.1.2 Mitigation Measures	23
	7.2.1.3 IOC Response to Identified Issues and Residual Environmental Effects	24
	7.2.2 Landforms, Soils, Snow and Ice	24
	7.2.2.1 Potential Environmental Effects.....	24
	7.2.2.2 Mitigation Measures	24

- 7.2.2.3 IOC Response to Identified Issues and Residual Environmental Effects 25
- 7.2.3 Water Resources 25
 - 7.2.3.1 Potential Environmental Effects..... 25
 - 7.2.3.2 Mitigation Measures 25
 - 7.2.3.3 IOC Response to Identified Issues and Residual Environmental Effects 26
- 7.2.4 Wetlands..... 26
 - 7.2.4.1 Potential Environmental Effects..... 26
 - 7.2.4.2 Mitigation Measures 26
 - 7.2.4.3 IOC Response to Identified Issues and Residual Environmental Effects 26
- 7.2.5 Fish, Fish Habitat and Fisheries 27
 - 7.2.5.1 Potential Environmental Effects..... 27
 - 7.2.5.2 Mitigation Measures 27
 - 7.2.5.3 IOC Response to Identified Issues and Residual Environmental Effects 28
- 7.2.6 Birds, Other Wildlife and Their Habitats..... 28
 - 7.2.6.1 Potential Environmental Effects..... 28
 - 7.2.6.2 Mitigation Measures 28
 - 7.2.6.3 IOC Response to Identified Issues and Residual Environmental Effects 29
- 7.2.7 Species at Risk and Species of Conservation Concern..... 29
 - 7.2.7.1 Potential Environmental Effects..... 29
 - 7.2.7.2 Mitigation Measures 29
 - 7.2.7.3 IOC Response to Identified Issues and Residual Environmental Effects 30
- 7.2.8 Current and Future Use of Lands and Resources 30
 - 7.2.8.1 Potential Environmental Effects..... 30
 - 7.2.8.2 Mitigation Measures 30
 - 7.2.8.3 IOC Response to Identified Issues and Residual Environmental Effects 31
- 7.2.9 Community Services and Infrastructure..... 31
 - 7.2.9.1 Potential Environmental Effects..... 31
 - 7.2.9.2 Mitigation Measures 32
 - 7.2.9.3 IOC Response to Identified Issues and Residual Environmental Effects 32
- 7.2.10 Health and Community Health 32
 - 7.2.10.1 Potential Environmental Effects..... 32
 - 7.2.10.2 Mitigation Measures 33
 - 7.2.10.3 IOC Response to Identified Issues and Residual Environmental Effects 33
- 7.2.11 Economy, Employment and Business..... 33
 - 7.2.11.1 Potential Environmental Effects..... 34
 - 7.2.11.2 Mitigation Measures 34
 - 7.2.11.3 IOC Response to Identified Issues and Residual Environmental Effects 34
- 8 EFFECTS OF THE ENVIRONMENT ON THE PROJECT 35**
 - 8.1 Approach and Methods 35
 - 8.2 Potential Environmental Effects..... 35
 - 8.3 Mitigation 36
 - 8.4 IOC Response to Identified Issues and Residual Environmental Effects 36
- 9 EFFECTS OF POSSIBLE ACCIDENTS OR MALFUNCTIONS..... 37**
 - 9.1 Approach and Methods 37
 - 9.2 Potential Environmental Effects..... 37

9.3 Mitigation 38

9.4 IOC Response to Identified Issues and Residual Environmental Effects 38

10 EFFECTS ON CAPACITY OF RENEWABLE RESOURCES..... 39

11 CUMULATIVE ENVIRONMENTAL EFFECTS 40

11.1 Approach / Methods and Scoping 40

11.2 Potential Cumulative Effects and Mitigation Measures 40

11.3 IOC Response to Identified Issues and Residual Environmental Effects 41

12 FOLLOW-UP PROGRAM..... 42

13 BENEFITS OF THE EA TO NEWFOUNDLAND AND LABRADOR..... 44

14 OVERALL CONCLUSIONS OF THE PROPONENT..... 45

LIST OF FIGURES

	Page No.
Figure 1.1 The Wabush 3 Open Pit Mine Project and IOC’s Existing Labrador City Operations.....	2
Figure 1.2 Wabush 3 Project Components and Layout.....	3
Figure 2.1 Estimated Construction Personnel Requirements.....	8

LIST OF TABLES

	Page No.
Table 12.1 Proposed Follow-up Program Components in the Wabush 3 EIS.....	42

LIST OF APPENDICES

Appendix A Environmental Effects Summary Matrices

This page has been intentionally left blank for double-sided printing

1 INTRODUCTION

The Iron Ore Company of Canada (IOC) has been operating the Carol Project (Labrador City Operations) in Labrador City since the early 1960s. The company's current mining operations in the region consist of open pit mines, mineral processing (concentrator and pellet plant) and tailings management facilities, transportation infrastructure and other associated components and activities.

IOC is proposing to construct and operate a new open pit mine at its Labrador City Operations mine site (Figure 1.1). The proposed Wabush 3 Open Pit Mine Project (hereinafter also referred to as the "Project") will be a conventional open pit mine with associated infrastructure. The Project will provide iron ore to IOC's existing concentrator plant and in doing so, will allow flexibility in iron ore feed as well as serve as a new source of iron ore to extend the operating life of IOC's Labrador City Operations.

The proposed Project requires environmental assessment (EA) review and approval under the Newfoundland and Labrador *Environmental Protection Act (NL EPA, Part 10)* and its associated *Environmental Assessment Regulations*. This document provides a non-technical summary of the Environmental Impact Statement (EIS) that has been prepared by IOC for the Wabush 3 Project, as required by the EIS Guidelines issued by the Government of Newfoundland and Labrador in April 2014. It includes an overview description of the Project, its existing environmental setting, IOC consultation activities and their outcomes, and the main findings of the environmental effects assessment. This includes the main results of the EA in terms of the Project's likely environmental effects, the various mitigation measures that IOC has identified and proposed to avoid or reduce any potential adverse effects and to optimize Project benefits, and proposed environmental monitoring and follow-up activities.

Additional information on the Project and the results of its EA are provided in the EIS document itself, which should be referred to for further detail on each of the items summarized here.

1.1 Project Overview

The Wabush 3 Project area will be located in Labrador City, and its overall footprint (including the open pit, waste rock disposal and overburden storage areas, haulage roads and other infrastructure) will cover a total area of approximately 570 ha (Figure 1.2).

Wabush 3 will be a conventional open pit mine with associated components and activities, which are being designed to support flexible ore feed to IOC's existing production facilities. The Project will consist of the following key components:

- An open pit mine which contains an estimated 744 million tonnes of iron ore (measured and indicated resources) and has an estimated operating life of approximately 45 years;
- An overburden storage area to the south of the open pit;
- A waste rock disposal site, adjacent to and northwest of the open pit;

Figure 1.1 The Wabush 3 Open Pit Mine Project and IOC's Existing Labrador City Operations

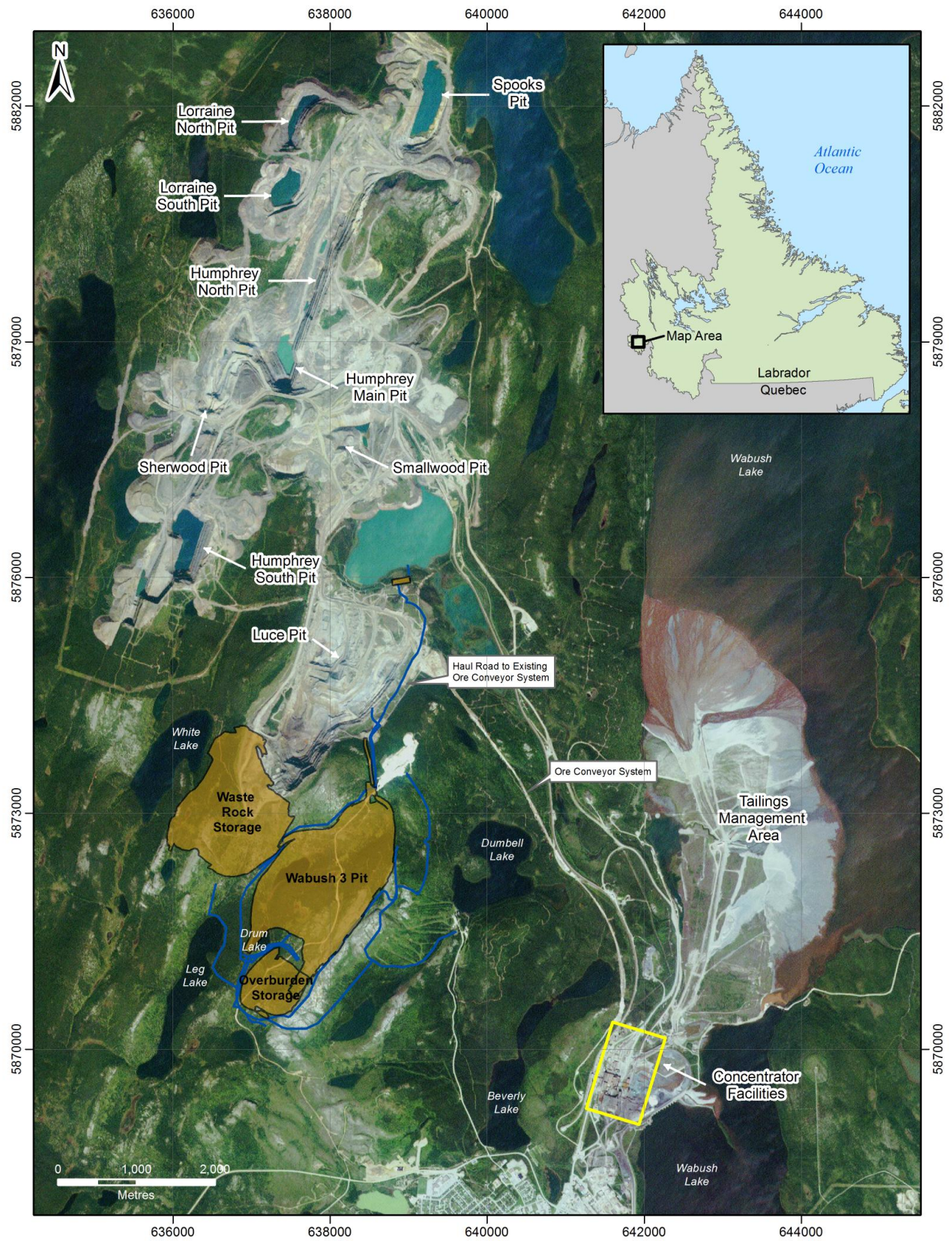
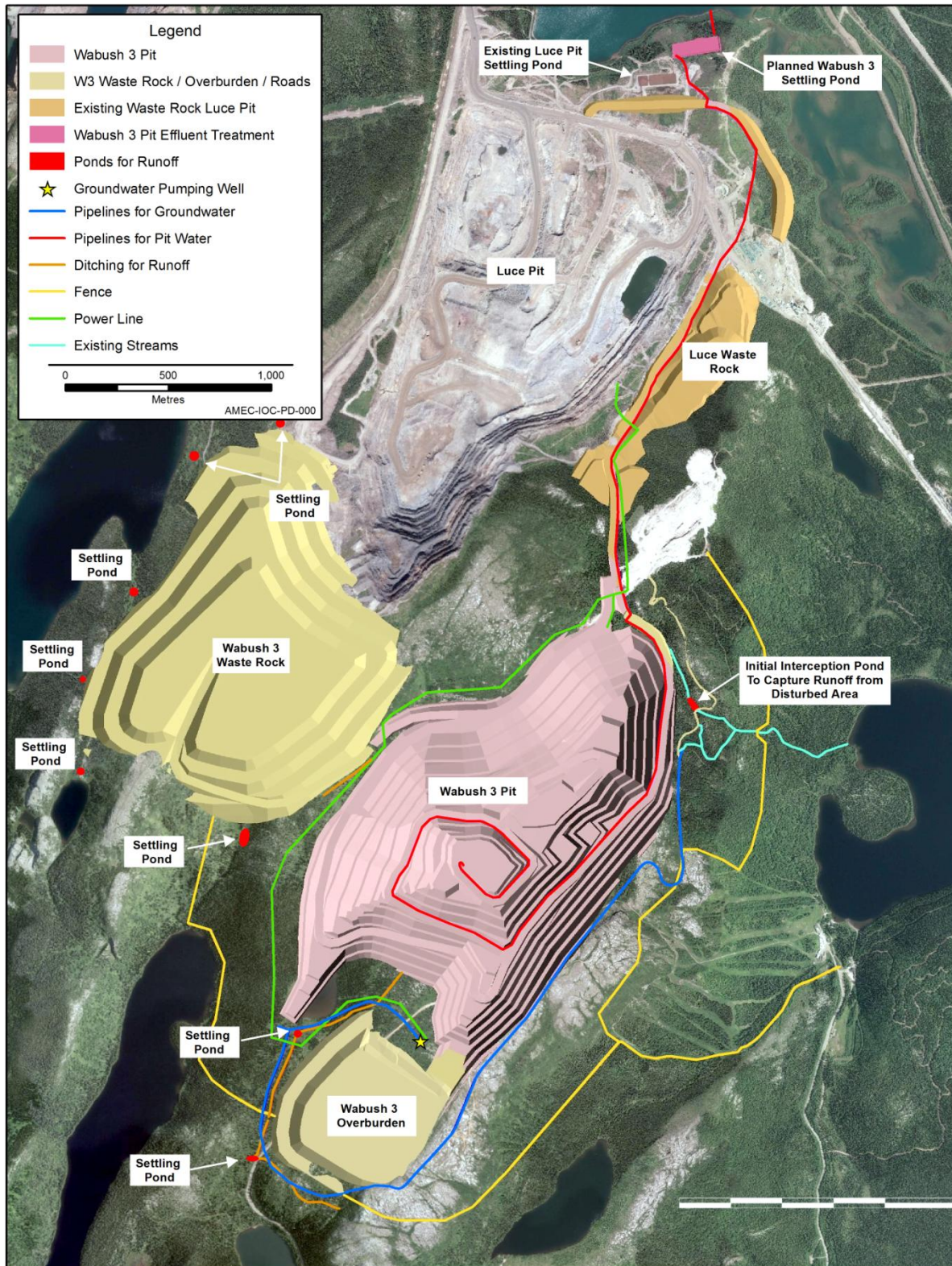


Figure 1.2 Wabush 3 Project Components and Layout



- A haulage road to the northeast of the open pit, linking it with the existing ore conveyor and concentrator facilities;
- A haulage road to the west of the open pit, connecting it to the waste rock storage pile;
- A haulage road to the south of the open pit, connecting it to the overburden storage area;
- Power lines along the haulage road to the northeast of the open pit and around the western and southern sides of the open pit;
- A groundwater extraction system and associated pipelines;
- A mine water collection, treatment and disposal system and associated pipelines;
- Drainage ditches and collection ponds downslope of the waste rock disposal and overburden storage areas; and
- Security fencing along the eastern and southern sides of the Project.

Construction activity will be undertaken over various phases, and will include site clearing, removal of overburden (glacial till) and drilling and blasting of the exposed rock, followed by the establishment of infrastructure and utilities. Once operational, the pit will utilize conventional mining techniques for the extraction of iron ore, along with associated ore handling and transport, water management, waste rock disposal and maintenance activities.

The Project will be fully integrated into IOC's overall Labrador City Operations, and will utilize its existing maintenance, ore delivery, processing and tailings management facilities, mining equipment, labour force and other aspects of IOC's current infrastructure and activities in the region.

1.2 Environmental Assessment Process

EA is a regulatory review process that is often applied to proposed developments, in order to proactively identify and seek to address their potential environmental effects as part of project planning and decision-making. Through EA review, environmental issues are identified (often through consultation), and likely environmental effects are assessed and evaluated, and measures to avoid or reduce adverse effects and optimize benefits are identified and proposed.

The results of an EA are then considered in project planning and design, and ultimately, in eventual government (regulatory) decisions regarding whether and how the Project can proceed.

1.2.1 Purpose of the EIS

The EIS has been developed and is being submitted by IOC, as the Proponent of the Project, in accordance with the provisions and requirements of the provincial EA legislation and regulations, and in full compliance with the associated EIS Guidelines (April 2014).

The purpose of the EIS is to provide a description of the Project, including its purpose and rationale and key proposed components and activities, as well as its existing biophysical and socioeconomic environments, consultation activities and identified questions and issues, the Project's likely environmental effects, and the mitigation measures that IOC has identified and proposed to address these predicted effects.

1.2.2 Provincial EA Requirements

The proposed Wabush 3 Project is subject to EA review under the *NL EPA* and *EA Regulations*. Key steps in the EA review process for the Project to date include:

- On May 23, 2013 IOC submitted the Wabush 3 Open Pit Mine EA Registration to the Government of Newfoundland and Labrador to formally initiate the provincial EA review process for the Project;
- Following governmental and public review of that Registration, on July 24, 2013 the Minister of Environment and Conservation announced that an EIS was required for the Project;
- On August 27, 2013 an EA Committee comprised of representatives of various applicable provincial and federal government departments was appointed;
- On October 3, 2013 the provincial government issued Draft EIS Guidelines for public review and comment; and
- On April 3, 2014 the Final EIS Guidelines were approved by the Minister and issued to IOC to guide its preparation of this EIS.

The EIS has been completed and submitted in accordance with the *NL EPA* and its *Regulations* and the above referenced EIS Guidelines.

The preparation and submission of the EIS is an important step in the EA review process for this Project. It will form the basis for further review, consideration and discussion of the Project and its potential environmental effects and planned mitigations by governments, Aboriginal and stakeholder groups, the interested public and IOC as part of the EA process.

Based on the results of the EA and the associated EIS reviews and input, the Government of Newfoundland and Labrador will decide whether the Project can proceed, and if so, under what terms and conditions.

2 PROJECT DESCRIPTION

The following sections provide a summary overview of the proposed Wabush 3 Project, including each of its main components and the various activities that will be undertaken during its planned construction, operations and maintenance and closure and decommissioning phases.

2.1 Purpose of and Need for the Project

The purpose of the Project is to develop the iron ore resources that are found within the Wabush 3 deposit on IOC's property in Labrador City, NL. The Project will provide iron ore to IOC's existing concentrator and pellet plant, and in doing so, will serve as a new source of iron ore to enhance production efficiency and flexibility and also extend the operating life of IOC's mining activities.

The Project will therefore help extend and sustain the important social and economic benefits that IOC's operations provide to Labrador West and to the province of Newfoundland and Labrador as a whole.

2.2 Project Description

The overall Wabush 3 Project area, including each of its associated components and facilities, will cover a total area of approximately 570 ha.

2.2.1 Location

The proposed Project is located in Western Labrador, with the planned open pit facility located within IOC's existing property boundaries on *Mining Lease 15 - Block 22-5*. The proposed development is located immediately to the south of and adjacent to IOC's currently operating Luce Mine (see Figure 1.1), northwest of the Town of Labrador City and immediately to the west of several existing recreational facilities in the area.

2.2.2 Components

The Project will include the construction, operation and eventual closure and decommissioning of the following key elements (see Figure 1.2):

- Open Pit;
- Waste Rock Disposal Area;
- Overburden Storage Area;
- Haulage Roads;
- Groundwater Extraction System and Associated Pipelines;
- Mine Water Collection, Treatment and Disposal System;
- Power Lines; and
- Security Fencing.

The proposed open pit contains an estimated 744 million tonnes of measured and indicated iron ore, and has an estimated operating life of 45 years (which may vary based on the eventual mining rate). The open pit itself

will be approximately 249 ha in total area, and will be created using conventional drill and blast methods and progressively expanded throughout the operational life of the Project.

The proposed waste rock disposal area is located immediately to the west of the open pit and will be connected to the pit by a short haulage road which eventually will become part of the pile. An estimated 455 million tonnes of waste rock will be produced throughout the life of the mine, and the total area of the waste rock disposal site will be approximately 220 ha.

Overburden associated with the open pit consists of vegetation, underlying soil and organic material and glacial till, and it is estimated that approximately 11 million cubic metres (20 million tonnes) of overburden will be removed from the pit area over the various phases of Project development. This material will be stored in an overburden storage area (approximately 59 ha in size), for future use in rehabilitation of developed areas throughout the IOC property.

Three haulage roads will be constructed as part of the Project, totalling approximately four km in length, which will provide access from the open pit to IOC's iron ore processing facilities to the north, as well as to the proposed waste rock disposal and overburden storage areas.

Pit dewatering and groundwater extraction systems will also be installed to manage water inflows into the Wabush 3 open pit area, in order to create and maintain a dry environment for drilling, blasting and excavating iron ore and waste rock. The pit dewatering system will include infrastructure for diverting flows around the pit areas, collecting groundwater seepage and surface runoff, and for treating collected mine water to meet applicable federal and provincial water quality regulations before discharge to the environment.

The anticipated power demand for the operation of Wabush 3 is approximately 15 MW, which will be supplied through a new on-site electrical substation and an approximately five km long power line connection to the existing electrical system on IOC's property. For operational and safety reasons, security fencing will also be established along the eastern and southern sides of the Project.

2.2.3 Activities

The Project will include the construction, operations and maintenance and eventual closure and decommissioning of each of the components described above. The Project will be developed in several sub-phases or timeframes that will include a mix of site development / construction, operations and progressive decommissioning.

The construction phase of the Project will include the following activities:

- Tree clearing and overburden removal;
- Surface drilling and blasting;
- Construction of infrastructure (haulage roads, fence, dewatering facilities); and
- Installation of utilities (power line and sub-station).

Once operational, the Project will utilize conventional (drill and blast) mining techniques for the extraction of iron ore, along with associated ore handling and transport, water management, waste rock disposal and

maintenance activities. The Project will be fully integrated into IOC’s overall Labrador City Operations, and will utilize the existing iron ore maintenance, ore delivery, processing and tailings management facilities, equipment, labour force and other aspects of IOC’s current infrastructure and activities in the region.

Ore will be recovered from the open pit using conventional drill and blast / load / haul methods. Electric shovels will load the ore and waste rock into diesel haul trucks, which will then be transported along a dedicated haulage road system to the existing IOC (Luce Pit) infrastructure for primary crushing. IOC’s current overland conveyor system will transport the crushed ore to the existing concentrator plant.

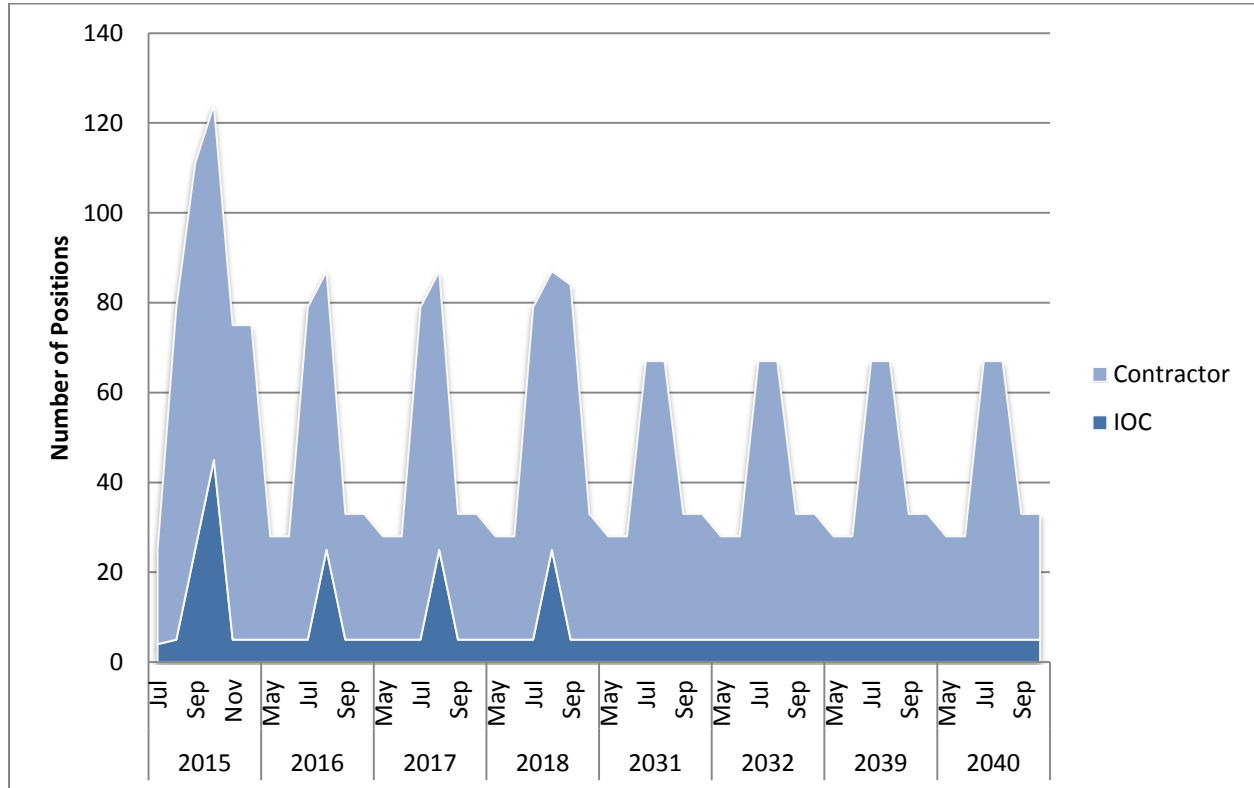
Mine operations will take place 24 hours per day, 365 days per year. The specific production rate from the Project at any given time will be influenced by its role in IOC’s overall, integrated Labrador City Operations, including the mining activities and rates of production from the other operating IOC mines.

The future decommissioning and remediation of the Project’s facilities will be incorporated into IOC’s overall Rehabilitation and Closure Plan for its Labrador City Operations.

2.2.4 Labour Force Requirements

During the Project’s construction phase, an estimated 2,428 person months of employment will be created, which will involve a mix of contractors and sub-contractors (approximately 85 percent) and IOC personnel (15 percent) (Figure 2.1):

Figure 2.1 Estimated Construction Personnel Requirements



The following construction activities will be completed primarily by contractors and sub-contractors:

- Clearing of vegetation;
- Stripping overburden;
- Drilling and equipping dewatering wells;
- Installing borehole water pipelines;
- Excavating settling ponds;
- Constructing the security fence; and
- Initiating drilling and blasting

IOC's existing workforce will undertake the following construction works:

- Constructing the haulage roads;
- Installing the power line extension and electrical sub-station; and
- Constructing the pit water pipeline.

During Project operations, a portion of IOC's existing labour force (an estimated 136 persons) will be redeployed from the existing mine pits to carry out mining and support activities at Wabush 3. The actual number of persons and particular occupations involved will vary over time according to the nature and scheduling of specific operational and maintenance activities and requirements.

2.2.5 Project Schedule

Subsequent to release from the EA process, and the receipt of formal corporate approval and all other required regulatory approvals and permits, construction activity for the Project would commence in the summer or fall of 2015 and would extend to late 2018 (Phase 1), followed by subsequent construction sub-phases in the 2031-2032 and 2039-2040 periods, to allow the progressive expansion of the open pit.

Once the initial construction phase of the Project has completed the installation of the required infrastructure and utilities and has developed the initial mining area, the operations and maintenance phase of the Project will begin. The current Project schedule indicates that this phase of the Project will commence in late 2016 (pre-production), and extend to approximately 2060. The initial construction phase will continue to carry out mine development activities (clearing, overburden stripping and development drilling and blasting) for several years after mining operations have started. The subsequent construction / development phases will also be undertaken concurrently with the mining operations.

As indicated, a key purpose and objective of IOC's proposed development of the Wabush 3 Project is to provide iron ore to IOC's existing concentrator and pellet plant, and in doing so, serve as a new source of iron ore to enhance production efficiency and flexibility and also to extend the overall operational life of its Labrador City Operations. Without the Project, these operations are estimated to conclude in approximately 2067, whereas the development of Wabush 3 would extend this timeframe to approximately 2079.

3 SCOPE OF THE ASSESSMENT

3.1 Scope of the Project

For the purpose of the EA, the scope of the Project includes each of the physical components and activities associated with its construction, operations and maintenance, and closure and decommissioning phases, as summarized in the preceding sections.

It is important to note that, somewhat different from other, recent mining developments in Newfoundland and Labrador that have been subject to EA review, Wabush 3 represents an extension of IOC's existing mining activities in Labrador City, rather than an entirely new and self-contained mining development in the region.

The overall nature and scope of the Project is therefore quite focussed, and includes the construction and operation of a new open pit, waste rock disposal and overburden storage areas, as well as the associated water management systems, haulage roads, power lines and other infrastructure. These components and activities will be located immediately adjacent to IOC's existing and long-standing mining operations, within which the Project will be fully integrated. As a result, the Project will not require the development and use of new iron ore processing or tailings management facilities and other mining infrastructure and equipment, nor will it involve a new or increased IOC operations workforce.

3.2 Factors to be Considered

As specified in the EIS Guidelines issued by the Government of Newfoundland and Labrador in April 2014, the following factors have been considered in the EA:

- The purpose of the Project;
- Alternatives to the Project;
- The need for the Project;
- Alternative means of carrying out the Project or components of the Project that are technically and economically feasible and the environmental effects of any such alternative means;
- 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;
- Measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the Project;
- Comments from Aboriginal organizations and from the public that are received in accordance with *NL EPA* regulations or practice;
- Local knowledge and Aboriginal traditional knowledge;
- 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; and
- The requirements of a follow-up program for the Project.

3.3 Scope of the Factors

In considering and addressing each of the above listed factors, the EIS has focussed upon identifying, analysing and describing those environmental components, issues and effects that are most relevant to the Project, and to eventual regulatory, planning and design decisions about it, as identified through the EA processes and IOC's governmental, Aboriginal and public consultation initiatives.

3.3.1 Identification of Valued Environmental Components

In keeping with what has become standard EA practice, and as specified in the EIS Guidelines, this EA is organized by and focused on a series of identified Valued Environmental Components (VECs).

VECs are aspects of the biophysical and socioeconomic environments that are of particular ecological and/or social importance, and which have the potential to be materially affected (adversely or positively) by the proposed project under assessment. VECs reflect identified scientific and/or community concerns regarding a project and its potential effects, and are typically identified early in an EA as a result of questions and issues raised through consultations with government departments and agencies, Aboriginal and stakeholder groups and the interested public. The VEC approach is a useful, effective and widely accepted way of helping to ensure that an EA focuses on important and relevant environmental components and issues.

VEC selection for the EIS was initially guided by the EIS Guidelines issued by Government, as well as being further informed by IOC's own consultation activities. Based on these various environmental issues scoping processes, the following VECs have been identified and are considered in the EIS:

- 1) Atmospheric Environment
- 2) Landforms, Soils, Snow and Ice
- 3) Water Resources
- 4) Wetlands
- 5) Fish, Fish Habitat and Fisheries
- 6) Birds, Other Wildlife and Their Habitats
- 7) Species at Risk and Species of Conservation Concern
- 8) Current and Future Use of Lands and Resources
- 9) Community Services and Infrastructure
- 10) Health and Community Health, and
- 11) Economy, Employment and Business

3.3.2 Spatial and Temporal Boundaries

EA study areas (spatial and temporal boundaries) have been established for each VEC to direct and focus the environmental effects assessment. These study boundaries are generally VEC-specific, given the differences between the VECs in terms of their overall characteristics and in the manner in which they may interact with and be affected by the Project.

A number of types of spatial assessment boundaries have been defined and are described for each VEC, which reflect the various ways and scales at which the Project may affect that component of the environment:

Project Development Area (PDA): The locations within which Project components and activities that may affect the VEC will likely occur. The PDA is defined so as to generally encompass all aspects of the Project that may affect the VEC in question, and covers an area of approximately 570 ha.

Local Study Area (LSA): This boundary includes a larger geographic area surrounding the PDA that encompasses the potential zone(s) of influence of other Project-related disturbances that may affect the VEC (such as any environmental emissions).

Regional Study Area (RSA): The EA also considers the larger ecological / socio-cultural environments and contexts within which the Project and its potential environmental effects will occur. For some environmental components, possible interactions may be limited to the immediate locations of proposed Project activities, whereas others may extend well beyond the immediate area of disturbance due to the distribution and/or movement of an environmental component and other associated environmental features and processes. This includes the particular characteristics and overall distributions and movements of the individual VECs under consideration, such as the migratory nature and movement patterns of affected fish or wildlife as well as the overall extent and distribution of human populations, communities and activities. These are important considerations in determining the potential for, and the extent and distribution of, an environmental effect.

For all VECs, the temporal boundaries of the EA include and encompass the construction, operations and maintenance and closure and decommissioning phases of the Project, as described earlier. This includes consideration of the likely timing of Project related activities, as well as the likely duration of any resulting environmental effects. Consideration was also given to the relevant temporal characteristics of the VECs, including the timing of their presence within the PDA / LSA / RSA, any especially important or critical periods, likely response and recovery times to potential effects, and any natural variation in that environmental component. Administrative boundaries refer to applicable legislation, regulations, policies or other considerations that are relevant to the management of the VEC, which are also defined and discussed as relevant.

Again, VEC-specific EA study areas (including spatial (LSA and RSA) and temporal boundaries) are defined in the EIS. The Project's likely environmental effects are assessed and their significance is evaluated based on these defined boundaries.

4 PROJECT ALTERNATIVES

As an important and valuable planning tool, EA is intended to help inform and influence project planning and design, and in doing so, to help proactively address the potential environmental outcomes of proposed development activities. The EA process therefore allows for the identification, analysis and evaluation of potential alternative project concepts and approaches, in order to help directly incorporate environmental considerations into project planning at an early stage.

As such, and as required under the provincial EA legislation and the EIS Guidelines issued for this Project, the EIS therefore also considers:

- 1) Alternatives to the proposed Project, or functionally different ways of achieving the same Project purpose and objectives; and
- 2) Possible alternative means of carrying out the Project that are technically and economically feasible.

The EIS also considers and describes the potential environmental effects of any such alternative means.

4.1 Alternatives to the Project

The underlying purpose of the Project is to develop the iron ore resources that are found within the Wabush 3 deposit on IOC's property in Labrador City, NL. The Project will provide iron ore to IOC's existing concentrator and pellet plant, and in doing so, will serve as a new source of iron ore to enhance production efficiency and flexibility and also extend the operating life of IOC's mining activities.

Potential alternatives to the Wabush 3 Project therefore include:

- 1) Not proceeding with the Project;
- 2) Delaying its implementation, or
- 3) The development of other iron deposits within the IOC leases in Labrador City.

Neither of these potential options is currently acceptable to IOC. The former two options would not satisfy the current needs to provide flexibility in mine production to more consistently meet IOC concentrator production capacity. The latter would also cause delays, as additional drilling and assessment are needed at the other potential sources. In addition, currently identified alternative ore sources do not provide the same operational benefits (such as low amounts of required waste rock stripping per unit of iron ore) as the Wabush 3 deposit.

All of the above alternatives would result in either a reduction in concentrator throughput, or a significant increase in mining rates, followed by greater variability in mining rates. The low waste mining requirements of the Wabush 3 deposit allow IOC to operate in a much more stable manner, with less workforce volatility.

The proposed Project provides a technically feasible, economically viable and environmentally and socially responsible means of addressing IOC's needs for operational flexibility and for extending the overall life of its Labrador City Operations.

4.2 Alternative Means of Carrying out the Project

The EIS also provides a discussion and analysis of various identified alternative means of carrying out the Project, related to several key Project components and activities. In doing so, it considers relevant environmental, technical and economic factors, including the pros and cons of each.

4.2.1 Description of Alternatives and Associated Technical, Economic and Environmental Considerations

As part of Project planning and design, alternatives were identified and evaluated for the following Project elements and activities:

- Mining Techniques;
- Handling and Treatment of Mine Pit Water;
- Waste Rock and Overburden Storage;
- Operational Life;
- Labour Supply;
- Addressing Effects on Adjacent Recreational Facilities; and
- Reclamation Methods

Potential mining methods include conventional open pit mining techniques and possible underground methods. Underground mining techniques were considered and dismissed for economic and technical reasons. The Wabush 3 deposit is very near the surface and the waste rock is either non-existent or relatively thin, making open pit mining methods (similar to existing IOC operations) the most logical choice. Due to the development and extraction costs involved, underground mining techniques are not considered to be an economically feasible option for this Project.

Several options for the treatment and ultimate discharge of treated mine pit water were also considered, including various combinations of settling pond and piping and eventual discharge into the Dumbell Lake watershed, Pumphouse Pond, the Leg Lake system, or into Luce Lake. The Luce Lake option is the preferred approach for environmental reasons, as it currently receives the treated pit water from IOC's Luce Pit.

Possible locations for the disposal of waste rock and the storage of overburden were also identified and evaluated as part of early Project planning and siting, and the selected options were influenced strongly by economic, operational and environmental factors. For example, the waste rock disposal site needs to be as close to the open pit as possible to reduce time and associated costs and fuel use, and in a location that does not restrict future mining. Placement of waste rock into exhausted mining areas will be carried out wherever feasible and approved by the provincial government, but this option is not feasible in the early years of the Project, since there are no exhausted mining areas available.

In terms of its schedule and operational life, the Project is being planned and designed to function as part of an integrated mix of IOC mining operations, to help ensure a steady and economic feed of ore to the existing concentrator and pelletizing plants to maintain their rated capacities. The estimated life of the Project is currently 45 years based on the present integrated mine plan, and for operational and economic reasons there are no other viable alternatives for the operational lifespan of Wabush 3.

The eventual operation of Wabush 3 will not result in an overall increase in mining activity at IOC's Labrador City Operations, and the labour supply for open pit mining will be drawn from IOC's existing open pit mining labour force. This characteristic is a key aspect of the Project rationale (namely, extending the overall lifespan of IOC's operations) and its associated economic benefits, as well as in avoiding potential socioeconomic issues due to associated population increases in Labrador West.

As part of on-going Project planning and the identification of mitigation approaches, IOC has been actively working with local recreational organizations to identify and evaluate potential options to address the Project's effects on adjacent recreational infrastructure. As part of those collaborative processes, IOC and the respective organizations have agreed that IOC will:

- Work with the Menihek Nordic Ski Club to re-locate portions of the existing ski trails that would be affected by the Project;
- Work with the Smokey Mountain Alpine Ski Club to replace its ski lifts, which will be engineered to be compatible with any blasting vibrations from Project. IOC will also work with the Alpine Ski Club to determine the configuration of the new ski lifts, establish communication protocols and design security fencing with a gate; and
- Work with the White Wolf Snowmobile Club to relocate a portion of the trail that will be affected by the Project.

At earlier stages of planning, IOC identified and explored various options to address these issues, including, for example, possible alternative locations for moving the ski hill facility. In all cases, however, these organizations have indicated a strong preference for coexistence rather than relocation, and so IOC's mitigation planning has and will continue to focus on this approach and objective.

The future decommissioning and remediation of the Project's facilities will be incorporated into IOC's overall Rehabilitation and Closure Plan for its Labrador City Operations. Should decommissioning be required for any component of Wabush 3 in advance of any larger closure initiative, a detailed decommissioning plan would be developed and implemented in accordance with acceptable standards of the day, and in consultation with relevant regulatory agencies.

4.2.2 Selection of a Preferred Option

IOC's Project planning and design work to date has included the active and proactive identification and consideration of technical, economic and environmental factors, in order to identify and seek to implement a feasible and economically viable project while at the same time avoiding or reducing environmental issues wherever possible. These evaluations were completed early in the Project planning stages (and in the EIS) to allow for a focused and thorough assessment of a feasible Project.

The various Project options that have been selected and which are being proposed for development by IOC are those identified and described in the Project Description chapter of this document. These comprise the proposed Project which is subject to detailed environmental analysis in the EIS, and for which IOC is seeking EA approval.

5 CONSULTATION

Consultation is a cornerstone of the EA process and a key aspect of IOC's approach to its planning and development activities. In planning and preparing the EIS, IOC has undertaken an extensive program of consultation for the Wabush 3 Project, including engagement initiatives with relevant government departments and agencies, Aboriginal and stakeholder groups and the general public.

IOC's consultative activities have been designed and implemented from both "*information out*" and "*information in*" perspectives, using various mechanisms to share and receive information about the Project. This approach provided interested and potentially affected groups and individuals with information on the proposed Wabush 3 Project and allowed them to formulate their questions and concerns and to share these perspectives. A key purpose and objective of IOC's Wabush 3 consultation program to date has been to identify questions, concerns and issues related to the proposed Project and its potential environmental effects that require consideration in the EIS and in on-going and future Project planning.

5.1 Governmental Consultation

IOC recognizes that a number of provincial and federal government departments have specific responsibilities or interests related to the proposed Project and its potential environmental effects. Over the past three years, IOC has held approximately 160 meetings with relevant government departments and agencies and other organizations to discuss the company's future development plans in Labrador West, which has included over 70 meetings focussed primarily or exclusively upon the proposed Wabush 3 Project. IOC's consultation activities with government departments and agencies have also included extensive discussions and on-going information sharing through various other means (such as through letters, email, telephone conversations), the results of which have also been considered in the scope and content of the EIS.

5.2 Aboriginal Engagement

IOC is committed to ensuring that Aboriginal peoples are consulted adequately and appropriately on the proposed Wabush 3 Project, and has identified five Aboriginal groups in Labrador and Québec who claim and assert Aboriginal rights and/or other interests in the area of Labrador West in which the Project will be developed and operated:

- 1) Labrador Innu (Sheshatshiu and Natuashish, Labrador, as represented by Innu Nation);
- 2) NunatuKavut Community Council (Labrador);
- 3) Innu of Uashat mak Mani-Utenam (Québec);
- 4) Innu of Matimekush-Lac John (Québec); and the
- 5) Naskapi Nation of Kawawachikamach (Québec).

IOC has been making considerable efforts to engage with each of these Aboriginal groups to provide and receive information on the Wabush 3 Project, its environmental setting and its potential environmental effects and mitigation. In October 2013, IOC contacted each of the Labrador and Québec based Aboriginal groups listed above to provide information on the Project and its EA review process, and to request a meeting with each group to further discuss the Project. IOC's engagement initiatives have also included offers of Aboriginal consultation agreements and associated processes and funding to gather and provide information on current

land and resource use, Aboriginal knowledge, and community issues and concerns regarding the Project and its potential environmental effects, for consideration and incorporation into the EIS.

Where Aboriginal groups have chosen to participate in such initiatives, the information and insights obtained has been extremely valuable and were considered and incorporated throughout the EIS. The Proponent also encourages Aboriginal groups to provide any relevant input and information that they may have directly to government as part of the EIS review process.

IOC will also continue to make efforts to consult with these Aboriginal groups through established and/or informal engagement processes as the Project moves forward, which will include the provision of Project information and updates on on-going and planned activities, as well as discussion of any issues that may arise and potential means of addressing them.

5.3 Public and Stakeholder Consultation

IOC has utilized a variety of consultation approaches and methods to help ensure that all interested parties have full opportunity to participate in the EA process for the Wabush 3 Project, including.

- Meetings with individual community and stakeholder groups;
- Public Open Houses in Labrador City in November 2013 and June 2014;
- Land, Water and Resource Use Workshops and Interviews (January / February 2014);
- A Fish Offset Plan Workshop (April 2014); and the
- On-going provision of Project information through IOC's website, FaceBook page and intranet site / newsletter, as well as a toll free telephone number and dedicated email address.

A key purpose and objective of IOC's Wabush 3 public and stakeholder consultation program to date has been to identify questions, concerns and issues related to the proposed Project and its potential environmental effects that require consideration in the EIS and in on-going and future Project planning.

As part of these consultations, participants identified a number of questions and concerns around recreational facilities and activities, as well as issues around human health and community services and infrastructure. Consultation discussions and feedback also included reference to water and air quality, as well as fish and fish habitat and the potential environmental effects of noise and vibrations.

As part of these discussions, participants were also encouraged to share any local knowledge that they may possess regarding the existing environment of the region, for use in the EIS. IOC also encouraged participants to indicate any questions or concerns they may have regarding potential Project effects, as well as suggestions for mitigations.

6 EXISTING ENVIRONMENT

The following presents a general and relatively high-level overview of the Project's existing environmental setting. More detailed descriptions of relevant aspects of the existing biophysical and socioeconomic environments are provided in the EIS, including the various sources of the information summarized below.

6.1 The Natural Environment

The Project area and surrounding region have a continental, subarctic climate with cool, short summers and long, cold winters. The overall average monthly temperature in the area is approximately minus 3°C, ranging from minus 22°C in January to 14°C in July. The area typically receives about 841 mm of precipitation per year, the majority of which occurs during the summer months with an average of 428 cm of snow per year most of which occurs between October and April. The prevailing winds in the area are from the west, with an average annual wind speed of 14 km/hr.

The existing atmospheric environment of the area has been influenced by on-going industrial activity, with associated air and noise emissions and on-going mitigation and monitoring programs in place by IOC and other operators. A significant amount of air quality information exists for the Labrador City and Wabush area resulting from ambient air monitoring programs operated by IOC and Wabush Mines since the 1970s. The air quality of the region is therefore well understood historically and well monitored on an ongoing basis. Regional ambient air quality monitoring indicates that the average air quality in the region is good overall, with SO₂ and NO₂ ambient concentrations meeting applicable standards but with total particulate levels occasionally exceeding guidelines.

The topography of the Project area is typical of the larger, surrounding region, and is largely bedrock controlled and somewhat rugged with rolling hills and valleys. The local landscape includes areas of ground moraine, bedrock knobs and ridges, thin till deposits and organic terrain.

Water resources in the vicinity of Wabush 3 include both groundwater and surface water. Groundwater flow occurs primarily through fractures and weathered zones within bedrock aquifers. The flow is generally from topographically higher areas toward lower areas, with regional groundwater flow likely to be ultimately toward Wabush Lake as it is the lowest point in the area. Past and on-going mining activities (particularly pit excavation and dewatering) have altered local groundwater flow patterns in the area. Groundwater / surface water interaction is common in the vicinity of Wabush 3. Under current conditions, watercourses upstream of Dumbell Lake and Leg Lake receive groundwater discharge.

Surface water flow in and around the Wabush 3 Project area occurs within three main watershed areas leading into the Wabush Lake, including; 1) Luce Lake, 2) Dumbell Lake, and 3) Leg Lake. The Luce Lake watershed is approximately 13 km² in size, in addition to the 4.6 km² drainage area from Luce Pit. White Lake is a subwatershed of Luce Lake, which drains into Luce Lake. The Dumbell Lake watershed is approximately 8 km² in size, with Dumbell Lake currently identified as a backup water supply for the Town of Labrador City. The Leg Lake watershed includes Pumphouse Pond and Drum Lake, and has an approximate drainage area of 6.5 km². Leg Lake drains southwards towards Harrie Lake, and discharges into Wabush Lake. The overall Harrie Lake / Leg Lake watershed is approximately 16 km². The calculated current average annual surplus in all the local watersheds is approximately 446 mm/year.

The proposed Project area is located within the Mid Subarctic Forest (Michikamau) Ecoregion, which encompasses the upland plateaus of Central and Western Labrador. The dominant vegetation communities within and near the proposed Project area itself include closed canopy coniferous forests, open black spruce / lichen forests, wetlands alpine shrub communities and sparsely vegetated rock outcrops. Wetlands are a common landscape feature across the region, and consist primarily of string fens, although other types of fens and bogs are also relatively common. There are a number of wetlands located within or immediately adjacent to the proposed Project area, which range in size from approximately 0.5 ha to more than 5 ha.

The freshwater environment within and around the Project area is limited to small headwater streams and ponds within portions of the Leg Lake, Dumbell Lake and White Lake watersheds, all of which eventually flow to Wabush Lake. Two small headwater ponds within the Leg Lake watershed and their streams are contained within the proposed Project footprint: Pumphouse Pond and Drum Lake. There are 12 species of freshwater fish that occur within the larger region, of which five occur within the Project area itself: burbot, slimy sculpin, mottled sculpin, lake chub and brook trout. No designated fish species at risk are known to occur within or near the proposed Project area.

Although the Project area itself is relatively intact and supports a number of vegetation and animal species characteristic of the larger region, it occurs immediately adjacent to areas of significant and long-standing mining and other development activity which have influenced the presence and distribution of wildlife in the area. A number of wildlife species can, however, be found within or near the proposed Project site at various times of the year, often moving in and out of the area at different times according to their life histories, habitat requirements and seasonal activities.

Recent wildlife surveys by IOC and/or other existing and available datasets have indicated that portions of the Project area are occupied by several bird species and groups including waterfowl, birds of prey, shorebirds, and a number of species such as sparrows, wood warblers and flycatchers. These habitats also provide resident and migratory mammals with opportunities for denning, foraging and movement throughout the area. Common species found in the area include red squirrel, snowshoe hare, red fox and several small mammal species. Observations of other wildlife included two species of amphibians (green frog and spring peeper) and multiple butterfly species. No wildlife species at risk have been found within the Project area itself during recent field surveys by IOC.

Although individuals from the migratory George River caribou herd have occasionally entered the region in past years, the Project site is outside of the herd's current range. The area is also outside the range of the threatened Lac Joseph woodland caribou herd, as confirmed through recent census work and a recent aerial survey completed by IOC across the region.

6.2 The Human Environment

The Labrador West region includes the communities of Labrador City and Wabush, which have a combined population of nearly 10,000 residents. The proposed Wabush 3 Project will be located several kilometres northwest of the developed lands that form part of the Town of Labrador City, and overlaps with the Municipal Boundary and larger Municipal Planning Area of that community.

Labrador City and Wabush are modern, vibrant communities, which include a wide and diverse range of public and commercial services and infrastructure for their residents and the general region, including municipal (administration, waste management, water and sewer, roads) and provincial / federal (air transportation, safety and security, health care, employment and social programs, training and education) services and facilities. The communities of Labrador West are connected to each other and other parts of Labrador and Québec by road and railway. A year-round highway to Baie Comeau, Québec connects Labrador City and Wabush with the national highway system to the west, and the Trans Labrador Highway extends east and connects the region with Central and Southeastern Labrador. IOC also owns and operates the QNS&L railway, which extends for 418 km from Labrador City to the Port of Sept-Îles, Québec and transports iron ore concentrate, goods, people and freight. Wabush Airport lies approximately midway between the two communities.

Mining and mineral processing, together with related support industries, are the main economic focus of the region, which has traditionally been one of the more affluent areas of Newfoundland and Labrador. IOC has been operating in Labrador City since the early 1960s, over which time its activities have become an important component of the economy and communities of Labrador West. As the largest private sector employer in the province, IOC and its activities are also a key component of the Newfoundland and Labrador economy as a whole. Wabush 3 and various other mining projects that are being proposed and/or are under development in the region will contribute further to the continuation and future growth of this economic sector by providing significant employment and business opportunities for the next several decades.

The population of Labrador West enjoys (and reports) a relatively high quality of life and well-being, which is due, at least in part, to the high standards of living and employment and income levels that have resulted from the mining developments that have characterized the economies of the region. Although it is recognized that sudden, recent growth from the expansion of mining and other activities in the region have seen some issues related to the availability and affordability of housing and other services and infrastructure, as well as in the occurrence and prevalence of social issues such as crime, the overall quality of life of its residents remains relatively high.

The lands and resources that are located within and adjacent to the proposed Project site are used for a variety of commercial, municipal and recreational purposes. Land and resource use is an important and integral component of Western Labrador's human environment and overall cultural landscape, and reflects the characteristics, traditions and values of its people. As noted above, the region's economy has long been focussed on natural resource based industries, particularly mining and associated activities, with past, on-going or potential activity also occurring in other commercial sectors. Local residents and visitors also have a long tradition of participating in a wide range of outdoor pursuits, including recreational activities such as hunting, fishing, wood cutting, berry picking, snowmobiling and ATV use, boating, skiing and hiking. Large and small game can be found throughout the larger region, and residents also harvest the area's forest resources for firewood and lumber. Angling is also an important recreational and subsistence activity, with various species found in the numerous rivers and ponds in the region. Cabins are located throughout the larger area, and are used in association with various recreational and subsistence pursuits. Snowmobiling is also a very popular activity in the winter months. Local trail networks are used by residents for various winter and summer activities. Recreational infrastructure such as a downhill ski hill, sections of Nordic ski trails and other facilities are also located in the area.

A number of Labrador and Québec Aboriginal groups and/or their traditional territories occur within or overlap with the Labrador West region, the land claims and Aboriginal rights assertions of which are at varying stages of acceptance, negotiation and settlement. Existing and available information does not indicate that Aboriginal people currently undertake traditional land and resource use activities within or immediately adjacent to the proposed Project site itself, or at least, that this comprises a core area for any group. No historic resources or other sites of cultural significance are known to be located within or near the proposed Project area.

6.3 Environmental Baseline Studies and Other Information Sources

To assist in ongoing planning and design for the Project, and in preparation for and support of the EIS, IOC undertook a series of studies to obtain further information on the existing biophysical and socioeconomic environments in the general area of the proposed Project.

These include studies (baseline and monitoring) related to the following, which are included as Appendices to the EIS:

- Air Quality and Climate
- Noise and Vibration
- Soil Quality
- Acid Rock Drainage Potential
- Groundwater and Surface Water
- Vegetation
- Ecological Land Classification
- Wetlands
- Fish and Fish Habitat
- Birds
- Small Mammals and Furbearers
- Caribou
- Archeology
- Land, Water and Resource Use and Ecological Knowledge
- Human Health, and
- Visual Aesthetics

As part of its Aboriginal, stakeholder and public consultation activities for the Project, IOC has also made particular efforts to gather and document information and knowledge from local residents and others on the existing biophysical and socioeconomic environments within and near the proposed Project Area, for consideration and use in the EIS.

7 ENVIRONMENTAL EFFECTS ASSESSMENT

The environmental effects assessment aspect of this EIS involves predicting and evaluating the potential environmental effects of the Project, which are generally defined as changes that the Project may cause in the environment.

7.1 Approach and Methods

The EA approach and methodology used in the EIS includes each of the following components and stages:

- Introduction;
- Environmental Assessment Study Areas and Effects Evaluation Criteria;
- Potential Environmental Issues, Interactions and Parameters;
- Existing Environment;
- Environmental Effects Assessment and Mitigation;
- Summary and Evaluation of Project Residual Environmental Effects;
- Cumulative Environmental Effects;
- Environmental Monitoring and Follow-up; and
- Environmental Effects Assessment Summary

7.2 Valued Environmental Components (VECs)

The environmental effects analysis focuses upon the following VECs, each of which is addressed in a separate Chapter of the EIS:

- 1) Atmospheric Environment;
- 2) Landforms, Soils, Snow and Ice;
- 3) Water Resources;
- 4) Wetlands;
- 5) Fish, Fish Habitat and Fisheries;
- 6) Birds, Other Wildlife and Their Habitats;
- 7) Species at Risk and Species of Conservation Concern;
- 8) Current and Future Use of Lands and Resources;
- 9) Community Services and Infrastructure;
- 10) Health and Community Health; and
- 11) Economy, Employment and Business

As required in the EIS Guidelines, Appendix A provides a series of “environmental effects matrices” which summarize the results of the environmental effects assessment for each VEC. These should be viewed in conjunction with the summary text provided below, as well as the detailed analyses included in the EIS itself.

7.2.1 Atmospheric Environment

This VEC includes consideration of various components of the atmospheric environment, including air quality, greenhouse gases (GHGs), noise, vibration and lighting.

7.2.1.1 Potential Environmental Effects

The development and operation of the Project will result in air emissions and the creation of GHGs, as well as increased levels of noise, vibration and lighting which can affect the quality of the atmospheric environment. The environmental effects assessment for this VEC focuses upon the following potential environmental issues and interactions: 1) Changes in Air Quality; 2) Changes in Levels of GHG Emissions; 3) Changes in the Acoustic Environment; 4) Changes in Vibration Levels; and 5) Changes in Light Levels.

Within the LSA, the Wabush 3 Project will result in changes in air quality as a result of particulate matter and nitrogen oxide emissions from various activities (including blasting) during construction, operations and beyond, as well as releases of GHGs. The preparation of the EIS included detailed modelling and analysis of these Project-related changes in air quality and GHG emissions, which were evaluated by comparing their respective levels in two scenarios: 1) Developing and operating the Wabush 3 Project; and 2) Not building the Project and maintaining ore production rates from the existing open pit operations. The air quality and GHG changes between the two scenarios were determined to not be significant. Because the Wabush 3 Project is closer to the Town of Labrador City and various recreational properties near Smokey Mountain than other current mining activities, the potential effects of noise and vibration levels on various receptors were also evaluated. As the EIS analysis indicated the potential for levels of noise and vibration associated with blasting to exceed the Ontario standards (as there are no Newfoundland and Labrador blast noise and vibration standards), mitigation measures may be required to ensure compliance. An evaluation of the potential effects of artificial lighting associated with the Wabush 3 Project was also performed, and it was concluded no adverse effects will occur.

7.2.1.2 Mitigation Measures

During the construction and/or operation of the Wabush 3 Project, IOC will implement a number of mitigation measures to avoid or reduce Project-related emissions to the atmospheric environment, and to help ensure compliance with applicable regulations and standards. These include regular, preventive maintenance of vehicles and heavy equipment and ensuring that the mining fleet is compliant with relevant regulatory requirements. Blasting will occur very infrequently (up to twice per month), and will be carried out in accordance with a Project-specific Blasting Plan that is designed to reduce air emissions, and noise and vibration levels. Access restrictions, signage and a security fence will be established to prevent public access to the Project area for safety and operational purposes, and blasting protocols (timing, frequency, 1,200 m clearance zones) and public communications / notifications will also be implemented. IOC will also expand its current Fugitive Dust Management Operations Plan to control sources associated with the Wabush 3 Project including, but not limited to, road dust, material handling and wind erosion. Air quality monitoring for various substances and noise and vibration monitoring will also be carried out.

7.2.1.3 IOC Response to Identified Issues and Residual Environmental Effects

Questions and concerns related to the atmospheric environment that were identified through IOC's Aboriginal and public consultations include those related to air quality issues due to blasting, the generation and distribution of dust and its effects on health and nearby infrastructure, and noise and vibrations and their potential effects on key locations and facilities in the community. The effects assessment and associated identification of mitigation have focussed largely upon these identified issues. With the implementation of the identified mitigation measures, the proposed Project is not likely to result in significant, adverse environmental effects on this VEC during any Project phase.

7.2.2 Landforms, Soils, Snow and Ice

This VEC includes consideration of various components of the physical environment, including landforms, soil (quality and quantity), snow and ice (LSSI) that are located within and near the proposed Project site.

7.2.2.1 Potential Environmental Effects

The development of the open pit mine and its associated infrastructure will result in ground disturbance within the Project footprint, as well as various emissions that will or may interact with these environmental components either directly or indirectly. The environmental effects assessment for this VEC focuses upon the following potential environmental issues and interactions: 1) Change in Landforms and Terrain Stability; 2) Change in Soil Quality and Quantity; 3) Change in Snow and Ice; and 4) Acid Rock Drainage / Metal Leaching.

Through the mapping and analysis completed as part of the EIS, it has been determined that no special or unique landforms are present in the Project area or will be otherwise affected by either phase of the Project. The existing landscape shows only minor evidence of instability. Soils will be removed and stockpiled during Project activities, and the overall quantity of soils in the area will be affected due to storage and burial under the waste rock pile. The creation and deposition of dust may also affect the quality of soils, although the composition of the dust materials will not differ from the surrounding materials. Dust creation may also affect the quality and presence of snow within the zone of influence of these air emissions, and the development of the mine infrastructure may also affect snow distribution and drifting patterns, due to changes in the local topography. Environmental effects from acid rock drainage / metal leaching are not likely to occur based on IOC testing to date and the experiences of other mining operations in the area.

7.2.2.2 Mitigation Measures

The potential effects of the Project on LSSI will be avoided or reduced through preservation of natural terrain and drainage patterns to the extent possible, and through the planned stockpiling, stabilization, monitoring and eventual re-use of soils. Dust and sedimentation reduction and control measures will be implemented throughout the life of the Project. Blasting procedures and plans will also help minimize vibrations and potential effects on ice cover of nearby waterbodies. IOC Environmental Protection Plan(s) and Emergency Response procedures will help reduce the potential for accidental events such as spills, or assist in the effective and timely response to same. Eventual Project rehabilitation and closure procedures will further address Project related changes to LSSI.

7.2.2.3 IOC Response to Identified Issues and Residual Environmental Effects

Identified questions and concerns related to the LSSI VEC were identified primarily through the EIS Guidelines issued by Government, and have been addressed through the analysis and mitigation measures outlined above.

With the implementation of the identified mitigation measures, the proposed Project is not likely to result in any significant, adverse environmental effects on LSSI during any Project phase.

7.2.3 Water Resources

The Water Resources VEC includes consideration of groundwater and surface water resources, both of which are important and inter-related components of the hydrologic cycle, and have important uses and roles in the biophysical and socioeconomic environments.

7.2.3.1 Potential Environmental Effects

The development and operation of the Project will require the management of surface and groundwater, and will result in potential environmental discharges and other changes which can affect water quantity and quality. The environmental effects assessment for water resources focuses on the following potential environmental issues and interactions: 1) Change in Surface Water Quantity and Drainage Patterns; 2) Change in Surface Water Quality; 3) Change in Groundwater Levels; and 4) Change in Groundwater Quality.

The Wabush 3 Project will result in changes in groundwater quality and quantity and surface water quality and quantity / drainage patterns. The Project will result in the removal of small headwater water bodies (Drum Lake and Pumhouse Pond) in the Leg Lake system, inflow streams in both the Leg Lake and Dumbell catchments, as well as associated changes in groundwater levels due to groundwater extraction during the operation of the open pit, through which these water losses will be distributed to other parts of both watersheds. Upon mine closure, groundwater extraction and pumping within the pit will cease allowing water levels to rebound to a new normal with combined inputs of groundwater and precipitation, thus creating a new surface water body.

7.2.3.2 Mitigation Measures

Potential effects on water resources will be avoided or reduced through runoff controls and erosion and sediment control measures, as well as the design and establishment of sedimentation / settling ponds, collection ditches and other associated infrastructure. Water treatment and quality monitoring will occur prior to discharge to the environment, in compliance with applicable federal and provincial regulatory requirements.

Extracted groundwater will be discharged into the Dumbell and Leg Lake watersheds to compensate for projected losses to those watersheds, and groundwater levels and quality will be monitored. IOC Environmental Protection Plan(s) and Emergency Response procedures will help reduce the potential for accidental events such as spills, or assist in the effective and timely response to any such incident.

7.2.3.3 IOC Response to Identified Issues and Residual Environmental Effects

Questions and concerns related to water resources that were identified through IOC's Aboriginal and public consultations include those related to the removal of waterbodies as a result of Project development, the possible effects of groundwater extraction and associated implications for local water supplies, and the possible contamination of water quality due to Project activities. The effects assessment and associated identification of mitigation have focussed largely upon these identified issues. With the implementation of the identified mitigation measures, the proposed Project is not likely to result in significant, adverse environmental effects on water resources during any Project phase.

7.2.4 Wetlands

Wetlands are areas that have water located at or near the ground surface for all or part of the year, and include bogs, fens, marshes, swamps and other types. Wetlands are found throughout Labrador and elsewhere in the province, and may be particularly important because of their role in water flow, storage and quality, ecological functions and/or for human uses.

7.2.4.1 Potential Environmental Effects

There are a number of wetland areas located within and adjacent to the proposed Project area, which may be affected either directly or indirectly by Project components and activities. The environmental effects assessment for this VEC focuses upon the following potential environmental issues and interactions: 1) Wetland Removal / Alteration; 2) Alteration of Wetland Quality (Hydrology); 3) Change in Vegetative Composition; and 4) Change in Water Quality.

The development of the Project will result in the direct loss or alteration of approximately 14.5 ha of wetland habitat, consisting primarily of fen-type wetlands. The wetland types and functions that are located within the Project footprint are common throughout the larger, surrounding region, and the removal of this relatively small amount of wetland is not expected to have adverse ecological or socio-cultural consequences.

7.2.4.2 Mitigation Measures

IOC will implement a number of measures to avoid or reduce adverse effects upon wetlands during the various phases of the Project. These include minimization of the Project footprint to the degree possible, with clear delimitation of clearing limits and work areas. Natural drainage patterns will also be preserved to the extent possible, and erosion / sediment and dust control procedures and practices will be implemented. IOC Environmental Protection Plan(s) and Emergency Response procedures will help reduce the potential for accidental events such as spills, or assist in the effective and timely response to any such incident.

7.2.4.3 IOC Response to Identified Issues and Residual Environmental Effects

Issues related to the wetlands that were identified through IOC's Aboriginal and public consultations include the required removal of wetland areas within the Project footprint, which was the main focus of the VEC's effects analysis and mitigation, as outlined above. With the implementation of the identified mitigation

measures, the proposed Project is not likely to result in any significant, adverse environmental effects on wetlands during any Project phase.

7.2.5 Fish, Fish Habitat and Fisheries

This VEC includes freshwater fish species as well as relevant components of their habitats, as well as any associated commercial, recreational and Aboriginal fisheries that utilize and depend upon these resources.

7.2.5.1 Potential Environmental Effects

The environmental effects assessment for this VEC considers and focuses upon the following potential issues and interactions: 1) Alteration or Destruction of Fish Habitat; 2) Change in Mortality Risk and Health; and 3) Change in Existing Fisheries.

The various development activities associated with the Project's construction phase will likely result in a permanent, irreversible fish habitat loss through the required removal of two ponds (Pumphouse Pond and Drum Lake) and associated stream sections within the Project area. The effects of this habitat loss are localized and will affect a relatively small quantity of headwater fish habitat, which will be fully addressed (compensated for) through the eventual fish habitat offsetting plan requirements under the federal *Fisheries Act* (see below). With groundwater extraction and mine water treatment / diversion during Project operations, there will also likely be a decrease in downstream flows. Associated effects on fish habitat and productivity are not expected, however, as groundwater will be pumped back towards the Leg Lake and Dumbell Lake watersheds to supplement any reductions. The limited use of these waterbodies for recreational fishing at present and the availability of other fishing locations in the region, along with planned habitat offset that will create or enhance fishing opportunities elsewhere in the region, will mean that the Project is not likely to adversely affect the overall nature or level of fishing in the region, with no consequent decrease in the overall quality, enjoyment or value of these recreational activities in Western Labrador.

7.2.5.2 Mitigation Measures

The Project's likely effects on fish, fish habitat and fisheries will be completely mitigated through the development, approval and implementation of an appropriate Offsetting Plan for any potential serious harm to fish, pursuant to the requirements of the federal *Fisheries Act*. Potential offsetting options to improve fish habitat / production include re-establishment of riparian revegetation in forest fire affected areas and stocking of fishless ponds and lakes. Any fish present in the affected waterbodies will be retrieved and relocated prior to any such habitat loss. Water quality will be protected through runoff controls and erosion and sediment control measures and infrastructure, and water flows will be maintained through the pumping of clean groundwater to Leg Lake and Dumbell Lake watersheds to mitigate flows. Water treatment and quality monitoring will take place prior to discharge to the environment, in compliance with applicable federal and provincial regulatory requirements. Monitoring will also be conducted to confirm the implementation and effectiveness of the approved Offsetting Plan.

7.2.5.3 IOC Response to Identified Issues and Residual Environmental Effects

Identified questions and concerns related to the fish, fish habitat and fisheries that were noted during IOC's Aboriginal and public consultations include the required removal of ponds and streams within the Project footprint and associated implications for fish habitat and fish resources and their use. These issues were the main focus of the VEC's effects analysis, as outlined above, and have been addressed through the mitigation measures proposed. With the implementation of the identified measures, the proposed Project is not likely to result in any significant, adverse environmental effects on this VEC during any Project phase.

7.2.6 Birds, Other Wildlife and Their Habitats

The interior of Western Labrador and its various habitat types are home to a variety of wildlife that are typical of boreal forest ecosystems. This includes large and small mammals and various resident and migratory species of birds including raptors, waterfowl, passerines and shorebirds.

7.2.6.1 Potential Environmental Effects

Development projects can interact with and affect wildlife and their habitats in several ways, such as through direct habitat alteration or loss due to clearing and the establishment of other project components, as well as noise, human presence and other disturbances that are often associated with construction and operations activities. The environmental effects assessment for this VEC considers and focuses upon the following potential environmental issues and interactions: 1) Change in Habitat Availability and Function; 2) Change in Mortality Risk and Animal Health; and 3) Disruption in Animal Behaviour.

The development of the open pit and the establishment of overburden and waste rock storage areas and other components during construction will result in long-term habitat alteration within the Project footprint, which may affect resident wildlife by reducing the availability of nesting, denning, resting and foraging areas, and by changing the distribution and movement patterns of birds and mammals. Habitat alteration will be restricted to the Project development area itself (which is relatively small at approximately 570 ha), however, and will affect habitat types that are well represented throughout the surrounding region. Mining activity during the operations and maintenance phase will be largely confined to areas already disturbed during the construction phase and will not contribute to additional habitat loss or fragmentation. The proximity of the Wabush 3 Project to previously altered habitats (existing IOC operations and others) is considered preferable for environmental reasons. The Project will not significantly affect overall habitat quality and availability, or mortality rates, animal health or animal behaviour.

7.2.6.2 Mitigation Measures

IOC will implement a number of measures to avoid or reduce adverse effects upon wildlife and their habitats during the various phases of the Project. These include minimizing the Project footprint, with clear delimitation of clearing limits and work areas, maintaining natural buffers and drainage patterns where possible, prohibitions on hunting or harassment of wildlife by on-site Project personnel, speed limits and other safe driving practices and waste management practices. IOC will also conduct nest searches during the breeding season in advance of vegetation clearing, and will avoid any identified active nests during that time as well as establishing suitable buffer zones around any active raptor nests.

7.2.6.3 IOC Response to Identified Issues and Residual Environmental Effects

Identified questions and concerns related to the birds, other wildlife and their habitats were identified through the EIS Guidelines issued by Government, and have been addressed through the analysis and mitigation measures outlined above. With the implementation of the identified mitigation measures, the proposed Project is not likely to result in any significant, adverse environmental effects on this VEC during any Project phase.

7.2.7 Species at Risk and Species of Conservation Concern

A number of species at risk (SAR) and species of conservation concern (SCC) are known to occur in Western Labrador, including plants and wildlife that have varying degrees of formal protection under the provincial *Endangered Species Act* and/or federal (*Species at Risk Act*) and/or that have been otherwise identified as being of conservation concern and/or regionally rare by relevant organizations.

7.2.7.1 Potential Environmental Effects

The environmental effects assessment for this VEC considers and focuses upon the following potential environmental issues and interactions: 1) Change in Habitat Availability and Function; 2) Change in Mortality Risk and Health; and 3) Disruption of Animal Behaviour.

Existing and available information and the results of IOC environmental field surveys do not indicate the presence of any SAR within the Project area itself or immediately surrounding area. A number of regionally rare plant species are, however, found in the area and larger, surrounding region. The proposed Wabush 3 Project will remove or otherwise alter existing habitat within the Project area, although the amounts and types (proportions) will be small relative to that which is available in the surrounding region as a whole. Project components may also affect plants and wildlife through other direct and indirect disturbances, although the limited presence of SAR and SCC within the area, the mobile nature of many species, the availability of similar habitats throughout the region, and IOC's planned mitigation measures will limit the potential for, and degree of, any such effects. The proximity of the Wabush 3 Project to previously altered habitats (existing IOC operations and others) is again considered to be environmentally beneficial, as the Project will minimize additional fragmentation of the landscape or effects on previously undisturbed individuals or populations.

7.2.7.2 Mitigation Measures

IOC will implement a number of measures to avoid or reduce adverse effects upon wildlife and their habitats during the various phases of the Project. These include minimizing the Project footprint and clear delimitation of clearing limits and work areas, as well as avoiding ecologically sensitive areas and maintaining natural vegetative buffers and drainage patterns wherever possible and practical. Erosion, sediment and dust control procedures and practices will also be implemented, as will prohibitions on harvesting activities by Project personnel and waste management protocols. Field surveys for SAR and SCC will also be undertaken prior to vegetation clearing (e.g., active nest searches during the breeding season), and clearing will be avoided in these areas during periods where SAR or SCC have low mobility life stages. IOC will also investigate potentially transplanting immobile species (regionally uncommon plants) from affected areas where practical and feasible and in accordance with its EPP.

7.2.7.3 IOC Response to Identified Issues and Residual Environmental Effects

Identified questions and concerns related to SAR and SCC were identified through the EIS Guidelines issued by Government, and have been addressed through the analysis and mitigation measures outlined above. With the implementation of the identified mitigation measures, the proposed Project is not likely to result in any significant, adverse environmental effects on this VEC during any Project phase.

7.2.8 Current and Future Use of Lands and Resources

The lands and resources that are located within and adjacent to the proposed Project site and elsewhere in Western Labrador are used for a variety of commercial, municipal, recreational and/or traditional purposes.

7.2.8.1 Potential Environmental Effects

The environmental effects assessment for this VEC considers and focuses upon the following potential environmental issues and interactions: 1) Change in Municipal and Commercial Land Use; 2) Change in Presence or Use of Recreational Properties and Facilities; 3) Change in Other Recreational Land and Resource Use Activities; 4) Change in Aboriginal Traditional Land and Resource Use Activities.

The Project will occur within the municipal boundaries of the Town of Labrador City. The construction phase will involve various activities that will overlap with municipal land use zoning, requiring an amendment to the municipal bylaw in order for the Project to proceed, as well as arrangements with adjacent mining and other commercial enterprises in or near the Project development area. This includes Shabogamo Mining & Exploration Limited (SME), as the Project overlaps with SME's mineral exploration licenses and lies adjacent to its mining leases. The Project footprint and eventual zone of influence will also overlap with a recreational / residential property on Dumbell Lake and portions of three key winter recreational facilities: 1) Menihek Nordic Ski Club trails; 2) Smokey Mountain Alpine Ski Club trails and lodge and; 3) a portion of one of White Wolf Snowmobile Club's trails. IOC is actively working with these organizations and others to find satisfactory solutions for these potential interactions, as described below.

Other, general land and resource uses occur throughout the region, and although there is evidence of fishing and other recreational activities in and near the planned Project area, these activities occur widely throughout the larger Western Labrador region. Project related site access restrictions and other disturbances are therefore not anticipated to adversely affect the overall nature, intensity or quality of recreational land and resource use activities by local residents or visitors. The Project is also not likely to adversely affect the overall nature, intensity or timing of the current use of land and resources for traditional purposes by Aboriginal persons, nor overall participation in such activities or their cultural value.

7.2.8.2 Mitigation Measures

IOC and its contractors will identify, obtain and comply with all required authorizations from relevant municipalities for any development activities within their boundaries, and will continue to work with existing commercial interests regarding their properties and/or facilities. IOC is also working with the Town of Labrador City to identify a suitable alternate backup water supply system and to support its future development (upon demonstrated need), and has negotiated an arrangement with the existing property owner at Dumbell Lake to

allow the continued, safe use of this property. The company is also working with the Menihek Nordic Ski Club, Smokey Mountain Alpine Ski Club, and White Wolf Snowmobile Club to re-locate portions of their infrastructure that will be affected by the Project.

Access restrictions, signage and a security fence will be established to prevent public access to the Project area for safety and operational purposes, and blasting protocols (timing, frequency, clearance areas / evacuations) and public communications / notifications will also be implemented. IOC will continue to consult with relevant communities, Aboriginal groups and other organizations to provide Project information and updates on on-going and planned activities, as well as discussion of any issues and potential means of addressing them.

7.2.8.3 IOC Response to Identified Issues and Residual Environmental Effects

Discussions related to commercial and recreational land and resource use were a key area of focus during IOC's Aboriginal and public consultations, including potential adverse effects on existing commercial interests in and near the Project area, direct interactions and required changes to existing recreational infrastructure, and possible effects to other recreational activities due to site access restrictions and associated noise and other disturbances. As indicated above, these issues were the primary focus of the VEC's effects analysis, as outlined above, and have been addressed through the mitigation measures proposed.

With the implementation of the identified measures, the proposed Project is not likely to result in any significant, adverse environmental effects on this VEC during any Project phase.

7.2.9 Community Services and Infrastructure

The availability and quality of required services and infrastructure are important elements of any community, and key factors in shaping and maintaining the quality of life of its residents.

7.2.9.1 Potential Environmental Effects

Development activities can place demands upon community services and infrastructure through direct project requirements, such as in the use of local transportation routes and accommodations, as well as other indirect demands by workers and their families. The environmental effects assessment for this VEC is focussed upon the following potential environmental issues and interactions: 1) Changes in the Use of Community Services; and 2) Changes in the Use / Integrity of Community Infrastructure.

The Wabush 3 Project will have limited potential to result in new or increased demands for community services and infrastructure in the region, and thus negligible implications for the availability or quality of these aspects of the existing socioeconomic environment. The Project's construction workforce will likely comprise a mix of resident and non-resident workers, with the former residing at their homes and the temporary, non-resident workforce being flown to and from the area according to their work rotations and being housed at IOC's existing accommodations camp in Labrador City. Once operational, the Project will utilize IOC's existing workforce in Labrador West. Therefore, there is little or no possibility of in-migration to the area during any phase of the Project, and thus, it will not contribute any new or increased demands for local community services and infrastructure. The Project will utilize some existing infrastructure and services, such as local roads

and the airport, but will not exceed the capacity of these to absorb and meet local demands, nor contribute materially to the degradation and required maintenance of these facilities.

7.2.9.2 Mitigation Measures

IOC and its contractors will obtain and comply with all required authorizations from relevant municipalities for any activities within their boundaries. IOC is working with the Town of Labrador City to identify a suitable alternate backup water supply, and will support the Town with any incremental cost difference associated with its implementation, provided there is a demonstrated need to replace the existing water supply. Non-resident construction workers will be accommodated at the existing IOC accommodations facility in Labrador City. The QNS&L will be used where appropriate to transport Project related equipment and materials to the Project area, and waste will be disposed of at IOC's waste disposal site. Throughout the life of the Project, IOC will implement on-going communication and cooperation with community and regional agencies and organizations, including continued IOC participation in regional forums such as the Labrador West Regional Taskforce and the Community Advisory Panel.

7.2.9.3 IOC Response to Identified Issues and Residual Environmental Effects

Identified questions related to this VEC that were identified through IOC's Aboriginal and public consultations to date include Project compliance with relevant Municipal Plans, and a possible increase in housing demands from Project workers. These issues have been addressed through the analysis and mitigation measures outlined above. With the implementation of the identified mitigation measures, the proposed Project is not likely to result in any significant, adverse environmental effects on this VEC during any Project phase.

7.2.10 Health and Community Health

The EIS also includes an analysis and discussion of whether and how the health and well-being of persons who live in local communities and surrounding regions may interact with, and be affected by, the proposed Project. This VEC includes consideration of: 1) Physical human health and well-being; and 2) Community (social) health and quality of life.

7.2.10.1 Potential Environmental Effects

The assessment for physical health includes consideration of possible sources of contaminants / emissions, exposure pathways and consumption patterns that may affect human health, including those that may be associated with Project-related changes in air, water and soil quality and in country foods.

As part of the EIS, IOC undertook a Human Health Risk Assessment (HHRA) that is based on detailed (and very conservative) environmental modelling. With respect to air quality, although particulate matter (dust), NO₂, and/or SO₂ concentrations are predicted to at times exceed guidelines at certain locations (cross country trails and/or downhill slopes locations), the contribution of the Project to these levels relative to other, existing development activities in the region is minimal. Moreover, the predicted exceedances are of low frequency and short-duration, which suggests that the potential for adverse health effects due to the Wabush 3 Project are very low. Other environmental media concentrations such as soil, small birds / mammals, berries and game meats were also used to calculate the potential for health risk as a result of consumption of these items. The

estimated values associated with these exposures are within acceptable levels, and hence, the likelihood of any adverse health effects from these media are likewise considered low. The Project is therefore not predicted to have significant adverse effects on air, water or soil quality, particularly of the type or degree of effect that would have resulting adverse effects on human health.

For community (social) health, the environmental effects assessment considers potential changes in public safety (injuries / accidents), substance abuse, crime and in residents' perceptions of quality of life and well-being. The proposed Project will create economic activity during its construction phase as well as sustaining and extending the life of IOC's mining and processing activities in the region, which will have an overall positive effect on the quality of life in Western Labrador. The short-term nature of the Project's construction phase, its use of existing permanent and temporary workers where possible, and IOC's planned use of its existing accommodation camp, work rotations and transportation systems during construction will help to minimize any negative social issues and interactions with the local communities. During operations, the proposed Project will utilize IOC's existing (resident) workforce in the region, and will therefore not result in population increase or demographic change in the region, which will further avoid the potential for social issues and associated community health concerns. The environmental analysis and modeling for possible Project-related emissions and disturbances (such as noise, air emissions, vibrations, visual intrusions) during operations have indicated that these will have a limited geographic zone of influence.

7.2.10.2 Mitigation Measures

The various mitigation measures identified and committed to by IOC in relation to the various physical environment VECs related to air, water and other environmental emissions and interactions will also help to avoid or reduce any associated implications for human physical health.

Human health and safety will be protected through planned site access restrictions, clearances, fencing, signage and communication protocols, particularly during blasting. The use of existing temporary construction workers and a resident construction workforce wherever possible, as well as IOC's existing operations workforce will help avoid adverse social issues and interactions. IOC will also coordinate, schedule and communicate the planned transportation of large equipment and other loads to address potential traffic and/or safety concerns.

7.2.10.3 IOC Response to Identified Issues and Residual Environmental Effects

Identified questions related to this VEC that were identified through IOC's Aboriginal and public consultations to date include possible public safety issues due to Project blasting (including air and water emissions and fly rock), effects on country foods and the health of their consumers, and the potential influx of Project workers. These issues have been addressed through the analysis and mitigation measures outlined above, and the Project is not likely to result in any significant, adverse environmental effects on this VEC during any Project phase.

7.2.11 Economy, Employment and Business

IOC has been operating in Labrador City since the early 1960s, over which time its activities have become an important and integral component of the economy and communities of Labrador West. The proposed Wabush

3 Project will provide a new source of iron ore for IOC's existing operations and in doing so, will help to optimise and extend the life of IOC's mining activities in the region. The Project will therefore make a strong contribution to local and provincial economies as a result of the continuous employment and business activity it will create and/or sustain over the life of the mine. Together, these will help facilitate the continuation of, and future development and growth in, Labrador West's mining sector and overall economy.

7.2.11.1 Potential Environmental Effects

The proposed Wabush 3 Project, through its construction and operations phases, will result in important, positive economic effects. The construction phase of the Project will create employment opportunities, and the requirements for goods and services during Project construction and operation will provide opportunities for local and provincial businesses. These direct and indirect economic benefits will be supplemented by "spin-off" economic outcomes, as these incomes and revenues move through the regional, provincial and national economies. Once operational, Wabush 3 will provide iron ore to IOC's existing concentrator and pellet plants, and in doing so, will serve as a new source of iron ore to enhance production efficiency and flexibility and also extend the operating life of IOC's mining activities. The Project will therefore help sustain and extend the important social and economic benefits that IOC's operations provide to Labrador West and to the province of Newfoundland and Labrador as a whole.

7.2.11.2 Mitigation Measures

IOC supports local benefits and employment and gender equity in its hiring and contracting practices, and has associated policies and procedures in place to help optimize this, as well as the use of the local workforce and Newfoundland and Labrador companies to the extent possible. The Project will be carried out in accordance with applicable IOC hiring, procurement and human resources related policies, plans and procedures throughout the various phases of the Project, supported by the development and implementation of a Gender Equity and Diversity Plan and regular reporting to Government on Project related employment and procurement. As described previously, IOC has also has plans in place to address any potential effects upon existing commercial and recreational facilities that are located within or near the Project area.

7.2.11.3 IOC Response to Identified Issues and Residual Environmental Effects

Identified questions and concerns related to economy, employment and business were identified through the EIS Guidelines issued by Government, and have been addressed through the analysis and mitigation measures outlined above. With the implementation of the identified mitigation measures, the proposed Project is not likely to result in any significant, adverse environmental effects on this VEC during any Project phase.

8 EFFECTS OF THE ENVIRONMENT ON THE PROJECT

The physical environmental setting of an area is often an important consideration in the planning, design, review and eventual implementation of a proposed development project. An appropriate understanding, and careful consideration, of relevant environmental characteristics and phenomena is typically required so that such activities can be designed and implemented appropriately, and in a manner that helps ensure that human health and safety, equipment and infrastructure and the natural environment are protected.

8.1 Approach and Methods

Physical environmental conditions can influence various, key elements of the design and conduct of mining activities, particularly in more northern areas. This includes the siting of project components and infrastructure, as well as the selection of the type and size of equipment to be used and the various construction and operational techniques to be applied.

The key physical environmental components that are relevant to this Project include climate, physiography (topography and drainage networks), geology (bedrock and surficial cover stratigraphy, geotechnical properties and structural geology features in the mine area and seismicity), hydrogeology (hydrogeological characteristics of the different geological units, groundwater geochemistry and groundwater levels in the mine area), streamflow data of surrounding waterbodies and geotechnical properties of Quaternary sediments.

The EIS provides a description of these and other relevant environmental features, along with a discussion of whether and how they have or will influence Project planning and implementation and any measures being taken by IOC to address the potential effects of the environment on the Project as it moves forward.

8.2 Potential Environmental Effects

Topographic features, climatic conditions, adjacent water bodies, hydrogeological conditions and other environmental factors have and will, to varying degrees, influenced the design and/or implementation of the Project and its associated components and activities. This includes the proposed site development, access ramps, haulage roads and mine water collection, pumping and treatment systems.

The preliminary design of the open pit geometry is based on the known bedrock geology of IOC's operating pits and Wabush 3, and final design will be based on detailed geotechnical assessment to be conducted prior to pit development. The proposed locations of the waste rock disposal area and the overburden storage area were selected based on several factors, including size and topography.

The proximity of the Wabush 3 open pit to winter recreational areas (the Smokey Mountain ski hill, the Menihek Nordic Ski Club and the White Wolf Snowmobile Club) has also affected key aspects of the mine layout and plan, as described previously, and these and other human features and activities will continue to influence detailed planning and design, including blasting techniques and timelines.

The climate of the Labrador West and the potential for climate change influences in the future will also affect various aspects of the design, construction and operation of the Project. This includes, for example, the consideration of precipitation events, winds and likely snow cover in road and drainage design and

maintenance planning, as well as construction scheduling based on temperatures and frost penetration. Sump and settling pond volumes and pumping rates are also being designed to account for likely hydrological characteristics, and other factors.

8.3 Mitigation

IOC has considerable, long-term experience in all facets of iron ore mining and processing in Western Labrador, dating back to the early 1960s. IOC's Labrador City Operations have been designed, constructed and operated in environmental conditions that are well understood and respected by IOC employees, contractors and sub-contractors.

Human health, safety and environmental protection will be very important priorities to IOC in the planning and design of the Project, and these will continue as such during construction and operation. IOC has comprehensive Health, Safety, Environmental and Quality Management Systems and associated plans and procedures in place for IOC's Labrador City Operations, and these will be amended as needed and utilized for the Project. These deal with worker safety for mine related activities during extreme weather conditions, such as cold temperatures, high winds and snow storms and potential white-out conditions, as well as avoiding and reducing adverse interactions between IOC activities at the natural and socioeconomic environments.

8.4 IOC Response to Identified Issues and Residual Environmental Effects

Identified questions and concerns related to the potential effects of the environment on the Project were identified through the EIS Guidelines issued by Government, and have been addressed through the analysis and measures outlined above.

The proposed Project facility has been planned and designed, and will be implemented, with due consideration of the local environmental conditions in and around the Project site. Topographic features, waterbodies, existing infrastructure, and other environmental factors have, to varying degrees, influenced the placement and design of the Project and its associated components. Weather conditions will also likely influence the timing of some activities. Project components and activities will also be subject to regular inspection / monitoring and adaptive management as required to address any environmental issues.

No additional or specific mitigation measures are required or proposed in relation to the possible effects of the environment on the Project, and with the planning and design measures outlined above, no significant adverse effects are anticipated.

9 EFFECTS OF POSSIBLE ACCIDENTS OR MALFUNCTIONS

In the construction, operations and maintenance, and decommissioning and closure of a development project, an accidental or other unplanned event is an unlikely, but unfortunately possible, outcome.

Some of the potential accidental events or malfunctions that may be associated with the Project and which are particularly relevant for EA purposes include:

- A fire at the Project site, potentially extending into adjacent areas and communities; and,
- An accidental release of fuels, chemicals or other substances into the environment.

9.1 Approach and Methods

As part of the environmental effects assessment for each VEC, potential accidental events and malfunctions were identified and their possible environmental effects are assessed and evaluated, along with the identification and discussion of proposed mitigation measures to prevent such incidents as well as to respond to them should one occur. The potential environmental effects of any such events are assessed and evaluated in a separate subsection for each VEC, using the same approach and evaluation criteria as those used for Project construction, operations and maintenance and closure and decommissioning.

9.2 Potential Environmental Effects

Potential accidental events or malfunctions during Project construction such as a fire or a spill of fuel other materials could affect the environments in or around the Project area and possibly beyond.

An accidental spill of chemical, fuels or other deleterious substances has the potential to adversely affect the presence or quality of water, soils, vegetation or other components of the biophysical environment, as well as any users / consumers of same. Similarly, a large scale forest fire that originated within the Wabush 3 Project area could alter vegetation and habitat availability or composition and structure across a particular geographic region, as well as affecting air quality, water quality and temperature, as well as resulting in wildlife habitat alteration or direct mortality.

A fire at the Project site spreading into adjacent areas could also adversely affect land areas and/or resources, rendering them unavailable or unsuitable for certain uses and activities. Similarly, an accidental spill of deleterious substances or other materials into adjacent waterbodies, land areas or otherwise may prevent the use of these for certain (particularly consumptive) activities for particular periods of time. Any such incident could also potentially pose risks to human health and safety and/or the environment, and in doing so, may also place associated demands on local safety and security services, including fire, emergency response and policing, as well as medical facilities and others. An accidental event such as a Project-related fire could also affect infrastructure such as buildings, transportation routes and possibly have associated economic implications.

Either of these events could potentially occur during the Project's construction, operations and/or decommissioning and closure phases. The resulting environmental effects of such an incident would clearly depend upon the nature, magnitude, location and timing of the event.

9.3 Mitigation

IOC currently has in place various measures, plans and procedures to prevent a fire, spill or other associated environmental incident at the Wabush 3 site and its overall Labrador City Operations, as well as to respond to such an accidental event should one occur. These plans and procedures will be further defined and reinforced through the eventual environmental permits and other approvals that will be required for the construction, operation and maintenance and eventual closure and decommissioning of the Project.

9.4 IOC Response to Identified Issues and Residual Environmental Effects

The mitigation measures referenced above will reduce the potential for accidental events or malfunctions to occur, as well as allowing for effective and timely response to any such accidents and their environmental effects throughout the life of the Project.

Significant, adverse environmental effects are therefore not likely to occur as a result of accidental events and malfunctions during any phase of the Project.

10 EFFECTS ON CAPACITY OF RENEWABLE RESOURCES

In keeping with the role of EA in promoting, and helping to achieve, sustainable development, the EIS Guidelines require that the EIS “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”.

Renewable resources that have the potential to be affected by the proposed Project include those included or reflected in the following VECs:

- Water Resources;
- Wetlands;
- Fish, Fish Habitat and Fisheries;
- Birds, Other Wildlife and Their Habitats; and
- Species at Risk and Species of Conservation Concern

With IOC’s planned implementation of the mitigation measures identified throughout the EIS and summarized above, the proposed Project is not likely to result in significant adverse environmental effects on any VEC. It will therefore not affect the capacity of any renewable resources to meet the needs of the present and those of the future.

11 CUMULATIVE ENVIRONMENTAL EFFECTS

The EIS also assesses and evaluates any cumulative environmental effects that may result from the Project in combination with other projects or activities that have been or will be carried out.

11.1 Approach / Methods and Scoping

The cumulative environmental effects assessment for each VEC considers the overall (total) effect on the VEC as a result of the Project's likely residual environmental effects (as summarized above) and those of other relevant projects and activities, using the following approach:

- 1) Past and on-going projects and activities and their effects are reflected in the existing (baseline) environmental conditions for each VEC, the current condition of which influences its overall sensitivity or resiliency to further disturbance or change. This existing condition is considered integrally in the assessment of the Project's likely environmental effects.
- 2) The cumulative effects assessment then considers whether and how this existing condition could be changed by the introduction of the Project and its residual environmental effects.
- 3) Other likely future projects and activities whose effects on the VEC would likely interact in space and time with those of the Project (and/or its zone of influence), and/or would affect the same populations, communities, etc as the Project are identified and considered. As also specified in the EIS Guidelines, this includes the following:
 - IOC (Labrador Operations)
 - Joyce Lake Direct Shipping Iron Ore Project
 - Kami Iron Ore Project: Alderon
 - Wabush Mines: Cliffs Resources
 - Mount Wright Mine: ArcelorMittal
 - Bloom Lake Mine: Cliffs Resources
 - Schefferville Area Iron Ore Mines (James, Redmond, Houston Properties): Labrador Iron Mines
 - DSO Iron Ore Project: Tata Steel Minerals Canada
 - Upper Churchill Project
 - Lower Churchill Generation Project, and the
 - Labrador-Island Transmission Link Project

11.2 Potential Cumulative Effects and Mitigation Measures

As noted above, the assessment and evaluation of potential cumulative environmental effects is based largely upon an approach of determining whether and how the likely residual effects of the Project will accumulate or interact with those of other projects and activities in the region, either through direct geographic and temporal overlap or other mechanisms, and/or through their respective contribution to regional environmental change.

For some environmental components and issues, the effects of the Project will be relatively localized and/or short-term in nature (e.g., any effects on landforms or soils) which will minimize the potential for interaction with the effects of all or most of the other projects under consideration.

Cumulative effects on surface water quality and quantity may, however, occur in areas such as Wabush Lake as both Wabush 3 and other projects ultimately discharge to that waterbody. Although fish and wildlife are somewhat mobile, there is limited connectivity between habitats and populations, or the localized movements of species at the times at which they will be affected by the Project reduces the potential for individuals to be affected by two or more projects. For others, such as wetlands and aspects of wildlife habitat, although the Project will contribute to overall decreases in VEC availability or quality in the region as a whole, it will not affect unique or particularly sensitive environmental features or components, and those that are affected are relatively well represented throughout the larger, surrounding region. Moreover, the adjacency of the Wabush 3 Project to previously altered habitats (existing IOC operations and others) is considered to be environmentally preferred, since this will minimize additional fragmentation of the landscape or effects on previously undisturbed populations.

For the various socioeconomic VECs under consideration, the nature, locations and extent of the various human populations, communities and activities that occur in the Western Labrador region and beyond somewhat increase the potential for these components to be affected cumulatively by more than one project. The Wabush 3 Project will, for example, result in an incremental loss of lands used for recreational and subsistence land use activities in Labrador West in combination with other past and upcoming Projects, although this continues to represent a relatively small portion of the overall land base that is used and available. Similarly, although several other projects and activities will interact with the same communities and populations as Wabush 3, the Project's relative contribution to issues around community services and infrastructure, community (social) health and others will be very small, and not likely perceptible. From an economic perspective, other on-going and future development projects in Labrador and elsewhere will have similar, positive effects on economy, employment and business throughout the region and province as Wabush 3.

Throughout the life of the Project, IOC will implement on-going communication and cooperation with community and regional agencies and organizations, including continued IOC participation in regional forums such as the Labrador West Regional Taskforce and the Community Advisory Panel.

11.3 IOC Response to Identified Issues and Residual Environmental Effects

A number of the questions and issues raised through IOC's Aboriginal and public consultations to date (such as a possible increase in housing demands from an influx of mine workers) are inherently cumulative in nature. The various environmental mitigation measures identified and committed to by IOC throughout the EIS will help to avoid or reduce the potential adverse environmental effects of the proposed Wabush 3 Project and in doing so, will avoid or reduce the project's potential contribution to any cumulative environmental effects on a regional scale.

The Project will therefore not likely result in significant adverse cumulative environmental effects in combination with other projects that have been or will be carried out.

12 FOLLOW-UP PROGRAM

An environmental monitoring and follow-up program will be designed and implemented in relation to the Project, in accordance with applicable regulatory requirements, and based on the findings of the EA review.

Monitoring programs are those implemented to meet standard regulatory requirements (such as may be required as a result of eventual Project permits), and/or to demonstrate compliance to environmental commitments made in the EIS.

Follow-up programs are those that may be required and implemented to address any EA-related issues of uncertainty, such as to verify the environmental effects predictions and/or the effectiveness of implemented environmental effects management measures.

Proposed environmental monitoring and/or follow-up measures will be implemented during Project construction, operations and maintenance and/or beyond, and have been identified on a VEC-specific basis, as summarized below:

Table 12.1 Proposed Follow-up Program Components in the Wabush 3 EIS

Theme	Required / Proposed Environmental Monitoring or Follow-up Activity	Location / Time	Construction	Operations	Closure and Decommissioning
<i>Atmospheric Environment</i>	Existing ambient air quality monitoring network. Continued air quality monitoring for various substances (TSP, PM _{2.5} , NO ₂ and SO ₂) and noise and vibration monitoring	<ul style="list-style-type: none"> As per current monitoring system and any Project-specific regulatory requirements 	•	•	•
<i>Terrestrial Environment</i>	Breeding bird and nesting surveys	<ul style="list-style-type: none"> Within areas to be cleared During breeding season (June 1 – August 15) 	•		
	Pre-construction surveys for amphibians	<ul style="list-style-type: none"> Spring period (pre-construction) 	•		
<i>Aquatic Environment</i>	Groundwater level monitoring	<ul style="list-style-type: none"> Monitoring wells surrounding the pit Year round, using data loggers 	•	•	•
	Groundwater quality monitoring	<ul style="list-style-type: none"> Monitoring wells surrounding the pit Frequency as determined in conjunction with government agencies 	•	•	•

Theme	Required / Proposed Environmental Monitoring or Follow-up Activity	Location / Time	Construction	Operations	Closure and Decommissioning
	Mine water discharge sampling	<ul style="list-style-type: none"> Final discharge point(s) Frequency as determined to comply with <i>MMER</i> and <i>NL ECWSR</i> 	•	•	•
	<i>Fisheries Act</i> Offset monitoring	<ul style="list-style-type: none"> As defined in Final Offset Plan and associated regulatory approval of same 	•	•	
Socioeconomic Environment	Country foods quality monitoring	<ul style="list-style-type: none"> As determined in consultation with relevant stakeholders and regulatory authorities 		•	
	Construction labour force reporting	<ul style="list-style-type: none"> As required in the EIS Guidelines (Section 4.4.4.3) IOC will develop and submit two Summary Reports (one at the mid point of construction and one at construction end) providing information on Project- labour during the construction phase. Other reporting as required by legislation and/or other IOC plans and approvals 	•		

13 BENEFITS OF THE EA TO NEWFOUNDLAND AND LABRADOR

Through the Wabush 3 EA review, potential environmental issues and interactions have been identified, likely environmental effects are assessed and evaluated, and measures to avoid or reduce adverse outcomes and optimize benefits have been identified and proposed. The process has also involved considerable governmental, Aboriginal, stakeholder and/or public participation at various stages. The findings and key outcomes of an EA will be considered in eventual governmental decisions regarding whether and how the project can proceed, as well as by IOC in its on-going and future planning and decision-making regarding the Project.

A number of examples of the ways in which the Project's EA review has and will benefit Newfoundlanders and Labradoreans are provided below, for illustration:

- *Environmental Benefits:* The EA has allowed for key environmental issues to be identified and considered from the very early stages of the Project's conceptual planning, as well as in the identification and proposal of specific mitigation measures to avoid or reduce possible adverse effects and to optimize benefits.
- *Sustainable Development:* The EA has also allowed for the environmental and social effects and benefits of the Project to be identified and evaluated in an early, and fully integrated, manner, in order to evaluate and confirm that the Project is in keeping with the principles of sustainable development.
- *Aboriginal Consultation:* As EA is inherently an open and consultative process, it is an ideal mechanism to consult with relevant Aboriginal groups through information exchange and dialogue. As documented throughout the EIS, IOC has made significant efforts to engage with each of the relevant Aboriginal groups in Labrador and Québec, with further opportunities available as the EA process moves forward.
- *Public Participation:* IOC has also planned and undertaken an extensive program of public and stakeholder consultation in relation to the Wabush 3 Project, the outcomes of which have played a key role in shaping the focus and scope of the EA, including the identification of mitigation.
- *Technological Innovations:* The proposed Project will not require or result in the use of new or innovative technologies during any of its planned phases. Rather, it uses standard and proven mining components and methods, for which any potential environmental issues are therefore well understood and fully manageable.
- *Scientific Knowledge:* The environmental studies carried out for this EA have contributed to the previous base of scientific knowledge regarding the existing environment of this area of Western Labrador.
- *Community and Social Benefits:* The EA review process has allowed for the potential community and social effects and benefits of the Project to be identified and considered early, both for IOC's planning as well as to help residents, communities, organizations, businesses and others to plan and prepare to take full advantage of these upcoming opportunities.

14 OVERALL CONCLUSIONS OF THE PROPONENT

The proposed Wabush 3 Project is being planned, and will be implemented, in a manner that avoids or reduces adverse environmental effects and which optimizes socioeconomic benefits. The Project will be designed, constructed and operated in accordance with IOC's environmental and other applicable policies, plans and practices, to help ensure that it is undertaken in a safe and environmentally responsible manner. It will also be undertaken in accordance with applicable legislation and regulations, including the environmental mitigation measures defined and committed to through the EA review, as well as terms and conditions of any subsequent regulatory approvals and authorizations.

With the planned implementation of the various mitigation measures identified and proposed throughout the EIS, the proposed Project is not likely to result in significant adverse effects to any aspect of the biophysical or socioeconomic environment, during either of its phases.

The implementation of the proposed Project will, however, provide significant socioeconomic benefits at the local, regional, provincial and national scales. This includes the employment and business activity that the Project will generate and/or sustain during its construction and operations phases, along with the associated income and taxation benefits described in this EIS.

The overall objective of the Wabush 3 Project is to provide iron ore to IOC's existing processing facilities, and in doing so, it will serve as a new source of iron ore to allow operational flexibility and also extend the operating life of IOC's mining activities. The Project will therefore help sustain and extend the important social and economic benefits that IOC's Labrador City Operations provide to Labrador West and to the province of Newfoundland and Labrador as a whole.

This page has been intentionally left blank for double-sided printing

Appendix A

Environmental Effects Summary Matrices

KEY	Frequency:	Certainty in Predictions:
Nature / Direction:	O Once	L Low level of confidence
P Positive	S Sporadic	M Moderate level of confidence
A Adverse	R Regular	H High level of confidence
N Neutral (or No Effect)	C Continuous	
Magnitude:	Duration:	N/A Not Applicable
N Negligible	S Short term	
L Low	M Medium term	
M Moderate	L Long term	
H High	P Permanent	
Geographic Extent:	Reversibility:	
S Site: (PDA)	R Reversible	
L Local (LSA)	I Irreversible	
R Regional (RSA)		

This page has been intentionally left blank for double-sided printing

ENVIRONMENTAL EFFECTS ASSESSMENT SUMMARY: ATMOSPHERIC ENVIRONMENT

Construction	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Air Quality</i>	A	M	L	S	R / C	R	H
<i>Change in GHG Emissions</i>	A	L	R+	L	C	R	H
<i>Change in Acoustic Environment</i>	A	M	L	S	S	R	H
<i>Change in Vibration Levels</i>	A	M	L	S	S	R	H
<i>Change in Light Levels</i>	N	N	L	S	R	R	H
Operations and Maintenance	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Air Quality</i>	A	M	L	M	R / C	R	H
<i>Change in GHG Emissions</i>	A	L	R+	L	C	R	H
<i>Change in Acoustic Environment</i>	A	M	L	M	S	R	H
<i>Change in Vibration Levels</i>	A	M	L	M	S	R	H
<i>Change in Light Levels</i>	N	N	L	M	R	R	H
Closure and Decommissioning	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Air Quality</i>	A	L	L	S	R / C	R	H
<i>Change in GHG Emissions</i>	A	L	R+	L	C	R	H
<i>Change in Acoustic Environment</i>	A	L	S	S	S	R	H
<i>Change in Vibration Levels</i>	N	N	S	S	S	R	H
<i>Change in Light Levels</i>	N	N	L	S	R	R	H
Accidental Events and Malfunctions	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Air Quality</i>	A	L-M	L	S	O	R	H
<i>Change in GHG Emissions</i>	A	L-M	R+	S	O	R	H
<i>Change in Acoustic Environment</i>	N	-	-	-	-	-	H
<i>Change in Vibration Levels</i>	N	-	-	-	-	-	H
<i>Change in Light Levels</i>	N	-	-	-	-	-	H

ENVIRONMENTAL EFFECTS ASSESSMENT SUMMARY: LANDFORMS, SOILS, SNOW AND ICE

Construction	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Landforms and Terrain Stability</i>	N	N	S	S	S	R	H
<i>Change in Soil Quality and Quantity</i>	A	L	S	M	C	R	H
<i>Change in Snow and Ice</i>	A	L	L	S	S	R	H
<i>Acid Rock Drainage / Metal Leaching</i>	N	-	-	-	-	-	H
Operations and Maintenance	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Landforms and Terrain Stability</i>	A	L	S	L	C	R	H
<i>Change in Soil Quality and Quantity</i>	A	L	S	M	S	R	H
<i>Change in Snow and Ice</i>	A	L	L	L	R	R	H
<i>Acid Rock Drainage / Metal Leaching</i>	N	-	-	-	-	-	H
Closure and Decommissioning	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Landforms and Terrain Stability</i>	P	L	S	L	R	R	H
<i>Change in Soil Quality and Quantity</i>	P	L	S	L	R	R	H
<i>Change in Snow and Ice</i>	A	L	L	L	R	R	H
<i>Acid Rock Drainage / Metal Leaching</i>	N	-	-	-	-	-	H
Accidental Events and Malfunctions	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Landforms and Terrain Stability</i>	N	-	-	-	-	-	H
<i>Change in Soil Quality and Quantity</i>	A	L	S	S	S	R	H
<i>Change in Snow and Ice</i>	A	L	S	S	S	R	H
<i>Acid Rock Drainage / Metal Leaching</i>	N	-	-	-	-	-	H

Environmental Effects Assessment Summary: Water Resources							
Construction	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Surface Water Quantity and Drainage Patterns</i>	A	M	L	L	C	I	H
<i>Change in Surface Water Quality</i>	A	L	S	M	S	R	H
<i>Change in Groundwater Levels</i>	A	L	S	M	C	R	H
<i>Change in Groundwater Quality</i>	A	L	S	M	S	R	H
Operations and Maintenance	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Surface Water Quantity and Drainage Patterns</i>	A	M	L	L	C	I	H
<i>Change in Surface Water Quality</i>	A	L	L	M	C	R	H
<i>Change in Groundwater Levels</i>	A	M	L	M	R	R	H
<i>Change in Groundwater Quality</i>	A	L	S	M	S	R	H
Closure and Decommissioning	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Surface Water Quantity and Drainage Patterns</i>	A	M	L	P	C	I	H
<i>Change in Surface Water Quality</i>	A	L	L	L	S	R	H
<i>Change in Groundwater Levels</i>	P	M	L	L	C	R	H
<i>Change in Groundwater Quality</i>	P	L	S	L	O	R	H
Accidental Events and Malfunctions	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Surface Water Quantity and Drainage Patterns</i>	N	-	-	-	-	-	H
<i>Change in Surface Water Quality</i>	A	L	S	S	S	R	H
<i>Change in Groundwater Levels</i>	N	-	-	-	-	-	H
<i>Change in Groundwater Quality</i>	A	L	S	S	S	R	H

Environmental Effects Assessment Summary: Wetlands							
Construction	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Wetland Removal / Loss</i>	A	M	S	P	O	I	H
<i>Alteration of Wetland Quality (Hydrology)</i>	A	L	L	L	O	R	H
<i>Change in Water Quality</i>	A	L	L	L	S	R	H
<i>Change in Vegetation Composition</i>	A	L	L	L	S	R	H
Operations and Maintenance	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Wetland Removal / Loss</i>	N	-	-	-	-	-	H
<i>Alteration of Wetland Quality (Hydrology)</i>	A	L	L	L	O	R	H
<i>Change in Water Quality</i>	A	L	L	L	S	R	H
<i>Change in Vegetation Composition</i>	A	L	L	L	S	R	H
Closure and Decommissioning	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Wetland Removal / Loss</i>	N	-	-	-	-	-	H
<i>Alteration of Wetland Quality (Hydrology)</i>	A	L	L	L	S	R	H
<i>Change in Water Quality</i>	A	L	L	S	S	R	H
<i>Change in Vegetation Composition</i>	A	L	L	S	S	R	H
Accidental Events and Malfunctions	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Wetland Removal / Loss</i>	N	-	-	-	-	-	H
<i>Alteration of Wetland Quality (Hydrology)</i>	N	-	-	-	-	-	H
<i>Change in Water Quality</i>	A	L	S-L	S	S	R	H
<i>Change in Vegetation Composition</i>	N	-	-	-	-	-	H

Environmental Effects Assessment Summary: Fish, Fish Habitat, Fisheries							
Construction	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Alteration or Destruction of Fish Habitat</i>	A	L (N)	S	L	O	I	H
<i>Change in Mortality Risk and Health</i>	A	L	S	S	S	R	H
<i>Change in Existing Fisheries</i>	A	L	S	L	C	I	H
Operations and Maintenance	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Alteration or Destruction of Fish Habitat</i>	N	-	-	-	-	-	H
<i>Change in Mortality Risk and Health</i>	A	L	S	S	S	R	H
<i>Change in Existing Fisheries</i>	N	-	-	-	-	-	H
Closure and Decommissioning	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Alteration or Destruction of Fish Habitat</i>	N	-	-	-	-	-	H
<i>Change in Mortality Risk and Health</i>	N	-	-	-	-	-	H
<i>Change in Existing Fisheries</i>	N / P	-	-	-	-	-	H
Accidental Events and Malfunctions	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Alteration or Destruction of Fish Habitat</i>	N-A	L	L	S-M	S	R	H
<i>Change in Mortality Risk and Health</i>	A	L	L	S	S	R	H
<i>Change in Existing Fisheries</i>	N	-	-	-	-	-	H

Environmental Effects Assessment Summary: Birds, Other Wildlife and Their Habitats							
Construction	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Habitat Availability and Function</i>	A	L	S	S	O	R	H
<i>Change in Mortality Risk and Animal Health</i>	A	L	S	S	S	R	H
<i>Disruption of Animal Behaviour</i>	A	L	L	S	S	R	H
Operations and Maintenance	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Habitat Availability and Function</i>	N-A	L	S	L	O	R	H
<i>Change in Mortality Risk and Animal Health</i>	A	L	S	L	S	R	H
<i>Disruption of Animal Behaviour</i>	A	L	L	M	S	R	H
Closure and Decommissioning	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Habitat Availability and Function</i>	N/ P	L	S	P	C	R	H
<i>Change in Mortality Risk and Animal Health</i>	N/ P	L	S	P	C	R	H
<i>Disruption of Animal Behaviour</i>	N/P	L	S	P	C	R	H
Accidental Events and Malfunctions	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Habitat Availability and Function</i>	A	N-L	S-L	S-L	O	R	H
<i>Change in Mortality Risk and Animal Health</i>	A	N-L	S-L	S	O	R	H
<i>Disruption of Animal Behaviour</i>	A	N-L	S-L	S	O	R	H

Environmental Effects Assessment Summary: Species at Risk and Species of Conservation Concern								
Construction	Residual Environmental Effects Summary Descriptors							
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty	
	<i>Change In Habitat Availability and Function</i>	A	L	S	S	O	R	H
	<i>Change In Mortality Risk and Health</i>	A	L	S	S	S	R	H
<i>Disruption of Behaviour</i>	A	L	L	S	S	R	H	
Operations and Maintenance	Residual Environmental Effects Summary Descriptors							
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty	
	<i>Change In Habitat Availability and Function</i>	N-A	L	S	L	O	R	H
	<i>Change In Mortality Risk and Health</i>	A	L	S	L	S	R	H
<i>Disruption of Behaviour</i>	A	L	L	M	S	R	H	
Closure and Decommissioning	Residual Environmental Effects Summary Descriptors							
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty	
	<i>Change In Habitat Availability and Function</i>	N-P	L	S	P	C	R	H
	<i>Change In Mortality Risk and Health</i>	N-P	L	S	P	C	R	H
<i>Disruption of Behaviour</i>	N-P	L	L	P	C	R	H	
Accidental Events and Malfunctions	Residual Environmental Effects Summary Descriptors							
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty	
	<i>Change In Habitat Availability and Function</i>	A	N-L	S-L	S-L	O	R	H
	<i>Change In Mortality Risk and Health</i>	A	N-L	S-L	S	O	R	H
<i>Disruption of Behaviour</i>	A	N-L	S-L	S	O	R	H	

Environmental Effects Assessment Summary: Current and Future Use of Lands and Resources							
Construction	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Municipal and Commercial Land Use</i>	A	L	L	S	O	R	H
<i>Change in Presence or Use of Recreational Properties and Facilities</i>	A	L	L	S	S	R	H
<i>Change in Other Recreational Land and Resource Use Activities</i>	A	L	L	S	S	R	H
<i>Change in Aboriginal Traditional Land and Resource Use Activities</i>	N	-	-	-	-	-	H
Operations and Maintenance	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Municipal and Commercial Land Use</i>	N	-	-	-	-	-	H
<i>Change in Presence or Use of Recreational Properties and Facilities</i>	N	-	-	-	-	-	H
<i>Change in Other Recreational Land and Resource Use Activities</i>	A	N-L	L	S	S	R	H
<i>Change in Aboriginal Traditional Land and Resource Use Activities</i>	N	-	-	-	-	-	H
Closure and Decommissioning	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Municipal and Commercial Land Use</i>	N	-	-	-	-	-	H
<i>Change in Presence or Use of Recreational Properties and Facilities</i>	N	-	-	-	-	-	H
<i>Change in Other Recreational Land and Resource Use Activities</i>	N-P	L	L	L	C	R	H
<i>Change in Aboriginal Traditional Land and Resource Use Activities</i>	N	-	-	-	-	-	H
Accidental Events and Malfunctions	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Municipal and Commercial Land Use</i>	N	-	-	-	-	-	H
<i>Change in Presence or Use of Recreational Properties and Facilities</i>	N	-	-	-	-	-	H
<i>Change in Presence or Use of Recreational Properties and Facilities</i>	A	N	S	S	O-S	R	H
<i>Change in Aboriginal Traditional Land and Resource Use Activities</i>	N	-	-	-	-	-	H

Environmental Effects Assessment Summary: Community Services and Infrastructure							
Construction	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Changes in the Use of Community Services</i>	A	N	L	S	S	R	H
<i>Changes in the Use / Integrity of Community Infrastructure</i>	N	-	-	-	-	-	H
Operations and Maintenance	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Changes in the Use of Community Services</i>	A	N	L	M	S	R	H
<i>Changes in the Use / Integrity of Community Infrastructure</i>	A	N	L	M	O	R	H
Closure and Decommissioning	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Changes in the Use of Community Services</i>	N	-	-	-	-	-	H
<i>Changes in the Use / Integrity of Community Infrastructure</i>	N	-	-	-	-	-	H
Accidental Events and Malfunctions	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Changes in the Use of Community Services</i>	A	N	L	S	O	R	H
<i>Changes in the Use / Integrity of Community Infrastructure</i>	N	-	-	-	-	-	H

Environmental Effects Assessment Summary: Physical Health							
Construction	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Atmospheric Environment Quality</i>	A	L	L	M	R	R	H
<i>Change in Soil Quality</i>	N	-	-	-	-	-	H
<i>Change in Water Quality and Quantity</i>	A	L	L	M	R	R	H
<i>Change in Country Foods</i>	N	-	-	-	-	-	H
Operations and Maintenance	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Atmospheric Environment Quality</i>	A	L	L	M	R	R	H
<i>Change in Soil Quality</i>	A	L	L	M	R	R	H
<i>Change in Water Quality and Quantity</i>	A	L	L	M	R	R	H
<i>Change in Country Foods</i>	N	-	-	-	-	-	H
Closure and Decommissioning	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Atmospheric Environment Quality</i>	P	L-M	L	M	R	R	H
<i>Change in Soil Quality</i>	N	-	-	-	-	-	H
<i>Change in Water Quality and Quantity</i>	N	-	-	-	-	-	H
<i>Change in Country Foods</i>	N	-	-	-	-	-	H
Accidental Events and Malfunctions	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Atmospheric Environment Quality</i>	A	M	L	S	S	R	M
<i>Change in Soil Quality</i>	A	L	S	S	S	R	M
<i>Change in Water Quality and Quantity</i>	A	M	L	S	S	R	M
<i>Change in Country Foods</i>	A	M	L	S	S	R	M

Environmental Effects Assessment Summary: Community Health							
Construction	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Public Safety (Injuries / Accidents)</i>	A	N-L	L	S	S	R	H
<i>Change in Substance Abuse</i>	N	-	-	-	-	-	H
<i>Change in Crime</i>	N	-	-	-	-	-	H
<i>Change in Perceptions of Quality of Life and Well-Being</i>	A	N-L	L	S	S	R	H
Operations and Maintenance	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Public Safety (Injuries / Accidents)</i>	A	N-L	L	S	S	R	H
<i>Change in Substance Abuse</i>	N	-	-	-	-	-	H
<i>Change in Crime</i>	N	-	-	-	-	-	H
<i>Change in Perceptions of Quality of Life and Well-Being</i>	A	N-L	L	S	S	R	H
Closure and Decommissioning	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Public Safety (Injuries / Accidents)</i>	P	L-M	L	L	R	R	H
<i>Change in Substance Abuse</i>	N	-	-	-	-	-	H
<i>Change in Crime</i>	N	-	-	-	-	-	H
<i>Change in Perceptions of Quality of Life and Well-Being</i>	A	M	L	L	R	R	H
Accidental Events and Malfunctions	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Public Safety (Injuries / Accidents)</i>	A	L-M	L	S	S	R	H
<i>Change in Substance Abuse</i>	N	-	-	-	-	-	H
<i>Change in Crime</i>	N	-	-	-	-	-	H
<i>Change in Perceptions of Quality of Life and Well-Being</i>	A	L-M	L	S	S	R	H

Environmental Effects Assessment Summary: Economy, Employment and Business							
Construction	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Economy</i>	P	M	R	S	R	R	H
<i>Change in Employment</i>	P	M	R	S	R	R	H
<i>Change in Business</i>	P	M	R	S	R	R	H
<i>Interference with Other Economic Sectors</i>	N-A	N	L	S	S	R	H
Operations and Maintenance	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Economy</i>	P	M	R	M	C	R	H
<i>Change in Employment</i>	P	M	R	M	C	R	H
<i>Change in Business</i>	P	M	R	M	C	R	H
<i>Interference with Other Economic Sectors</i>	N	-	-	-	-	-	H
Closure and Decommissioning	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Economy</i>	N, P	L	R	S	O	R	H
<i>Change in Employment</i>	N, P	L	R	S	O	R	H
<i>Change in Business</i>	N, P	L	R	S	O	R	H
<i>Interference with Other Economic Sectors</i>	N, P	N	L	S	O	R	H
Accidental Events and Malfunctions	Residual Environmental Effects Summary Descriptors						
	Nature	Magnitude	Extent	Duration	Frequency	Reversibility	Certainty
<i>Change in Economy</i>	N	-	-	-	-	-	-
<i>Change in Employment</i>	N	-	-	-	-	-	-
<i>Change in Business</i>	N	-	-	-	-	-	-
<i>Interference with Other Economic Sectors</i>	N-A	L	L	S	O	R	H