Canadian Environmental Assessment Agency

Agence canadienne d'évaluation environnementale

Kami Iron Ore Project

Comprehensive Study Report

October 2013

Canada

Cover Photo courtesy of Alderon Iron Ore Corp.

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Executive Summary

Alderon Iron Ore Corp. (Alderon, or the Proponent) proposes to construct and operate the Kami Iron Ore Project (Kami, or the Project), consisting of an open pit iron ore mine and associated infrastructure in western Labrador, and a concentrate storage and load-out facility at the Pointe-Noire Terminal in the Port of Sept-Îles, Québec.

The Kami Iron Ore Mine and associated rail infrastructure are located entirely within Labrador, near the towns of Wabush, Labrador City and Fermont, Québec. The Project includes construction, operation, rehabilitation and closure of the following primary components:

- Open pit (Rose Pit),
- Waste rock disposal areas (Rose North and Rose South),
- Processing infrastructure which includes crushing, grinding, spiral concentration, magnetic separation, and tailings thickening areas,
- Tailings management facility,
- Ancillary infrastructure to support the mine and process plant (gate and guardhouse, reclaim water pumphouse, truck wash bay and shop, electrical substation, explosives magazine storage, administration and office buildings, maintenance offices, warehouse area and employee facilities, conveyors, load-out silo, stockpiles, sewage and water treatment units, mobile equipment, access road, and transmission lines),
- Rail transportation component, including rail line construction to connect the mine site to the Québec North Shore & Labrador (QNS&L) Railway.

In addition to the mine, installation of storage and handling facilities at the Port of Sept-Îles, Quebec is proposed, where ore concentrate arriving by train from the mine site will be unloaded, stockpiled and loaded by the Port of Sept-Îles (the Port) into ships for transport to buyers.

The Proponent would require authorizations from Fisheries and Oceans Canada and Transport Canada, under the *Fisheries Act* and the *Navigable Waters Protection Act*, respectively for the mine to proceed. Neither authorization may be issued before conducting a federal environmental assessment (EA) under the former *Canadian Environmental Assessment Act* S.C. 1992, c. 37, *1992* (the former Act). In addition, the stockpiling and loading facilities at the Port of Sept-Îles will be located on federal lands, the use of which also triggers a federal EA. Other federal authorities providing expert information or knowledge during the EA process included Environment Canada, Health Canada and Natural Resources Canada.

The former Act and associated *Comprehensive Study List Regulations* require that the EA be a comprehensive study due to the proposed ore production capacity of the mine, and that a Comprehensive Study Report (this document) be prepared. The Project is also subject to the *Cabinet Directive on Improving the Performance of the Regulatory System for Major Resource Projects*, and the Newfoundland and Labrador *Environmental Protection Act* and associated *Environmental Assessment Regulations, 2003*.

The Canadian Environmental Assessment Agency (the Agency) prepared this Comprehensive Study Report in consultation with Fisheries and Oceans Canada, Transport Canada, Environment Canada, Natural Resources Canada and Health Canada following a technical review of the Proponent's Environmental Impact Statement and an evaluation of the environmental effects of the Project.

A valued ecosystem component (VEC) is a notable feature of the natural or human environment that is likely to be affected by the Project. The Environmental Impact Statement identified and assessed the Project's effects on the following VECs: atmospheric environment; landforms, soils, snow and ice; water resources (surface and groundwater), wetlands; freshwater

fish, fish habitat and fisheries; birds, other wildlife and their habitats and protected areas; species at risk and species of conservation concern; historical and cultural resources; current use of lands and resources, including for traditional purposes by Aboriginal persons and health and community health.

The Agency evaluated the Project's potential to cause significant adverse environmental effects based on a review of the proposed Project and its predicted effects on the VECs. This evaluation was completed based on information provided by the Proponent and comments provided by federal and provincial experts, Aboriginal groups and the public through various consultation opportunities.

The potential environmental effects of greatest concern identified during the comprehensive study process include potential effects on water resources, wetlands and the atmospheric environment, and related effects on current use of land and resources. Cumulative environmental effects were also identified as a principal concern in light of the region's mining history and recent resurgent interest in its substantial iron ore resources in what is known as the Labrador Trough.

Methods to reduce, eliminate or compensate for the Project's potential adverse environmental effects were incorporated into the overall planning and design, either prior to, or as a result of, the EA process. Key mitigation measures include:

- development of compensation plans for lost fish habitat,
- relocation of the Rose South Waste Rock Disposal Area to eliminate its potential effects on Lac Daviault and the Town of Fermont,
- treatment of mine effluent to meet regulated standards,
- implementation of a Greenhouse Gas Management Plan and a dust suppression program to minimize airborne emissions, and
- relocation of the rail route to avoid the Wabush Public Protected Water Supply Area.

A follow-up program study will be implemented to verify the accuracy of the EA and to determine the effectiveness of the mitigation measures for the Project. Follow-up is planned in relation to several VECs, including the atmospheric environment; landforms, soils, snow and ice; water resources; wetlands; and fish, fish habitat and fisheries.

The Agency concludes that the Project is not likely to cause significant adverse environmental effects, taking into account the implementation of mitigation measures described in this comprehensive study report.

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List of Acronyms, Initialisms and Abbreviations

ARD	acid rock drainage
DFO	Fisheries and Oceans Canada
EA	environmental assessment
EIS	environmental impact statement
EPP	environmental protection plan
GHG	greenhouse gas
ha	hectares
HHRA	human health risk assessment
IOC	Iron Ore Company of Canada
LSA	local study area
km	kilometers
m	meters
ML	metal leaching
Mtpa	million tonnes per annum
PDA	project development area
PLSMU	Pike Lake South Management Unit
RSA	regional study area
t/d	tonnes per day
The former Act	former *Canadian Environmental Assessment Act* S.C. 1992, c. 37, *1992*
The Agency	Canadian Environmental Assessment Agency
The Minister	Federal Minister of the Environment
The Project	Kami Iron Ore Project
The Proponent	Alderon Iron Ore Corporation
TMF	tailings management facility
VEC	valued ecosystem component

1. Introduction

1.1 Project Overview

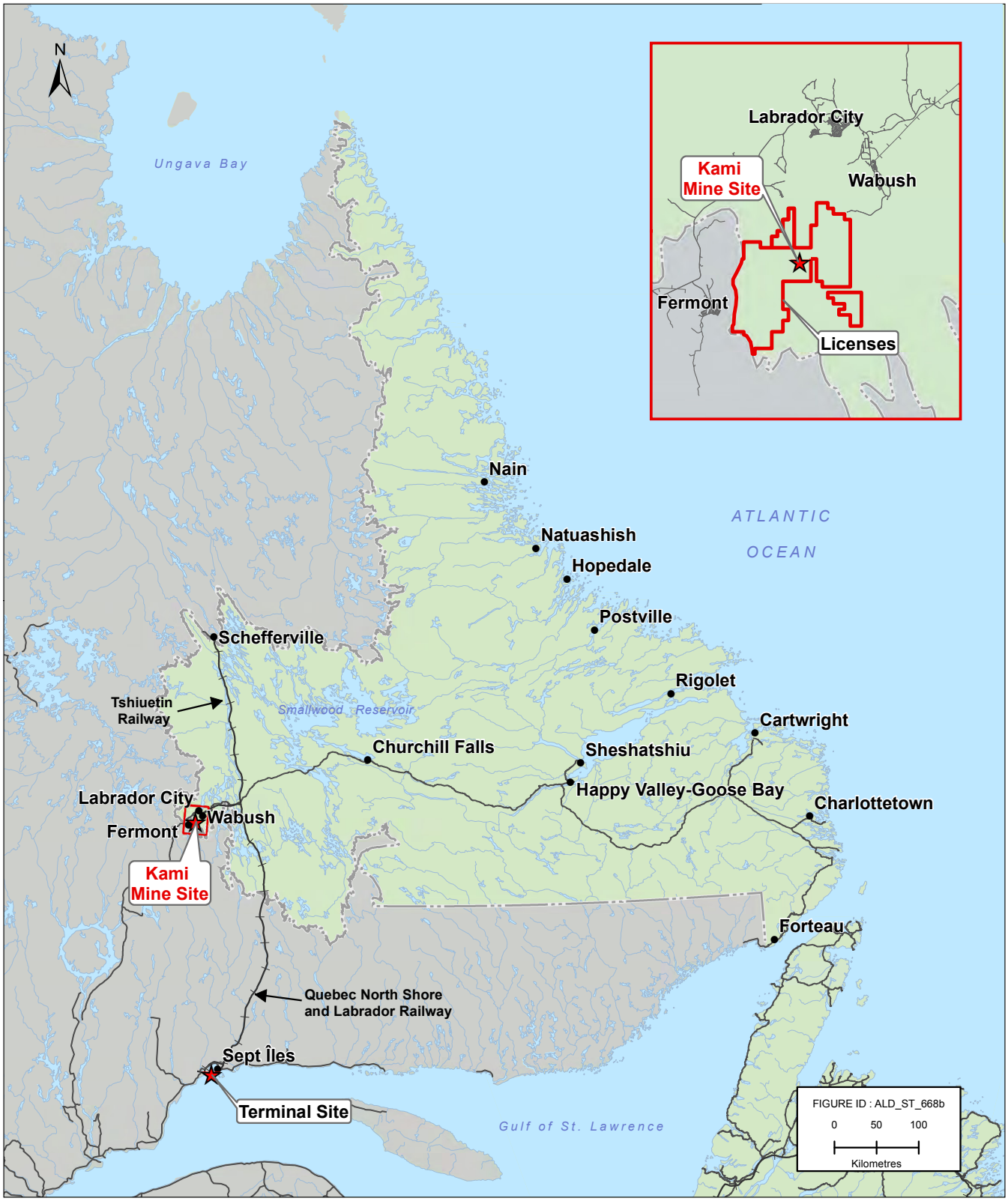
Alderon Iron Ore Corporation (Alderon, or the Proponent) proposes to develop an iron ore mine on the Kamistiatusset (Kami) Property located in western Labrador. The mine property is located approximately 10 km south of the towns of Wabush and Labrador City in Newfoundland and Labrador and approximately 5 km east of Fermont, Québec. The Project includes construction, operation, and eventual closure and reclamation of an open pit, waste rock disposal areas, processing infrastructure, a tailings management facility (TMF) and effluent treatment infrastructure, supporting infrastructure and a rail transportation component. Iron ore concentrate will be transported by existing rail to the Kami Terminal at the Port of Sept-Îles at Pointe-Noire, Québec. The Kami Terminal consists of a rail loop and a concentrate unloading, stacking, storage, and reclaiming facility designed to store and transport the ore before shipping it to market.

The mine property is located approximately 10 km south of the towns of Wabush and Labrador City in Newfoundland and Labrador and approximately 5 km east of Fermont, Québec.

Table 1-1: Project Summary

Project Summary	An open pit mining operation with a peak production of approximately 16 Mtpa of iron ore concentrate that will be exported primarily to international markets.
Proponent	Alderon Iron Ore Corporation 10 Fort William Place, Suite 201 St. John's, NL A1C 1K4 Attention: Todd Burlingame, Executive Vice-President, Environment & Aboriginal Affairs **E-mail: Kami@alderonironore.com**
Location	The mine site will be located in western Labrador, near the town of Fermont, Québec and the towns of Wabush and Labrador City, Newfoundland and Labrador. The concentrate storage and load-out facility will be located at Point-Noire, Québec, on lands within the jurisdiction of the Sept-Îles Port Authority. The approximate centre of the mine site is at 52° 49' N and 67° 02' W.
Federal Environmental Assessment Contact	Kami Iron Ore Project, Canadian Environmental Assessment Agency 1801 Hollis Street, Suite 200 Halifax, NS B3J 3N4 Attention: Derek McDonald, P.Eng. **Email: Kami@ceaa-acee.gc.ca**
Canadian Environmental Assessment Registry	**http://www.ceaa-acee.gc.ca/050/details-eng.cfm?evaluation=64575** Reference number: 64575

Figure 1-1: Project Location



1.2 Environmental Assessment Process

1.2.1 Federal Environmental Assessment Process

A federal environmental assessment (EA) is required for the Project under the former *Canadian Environmental Assessment Act* S.C. 1992, c. 37, *1992* (former Act) and the *Canada Port Authority Environmental Assessment Regulations* (established under the former Act) due to actions that may be undertaken by Fisheries and Oceans Canada (DFO) and Transport Canada and the Sept-Îles Port Authority. The former Act applied to federal regulatory authorities when they contemplated certain actions or decisions that would enable a project to proceed in whole or in part. The *Canada Port Authority Environmental Assessment Regulations* apply to Canada Port Authorities that propose a project, or provide funding or land for one.

DFO and Transport Canada may issue permits, authorizations or approvals in relation to the Project pursuant to the *Fisheries Act* and the *Navigable Waters Protection Act*, respectively. In addition, use of federal lands that are administered by Sept-Îles Port Authority is required for the Project to proceed as proposed.

The federal EA for this Project was commenced before the *Canadian Environmental Assessment Act, 2012* came into force and will therefore be completed under the former Act.

The Project is subject to a comprehensive study-type of EA under the former Act pursuant to paragraph 16(a) of the *Comprehensive Study List Regulations*:

> *"The proposed construction, decommissioning or abandonment of a metal mine, other than a gold mine, with an ore production capacity of 3 000 t/d or more".*

In accordance with amendments to the former Act that came into force in July, 2010, the Canadian Environmental Assessment Agency (Agency) became legally responsible for the conduct of the comprehensive study. Federal authorities providing expert information or knowledge during the EA process included Environment Canada, Health Canada and Natural Resources Canada.

1.2.2 Purpose of the Comprehensive Study Report

This report presents the Agency's analysis to determine whether or not the Project is likely to cause significant adverse environmental effects.

The Federal Minister of the Environment (the Minister) will consider this report and comments received from the public and Aboriginal groups when issuing an EA decision statement in relation to the Project. The Minister may request additional information or require that public concerns be addressed further before issuing the EA decision statement. The Minister will refer the Project back to DFO and Transport Canada following the EA decision statement for appropriate action under section 37 of the former Act. The Sept-Îles Port Authority will also take into consideration the comprehensive study report and any comments submitted when making a course of action decision under the *Canada Port Authority Environmental Assessment Regulations*.

1.2.3 Provincial Environmental Assessment Process

In addition to federal EA requirements, the Project is also subject to a provincial EA pursuant to Newfoundland and Labrador's *Environmental Protection Act* and *Environmental Assessment Regulations, 2003*. Further information on the provincial EA process is available on the Department of Environment and Conservation's website (**www.env.gov.nl.ca**). The Government of Canada and the Province of Newfoundland coordinated their respective EA processes to the extent possible to reduce duplication and promote intergovernmental cooperation. For example, the Proponent's Environmental Impact Statement (EIS) was intended to address the requirements of both processes.

2. Project Description

2.1 Scope of the Project

The scope of this Project for this EA includes all physical works and activities associated with its construction, operation, and decommissioning.

2.2 Project Components

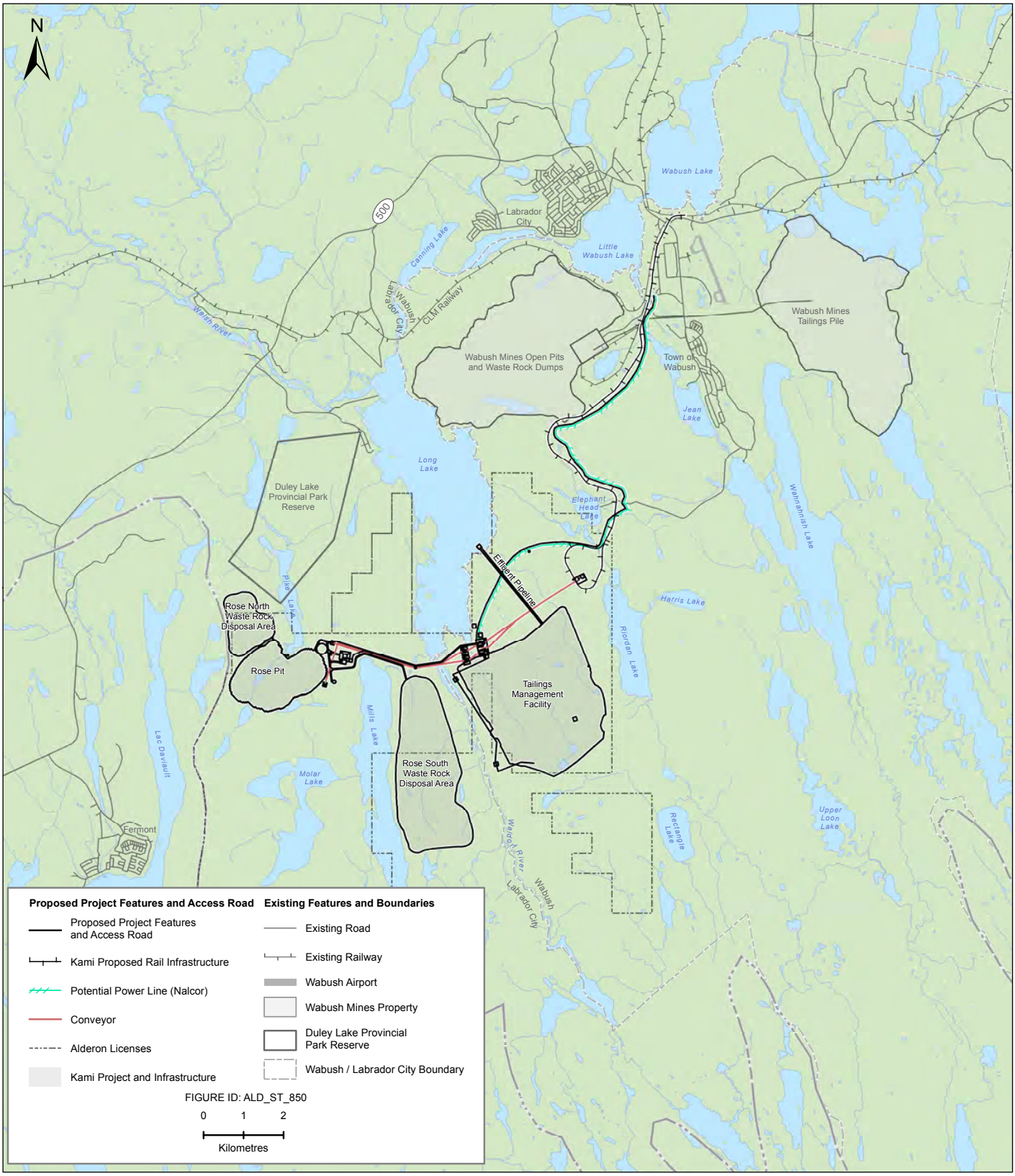
The Project mine site to be located in Western Labrador will include the following components:

- An open pit mine (Rose Pit)
- Site buildings
- Two waste rock disposal areas (Rose North and Rose South)
- Processing infrastructure that includes crushing, grinding, spiral concentration, magnetic separation, and tailings thickening areas
- A TMF
- Effluent treatment infrastructure
- Ancillary infrastructure to support the mine and process plant (e.g., gate and guardhouse, reclaim water pump-house, water retention basins, truck wash bay and shop, electrical substation, explosives magazine storage, administration and office buildings, maintenance offices, warehouse area and employee facilities, conveyors, load-out silo, stockpiles, sewage and water treatment units, mobile equipment, access road, site communication tower, and transmission lines)
- New railway infrastructure to connect the mine site to the Québec North Shore & Labrador (QNS&L) Railway, totalling approximately 14.5 km of new rail line.

The Kami Terminal to be located in Sept-Îles, Quebec will include the following components:

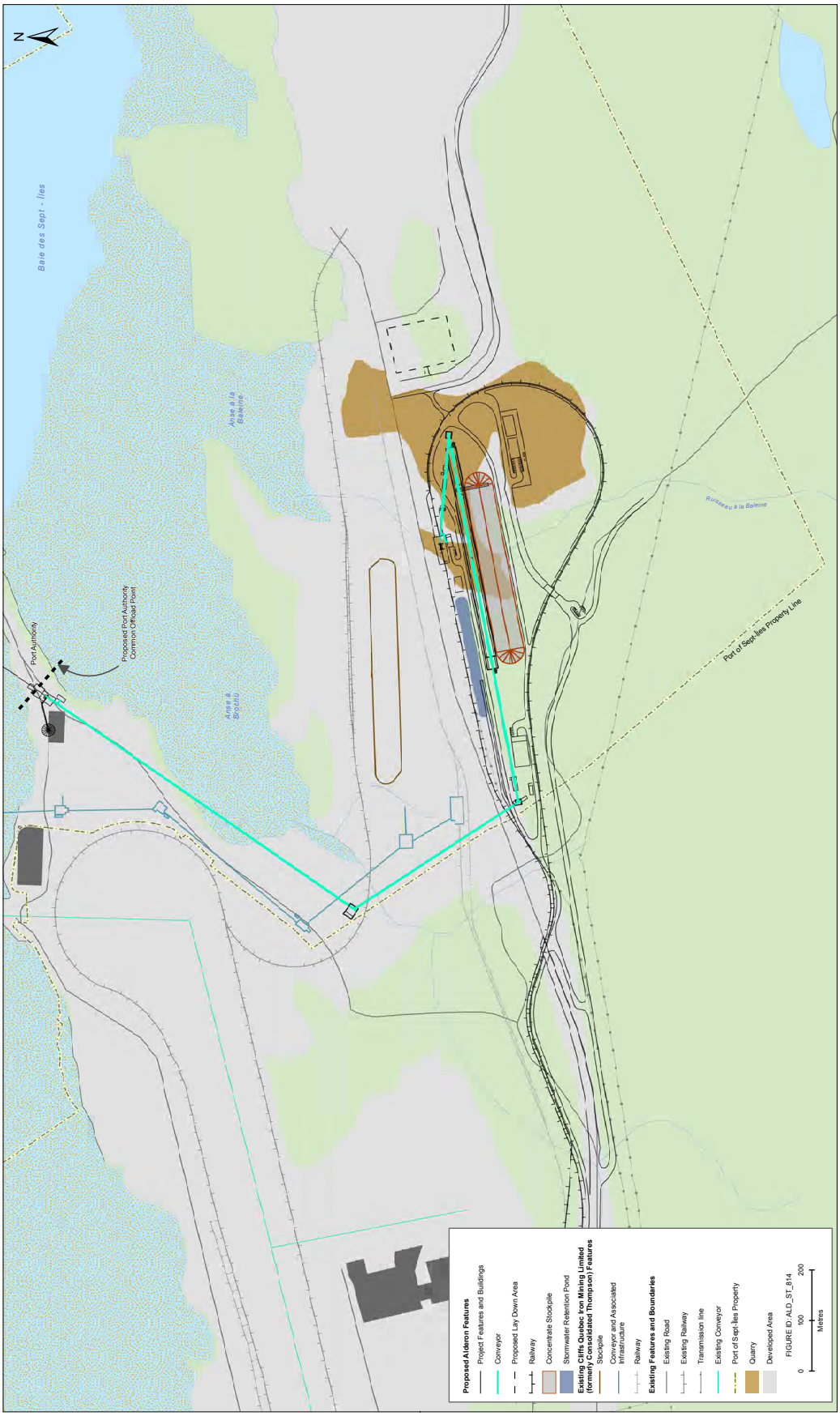
- Concentrate unloading stacking, storage and reclaiming facilities
- A rail loop approximately 3.5 km long.

Figure 2-1: Labrador Project Components



Source: Alderon Iron Ore Corporation

Figure 2-2: Sept-Îles Project Components



Source: Alderon Iron Ore Corporation

2.2.1 Activities

Table 2-1 lists the key project activities associated with construction, operation and maintenance, and decommissioning and reclamation.

Table 2-1 Project Activities and Physical Works

Project Activities and Physical Works	Details
Site Preparation	• Installation of an upstream dam and a water diversion pipeline around Rose Pit • Dewatering of Rose Pond • Mobilization and installation of construction infrastructure • Clearing and grubbing of vegetation • Removal of overburden and stockpiling • Site grading and excavation • Installation of ditching, surface water controls and erosion and sediment protection
Construction of Mine Site Infrastructure	• Construction of processing facilities and other site buildings and infrastructure • Construction of access roads, railway infrastructure and power lines, and associated stream crossings • Installation of water management and water supply infrastructure • Development of waste rock and overburden disposal areas • Construction of the TMF
Construction of Kami Terminal Site Infrastructure	• Construction of concentrate unloading, stacking, storage and reclaiming facility • Construction of access roads • Construction of rail loop, including blasting if necessary
Open Pit Mining	• Drilling, blasting, and extraction of rock • Transportation of ore by conveyor to processing facilities • Transportation of waste rock to disposal sites • Water management (including ongoing dewatering of open pit, water collection and control, sediment control)
Ore Processing	• Crushing, storage, grinding, screening, and gravity and magnetic concentration of ore
Tailings Management and Effluent Treatment	• Disposal of tailings within TMF • Tailings dewatering and pumping • Treatment and discharge of excess water in TMF • Progressive rehabilitation
Water Management and Balance	• Process water extraction and management • Use of groundwater wells, or lake pumps, for employee water needs
Ore Transportation and Storage	• Concentrate load-out system for railcars loading at mine site • New railway line to connect mine loop to QNS&L Railway, which will transport iron ore to the Kami Terminal • Offloading and storage of iron ore at Kami Terminal • Movement of iron ore via enclosed conveyors to port-operated ship loading facilities
Site Decommissioning	Mine Site: • Removal of mine site buildings and regrading • Removal of rail infrastructure • Removal of water management and water supply infrastructure • Capping of dewatering and groundwater wells • Installation of warning signs around the open pit • Grading and contouring of TMF Kami Terminal • There is no plan to decommission the Kami Terminal. It will be transferred to another owner upon conclusion of the Proponent's operations.
Site Reclamation	• Rehabilitation of site roads, site buildings and infrastructure sites through re-grading, placement of soils, and re-vegetation

2.2.2 Schedule

Construction activities will begin after the Project has received all the necessary government approvals and permits. The current project schedule is for the Project to commence operation in late 2015 and continue until approximately 2033.

3. Scope of the Environmental Assessment

A scoping process was conducted to focus the EA on relevant factors and concerns and to establish its temporal and spatial boundaries.

3.1 Factors to be Considered

Subsections 16(1) and 16(2) of the former Act require consideration of the following factors for a comprehensive study:

- 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 shall be carried out
- the significance of the environmental effects referenced above
- comments from the public that are received in accordance with the Act and the regulations
- measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the Project
- the purpose of the Project
- alternative means of carrying out the Project that are technically and economically feasible and the environmental effects of any such alternative means
- the need for, and the requirements of, any follow-up program in respect of the Project
- 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

Under subsection 16(1)(e) of the former Act, the Agency also required the assessment of the need for the Project, an evaluation of alternatives to the Project, and an examination of the benefits of the EA to Canadians.

3.2 Scope of the Factors

The EA focused on components of the environment that have particular value or significance and are likely to be affected by the Project. These are referred to as valued ecosystem components (VECs). Selection of VECs for the assessment was based on the environmental setting, professional judgment, and issues raised during consultations. The VEC-selection process included consideration of the temporal and spatial scope of the Project and the anticipated Project-environment interactions.

The Agency considered the following VECs in this EA:

- Atmospheric Environment
- Landforms, Soils, Snow and Ice
- Water Resources
- Wetlands
- Freshwater Fish, Fish Habitat, and Fisheries
- Birds, Other Wildlife and their Habitats, and Protected Areas
- Species at Risk and Species of Conservation Concern
- Historical and Cultural Resources
- Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons
- Other Current Use of Lands and Resources
- Health and Community Health

One or more measurable parameters for each selected VEC were identified to facilitate quantitative or qualitative assessment of potential project effects and cumulative environmental effects.

3.3 Temporal and Spatial Boundaries

The temporal boundaries of this EA are defined based on the timing and duration of project activities that could adversely affect the environment. The purpose of the temporal boundaries is to identify when an effect may

occur in relation to specific project phases and activities. In general, temporal boundaries for assessment include the construction, operation and maintenance, and decommissioning and reclamation phases of the Project.

The spatial boundaries for each VEC encompass the geographic extent over which the Project's potential environmental effects are expected to be measureable. These include the Local Study Area (LSA), which is the maximum area within which project-related environmental effects are predicted or measured with a reasonable degree of accuracy and confidence (Table 3-1). The Regional Study Area (RSA) boundary for each VEC includes the LSA and areas related to other projects whose potential residual effects could interact with the residual effects from the Kami project (Table 3-2). The RSA is described when the analysis determined that a cumulative impacts assessment is warranted.

Table 3-1: Local Study Area Boundaries

Valued Ecosystem Component	Local Study Area Boundary for Mine Site	Local Study Area Boundary for Kami Terminal
Atmospheric Environment	An area 40 km by 40 km, extending from the centre of the project-related activities and incorporating the towns of Labrador City and Wabush, Labrador and Fermont, Québec.	For air quality, greenhouse gas emissions, light and vibration assessments, the LSA is defined as an area that is 30 km (east-west) by 30 km (north-south) extending from the center of the proposed undertaking. For acoustic modeling of the operation of the Kami Terminal, the LSA is defined as an area that is 14 km (east-west) by 6 km (north-south) extending from the center of the Kami Terminal-related activities.
Landforms, Soils, Snow and Ice	Includes the project footprint and a 100 m buffer around all of the project components and Long Lake.	N/A
Water Resources	Includes the approximate 8,000-hectare area bounded by the Québec-Labrador border and Rose Pit on the west, Riordan Lake on the east, Long Lake and Duley Lake Provincial Park Reserve on the north, and the Québec-Labrador border to the south, and waterbodies over which the rail line and access road cross.	Includes the project footprint and adjacent areas where environmental effects may reasonably be expected to occur, which are the anse à Brochu and anse à la Baleine sub-watersheds.
Wetlands	Includes all project components and the Kami mineral license area.	N/A
Freshwater Fish, Fish Habitat, and Fisheries	Includes the project components and associated surrounding area. Waterbodies included in the LSA are the Rose Pit ponds and associated streams, Pike Lake South and North and associated streams, one stream associated with the Rose North Waste Rock Disposal Area, the four small stream sections associated with the Rose South Waste Rock Disposal Area, Mills Lake, Long Lake, three small ponds and associated streams at the TMF, Riordan Lake, Harris Lake, Elephant Head Lake, the Waldorf River from the unnamed lake directly downstream of Swanson Lake to the inflow to Long Lake, Walsh River from the confluence with the Pike lakes system to the inflow to Long Lake, the stream section connecting Wahnahnish and Jean Lakes, the upper portion of the northern arm of Wahnahnish Lake, and an unnamed pond located directly west of Flora Lake and south of the Trans Labrador Highway.	N/A

Table 3-1: Local Study Area Boundaries continued

Valued Ecosystem Component	Local Study Area Boundary for Mine Site	Local Study Area Boundary for Kami Terminal
Birds, Other Wildlife and their Habitats, and Protected Areas	Includes the project footprint and a 500- meter buffer around the project components that will directly cause surface disturbance activities. The buffer incorporates adjacent areas where environmental effects due to noise and dust may reasonably be expected to occur.	Includes the project footprint in its entirety and a 500 m buffer area to incorporate adjacent areas where environmental effects due to noise and dust may reasonably be expected to occur.
Species at Risk and Species of Conservation Concern	Includes the project footprint and a 500-metre buffer around the project components that will directly cause surface disturbance activities. The buffer incorporates adjacent areas where environmental effects due to noise and dust may reasonably be expected to occur.	Includes the project footprint in its entirety and a 500 m buffer area to incorporate adjacent areas where environmental effects due to noise and dust may reasonably be expected to occur.
Historical and Cultural Resources	Includes early and current versions of the project footprint and the Kami mineral license area.	Includes the project and a 200 m buffer to account for offsite indirect effects.
Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons	Includes an area, centered on the project footprint, that encompasses all planned project components and activities and the potential zones of influence of any project-related disturbances.	Includes an area, centered on the project footprint that encompasses all planned Kami Terminal components and activities, and the potential zones of influence of Kami Terminal-related disturbances.
Other Current Use of Lands and Resources	Includes all project features and several waterbodies and terrestrial landscape features that are currently used by local residents for recreational, subsistence and, in some cases, commercial land use and harvesting activities.	Includes the project footprint related to the Kami Terminal in its entirety and the surrounding industrial development zones on the Marconi Peninsula. The LSA also includes the low density residential and recreational area of Val Sainte-Marguerite located at the mouth of the rivière Sainte-Marguerite some 1.5 km from the project footprint and the low density residential areas located close to the railway tracks around the baie des Sept-Îles.
Health and Community Health	For the physical health components, the LSA is a 40-km by 40-km area extending from the centre of the project-related activities and incorporating the towns of Labrador City and Wabush, Labrador and Fermont, Québec. For the community health related components, the LSA includes the Project Development Area and surrounding areas, including the adjacent communities of Wabush, Labrador City and Fermont.	N/A

Table 3-2: Regional Study Area Boundaries

Valued Ecosystem Component	Regional Study Area Boundary for Mine Site	Regional Study Area Boundary for Kami Terminal
Atmospheric Environment	Includes Wabush Mines, Iron Ore Company of Canada's operations, Bloom Lake Mine and Rail Spur, Schefferville Iron Ore Mine, and the DSO Iron Ore Project.	With respect to conventional pollutants, the RSA is deemed equivalent to the above-described LSA. For change in GHG emissions, since the environmental effect of GHG on the environment is a global concern, the spatial boundary is provincial, national and global in geographic extent. It was defined as being the territory of the province of Québec, for the purpose of this study.
Landforms, Soils, Snow and Ice	Includes Mont Wright Mine (ArcelorMittal), Bloom Lake Mine (Cliffs Resources), Wabush Mines (Cliffs Resources), and Iron Ore Company of Canada's (IOC) Carol Project.	N/A
Water Resources	Extends from the highlands along the Québec-Labrador border, northeast through Wabush and Labrador City along a chain of lakes including Wabush Lake and the southwestern end of Shabogamo Lake.	The RSA takes into account the area of influence limited to the baie des Sept-Îles.
Wetlands	Includes several sub-watersheds, including Mills Lake, Long Lake, Riordan Lake, Waldorf River, Pike Lake South, Wabush Lake, and several unnamed brooks and lakes. It is bounded by the Québec-Labrador border on the west, a subwatershed boundary east of Wahnahinish Lake to the east, Wabush Lake on the north, the Québec-Labrador border to the south, and waterbodies over which the rail infrastructure and access road cross.	N/A
Freshwater Fish, Fish Habitat, and Fisheries	Includes all watercourses, waterbodies and respective watersheds surrounding the PDA that eventually drain into and include Wabush Lake. It also includes Lac Daviault for the purpose of assessing the effects to fisheries.	N/A
Birds, Other Wildlife and their Habitats, and Protected Areas	Includes the LSA and surrounding area to provide a regional context for understanding birds, other wildlife and their habitat that could potentially interact with the Project. It encompasses an area of approximately 1,193 km². The RSA for Protected Areas includes the area within the municipal boundaries of the towns of Labrador City, Wabush, and Fermont.	Includes wildlife habitats on the Marconi Peninsula, in baie des Sept-Îles, and extends west to rivière Sainte-Marguerite.
Species at Risk and Species of Conservation Concern	Includes the LSA and surrounding area to provide a regional context for understanding Species at Risk/ Species of Conservation Concern that could potentially interact with the Project. It encompasses an area of approximately 1,193 km².	Includes habitats on the Marconi Peninsula, in baie des Sept-Îles, and extends west to rivière Sainte-Marguerite.
Historical and Cultural Resources	Focused on previously-investigated areas in western Labrador, but extends to encompass previously investigated areas to the west in Nouveau-Québec, and to the south, along the North Shore of the St. Lawrence in Québec.	Based on previously investigated locations in the general area of Sept-Îles.

Table 3-2: Regional Study Area Boundaries continued

Valued Ecosystem Component	Regional Study Area Boundary for Mine Site	Regional Study Area Boundary for Kami Terminal
Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons	Generally defined as the overall geographic extent of traditional land and resource use activities by the various Labrador and Québec Aboriginal groups that are considered in this assessment. It is therefore somewhat "group-specific", although for general analytical purposes it has been defined to fully encompass the overall known distribution of these activities by all of the groups under consideration.	Generally defined as the overall geographic extent of current land and resource use activities by the various Aboriginal groups that are considered in this assessment. The RSA is therefore somewhat "group-specific", although for general analytical purposes it has been defined to fully encompass the overall known distribution of these activities by the various groups under consideration.
Other Current Use of Lands and Resources	Delineated to include the multiple travel routes used in western Labrador and adjacent areas of eastern Québec, including both roads and other cleared corridors which provide access to the country via snowmobile or all-terrain vehicle (ATV). It covers an area of approximately 46,000 km².	The RSA, which takes into account the area of influence, is limited to the city of Sept-Îles, beyond which no interactions between the Kami Terminal and other current uses are expected to occur.
Health and Community Health	Includes the main municipalities that may be affected by project activities that are of concern to the public. The RAS for physical health is similar to that defined for atmospheric environment and comprises the area within which cumulative effects may occur given potential overlapping air contaminants from Wabush Mines, Iron Ore Company of Canada's operations, Bloom Lake Mine and Rail Spur, Schefferville Iron Ore Mine, and the DSO Iron Ore Project. The RSA for community health includes Labrador as a whole and the Côte-Nord region of Québec and is based on relevant health administrative regions.	The Kami Terminal is not expected to interact with health and community health.

3.4 Purpose of and Need for the Project

The purpose of the Project is to develop the iron ore deposits within the Kami Mine Property in Labrador and related transportation and loading infrastructure to produce iron ore concentrate for sale to international markets.

The Project is needed to satisfy the high level of global demand for iron ore and steel, to contribute to the on-going viability and future growth of Newfoundland and Labrador's mining industry, and to provide revenue and profits for the Proponent and its shareholders.

Iron ore is the main source of primary iron required for global iron and steel industries. Market demand for iron ore has slowed, as a percentage, over the past year, but absolute volume demand is predicted to continue to grow, due to demand from emerging markets, including China.

The mining and mineral processing industry is important to the Canadian and Newfoundland and Labrador economies, and has potential for future growth. The province characterized development of mineral resources in Labrador as a priority in its 2007 Northern Strategic Plan for Labrador.

4. Project Alternatives

Section 16(1)(e) of the former Act requires that alternatives to the Project be assessed as part of a comprehensive study. Alternatives to the Project are functionally different ways to meet the Project's need and purpose. As well, the comprehensive study included consideration of the alternative means of carrying out the Project that are technically and economically feasible and the environmental effects of any such alternative means in accordance with paragraph 16(2)(b) of the former Act. An evaluation of both of these factors is presented in the following sections.

4.1 Alternatives to the Project

The Project is intended to develop the iron ore deposits within the Kami Property and to produce iron ore concentrate suitable for sale to international markets.

Addressing the overall, worldwide requirement for iron ore could potentially be addressed through other development projects or initiatives that may also provide associated economic benefits to the regions and jurisdictions in which they are developed. With the exception of this proposed Project, however, no other such alternatives are within the ability and responsibility of the Proponent. The only alternative to the Proponent's construction and operation of the Project is a decision to not proceed - the "no-go" alternative.

According to the Proponent, the Project provides a technically feasible, economically viable and attractive, and environmentally and socially responsible means of addressing the identified need for and purpose of the development. The Proponent also considers the Project as one which can and will be planned and implemented in a manner that avoids or reduces potential adverse environmental effects and optimizes socio-economic benefits.

4.2 Alternative Means of Carrying Out the Project

The Proponent identified, analyzed, and evaluated different potential project concepts and approach options. The EIS considered possible alternative means of carrying out the Project that are technically and economically feasible, and the potential environmental effects of these alternative means. Consideration was given to alternatives means of carrying out the following project components or activities:

- Tailings management
- Waste rock storage
- Ore transportation
- Power supply
- Mining methods
- Location of the terminal facility

The assessment of alternative means of carrying out the Project is summarized in Table 4-1.

The Agency is satisfied that the Proponent has identified the technically and economically viable alternative means of carrying out the Project and in identifying preferred alternatives has considered the environmental effects of the alternatives and their acceptability.

Alternatives to the Project are functionally different ways to meet the Project's need and purpose.

Table 4-1 Project Alternatives Assessment

Project Component	Alternatives Considered	Economic and Technical Feasibility and Select Environmental Considerations	Preferred Option
Tailings management	Option 1: tailings disposal in open pit	• Tailings deposition in an exhausted area of the Rose Pit is not technically feasible during the operation of the pit. At the end of the pit life, its feasibility will be investigated.	
	Option 2: tailings disposal in natural waterbodies	• Not considered to be feasible or environmentally acceptable.	
	Option 3: conventional tailings storage in an engineered impoundment	• Technically and economically feasible, using effective and proven technology.	✓
	Option 4: dry stacking of dewatered tailings	• Significant cost implications to the Project associated with dewatering and haulage. • This option would be more susceptible to dust generation and associated environmental issues.	
	Option 5: codisposal of tailing and waste rock	• Based on technical and operational aspects, environmental issues, socioeconomic issues and economic implications, this option was not considered acceptable due to the physical site constraints and the volume of tailings produced at a substantial distance from the pit area.	
Waste rock storage (management and location)	Option 1: codisposal of tailings and waste rock	• This option was dismissed, see above, as tailings will be completely managed and contained within an engineered structure.	
	Option 2: disposal in a designated, engineered waste rock disposal area	• Preferred option for economic, technical and environmental reasons.	✓
	Option 3: disposal in natural waterbodies	• Not considered to be an environmentally acceptable option.	
	Option 4: use waste rock as construction aggregate	• Waste rock will be used where possible and practical as construction and/or rehabilitation materials and aggregate.	✓
Transportation of ore from mine site to QNS&L railway network	Option 1: railway	• Economically and technically feasible. • Acceptable and manageable environmental effects.	✓
	Option 2: pipeline	• Requires high initial capital cost for construction when compared to rail transport. • Additional power required to operate the pumping systems necessary to keep the line operational. • Difficult ground conditions for pipeline construction and operation presents technical challenges.	
	Option 3: roadway	• Not economically feasible. • The existing route is inadequate (single lane each way, partially paved, route is indirect) and would lead to financially prohibitive operating costs for the Project. • Negative environmental issues associated with transportation of ore by truck.	
Power supply	Option 1: new 46 kV distribution line bringing power directly to the plant main substation	• Preferred option for economic and environmental reasons (no air emissions from diesel generators).	✓
	Option 2: power provided by diesel generators	• Not preferred due to environmental concerns associated with air emissions that would be associated with the diesel generating units.	
Mining methods	Option 1: open pit mining	• Used extensively in similar iron ore mining and other operations in Labrador and elsewhere. • Proven to be effective and viable in such operations.	✓
	Option 2: underground mining	• Not considered to be economically feasible.	

Table 4-1 Project Alternatives Assessment continued

Project Component	Alternatives Considered		Economic and Technical Feasibility and Select Environmental Considerations	Preferred Option
Location of the terminal facility	Option 1: the Pointe-Noire Terminal that is part of the Port of Sept-Îles		• Installation costs are less because located closer to the shiploader. • Technically feasible. • Port of Sept-Îles is a very active industrial port site and has been in operation for decades. • Moving concentrate a shorter distance could reduce energy use and the amount of dust released. • Little to no loss of habitat.	✓
	Option 2: Pointe-Noire terminal south-east of Option 1		• Greater installation costs. • Technically feasible. • Moving concentrate a longer distance compared to Option 1 could increase energy use and the amount of dust released.	
	Option 3: Seven Lands Development Corp. near mouth of Moisie River		• Location has no access to the shore and additional facilities would need to be constructed. • Not economically feasible. • Technically feasible. • Would require construction activity and works in the marine environment that would decrease potential marine habitat.	
	Option 4: build a new port in Labrador		• Building a new port in Labrador is not economically feasible. • Technically feasible. • Would require construction activity and works in the marine environment which would decrease potential marine habitat.	
Transportation of ore to the Port of Sept-Îles facility	Option 1: Use existing rail lines at Port of Sept-Îles		• Has economic risk. • Dead-end line requires train to be broken down for unloading. • Breaking the train cars into smaller sections uses more locomotive fuel, releases higher emissions and creates more noise.	
	Option 2: Build new rail lines at Port of Sept-Îles	Option 2-1: Work with Cliff Bloom Lake to build a new rail loop using some of their existing track	• Has economic and operational risk. • Grading and a stream crossing required.	
		Option 2-2: Build a new rail loop near the Cliffs Bloom Lake rail loop	• Less economic and operational risks. • Grading and a stream crossing required.	✓
		Option 2-3: Build a new rail loop located west of the Pointe-Noire Road	• Costly construction. • Landscape would need to be dramatically altered. • Construction would require substantial rock cutting, blasting and other earth-moving efforts. • Ruisseau à la Baleine would need to be redirected.	
	Option 3: Transport iron ore concentrate by truck to the Port		• Not economically feasible. • Shipping goods by truck burns more fuel, releases more emissions and creates more traffic on the highway.	
	Option 4: Transport iron concentrate by new railroad through Labrador and Quebec		• Not economically feasible. • Building a new railroad would alter habitat. • Construction would require more resources than using the existing rail line.	

5. Consultation

The Agency provided opportunities for public and Aboriginal participation and held several Aboriginal consultation sessions to improve the quality of the EA. In addition, the Proponent provided information on the Project to the public and to Aboriginal groups, as described below.

5.1 Public Consultation Activities

The former Act requires that the public have three opportunities to participate in a comprehensive study. For this project, the Agency provided public comment periods on the Draft EIS Guidelines and a Summary of the EIS. These opportunities were provided jointly with the province. In addition, the Agency is currently inviting the public to provide comments on this comprehensive study report. The Minister of the Environment will consider this report, and any comments received on it, before issuing an environmental assessment decision statement.

Funding was awarded to the Conseil régional de l'environnement de la Côte-Nord under the Agency's Participant Funding Program. Notices of public participation opportunities were posted on the Canadian Environmental Assessment Registry Internet Site and advertised through local media.

The Agency considered comments received from the public in preparing this comprehensive study report. The identified issues and concerns of participants related to:

- the public participation process;
- potential effects from dust and emissions;
- potential effects on cabins;
- potential noise effects;
- potential effects on water quality and water resources;
- potential effects on recreational activities;

The Agency considered comments received from the public in preparing this comprehensive study report.

- potential effects on human health;
- potential effects on visual aesthetics;
- cumulative effects; and
- general impacts to the quality of life of residents in the region.

Further information on these themes, and a selection of other public and Aboriginal comments, are included in *Section 7: Environmental Effects Assessment. Section 9: Benefits to Canadians* describes changes to the Project that were made partially in response to public and Aboriginal comments.

Participation Activities by the Proponent - Public stakeholders engaged by the Proponent include residents of the towns of Labrador City, Wabush, Fermont and Sept-Îles. In addition, the Proponent engaged other potentially-affected or interested stakeholders including non-governmental organizations, economic development organizations, and outdoor recreation users and outfitters.

Public consultation activities by the Proponent included information sharing, general consultation with community members, and key stakeholder meetings. In particular:

- Public notices were created to share information with the general public and those potentially affected by the Project;
- A Project Website was created to provide project information, EA documentation, notifications, and consultation materials and to provide an area for stakeholders to submit contact information and comments;
- Public information sessions were held to provide information to the general public and other interested stakeholders and to receive feedback; and
- Meetings were held with stakeholders to provide information on project design and EIS studies and to identify concerns to be addressed in the EIS.

5.2 Aboriginal Consultation

The federal government has a legal duty to consult and, where appropriate, to accommodate Aboriginal peoples when its proposed conduct might adversely impact an established or potential Aboriginal or treaty right.[1] Aboriginal consultation is also an important part of good governance and sound policy development and decision making. In addition to the federal government's broader obligations, the former Act requires that all federal environmental assessments consider the effect of any project-related change in the environment, and also the effect of that change on the current use of land and resources for traditional purposes by Aboriginal persons. The former Act also requires consideration of the effect of any project-related change in the environment on physical and cultural heritage and "any structure, site, or thing that is of historical or archaeological significance" such as sites historically occupied by Aboriginal peoples.

For this EA, the Agency served as Crown consultation coordinator for the federal government. The Newfoundland and Labrador Department of Environment and Conservation was the lead agency for Crown consultation by the provincial government. The federal and provincial Crown consultation and environmental assessment processes were integrated to the extent possible including development of a joint consultation plan and joint comment periods for the draft EIS Guidelines and the EIS.

The Agency identified the following Aboriginal groups as having potential Aboriginal rights that could be adversely affected by the Project:

- Innu Nation
- NunatuKavut Community Council
- Innu-takuaikan Uashat mak Mani-utenam
- Nation Innue Matimekush-Lac John
- Naskapi Nation of Kawawachikamach

The Agency consulted with the groups through phone calls, emails, letters, and meetings in addition to the three comment periods described in Section 5.1.

Funds were provided through the Agency`s Participant Funding Program to reimburse eligible expenses of Aboriginal groups that participated in the EA. Four of the five identified Aboriginal groups applied for and received funding through this program (Innu Nation, NunatuKavut Community Council, Naskapi Nation of Kawawachikamach and Innu-takuaikan Uashat mak Mani-utenam).

1 Aboriginal rights are rights that some Aboriginal peoples of Canada hold as a result of their ancestors' long-standing use and occupancy of the land. The rights of certain Aboriginal peoples to hunt, trap and fish on ancestral lands are examples of Aboriginal rights. Aboriginal rights vary from group to group depending on the customs, practices and traditions that have formed part of their distinctive cultures (Aboriginal Affairs and Northern Development Canada, **http://www.aadnc-aandc.gc.ca/eng/1100100014642/1100100014643)**

The Proponent also conducted engagement and consultation activities with all five Aboriginal groups. The Proponent offered each group financial support to conduct traditional land use studies (only NunatuKavut Community Council took advantage of this offer) and support for reviewing key EA and regulatory documents. The Proponent was open to meeting with all groups to discuss issues and conducted its own historical research studies related to Aboriginal use of the area where information was not provided by the Aboriginal groups. Information collected by the Proponent was taken into account by the Agency when determining whether or not the Project may cause adverse effects on asserted Aboriginal rights and title.

Appendix D contains a summary of concerns raised by the Aboriginal groups during the environmental assessment process and the Proponent's and the Agency's responses.

Potential adverse impacts of the Project on potential Aboriginal rights

The Kami mine site is located within the asserted traditional territories of NunatuKavut Community Council, Innu Nation, Innu-takuaikan Uashat mak Mani-utenam, Nation Innue Matimekush-Lac John and the Naskapi Nation of Kawawachikamach. NunatuKavut Community Council undertook a land use study for the Kami Project and found that the Project overlapped with some areas where hunting, fishing and camping take place. Innu Nation indicated that the project will have an effect on their asserted Aboriginal right to hunt within the Project Development Area and that conclusion of an impacts and benefits agreement with the Proponent is required to provide adequate financial compensation for these impacts. Innu-takuaikan Uashat mak Mani-utenam has indicated that the Project will impact rights of their members related to use of trapline and beaver lot areas. While there is no evidence that members of either of these groups currently exercise rights in the Project Development Area or Local Study Area, they maintain that the area is a part of their territories in which they may exercise rights in the future. Several groups have indicated that this area of their traditional territory has not been used for the past fifty years due to development of large-scale mining in the area. The cumulative effects of the Project, given the historical context of industrial development in the area and a perceived erosion of Aboriginal and Treaty Rights over time, were of particular concern to some participants. The Agency did not receive information from Aboriginal groups that would substantiate a conclusion that the general availability of resources in the regional study area, which are traditionally used by Aboriginal people, would diminish as a result of the Project. Notably, alternative locations surrounding the mine site and terminal site would remain available for affected Aboriginal groups to carry out traditional activities.

The federal government has a legal duty to consult and, where appropriate, to accommodate Aboriginal peoples when its proposed conduct might adversely impact an established or potential Aboriginal or treaty right.

The Kami Terminal is within the asserted traditional territories of Innu-takuaikan Uashat mak Mani-utenam and Nation Innue Matimekush-Lac John. The construction and operation phases of the Kami Terminal will alter the existing landscape. However, the Kami Terminal area has been the site of ongoing industrial activity for several decades and is designated for large-scale development. Available information indicates that traditional land and resource use activities do not occur within the Kami Terminal site, nor are there any known sites of historical, cultural, or spiritual importance to Aboriginal communities.

The Proponent assessed cumulative effects in consideration that both the Kami mine site and Kami Terminal are located in areas that have experienced and continue to experience industrial activity and development. Measures proposed by the Proponent to avoid or reduce the potential effects of the Project on the environment and on Aboriginal groups will ensure that the Project does not significantly contribute to cumulative effects.

Proposed accommodation measures within the context of the environmental assessment

Mitigation developed to reduce impacts on VECs will minimize the impact on potential Aboriginal rights. Specific mitigation measures that will reduce the potential impacts of the Project on potential Aboriginal rights include fugitive dust suppression programs and dust control at the crusher buildings and all conveyor transfer points, to minimize adverse effects on air quality. Key mitigation measures to protect water resources include water harvesting and re-use, erosion and sedimentation controls, management of ammonia contamination (from blasting), treatment of all mine effluent to comply with the *Metal Mining Effluent Regulations* (MMER) and progressive site rehabilitation. Minimising the Project's footprint through engineering design and implementing fishing and hunting bans for employees will also minimise impacts on Aboriginal use.

The Proponent will continue to engage Aboriginal groups and communities to monitor the effects of the Project on Aboriginal land and resource use. The Proponent will consult Aboriginal groups on mitigation or avoidance measures if monitoring results indicate that the Project is likely to adversely affect Aboriginal interests or traditional land and resource use. Such mitigation or avoidance measures may include additional environmental monitoring, reclamation and closure plans, emergency and spill response plans, land and cultural protection measures, and the negotiation of benefits agreements.

Issues to be addressed in the regulatory approval phase

The regulatory approval phase of the Project consists of federal authorizations, approvals or permits related to areas of federal jurisdiction (i.e., effects on fish and fish habitat and navigation). The federal Crown will consult Aboriginal groups as appropriate prior to taking regulatory decisions. The decision to undertake additional consultation will take into consideration:

- the consultation record resulting from the EA and
- mitigation, compensation, and accommodation measures proposed to address potential outstanding concerns not addressed through the EA.

The role of the federal Crown Consultation Coordinator will be transferred from the Agency to Transport Canada upon completion of the EA. Transport Canada representatives will be available to discuss regulatory matters with Aboriginal groups. At this time no issues have been identified that would require additional consultation during the regulatory phase.

6. Existing Environment

A number of regulatory issues fall under provincial jurisdiction and, where appropriate, the province may issue relevant permits and approvals, and consider the imposition of appropriate terms and conditions upon release or during the post-EA permitting phase.

Kami Mine Site

The mine site is located in western Labrador, within the Labrador City and Wabush Municipal Planning Areas and the Hyron Regional Economic Zone. Mineral exploration, mining and associated industrial activities have been ongoing in the region since the late 1950s. The Kami property is flanked by several operating iron ore mines (IOC, Wabush Mines and ArcelorMittal).

The project area is located immediately southwest of the Towns of Wabush and Labrador City and the existing mining and mineral processing operations in Labrador West, and northeast of the Town of Fermont, Québec. The Aboriginal community closest to the project site is in Schefferville, located approximately 200 km to the north. However, the Project is located in an area which five Aboriginal groups assert as their traditional territory (Section 5).

The existing (baseline) condition of the environment within and near the project area reflects the effects of other past and on-going human activities in the region. Regional ambient air quality monitoring indicates that the average air quality in the region is good overall, with SO_2 and NO_2 ambient concentrations being below applicable standards and with total suspended particulate levels occasionally exceeding guidelines. Baseline water quality monitoring data similarly shows that existing surface water quality is good, with several parameters occasionally slightly exceeding ecological water quality guidelines.

The biophysical environment in which the Project lies is the Mid Subarctic Forest (Michikamau) Ecoregion – ED432 Ecodistrict of western Labrador. Habitat types common to western Labrador are found throughout the project area. These habitat types support a wide range of wildlife species that are common throughout the region.

Species at risk and species of conservation concern that have been observed in the project area include: the Olive-sided Flycatcher (Threatened) and the Rusty Blackbird (species of special concern). There have been no observations of any plants listed by the federal *Species at Risk Act* within the project area; however, eleven plant species of conservation concern (as listed by the Atlantic Canada Conservation Data Centre) were recorded within the Local Study Area. No caribou were observed in proximity to the project area.

Wetlands cover a sizable proportion of the natural landscape of Labrador and are common throughout the project area. Both Labrador City and Wabush have signed Municipal Wetland Stewardship Agreements with the provincial government and Eastern Habitat Joint Venture, which require the incorporation of wetland conservation in the scope of municipal planning. Each municipality has designated wetland areas within its municipal planning areas as Habitat Management Units (Town of Labrador City and Eastern Joint Habitat Venture 2010; Town of Wabush and Eastern Habitat Joint Venture 2010). The Project ore body would intersect the Pike Lake South Management Unit (PLSMU), designated under the town of Labrador City's Municipal Wetland Stewardship Agreement. However, no unique habitat features have been identified within the management unit or elsewhere within the project area.

Fish species and habitat common to western Labrador are present within the project area. Recreational fisheries are conducted throughout

the region and in close proximity to the project area. No recreational fishery was identified within the footprint of the project. There were no observations of any federally-listed fish species at risk within the project area, and no commercial or Aboriginal fisheries have been identified in or near the project area.

Current land and resource use near the project area includes municipal planning, industrial activities, cabin use, hunting and trapping, angling, wood harvesting, berry picking, snowmobiling and boating. Recreational land use in this area is extensive due to its close proximity to the towns of Labrador City, Wabush and Fermont. A number of cabins have been identified within the project area. Based on the information available, there is no evidence of current use of lands and resources for traditional purposes by Aboriginal persons in or immediately adjacent to the project area. Additionally, no historical and cultural resources have been identified in the project area.

Kami Terminal

The Kami Terminal lies within the Municipality of Sept-Îles on Port Authority of Sept-Îles Lands adjacent to similar load-out operating facilities (Pointe-Noire Terminal). The Pointe-Noire Terminal has been in operation for many decades and contains several industrial and port facilities similar to the Kami Terminal. There are two Aboriginal reserves in the vicinity of the Kami Terminal site: Uashat and Maliotenam, which are located approximately 10 and 26 km, respectively, to the east of the Kami Terminal site. The Kami Terminal is located within the asserted traditional territory of two Aboriginal groups: Innu-takuaikan Uashat mak Mani-utenam and Nation Innue Matimekush-Lac John (Section 5).

Although the wide range of habitats in the Côte-Nord region of Quebec makes it attractive to a variety of bird and wildlife species, the Kami Terminal site is in an industrialized area with few natural habitats. Remaining habitat at the Kami Terminal site consists mainly of patches of young mixed forest stands and mature coniferous stands. There is no freshwater fish habitat present within the Kami Terminal footprint. There are several seabirds colonies in a 5 to 10 km radius from the Kami Terminal site.

No species at risk or species of conservation concern have been observed during field surveys at the proposed terminal site. In addition, no flora species with special status are reported for the Port site area according to the *Centre de données sur le patrimoine naturel du Québec* database (personal communication, MDDEP, July 2011).

The closest areas used for residential and recreational activities are approximately 1.5 km from the Kami Terminal site, in the low density Val Sainte-Marguerite area. Based on the information available, there is no evidence of current use of lands and resources specifically for traditional purposes by Aboriginal persons in the Kami Terminal area. No historical and cultural resources have been identified in the Kami Terminal area.

7. Environmental Effects Assessment

7.1 Approach

The Agency, in collaboration with federal departments, identified and assessed the potential adverse environmental impacts of the Project on the basis of:

- the proponent's EIS and associated information (e.g., Addendum to the EIS, commitments to implement mitigation measures),
- information obtained during public and Aboriginal consultations, and
- comments from federal and provincial government departments.

Mitigation measures were identified to reduce the potential adverse environmental effects. Many of these measures have been integrated into the project design or operational plans. The environmental effects remaining after the implementation of mitigation measures—the residual effects—were evaluated in accordance with the *Reference Guide: Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects*[2]. A follow-up program will be implemented to verify environmental effects predictions and the effectiveness of mitigation measures (Section 8, Appendix C).

The following subsections provide a summary of potential project-related environmental effects, mitigation and residual effects for key VECs. A summary of the VECs, environmental effects, mitigation, and conclusions regarding the significance of the environmental effects is tabled in Appendices A and B. Follow-up is outlined in Appendix C.

A follow-up program will be implemented to verify environmental effects predictions and the effectiveness of mitigation measures.

7.2 Atmospheric Environment

Atmospheric environment includes air quality, greenhouse gas (GHG) emissions and the acoustic and visual environments near the Project.

Construction activities will cause the emission of air contaminants including particulate matter (dust) and combustion gases through the combustion of fuel in construction equipment. The emissions of criteria air contaminants during project construction will be temporary in nature and are expected to be within regulatory objectives, standards and guidelines.

Construction and operation activities will produce noise. The communities surrounding both the mine site (i.e., Fermont, Labrador City, Wabush) and the Kami Terminal (i.e., Val Sainte-Marguerite and Sept-Îles) are unlikely

2 Federal Environmental Assessment Review Office. 1994. Reference Guide: Determining Whether a Project is Likely to Cause Significant Adverse Environmental Effects. Available at: **http://www.ceaa.gc.ca/default.asp?lang=En&n=D213D286-1&offset=&toc=hide**

to experience noise resulting from civil works. The cabins on Long Lake and Riordan Lake are all within five kilometres of the mine site, some being within a few hundred meters, and will experience some elevated noise levels.

Vibration related to drilling, blasting, and operation of heavy equipment was analyzed. Due to the distance from the project site to the nearest receptors, vibration will generally not be noticeable.

Light emissions during project operation and construction could affect ambient light and the night sky.

Mitigation

Mitigation measures will include progressive rehabilitation, use of dust suppressants and collector systems, use of covered conveyors as required, development of a blasting plan, and comprehensive equipment maintenance and monitoring programs. Rail car dumping will occur in a closed building at the Kami Terminal. Proper light installation and use of the local landscape as a shield will minimize the effects of light emissions. Further mitigation is described in Appendix B.

Government, Public and Aboriginal Comments

Provincial and federal government departments reviewed and submitted comments and information requests related to the proponent's assessment of effects on the atmospheric environment. A variety of questions and clarifications about baseline information and modeling techniques for air quality and emissions were directed to the Proponent. These included questions on the proponent's methods, inputs to, assumptions for, and results of the analyses conducted for the EIS. The Proponent was directed to consider the baseline levels and potential effects associated with non-criteria air contaminants (e.g., metals, volatile organic compounds, polycyclic aromatic hydrocarbons) and provide further information on GHG emissions. Comments were also submitted related to the proponent's operational mitigation and monitoring strategies for air quality. Environment Canada expressed interest in reviewing monitoring and follow-up plans before they are implemented.

Health Canada submitted comments dealing with effects of the Project on noise levels, including the proponent's analysis of construction noise levels, noise modeling, and associated mitigation. Health Canada also requested additional information on the potential effects of noise from the mine on nearby cabin owners and the proposed mitigation measures to reduce those effects. The Proponent provided detailed noise modeling concluding that the project-related air, vibration and noise emissions will not have significant effects on human health or quality of life in adjacent Labrador and Québec communities, including Fermont. The Proponent indicated that it will comply with relevant provincial and regulations and applicable guidelines during all project phases.

The proponent's analysis confirmed that approximately 20 cabins are predicted to experience noise levels which would result in an increase of the Health Canada metric of percent highly annoyed by greater than 6.5%[3]. The Proponent stated that that it will undertake noise monitoring along the perimeter of the Project during construction and on occasion during

3 The percentage highly annoyed can be thought of as an aggregate indicator of assorted noise effects, present to varying degrees, that are creating a negative effect on a community, and that may not be measurable when considered as separate negative effects. High annoyance with noise is currently a reliable and widely accepted indicator of human health effects due to environmental noise. Based on Health Canada research, a 6.5-percent increase in the percentage of people highly annoyed corresponds to a severe noise impact and mitigation is advised.

In response to concerns raised by the Town of Fermont and community members, the Proponent relocated its proposed Rose South Waste Rock Disposal Area.

operation based on public complaints. A Noise Management Plan is to be developed, which will include details for monitoring, and outline a noise complaint follow-up and response procedure. In addition, the Proponent committed to additional mitigation including more stringent equipment maintenance, vehicle speed restrictions, advanced railroad track design and building insulation enhancements. As the detailed mine plan evolves, optimization of material handling, geotechnical considerations, and design improvements will be introduced to minimize this effect. The Proponent states that it has concluded negotiations to purchase the majority of cabins which would potentially be affected by project infrastructure and activities. Negotiations to purchase the remaining potentially affected cabin are ongoing. A Blasting Plan will also be developed that will be designed for compliance with applicable regulations with respect to noise and vibration.

Other issues of concern related to the atmospheric environment raised by stakeholders related to dust and dust control measures. Nearby residents, organizations, and Aboriginal groups were principally concerned with how the potential effects on the atmospheric environment may cause health problems and affect their overall quality of life. The EA included air quality modeling based on anticipated project-related air emissions and with consideration of site-specific atmospheric conditions and other aspects of the existing biophysical and socio-economic environments. Further air quality modeling data was provided by the Proponent during the assessment as more information on its planned activities and processes that have potential to generate dust emissions became available. Predicted project air emissions are not expected to exceed Newfoundland and Labrador or Québec Regulations. However, in response to concerns raised by the Town of Fermont and community members, the Proponent relocated its proposed Rose South Waste Rock Disposal Area to reduce the potential for aesthetic effects or other interactions with that community and its residents.

Health Canada raised concerns regarding the lack of information on metals concentrations in baseline ambient air and also in predicted future air emissions from the Project. It is recommended that metals in dusts be monitored prior to project construction to establish baseline/background metals concentrations in air, and also during project operations to evaluate any changes. These concentrations would be compared to applicable provincial ambient air quality criteria. In addition, Health Canada also advised that particle composition should be monitored during operation in order to verify the predictions in the EIS. In the event air quality exceeds applicable air criteria, Health Canada recommended that the Proponent implement additional mitigation including a formalized complaint-response process. Potential mitigation could also include work slow-downs or stoppages during times of elevated air contamination.

Agency Conclusions on Significance of the Residual Environmental Effects

The Agency concludes that the Project is not likely to cause significant adverse environmental effects on the atmospheric environment, when the implementation of mitigation is taken into account. Follow-up measures, including monitoring carbon dioxide emissions associated with blasting will be implemented. Furthermore dust composition monitoring (including metals screening) during construction and operation to confirm ambient concentrations of metals and dusts will be required. Additional air quality monitoring prior to project construction in order to establish background levels of metals and dusts will also be necessary (Appendix C).

7.3 Landforms, Soils, Snow and Ice

This VEC includes consideration of landforms, terrain stability, soil quality and quantity, snow and ice as well as the potential for acid rock drainage (ARD) and metal leaching (ML).

Mine Site

Construction activities (e.g., construction of road, mining facilities, rail line) will alter existing landforms and/or drainage regimes within the mining and processing areas. Although landforms will be altered, it is not anticipated that any landforms will be lost entirely given the relatively gently undulating, rolling and inclined nature of the terrain, coupled with overburden of up to 51 m in depth.

Terrain stability is an issue for most mining projects. However, no landslides or any evidence of slow mass movement have been observed in the surficial geology for the Project, based on examination of existing aerial photographs.

Site preparation and construction activities have the potential to change soil quality and quantity. For example, airborne deposition of dust associated with construction can affect soil quality. However, at the Kami Mine Site, the parent geologic material contains iron and therefore the deposition of dust composed of iron particulates will not adversely affect soil quality on upland soils.

Construction of the mine site and associated infrastructure has the potential to affect snow distribution and drifting, as a result of changes in the micro-topography that influence wind direction and speed.

Certain waste rock units exhibit the potential for production of ARD and ML, but related effects are not expected based on tests conducted and experience with other operations in the region. Testing done for the EA used accepted indirect measurement techniques. However, the Proponent has stated that it will base future characterization of the waste rock's acid-generating potential on direct measurement of total carbonate and sulphide content to confirm its predictions.

Kami Terminal

There are no sensitive or valuable landforms within the Kami Terminal site. Most of the soils within the Kami Terminal area are already disturbed by previous or ongoing industrial activities. No natural undisturbed soils are present in the area other than a hillside where part of the concentrate unloading, stacking, storage and reclaiming facility will be located, and that will be levelled using specialized blasting techniques. No issues were identified related to snow and ice in the Kami Terminal area. Considering the absence of valuable landforms or effects related to snow and ice, no assessment of this VEC was conducted for the Kami Terminal.

Mitigation

Implementation of standard mitigation such as maintenance of natural drainage patterns will effectively eliminate the potential for shallow

landslides. Erosion control measures will be implemented during construction to minimize effects on soils. Changes in soil quantity will be minimized through the stockpiling of peat and topsoil. Stockpiled soil will be used to reclaim the site progressively and at the time of mine closure. Treatment of run-off prior to release to the receiving environment will minimize effects on soil quality.

Effects due to snow deposition and drifting will be mitigated through the use of snow fences to control snow drifting in critical areas. The Proponent will develop a blasting plan, and blasting will be managed so that vibrations will not affect ice cover of nearby lakes.

The Proponent will operate overburden, waste rock and tailings storage facilities and programs to monitor for ARD as a precautionary measure. Detailed engineering designs will incorporate the ability to add ARD treatment in the future, if necessary. The Proponent has identified additional mitigation measures to control the potential for ARD, including mixing waste rock units to neutralize acid generating potential.

Government, Public and Aboriginal Comments

Several government departments including Natural Resources Canada submitted comments and concerns related to ARD and ML after reviewing the EIS. These included requests for additional detail and elaboration on the potential for ARD and ML and the proponent's proposed monitoring and management measures. The Proponent provided test results from static and kinetic testing for ARD and also responded that based on its knowledge that there have been no ARD issues in the over-60-year history of iron ore mining in Labrador West. In addition, based on the testing and analysis completed by the Proponent to date, it is considered very unlikely that serious ARD issues will occur at the Kami facility. The Proponent stated that it will be operating overburden, waste rock and tailings storage facilities and programs to monitor for ARD, and detailed engineering designs will incorporate the ability to add ARD treatment in the future if this becomes an issue. Long-term ARD potential will be evaluated via kinetic tests which have already commenced. Additional information on previous and planned ARD related analysis and management was also provided. Overall, Natural Resources Canada was satisfied with the responses provided by the Proponent.

Public and Aboriginal participants expressed concern about reclamation and rehabilitation, including the vagueness of information in the EIS. They also raised concerns about possible challenges to reclamation of a mine in this environment. The Proponent responded that its Rehabilitation and Closure Plan will outline measures to return the site to one that can be safely accessed and supports flora and fauna species native to the area. It stated that information on rehabilitation of similar mines in the region is limited because there have been no mine closures in this area. Nonetheless, the Proponent provided additional information on the scope, nature, methods and objectives of future rehabilitation and closure activities. The Proponent intends to consult with the other mining operations in the area with respect to their experiences (successes and failures) regarding any implemented rehabilitation approaches and techniques during the various phases of their on-going projects and its associated activities. It will develop the measures required to return the site to a condition that can be safely accessed and which will support flora and fauna species native to the area pre-mine development, pursuant to the requirements of the Newfoundland and Labrador Mining Act and other associated guidelines and standards. Approaches for progressive and final rehabilitation be further assessed during the detailed design stage and implementation of the Project.

Agency Conclusions on the Significance of the Residual Environmental Effects

The Agency concludes that the Project is not likely to cause significant adverse environmental effects on landforms, soil, snow and ice when the implementation of mitigation is taken into account. Monitoring and follow-up will be undertaken for this VEC including further characterization of ARD potential and monitoring of erosion control measures (Appendix C).

7.4 Water Resources

This VEC includes the quality and quantity of both groundwater resources and surface water resources. Both are important components of the hydrologic cycle and an effect on one can influence the other. Water resources may be affected during the construction, operation and decommissioning phases of the Project.

Mine Site

The primary direct project-related effects on groundwater resources would include large scale pumping and dewatering of the open pit mine during operation and localized changes to groundwater quality in the vicinity of plant facilities, petroleum storage tanks, tailings impoundment and waste rock areas. Based on the assessment of the area, Gleason Lake provides a hydraulic boundary condition that will maintain groundwater levels beyond it. In addition surface water recharge to Gleason Lake is expected to follow its current drainage route to Daviault Lake due to the topography of the area and sediment permeability.

Alterations to the land surface resulting from project facilities (e.g., open pit, TMF) and activities affecting surface water (e.g., water withdrawal, treated effluent discharge) will be the primary drivers of effects on surface water resources. Major alterations include dewatering of Rose Pond and the installation of an upstream dam and a water diversion pipeline around Rose Pit. Small water bodies located within the planned footprint of the TMF will be lost.

Surface water effects relate to potential changes in receiving water hydrology, water quality and sediment quality. Changes to flow and water quality relate to changes to the drainage, infiltration and groundwater discharge characteristics, water withdrawal and uses, and discharge of treated effluent to receiving waters.

Based on preliminary groundwater flow modeling, groundwater levels under the lakes around the perimeter of the open pit are predicted to be lowered due to pit dewatering, and may require mitigation if water levels in the lakes are observed to decline during operation. This includes Byrde Lake, Elfie Lake, Mid Lake and a portion of Pike Lake South. Groundwater levels under other lakes, located farther afield from the open pit were not predicted to decline.

Testing of geologic materials was conducted to assess the potential for ARD and ML in the waste rock units. Ore concentrate and tailings are considered non-acid generating with low ML potential based on the results of static tests.

Kami Terminal

Construction activities at the Kami Terminal will require a stream diversion and installation of watercourse crossings, which will change the local drainage pattern over a short distance. Geologic materials were tested to assess the potential for ARD and ML resulting from site preparation activities such as blasting. Test results indicate that ARD is unlikely at the Kami Terminal.

Mitigation

Local water quality and quantity will be protected by complying with all regulations and guidelines and by implementing best management practices

for spill prevention, dewatering, surface water management and drainage, material handling, erosion, and sediment control planning. The Proponent will develop an Environmental Protection Plan (EPP) and an Emergency and Spill Response Plan during the design phase of the Project describing in detail mitigation measures to be implemented.

Perimeter ditches will be constructed around the open pit and waste rock disposal areas at the mine site to collect and divert runoff. Groundwater levels between the open pit mine and identified groundwater users will be monitored throughout the life of the Project. Optimized water withdrawal and reuse, and restoration of water balance conditions and natural drainage patterns will further help mitigate adverse effects on surface water quality and quantity.

Slopes at the Kami Terminal will be stabilized and engineered to reduce erosion. The concentrate yard will be lined and run-off water will be collected and treated before release to protect water quality. Additional mitigation measures in relation to water resources are described in Appendix B.

Government, Public and Aboriginal Comments

The proponent's assessment of potential effects on water resources attracted comments dealing with a variety of issues, such as effects on water quality, water supply, groundwater, surface water, cumulative effects and effects from accidents and malfunctions.

Government reviewers requested additional detail and clarification regarding testing and statistical methods used in the assessment of effects on surface water quality and groundwater including further analysis of existing baseline conditions relative to applicable guidelines. The Proponent was also directed to further consider potential effects on drinking water supplies in the area and to provide detail and clarification of water quality monitoring during construction and operation.

Groundwater levels between the open pit mine and identified groundwater users will be monitored throughout the life of the Project.

In its comments on the EIS and amendments NRCan commented on uncertainty with respect to recharge and drawdown rates during mine excavation. NRCan recommended that additional studies and modelling be undertaken and that further pumping tests be undertaken once access is granted to the Wetland Habitat Management Unit under which pit is to be located. This testing is necessary to assess the role of geological features such as faults and fractures.

The Proponent provided further groundwater modelling during the EA review which supported its initial observations that only those lakes at the periphery of the pit would be impacted.

The Proponent also confirmed that it will conduct a large-diameter borehole pump test, and will use the data in ongoing modeling to improve its understanding of the groundwater regime and its links to nearby surface waters. The results will be shared with regulatory agencies. The Proponent will adopt an adaptive management approach to this issue. It will monitor water levels of surrounding lakes to test its predictions concerning potential drawdown effects of the pit dewatering and, if unpredicted drawdown occurs, mitigation strategies will be implemented to address the effects. These measures include grouting of significant water-bearing fractures

and management frameworks that eliminate or reduce the effects through lake water supply augmentation by diverting a portion of pit dewater volume to the lake(s) in question.

Environment Canada submitted comments related to the effects on water resources arising from accidents and malfunctions specifically related to dyke break scenarios, fuel spills at the fuelling and fuel transfer facilities and emergency containment and recovery measures specific to preferential paths towards receiving waters and drainage features. Additional detail about the proponent's emergency procedures and contingency and mitigation plans was requested.

The Proponent responded that the proposed TMF will be designed, constructed and operated in accordance with applicable standards and regulatory approvals. Hazard consequence assessment of the TMF will be conducted during the detailed design stage when adequate information is available. The Canadian Dam Association dam safety guidelines will be followed to address emergency spillway discharges, tailings dam breach and polishing pond dam breach. Each potential incident will be evaluated to establish appropriate preventive, mitigative or remedial measures. The emergency spillway will be located such that the flow path will be through the existing watercourse channel to Long Lake. The emergency spillway flow path to the tailings dam will be via the polishing pond and will reduce the suspended solids concentration leaving from the polishing pond. Water sampling will be carried out during any emergency discharge to measure the total suspended solid concentration entering downstream waterbodies.

The fuel tank farm is proposed to be located downstream of the tailings dam and east of the small tributary of Long Lake. The preferential spill flow paths are overland towards the small tributary and then into Long Lake via the small tributary in the case of secondary containment breach. Further details on the emergency containment and recovery plans specific to the preferential flow path were provided by the Proponent.

The Proponent will develop a detailed Emergency and Spill Response Plan during the design phase of the Project. The potential for a fuel product transfer accident / malfunction at the mine site was assessed in the EIS. It will also be further addressed through the measures and procedures outlined in that Plan. Relevant federal and provincial regulatory guidance regarding fuelling and fuel transfer facility planning will be incorporated into the detailed design process to ensure that the design of fuel transfer facilities reduces the possibility of associated accidents and malfunctions.

Another potential accident scenario, to which Environment Canada addressed comments, relates to the potential for a fuel spill caused by a possible rail derailment and the consequences of such an event depending on where the event occurred along the track. Environment Canada requested that a specific emergency contingency plan be prepared for each identified sensitive area. The Proponent responded to this concern describing potentially sensitive areas along the proposed rail infrastructure as stream crossings, wetland crossings and any areas identified as supporting species at risk, as well as areas used by communities for recreation and resource use purposes. They confirmed that the detailed Emergency Response and Spill Response Plan will identify site-specific mitigation and response procedures, particularly in relation to these identified sensitive areas. Environment Canada was satisfied with this response.

Environment Canada also requested additional information on the proponent's water management plans, the Project's potential interaction with effluent from Wabush Mines and associated cumulative effects. Issues related to cumulative effects were also raised in relation to effects at the

Kami Terminal site, and its potential contribution to water and sediment quality issues in Sept-Îles Bay. The Proponent emphasized that the analysis of cumulative effects was a key consideration in its assessment. It provided information that the Project would discharge treated effluent through its TMF at Flora Lake, which would discharge to Wabush Lake. The effluent assimilative mixing zone boundary is defined as the point at which water quality re-attains baseline or Canadian Water Quality Guideline concentrations. The Proponent predicted that the mixing zone would be contained within the LSA and would not extend to the RSA. On this basis, it concluded that an effluent water quality cumulative effect was not anticipated. Environment Canada indicated that it was satisfied with the proponent's response.

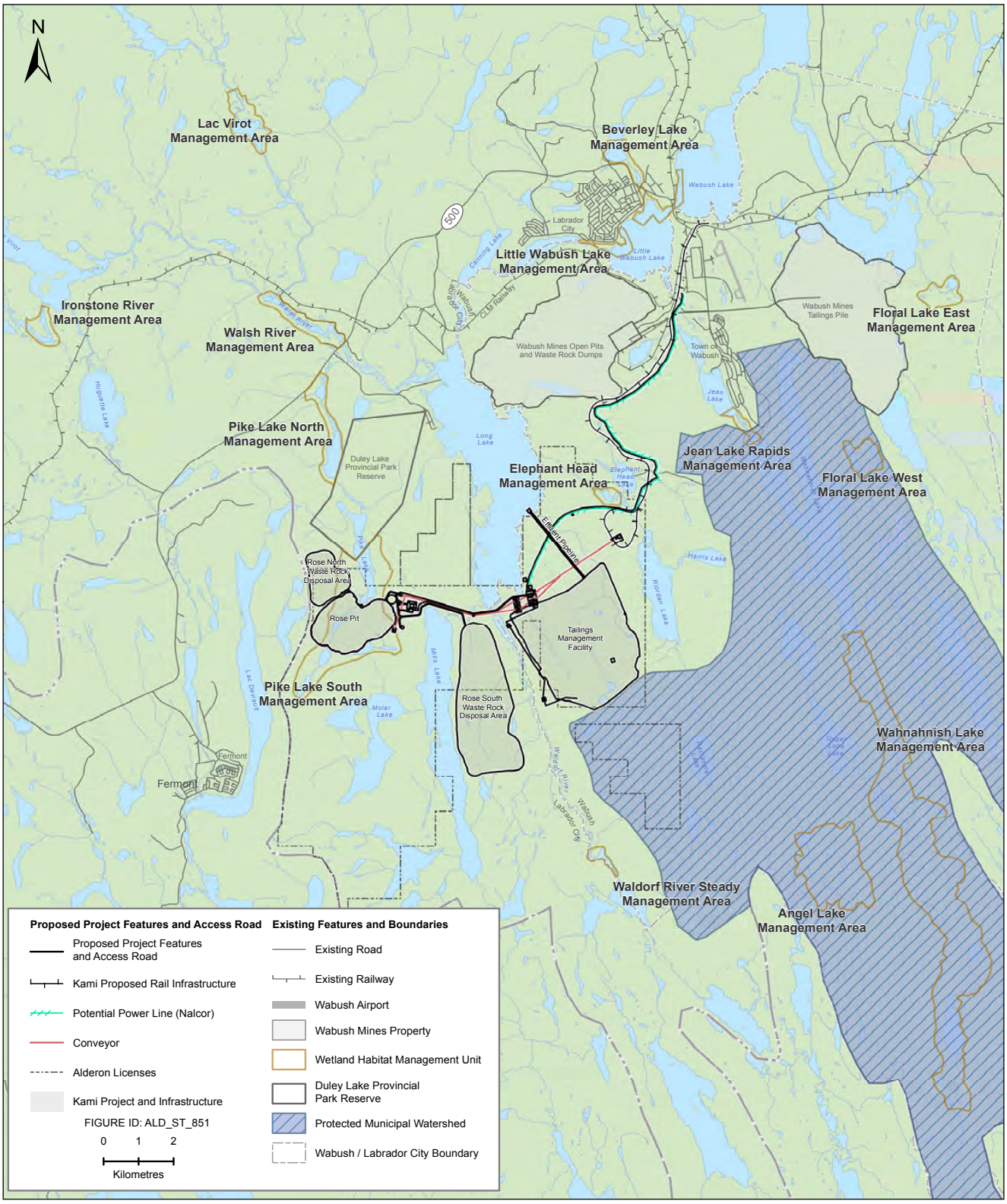
With respect to the terminal site, the Proponent will continue to work with local and regional planning and management authorities and consult and cooperate with other proponents in considering and addressing current and future development, as well as implement appropriate mitigation measures (Appendix B) to help ensure that the effects of the Project, and thus, its contribution to any such regional / cumulative effects, are minimized. Notably, during the operations and maintenance phase, effluents from the Kami Terminal will be collected and treated before their final discharge into Sept-Îles Bay. Effluent characteristics will comply with all relevant regulations and information on its final characteristics will be provided once detailed engineering including treatment process has been finalized. The Proponent will monitor water quality during construction in the two non-fish bearing streams located within the proposed terminal facility. Additional consideration of cumulative effects at the terminal site is included in Section 7.16.

Public and Aboriginal participants expressed concern about contamination of water bodies and the water supply, degradation of water quality, water management issues and cumulative effects on water resources. A specific concern was raised with respect to the Project's proximity to the Town of Fermont, and possible contamination of water supplies. The Proponent stated that Fermont is located several kilometres west of a major watershed divide and a large lake which would act as a boundary to any seepage. During normal operating conditions, all groundwater flow will be inward towards the open pit mine. Surface water from the development of the Rose Pit and Rose North Waste Rock Disposal area will not drain towards Fermont. The Proponent noted that surface water from the Rose Pit will be managed by pit dewatering, and external drainage routing toward the pit will be collected in pit perimeter drainage ditches. The Rose North Waste Rock Disposal Area will also be designed with perimeter ditches to divert non-contact external drainage around the area, as well as a sedimentation pond to provide increased sediment capture to waste rock area runoff. The proposed TMF is located within the Long Lake watershed, and in the case of a tailings dam breach, the flow path would be towards Long Lake with no discharge into the Wahnahnish Lake watershed, which is the location of the water supply for the town of Wabush.

There were also concerns about the rail line that was originally proposed to pass alongside the Protected Public Watershed Area (Wahnahnish Lake) for the Town of Wabush, and the potential for a train derailment to adversely affect the water supply. The Proponent addressed this by re-routing the rail line to avoid the water supply.

Public concerns were raised about potential overflows of the retention pond at the Kami Terminal. The Proponent responded that the total storage capacity of the retention pond is currently planned to be designed for a 1-in-100-year rain event. In the unlikely scenario of a complete accidental breach of the pond, this amount of storm water would be released in Sept-Îles Bay. Relative to the overall size of the Bay, this is not considered to be a significant amount of

Figure 7-1: Wetland Stewardship Habitat Management Units



Source: Alderon

discharge. Measures to avoid such an event, as well as to respond to it and its potential effects, will be incorporated into project engineering design and planning. Additionally, this scenario will be contemplated when the Proponent develops its detailed emergency response plan prior to construction.

Agency Conclusions on the Significance of the Residual Environmental Effects

The Agency concludes that the Project is not likely to cause significant adverse environmental effects on water resources when the implementation of mitigation is taken into account. Follow-up measures will be implemented related to potential effects on water resources, such as monitoring groundwater and the discharge from the storm water retention pond. Additional groundwater data will be collected both prior to (e.g., pumping tests), and during operation of the open pit mine. A more detailed groundwater flow model will be prepared based on additional field data collected during the detailed design phase of mine development. Further follow-up measures are described in Appendix C.

7.5 Wetlands

Wetlands are characterized as lands having water at or near the ground surface and include bogs, fens, marshes, swamps, and shallow water wetlands. Wetlands were not identified at the Kami Terminal site at the Pointe-Noire Terminal. However, wetlands are common throughout the RSA and LSA of the mine site in Labrador; fens and marshes are the most abundant wetland types in this area. In total, the Project is predicted to adversely affect approximately 572 ha of wetlands and associated wetland function, resulting in the permanent loss of approximately 526 ha of wetland and temporary alterations or disturbance to 46 ha. Although the Project has been designed to avoid impacts on Wetland Management Units, wherever possible; the ore body would intersect the Pike Lake South Management Unit (PLSMU), designated under the town of Labrador City's Municipal Wetland Stewardship Agreement (Figure 7-1).

Less than six percent of the 8,918 ha of wetlands identified within the Regional Study Area will be lost.

The Proponent states that the effects of the Project on wetland quality and quantity will occur primarily during the construction phase. Site preparation (including clearing, excavation, material haulage, grading, and removal of overburden and stockpiling) will have the largest effect on wetland quality and quantity. Construction of access roads, railways, watercourse crossings, site buildings and other associated infrastructure may also contribute to the loss or alteration of wetlands. Notably, no wetland types will be lost completely as a result of project activities. The Proponent predicted that project effects on wetland function are expected to be of minimal consequence. Less than six percent of the 8,918 ha of wetlands identified within the RSA will be lost. Adverse effects on wetlands in the area of Lac Daviault, Fermont and beyond are not anticipated.

Mitigation

Effects on wetlands will be avoided or minimized through effective project planning, design and the application of known and proven mitigation measures, such as erosion and sedimentation control. In addition to measures described in Appendix B, additional mitigation and follow-up

will be described in a Wetland Mitigation and Monitoring Plan to be developed in consultation with Environment Canada, Newfoundland and Labrador, participating municipalities and other stakeholders. A Wetland Compensation and Rehabilitation Strategy will be developed in conjunction the Wetland Mitigation and Monitoring plan.

The Proponent has stated that in-situ reclamation of affected wetlands at the mine site would not be possible or practical; however, it will participate in regional efforts aimed at wetland reclamation and rehabilitation to compensate for those wetlands that would be permanently altered. In addition, it will evaluate options to coordinate its activities with other mine operators (e.g., Iron Ore Company of Canada, Cliffs) in the region so that research into wetland reclamation / rehabilitation is initiated and supported.

The Proponent has realigned the originally-proposed rail route to avoid the Jean Lake Rapids Management Unit, Elephant Head Management Unit and the protected watershed area for the Town of Wabush. As a result, no adverse effects on these areas are predicted (Table 7-1). In relation to impacts to the PLSMU, the Proponent indicated that it is negotiating a Corporate Stewardship Agreement with the Town of Labrador City. The Proponent has proposed community conservation initiatives to offset the Project's effects on the PLSMU. The Proponent has also undertaken a constraints mapping exercise and provided resulting information to the Town of Labrador City to assist it in identifying potential wetland locations to serve as a Replacement Protected Area for the PLSMU.

Government, Public and Aboriginal Comments

Environment Canada provided information on the applicability of the *Federal Policy on Wetland Conservation* and its consideration in project planning and implementation. Alderon recognized the hierarchy of mitigation options available for wetlands, commencing with avoidance of adverse effects, minimization of unavoidable effects, and finally compensation for residual effects that cannot be minimized. The Proponent reiterated its commitment to develop a Wetland Mitigation and Monitoring Plan, which would incorporate this hierarchical progression of mitigation alternatives, where feasible. Environment Canada recommended that identification of wetland restoration activities be discussed as part of the Wetland Mitigation and Monitoring Plan. The Proponent has agreed to this suggestion.

Both government and non-government reviewers raised concerns about potential effects on wetland management units, including the PLSMU, and proposed mitigation measures. Environment Canada commented on the consideration of alternative routes that would avoid wetlands. The Proponent provided additional detail on the potential effects on wetland management areas and associated mitigation measures. It has also clarified

Table 7-1: Wetland and Watershed Management Areas Located Near the Mine Site

Wetland / Watershed Management Area	Approximate Area Affected (km^2)	Mitigation
Elephant Head Management Unit	0	No impact—avoided through realignment of rail route.
Jean Lake Rapids Management Unit	0	No impact—avoided through realignment of rail route.
Pike Lake South Management Unit (PLSMU)	5	Negotiate corporate stewardship agreement with the Town of Labrador City. Community conservation initiatives are proposed to offset the Project's effects on the PLSMU.
Town of Wabush's protected watershed area	0	No impact—avoided through realignment of rail route.

that the rail line has been rerouted to avoid the Jean Lake Rapids Management Unit, Elephant Head Management Unit and the protected watershed area for the Town of Wabush.

Agency Conclusions on the Significance of the Residual Environmental Effects

The Agency concludes that the Project is not likely to cause significant adverse environmental effects on wetlands when the implementation of mitigation is taken into account. Follow-up measures for wetlands include monitoring to confirm that wetland mitigation measures are appropriately implemented, participation in regional efforts aimed at wetland reclamation and rehabilitation to compensate for those wetlands that will be permanently altered.

7.6 Freshwater Fish, Fish Habitat and Fisheries

This VEC includes the populations and associated habitats for all freshwater fish species that may or will be affected by the Project. Fish include all species at any life stage, while fish habitat is defined as all productive and migratory fish habitat areas. Productive fish habitat includes all areas that provide an important function in sustaining the life processes of fish including spawning grounds, nurseries, rearing areas, foraging areas and migration corridors. Fisheries are defined as the commercial, Aboriginal, and recreational fisheries. There is no habitat that supports freshwater fish populations or potential fisheries at the Kami Terminal; therefore, assessment of the VEC at the terminal was not necessary.

The Project will interact with freshwater fish, fish habitat and fisheries at the mine site where there is a change in fish habitat, including: alteration or removal of existing fish habitat, change in water quality or sediment quality, change in water flow rates and potential barriers to fish passage.

Effects on fish and fish habitat are anticipated during the construction phase of the Project at the proposed open pit and associated waste rock disposal areas and at the TMF. Water bodies, including Waldorf River, will be crossed by site access roads and the rail line. Effects on fish habitat will consist of alterations and losses from site preparation and construction activities.

Fish health and mortality is not likely to be affected, with the potential minor exception of limited injury and loss associated with fish relocation prior to dewatering ponds or streams. Habitat protection and effluent quality measures will minimize adverse effects on fish health.

The removal of fish habitat during construction will result in loss of opportunity for recreational fishing at the open pit site. Fishing occurs at other locations in the LSA and beyond.

Mitigation

Measures to mitigate potential impacts on fish, fish habitat and fisheries will include: control of total suspended solids through surface water management and settling ponds, treating mine site waters for contaminants to meet regulatory standards, dust suppression, providing adequate surface water and baseline flows, correctly sizing and installing culverts, minimizing riparian disturbance and progressive rehabilitation. A project-specific EPP will be developed that will describe mitigation measures in detail.

The issuance of an authorization under the *Fisheries Act* requires the Proponent to develop an acceptable fish habitat compensation plan for the mine site to offset the permanent destruction or alteration of fish, or fish habitat that supports fisheries.

Additional mitigation measures in relation to fish and fish habitat and contained in Appendix B.

Government, Public and Aboriginal Comments

DFO raised concerns about lack of detailed information on how the Proponent will offset losses to fish and fish habitat that may occur as a result of this project. In its response to DFO, the Proponent acknowledged the need to develop a Fish Habitat Compensation Plan, should a subsection 35(2) *Fisheries Act* Authorization be required. As per DFO guidance, information was provided that described the existing fish habitat that has the potential to be impacted by project components and activities. A draft Freshwater Fish Habitat Compensation Plan to offset the loss of productive fish habitat in small ponds and streams within the Project footprint has been provided to DFO. The options for fish habitat compensation presented by the Proponent include the enhancement of spawning and rearing areas, in Tamarack Brook and Pike Lake outflow, to increase fish production and improve habitat that support recreational fisheries in the area.

DFO identified concerns about possible impacts from the Project on water quality that could impact active fish habitat compensation sites within the Beaver Bay and Area 2 (Southern end of Wabush Lake) areas, which are under the responsibility of the Iron Ore Company of Canada. Both of these sites are approximately 23 km from the nearest effluent discharge point of the Kami Mine. The Proponent reemphasized that its analysis on impacts to water quality indicates that there is unlikely to be any significant residual environmental effects related to water quality from the Project at this location.

Furthermore, the Proponent will be required to undertake Environmental Effect Monitoring (EEM) and compliance monitoring of effluents for the Project under the *Metal Mining Effluent Regulations* (MMER) and provincial regulations to confirm all discharges into Long Lake are within acceptable limits. This sampling will provide information on the ongoing effectiveness of the TMF and treatment systems and will allow further mitigations, if required, to be developed.

The design of the various identified watercourse crossings associated with the Project's access road and rail line components, including any associated stream alteration requirements were also raised by DFO. DFO requested further information on the type of structure to be utilized at each crossing (i.e., culverts, clear span bridge, etc.), mitigations that will be employed to minimize impacts to fish and fish habitat during construction of the crossings, and the proposed timing of the construction of the crossings. Additional information was provided and DFO determined that the construction of the watercourse crossings would not result in impacts to fish and fish habitat with implementation of appropriate mitigation measures (i.e. appropriate sizing and erosion sedimentation control).

DFO and Environment Canada as well as a number of other stakeholders raised concerns regarding red water from Project-related effluent and the potential effects of iron on fish health. Red water is a tailings effluent condition that is often associated with iron ore mining and processing. Iron precipitation and staining processes resulting from tailings coming in contact with water cause a red discoloration in receiving water. There are no regulatory specifications related to the colour of effluent discharged to the receiving environment, and the main concern with red water is primarily aesthetic. However, a mechanical water treatment using a coagulation/settling system (to remove any red water) is planned for any surface water that may be in contact with the iron ore concentrate or the tailings prior to release into nearby waterbodies. No associated environmental effects (including on fish health) are anticipated.

Health Canada sought clarification of the fish sampling undertaken for the EA and requested baseline country foods sampling, including fish. Samples of fish in Long Lake collected as part

of the baseline country foods evaluation that commenced in summer 2013 will be used in order to monitor potential future impact from the Project on country food.

Issues arising during Aboriginal, public and stakeholder engagement included loss or contamination of fish habitat, the decline in fish populations or species, and cumulative effects on fish, fish habitat and fisheries. In response to concerns about cumulative effects on fish and fish habitat, the Proponent restated its commitment to habitat compensation. The Proponent believes that the process of authorization and compensation planning that will be undertaken for the Project, which will result in a no-net loss of fish habitat in the Regional Study Area (RSA), will prevent the activities of the Project from contributing further to any cumulative effect of the loss of fish habitat within the RSA.

Agency Conclusions on the Significance of the Residual Environmental Effects

The Agency concludes that the Project is not likely to cause significant adverse environmental effects on freshwater fish, fish habitat, and fisheries when the implementation of mitigation is taken into account. A follow-up program is planned for this VEC which in addition to regulatory compliance monitoring will include monitoring for potential impacts on sediment quality due to red water discharge and monitoring to ensure mitigation to protect fish and fish habitat is implemented and effective (i.e. erosion control, fish passage, minimum flows and water levels in nearby ponds).

7.7 Birds, Other Wildlife and Their Habitats and Protected Areas

This VEC includes migratory and non-migratory birds (such as waterfowl, raptors, shorebirds, wetland birds and other land birds), amphibians, small mammals, ungulates (such as sedentary or migratory caribou populations in the region, and moose), and furbearers (such as black bear, wolf, marten, red fox, beaver and otter). Protected areas (e.g., PLSMU, Duley Lake Park Reserve) are also considered because of the potential for interactions between these areas and project activities (Figure 7-1).

Activities associated with project construction, operation, maintenance, decommissioning and reclamation have the potential to affect this VEC. Site preparation and construction activities will result in the most important adverse effects of the Project through:

- changes in habitat (i.e., loss or alteration of habitat for wildlife species),
- changes in wildlife distribution and movement (i.e., abundance and distribution of wildlife species and sensory disturbance),
- increased mortality risk (i.e., the direct loss of individual animals),
- changes in health (e.g., increased stress levels leading to the introduction of disease, effects of airborne contaminants and masking of key auditory signals), and
- loss of approximately 5 km^2 of the PLSMU, which has been designated as a wetland habitat management unit.

Operational and maintenance activities include noise and site lighting which can lead to mortality of migrating birds under certain conditions, such as fog or mist at night.

Potential effects to wildlife could occur at both the mine site and the Kami Terminal. Although, activities at the Kami Terminal would be within areas that are mostly already disturbed, there are several seabird colonies in a 5 to 10 km radius from the Kami Terminal site. Seabirds, Seaducks, and other waterfowls could use the coves where the terminal is located (Anse à Brochu and Anse à la Baleine) for feeding or resting. Some waterfowls like the Black duck might also nest

inland, close to the shoreline in Anse à Brochu. Blasting at the terminal could affect migratory birds if it were to occur during the migration or nesting season.

Mitigation

Effects on birds, other wildlife and their habitat, and protected areas will be mitigated through measures designed to limit the area disturbed by the Project and to control emissions and discharges.

To mitigate specific impacts to avifauna, the Proponent will restrict clearing to the period outside the breeding bird season. An Avifauna Management Plan will be developed to address potential effects on migratory birds and their nests, eggs and habitats (i.e., incidental take, blasting). In addition, an EPP outlining measures to mitigate impacts to birds and other wildlife will be developed.

Mitigation of impacts to the PLSMU includes the development of a Corporate Stewardship Agreement with the Town of Labrador City. As discussed in Section 7.5, the Proponent has undertaken a constraints mapping exercise and provided resulting information to Labrador City to assist it in identifying potential wetland locations, which perform the same regional protection functions as the PLSMU and could be incorporated into the town's municipal plan. A potential Replacement Protected Area could be designated by the municipality, recognising potential losses *in lieu* to the PLSMU.

The Proponent has committed to limit lighting to that required for safe operation, shield exterior lights from above and use motion sensors for security lighting. A no-hunting or harassment of wildlife policy will be in place on the project site. Additional mitigation of potential impacts to birds, other wildlife and their habitat and protected areas is listed in Appendix B.

Government, Public and Aboriginal Comments

Government departments, the public and Aboriginal groups submitted comments pertaining to wildlife species, wildlife habitat, parks and protected areas, mitigation measures, and cumulative effects. The Proponent was asked to further explain and justify the methods and techniques used to assess the effects of the Project on wildlife and its habitat. In response, the Proponent provided an explanation and justification of:

- the selected study area for wildlife, bird and amphibian survey methodologies;
- guidelines used to determine acceptable levels of species mortality;
- the ecological land classification used in support of the impact analysis; and
- the evaluation of residual effects on wildlife species and habitats.

Environment Canada expressed interest in reviewing the Environmental Protection Plan (EPP) and the avifauna management plan before these are finalized and implemented. The Proponent has agreed to this suggestion. In addition, the Proponent has agreed to Environment Canada's recommendation that the Avifauna Management Plan provide details on density of nesting pairs per species and per habitat type for Anse à Brochu and Anse à la Baleine (terminal).

Aboriginal groups and the public raised concerns related to impacts and cumulative effects of the project on caribou. In response, the Proponent provided information about caribou herds and their proximity to the Project. It stated that caribou and other wildlife surveys, and interviews with residents and stakeholders, indicate that caribou are not using the RSA. The recently documented distribution of the George River Caribou Herd (including calving and wintering areas and migratory routes between these) lies in an area, approximately 350 km northeast of the

Project (NLDEC 2010[4]). The closest boundary of the historic home range of the Lac Joseph caribou herd (listed as threatened under the *Species at Risk Act*) is approximately 50 km from the Project. Extensive aerial surveys in 2009 did not locate any caribou in the vicinity of the Project (Schmelzer 2011[5]). The ranges of the Red Wine Mountains herd and Mealy Mountains Herd are approximately 450 km and 780 km from the Project, respectively.

Comments were submitted expressing concern that the Project will result in the loss of potentially suitable caribou habitat and hinder ongoing recovery efforts. The Proponent responded that because the documented former range of the George River Caribou Herd does not overlap the proposed Kami Project, it is unlikely the effects of the Project would interact with the recovery of this herd. In addition, the Proponent examined potential caribou habitat in the RSA using the Ecological Land Classification. This work did not identify any primary caribou habitat within the RSA. However, it estimated that the RSA contains 242 km^2 of potential secondary habitat and 497 km^2 of potential tertiary caribou habitat. The total area of potential secondary and tertiary caribou habitat that could be lost as a result of the Project has been estimated as 21 km^2 (approximately three percent of the RSA).

Newfoundland and Labrador commented on the potential for impacts to the Duley Lake Provincial Park Reserve. The Proponent responded that this Reserve is located outside of the Project footprint. Although direct interaction between the Project and the Park is not expected, the Park's proximity to certain Project elements creates some potential for interactions due to noise, dust and other disturbances. Overall, the Proponent does not expect the Project to result in any effects on Duley Lake Provincial Park Reserve that would affect the ecological integrity or use of the area, or which would be in non-compliance with *Provincial Park Regulations*.

Newfoundland and Labrador commented on the proponent's commitment to manage the potential introduction and spread of invasive species on the sites and requested that an invasive species management plan be included as part of the EPP. The Proponent responded that details regarding the invasive species management or weed control program will be outlined in a project-specific EPP that will be developed in consultation with the appropriate regulatory authorities prior to starting construction.

Agency Conclusions on the Significance of the Residual Environmental Effects

The Agency concludes that the Project is not likely to cause significant adverse environmental effects on birds, other wildlife and their habitat, and protected areas, taking into account the implementation of mitigation measures. Follow-up will include targeted dusk surveys for Common Nighthawk (*Chordeiles minor*) and monitoring the Anse à Brochu and Anse à la Baleine to determine concentrations of waterfowl prior to and during blasting, if it is to occur during the migration season (terminal) (Appendix C).

4 Newfoundland and Labrador Department of Environment and Conservation (NLDEC). 2010. George River Caribou Management. Available online: **http://www.env.gov.nl.ca/env/wildlife/pdf/GRCH_2010_Consultations.pdf.**

5 Schmelzer, I. 2011. An estimate of population size and trend for the Lac Joseph Caribou Herd and the greater region of south central Labrador: Results of a large-scale aerial census conducted during March 2009. Department of Environment and Conservation, Government of Newfoundland and Labrador. Submitted January 2010 and revised May 2011. Available online: **http://www.iemr.org/pdfs/R_Caribou/Lac_Joseph_Caribou_Survey_2009_Schmelzer__May%20_9_2011_Revision.pdf.**

7.8 Species at Risk and Species of Conservation Concern

This VEC includes species of plants or animals, and their critical habitat, that are of provincial, national or international importance, particularly those that are protected under federal or provincial legislation. Two federally-listed species at risk under the *Species at Risk Act* have been observed in the project area: the Olive-sided Flycatcher (Threatened), and the Rusty Blackbird (species of special concern). Harlequin Duck was not observed during waterfowl surveys, but has been reported in the LSA in recent years. Eleven plant species of provincial conservation concern have been recorded in the LSA[6] and additional plant surveys in the PDA and RSA are currently being conducted.

Mine Site

Activities associated with project construction, operation and maintenance, decommissioning and reclamation could affect the abundance and distribution of rare or sensitive plant species. The Project will alter or eliminate approximately 22 km^2 of habitat (less than five percent of the area within the RSA). Effects on plant species of conservation concern will be limited to the construction phase where surface disturbance activities occur. Of the eleven plant species recorded within the LSA, all have also been recorded elsewhere in the RSA. It is noted that scarcity rankings related to certain species are very conservative due to lack of information on their distribution in Labrador. Thus, the Proponent is continuing to conduct field work to determine whether certain species are regionally common or abundant and will continue to engage with the province on this matter.

The preferred habitat types for Olive-sided Flycatcher are generally well represented in the greater landscape, accounting for approximately 21 percent of the RSA. Habitat for Rusty Blackbird is common in the RSA.

Kami Terminal

While some mammal and bird species, such as woodland caribou and Canada Warbler, have been reported in the region, habitat conditions in the Kami Terminal area are not suitable for these species. Approximately forty-five percent of the land at the Kami Terminal site was previously developed (22.6 ha). Site preparation for construction of the Kami Terminal will alter less than one percent of the land on the Marconi Peninsula, excluding previously developed areas. Therefore, there is unlikely to be any change in the amount of (potential) critical or important habitat of species at risk or species of conservation concern.

Mitigation

Effects on species at risk and species of conservation concern will be mitigated through the development of protection measures and environmental management techniques based on site-specific conditions. Plant species of conservation concern and their habitat will be avoided, to the extent feasible. If avoidance is not possible, plant species of conservation concern will be transplanted to alternate sites.

Other mitigation measures will include minimizing the project footprint and establishing buffers around wetlands and riparian areas. Additional mitigation is listed in Appendix B.

6 Beautiful sedge, Chestnut sedge, Green false hellebore, Hyssop-leap fleabane, Lesser panicled sedge, Northern valerian, Small yellow lady slipper, Spike mulhy, Tall northern green orchid, Whitestem pondweed and Yellow sedge.

Government, Public and Aboriginal Comments

Environment Canada stated that the Common Nighthawk (listed as threatened under the *Species at Risk Act*) has been observed in the Labrador City area and provided comments on the habitat preferences of this and other species at risk. The Proponent will conduct surveys in 2013 to assess the occurrence of Common Nighthawk in the LSA, the results of which will be integrated into its Avifauna Management Plan.

Newfoundland and Labrador noted that a number of bat species were recently identified through an emergency assessment by COSEWIC and should be considered in any development plans where they occur. The Proponent acknowledged that Little Brown Bat (*Myotis lucifugus*) and Northern Long-eared Bat (*Myotis septentrionalis*) are listed as Endangered by COSEWIC and will be included in the EPP. The Proponent will survey cabins and caves prior to construction. If bat colonies are identified, they will be handled according to guidelines set out by provincial regulators.

Newfoundland Labrador also provided corrections and clarifications related to the proponent's assessment methods, mitigation, and conclusions, including comments on the proposed EPP, the management of re-vegetation activities, ways to discourage nesting and the possible use of directional lighting.

Agency Conclusions on the Significance of the Residual Environmental Effects

The Agency concludes, taking into account the implementation of mitigation measures, that the Project is not likely to cause significant adverse environmental effects on species at risk and species of conservation concern. Follow-up will be conducted to confirm that mitigation measures are appropriately implemented (Appendix C).

7.9 Historical and Cultural Resources

Historical and cultural resources include sites, materials, landscapes or places of historical, archaeological, cultural, spiritual, paleontological, or architectural importance. Mapping work conducted by the Proponent indicated generally low potential for archaeological and cultural resources within the LSA of the mine and the Kami Terminal area. Other sources of information included:

- information gathered through informant interviews with land users
- information from communication with communities and local organizations.
- available information from by the Provincial Archaeology Office (PAO)
- information available from the environmental assessments of other projects in the RSA.

No sites of historical, archaeological, cultural, spiritual, paleontological, or architectural importance were identified within the LSA of the mine site or within the Kami Terminal area. Nonetheless, all project activities that could potentially disturb or cause the loss of historical and cultural resources were assessed. However, since sites of archaeological importance were not identified, the Proponent indicated that the Project will also not affect, or physically disturb, any known sites.

Mitigation

A project-specific EPP will be developed and implemented for the Project, which will outline procedures to be followed in the event that historic or cultural resources are discovered during project activities. The Proponent will also use the archaeological potential mapping completed for the LSA in order to plan further field investigations as project planning progresses. Mitigation measures will be implemented in accordance with applicable legislation.

Government, Public and Aboriginal Comments

Government reviewers requested various wording corrections and clarifications with respect to the Proponent's analysis. No concerns were raised by Aboriginal groups or the public.

Aboriginal groups requested further information with respect to mitigation measures proposed to prevent damage to historic and cultural resources in regions in the PDA known to have high potential for historic and cultural resources. The Proponent responded that in general the PDA has relatively low potential for historic and cultural resources. While some locations within the PDA have a higher potential than others, overall, the area does not have uniquely high potential zones. The Proponent will develop project-specific EPP which will outline procedures to follow in the event of an unexpected discovery and measures to address potential adverse effects. Orientation and training programs provided to construction personnel will include briefings related to historic and cultural resources. In the event that historic and cultural resources are identified, the Proponent will implement a Stage 1 Historic Resources Overview Assessment in accordance with provincial guidelines. No further activity would proceed until an appropriate approach is approved by the PAO.

In the event that archaeological materials are identified, mitigation of sites or materials could include site avoidance and protection or Systematic Data Recovery (i.e., excavation). Systematic Data Recovery involves the scientific and systematic investigation of unavoidable archaeological sites losses using accepted data recovery techniques.

If cultural / spiritual sites were to be identified, the site would avoided until appropriate means and measures of documentation, interpretation and long-term conservation and stabilization were established in consultation with Aboriginal groups, other stakeholders, and the PAO.

Agency Conclusions on the Significance of the Residual Environmental Effects

The Agency concludes that the Project is not likely to cause significant adverse environmental effects on historical and cultural resources when the implementation of mitigation is taken into account. Follow-up monitoring for compliance with measures outlined in the EPP related to historical and cultural resources will be undertaken.

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

To assess the effects of the Project on the current use of land and resources for traditional purposes by Aboriginal persons, the Proponent:

- identified lands, waters and resources of specific social, economic, archaeological, cultural or spiritual value to Aboriginal persons; and
- described the current use of those lands, waters and resources for traditional purposes —fishing, hunting, trapping, plant harvesting and navigation and other similar activities conducted for food, social, cultural or ceremonial purposes.

The Proponent also identified potential interactions with the VEC by superimposing the proposed project components and activities over available information about the nature, geographic range and frequency of current Aboriginal land and resource use activities in order to assess the impact of the Project on the use of the land and resources in the study area. The Project's effects were then assessed from three perspectives—activity distribution, activity levels and quality and cultural value of the activity.

The Proponent's conclusions respecting the effects of the Project on the current use of land and resources for traditional purposes by Aboriginal persons were based on:

- the results of its engagement efforts with Aboriginal groups potentially affected by the Project;
- a review of all publicly available information; and
- the Proponent's own commissioned research.

Mine Site

Only one of the five Aboriginal groups whose asserted traditional territory includes the mine site currently undertakes traditional land and resource use activities within the footprint area of the Kami mine site or Local Study Area (LSA) based on existing and available information. NunatuKavut Community Council members residing in Labrador City and Wabush currently undertake a variety of land and resource use activities throughout the region, including hunting, fishing, berry picking, camping and associated travel.

NunatuKavut Community Council members residing in Labrador City and Wabush currently undertake a variety of land and resource use activities throughout the region.

The Project will cause localized effects within the PDA and LSA, such as site access restrictions within the PDA for security reasons during construction and operations, alteration of the natural landscape, noise, dust and visual intrusions. Current use of land and resources for traditional purposes by Aboriginal persons in the region outside the LSA will be unaffected since effects are confined to the LSA.

Some users may be displaced from the footprint area of the mine site and LSA due to the localized effects of the Project. However, due to the availability of resources and land base, it is anticipated that there will be no decrease in the overall quality or underlying cultural value of the current use of land and resources for traditional purposes by Aboriginal persons.

Mitigation

The Proponent will undertake mitigation measures such as minimising the Project's footprint through engineering design and in consideration of other operations in the Project area, implementing fishing and hunting bans for employees and progressive reclamation of the project site.

The Proponent has also assessed the potential implications of the Project for vegetation, fish, wildlife and other resources used for traditional purposes, and will apply a variety of mitigation measures to reduce impacts on these resources (Appendix B).

The Kami Terminal components and activities will be sited entirely within an existing industrial zone, thus limiting the effects of the Kami Terminal on the current use of land and resources for traditional purposes by Aboriginal persons.

Government, Public and Aboriginal Comments

Government reviewers raised questions about the Proponent's baseline information on current land use for traditional purposes in the LSA. The Proponent was asked to clarify the source of its traditional use information, and to further explain the terminology used.

Aboriginal groups largely focused on the mine site, although some comments were related to the Kami Terminal. Concerns generally dealt with the potential effects of the Project,

including cumulative effects, on the biophysical environment and the resulting impacts on the ability to conduct traditional land and resource use activities. The Proponent maintains that the proposed Project is not likely to interact with or to have significant adverse effects on the Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons and will not contribute to any cumulative effects on this VEC within the RSA.

Innu-takuaikan Uashat mak Mani-utenam stated that its consent is required for the Project to proceed.

NunatuKavut Community Council initially disagreed with the Proponent's conclusion that NunatuKavut Community Council's use of the area is solely for contemporary recreational purposes. In response, the Proponent withdrew its initial conclusion and acknowledged the NunatuKavut Community Council's use of the area for traditional purposes.

Innu Nation requested further information from the Proponent concerning the successes and challenges of rehabilitation at similar mines in the region, in order to achieve desirable outcomes to return of the site to conditions suitable for Innu to carry out traditional harvesting activities. The Proponent responded that information on the results of rehabilitation at similar mines in the region is generally limited as there have been no mine closures in this area. Progressive rehabilitation efforts using different techniques to re-vegetate areas of exposed / beached tailings have been studied and implemented at Iron Ore Company of Canada (IOC) and Wabush Mines. The Proponent intends to consult with these other mining operations in the area, on their experiences (successes and failures) regarding re-vegetation practices in support of conducting independent vegetation studies and trials given the site specific conditions for the Project.

The Proponent provided a Draft Rehabilitation and Closure Plan as an amendment to its EIS. The plan was based on the current stage of engineering and which will be further advanced through the detailed design stage. The final Rehabilitation and Closure Plan will outline the measures required to return the site to a condition that can be safely accessed and which will support flora and fauna species native to the area pre-mine development, pursuant to the requirements of the Newfoundland and Labrador *Mining Act* and other associated guidelines and standards. Approaches for progressive and final rehabilitation will continue to be assessed in the detailed design stages and implementation of the Project. The Proponent has committed to providing draft plans, upon request, to Innu Nation for their information at the same time as it provides these plans to government. The Proponent has committed to continued and meaningful engagement with Aboriginal groups, including Innu Nation, during the life of the Project and has reiterated its preparedness to discuss mitigation measures and other matters related to the Project and its implementation.

Following its review of the EIS, Health Canada requested additional information and detailed clarifications regarding the Proponent's analyses in relation to potential contamination of country food. Although project emissions are not predicted to result in increased health risk, a country food a sampling program was initiated by the Proponent in 2013 to collect data prior to construction to evaluate any future changes in the environment that may occur as a result of the project.

A summary of concerns raised by Aboriginal groups during the course of the environmental assessment is contained in Appendix D.

Agency Conclusions on the Significance of the Residual Environmental Effects

The Agency concludes that the Project is not likely to cause significant adverse environmental effects on the current use of lands and resources for traditional purposes by Aboriginal persons when the implementation of mitigation is taken into account. Follow-up will be implemented in relation to this VEC including continued engagement by the Proponent with Aboriginal groups throughout the life of the project. The Proponent will undertake a country food sampling program to evaluate potential future country food contamination.

7.11 Other Current Use of Lands and Resources

The EA considered the effects of changes in the environment on other current use land and resources use. Other current use of lands and resources use is defined as any current (1990 to present) land use or harvesting, including industrial uses, undertaken by non-Aboriginal persons or communities. The Proponent reviewed publicly-available, secondary-source material and conducted detailed informant interviews with local land and resource users to characterize local and regional baseline conditions.

Mine Site

Certain project activities will require implementation of restricted access zones and alteration of landscapes or water bodies, including pond dewatering. These restrictions and alterations will affect access to lands and resources during project construction, operation and maintenance and result in a corresponding change in level of activity or use of these lands and resources. Cabin use could be affected by potential elevated noise and dust levels, and change in access. The viewscape will be altered by physical features or works that are visible from outside the PDA.

Kami Terminal

The assessment of effects on industrial development included consideration of activities that would lead to the exclusion or promotion of industrial activity at the port. Effects on residential and recreational property due to potential changes in air quality, noise, vibrations, drinking water quality, country foods and light quality were considered. These potential effects would occur during construction and operation of the terminal. Changes to view planes were considered to be non-significant due to the proximity of the Kami Terminal to existing infrastructure at Pointe-Noire, and due to the distance to receptors.

Construction of the Kami Terminal will require realignment of an access road and underground water main in the Pointe-Noire industrial area. Site preparation and construction may cause changes in the atmospheric environment, such as dust, noise, light and vibration. These changes may affect residential and recreational uses near Val Sainte-Marguerite.

Mitigation

Measures to mitigate adverse effects on other current use of lands and resources involve a combination of design features (e.g., use of span bridges to facilitate navigation, progressive rehabilitation, relocation of project features, and realignment of access roads), effects management measures (e.g., air, noise, and water management, development of a blasting plan and use of enclosed conveyor systems), and adherence to comprehensive equipment maintenance and monitoring programs and regulatory standards. Continued engagement with stakeholder groups such as the *Table de concertation sur la qualité de l'air* in Sept-Îles will also occur in order to understand and address potential issues of concern.

Additional mitigation measures are summarized in Appendix B.

Government, Public and Aboriginal Comments

Comments and concerns regarding the Project's effects on other current use of lands and resources were raised by members of the public and community and municipal organizations. Key comments pertained primarily to the following topics:

- recreational activities,
- visual aesthetics, and
- cabins.

The importance of recreational activities to local residents and communities and potential interactions of the Project with local activities and facilities, including the Lac Daviault park Area was raised. The Proponent stated that it recognizes the importance of outdoor recreational activities and pursuits in the region. However, access to the project site during construction and operations will have to be restricted to ensure the safety of workers and the public. The construction of an access road is proposed east of Wabush to minimize any effects of project-related traffic on communities and recreational areas. The Proponent has committed to working with communities and local user groups to address any project access issues and associated safety concerns.

The Proponent's assessment concludes that the Project will not overlap or otherwise interact with Lac Daviault and, therefore, will not affect current recreational use of the lake for boating, camping or floatplanes. Some waste rock areas will likely be visible from the western shores of the lake. Neither blasting vibrations nor elevated dust levels will be felt in that area. In addition blasting noise levels are predicted not to exceed Health Canada's guidelines. Following EA approval, a Blasting Plan will be developed and implemented in compliance with all applicable laws, regulations and industry best practices and with consideration of safety, environmental and social issues identified throughout the EIS.

The Project's location relative to the Town of Fermont and possible visual effects on some recreational users and on the community's overall quality of life was also raised as an issue. The Proponent undertook a viewshed analysis focusing on the location of the Project in relation to communities, parks and recreational areas and assessed the potential visibility and appearance of the Project from these locations. The Proponent states that the Project has been designed to have minimal visibility from the surrounding communities. For example, following concerns raised by, and in consultation with, the Town of Fermont, the Proponent relocated its proposed Rose South Waste Rock Disposal Area to reduce the potential for aesthetic effects.

The potential effects of the Project on nearby cabins were also a concern of local residents. In support of the environmental analysis, the Proponent conducted a number of studies to understand the potential effects of noise, dust, and other Project sources on cabin owners within the PDA. Further discussion and analysis of this issue in the context of the environmental assessment is contained in Section 7.2 Atmospheric Environment. The Proponent stated that it has concluded negotiations to purchase the majority of cabins which would potentially be affected by project infrastructure and activities. Negotiations to purchase the remaining potentially affected cabin are ongoing.

Agency Conclusions on the Significance of the Residual Environmental Effects

The Agency concludes that the Project is not likely to cause significant adverse environmental effects on other current uses of lands and resources, taking into account the implementation of mitigation. Monitoring programs for surface water quality, country foods, noise and air quality are required (Appendix C).

7.12 Health and Community Health

Health and community health considers both individuals and communities that may be affected by various project components and activities and/or their associated and resulting environmental outcomes (e.g., dust, noise, light, aesthetic changes).

Mine Site

The primary sources of potential effects on physical health are air emissions and water discharges. Although effects on air and water quality will begin during construction, they are expected to be greatest during operations and to diminish at closure and post-closure. The operation and maintenance of the Project will result in fugitive dust emissions; however, based on the proposed mitigation, air quality standards at the representative receptor locations are not predicted to be exceeded, with the exception of $PM_{2.5}$ at the southern end of Long Lake, which is predicted to be slightly above the applicable standard.

With planned mitigation, dust emissions will not cause a measurable change in baseline soil quality at the representative receptor locations, nor is predicted dust fall expected to cause a measurable accumulation of metals in vegetation at the representative receptor locations.

Kami Terminal

Given the characteristics of the Kami Terminal and its distance from the main population center in Sept-Îles, the atmospheric environment is considered as being the only pathway for potential effects on human health. Potential health effects could occur through dust generation, increased noise levels and vibrations. Health issues associated with the atmospheric environment are assessed in the Atmospheric Environment VEC (Section 7.2).

Mitigation

The Proponent will implement mitigation measures to avoid or reduce effects on the atmospheric environment, water resources, vegetation, soils, country foods, viewscapes and other relevant VECs. These measures will, in turn, mitigate potential effects on both physical health and community health.

Government, Public and Aboriginal Comments

Comments and concerns raised as a result of the governmental, Aboriginal and public review of the EIS in relation to this VEC pertained to variety of issues related to potential effects on human health and on quality of life.

Health Canada commented on the Proponent's human health risk assessment (HHRA), including the purpose of the assessment and clarification regarding the methodology used and its outcomes. In response, the Proponent was able to satisfy Health Canada's comments and information requests by providing additional detail and justification related to the methodology, conclusions, and discussion presented as part of the HHRA and the overall analysis. Notably, the Proponent provided additional justification for its selection of contaminants for evaluation in the HHRA. The Proponent also further clarified the meaning and importance of the concepts of repeatability and measurable change as they related to the definition of significant adverse residual environmental effects on physical health.

Health Canada also expressed concern regarding potential impacts to country foods and recommended that data be collected on current contamination levels in order to validate the conclusions of the EIS that there would be no impact on country foods. The Proponent agreed to initiate a country food sampling program and to assess the potential.

The main issues raised by participants in public and Aboriginal consultation activities were impacts on quality of life, visual aesthetics, human health, safety, and cumulative effects. Residents of communities around the mine site stressed the importance of maintaining their current quality of life and raised concerns over potential impacts to human health, both mental and physical, due to the Project's effects on the atmospheric environment, water quality, visual aesthetics, and recreational activities. Concerned members of the public requested assurance that the Proponent would commit to long-term measures to ensure their overall quality of life is not affected. In response, the Proponent reiterated that project-related emissions and other disturbances are not expected to result in noticeable changes to air, water, or soil that would likely pose a threat to human health or directly and indirectly effect local land and resources use activities. Furthermore, the Project will not likely result in significant adverse cumulative effects on health and community health. Additional detail on the Project's effects on air, water, soil, recreational activities, and other VECs that may contribute to changes in health and community health are presented in sections of this CSR dedicated to those VECs. The Proponent also noted that the Project is intended to contribute to positive socio-economic characteristics and benefits, and measures will be implemented to avoid or reduce any adverse effects on local residents and their activities, health and well-being.

Agency Conclusions on the Significance of the Residual Environmental Effects

The Agency concludes that the Project is not likely to cause significant adverse environmental effects on health and community health when the implementation of mitigation is taken into account.

7.13 Effects of the Environment on the Project

Environmental factors that could potentially affect the Project and lead to environmental effects include severe weather (e.g., high winds), severe cold (e.g., deep frost, ice depth), precipitation (e.g., snowfall accumulation, extreme rain events), long term climate change (e.g., greater frequency of storm events, increasing storm intensity, decreases in local precipitation and water table), and seismicity (i.e., earthquakes). The mine site is located in a tectonically stable environment with low seismic activity. It is also in a zone of discontinuous permafrost, but this is not expected to have implications for mine infrastructure.

Mitigation

The Project will be built in accordance with applicable national and international design standards. Standards specify proper engineering design parameters for site-specific normal and extreme physical environmental conditions, and provide accepted design criteria for withstanding potential physical environmental conditions. Building codes consider physical environmental criteria such as temperature, wind, snow and ice loading and drainage. Design life is taken into consideration by choosing materials with sufficient durability and corrosion resistance.

Government, Public and Aboriginal Comments

No comments or issues related to effects of the environment on the Project were raised during the government, Aboriginal, or public review of the EIS, or during the proponent's public and Aboriginal engagement activities.

Agency Conclusions on the Significance of the Residual Environmental Effects

The Agency concludes that the effects of the environment on the Project are not likely to cause significant adverse environmental effects when the implementation of mitigation is taken into account (i.e. appropriately sized culverts and drainage ditches, apply best practices in relation to construction of the mine and terminal, development of Emergency and Spill Response Plan, progressive reclamation and dust suppression measures).

7.14 Effects of Accidents and Malfunctions

Under the former Act, an EA must consider the possible effects of accidents and malfunctions that could adversely affect the environment at any stage of the Project from construction to post closure. Accidents and malfunctions have the potential to occur throughout the life of the Project from mine site construction through to post closure.

The potential environmental effects of each potential accident and malfunction were assessed for each VEC, based on the existing conditions and knowledge about the environmental effects of the accidental events. Four accidental event scenarios were assessed for mine site components of the Project: train derailment, forest fire, dyke breach, and premature shutdown. Five accidental event scenarios were developed for the Kami Terminal components of the Project: train derailment, forest fire, stormwater retention pond overflow or breach, product spill at port, and premature shutdown. Table 7-2 summarizes the potential effects associated with each of these scenarios.

Table 7-2 Potential Environmental Effects of Accidental Event Scenarios

Accidents/Malfunctions	Atmospheric Environment	Landforms, Soils, Snow and Ice	Water Resources	Wetlands	Freshwater Fish, Fish Habitat and Mortality and Fisheries	Birds, Other Wildlife and their Habitats, and Protected Areas	Species at Risk and Species of Conservation Concern	Historical and Cultural Resources	Current Use of Lands and Resources for Traditional Purposes by Aboriginal Peoples	Other Current Use of Lands and Resources	Health and Community Health
Mine Site											
Train Derailment	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Forest Fire	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Dyke Breach	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Premature or Permanent Shutdown											
Kami Terminal											
Train Derailment	✓		✓			✓	✓	✓	✓	✓	
Forest Fire	✓		✓			✓	✓	✓	✓		
Storm Water Retention Pond Breach or Overflow			✓					✓	✓		
Product Spill at Port											
Premature or Permanent Shutdown											

Mitigation

Project components will be designed using best practices and adherence to regulatory standards, in order to reduce the likelihood and to mitigate the impacts of accidents and malfunctions. The Proponent will develop a detailed Emergency and Spill Response Plan during the design phase of the Project.

Government, Public and Aboriginal Comments

The Proponent assessed the potential effects in its EIS of accidents and malfunctions for each VEC. During the review, government, Aboriginal and public reviewers raised concerns about the effects of accidents and malfunctions most notably related to spills and emergency response planning. Key concerns related to:

- the requirements for a detailed contingency and mitigation plan for each of the dyke break scenarios;
- possible fuel product transfer accidents / malfunctions and associated procedures and plans;
- emergency containment and recovery measures specific to preferential paths towards receiving waters and drainage features;
- procedures to quickly recover any hydrocarbons from the sedimentation ponds in the event that they are used for emergency containment; and
- the potential for spill as a result of train derailment and the environmental consequence of such an event.

Discussion on these issues is contained in section 7.4.

Agency Conclusions on the Significance of the Residual Environmental Effects

The Agency concludes that accidents and malfunctions are not likely to causes significant adverse environmental effects, taking into account the implementation of mitigation, and provided that appropriate emergency and spill response plans are in place.

7.15 Capacity of Renewable Resources

A comprehensive study must address the capacity of renewable resources that are likely to be significantly affected by the Project to meet present and the future needs. The effects of the Project on renewable resources were assessed in detail in the EIS. The assessment focused on water resources, wetlands, fish and fish habitat, and waterfowl and other wildlife. An adverse effect on these resources could result in a reduced capacity to provide, among other things, drinking water resources and wildlife resources, and a reduced capacity to support fisheries, traditional use, and healthy ecosystem functionality.

The assessment of effects on each of these resources was conducted according to the scope of assessment for the Project and environmental assessment methods that have been developed to satisfy the regulatory requirements of the former Act. Measures for significance were determined for each VEC usually based on a regulatory standard or a threshold, where available.

The Agency concludes that no renewable resources are likely to be significantly affected by the Project and, thus, the Project is not likely to cause significant adverse environmental effects on the capacity of the renewable resources, taking into account the implementation of mitigation and compensation measures.

7.16 Cumulative Environmental Effects

The cumulative environmental effects on VECs resulting from the Project in combination with other projects and activities were assessed, as required under the former Act. The cumulative environmental effects were assessed taking into consideration the *Agency's Operational Policy*

Statement[7] and the *Cumulative Effects Assessment Practitioners Guide*[8]. Table 7-3 lists other projects and activities that were considered in the assessment of cumulative environmental effects and their potential interaction with each VEC. Cumulative environmental effects were assessed in the Regional Study Area for each VEC.

Past and on-going projects and activities were considered to be reflected in the baseline (current) environment for each VEC. The assessment focused on the degree of change from baseline VEC conditions resulting from the Project acting in combination with other relevant ongoing and future projects.

Table 7-3 Scoping of Potential Cumulative Environmental Effects

Name of Project/Activity	Atmospheric Environment	Landforms, Soils, Snow and Ice	Water Resources	Wetlands	Freshwater Fish, Fish Habitat and Mortality and Fisheries	Birds, Other Wildlife and their Habitats, and Protected Areas	Species at Risk and Species of Conservation Concern	Historical and Cultural Resources	Current Use of Lands and Resources for Traditional Purposes by Aboriginal Peoples	Other Current Use of Lands and Resources	Health and Community Health
Labrador Operations (existing and planned expansions) – Iron Ore Company of Canada	✓	✓		✓	✓	✓	✓		✓	✓	✓
Wabush Mines – Cliffs Resources	✓	✓		✓	✓	✓	✓		✓	✓	✓
Mont Wright Mine – ArcelorMital		✓				✓	✓		✓	✓	
Bloom Lake Mine and Rail Spur – Cliffs Resources	✓	✓		✓		✓	✓		✓	✓	
Schefferville Iron Ore Mine – Labrador Iron Mines						✓	✓		✓		
DSO Iron Ore Project – Tata Steel (formerly New Millennium)						✓	✓		✓		
Lower Churchill Hydroelectric Generation Project						✓			✓		
Infrastructure or other projects at the Port of Sept-Îles						✓			✓		
Urbanization		✓		✓	✓	✓	✓		✓	✓	
Pointe-Noire Port Expansion	✓		✓			✓	✓			✓	
Chemin de Fer Arnaud and QNS&L	✓					✓	✓			✓	
Alouette Aluminium Smelter Project	✓					✓	✓			✓	
Second Port-Cartier Pellet Plant											
Bloom Pointe-Noire Terminal	✓		✓			✓	✓			✓	
Arnaud Apatite-Magnetite mine	✓		✓			✓	✓			✓	

7 Canadian Environnmental Assessment Agency. 2007. Operational Policy Statement: Addressing Cumulative Environmental Effects under the *Canadian Environmental Assessment Act*.

8 Hegmann, G., C. Cocklin, R. Creasey, S. Dupuis, A. Kennedy, L. Kingsley, W. Ross, H. Spaling and D. Stalker. 1999. *Cumulative Effects Assessment Practitioners Guide*. Prepared by AXYS Environmental Consulting Ltd. and the CEA Working Group for the Canadian Environmental Assessment Agency, Hull, Quebec.

Government, Public and Aboriginal Comments

Cumulative effects were identified by a number of reviewers as an important concern in relation to a number of VECs, including those summarized below. In addition, certain Aboriginal groups expressed concern over the methodology used by the Proponent and disagreed with assessment boundaries for cumulative effects assessment. NunatuKavut Community Council expressed concern about the cumulative environmental effects of industrial development in the Labrador trough. In response to NunatuKavut Community Council's concern, Newfoundland and Labrador re-confirmed its previous commitment to identify regional mechanisms to assess and mitigate the cumulative effects of future development in Labrador[9]. Newfoundland and Labrador also offered to meet with NunatuKavut Community Council and provided a contact with whom NunatuKavut Community Council could follow up.

Water Quality (Labrador)

Environment Canada requested additional information on the Project's potential interaction with effluent from Wabush Mines and associated cumulative effects. The Proponent responded that the Project will discharge effluent through its TMF at Flora Lake, which discharges to Wabush Lake. The Project effluent assimilative mixing zone boundary is defined as the point at which water quality re-attains baseline or Canadian Water Quality Guideline concentrations; the mixing zone is predicted to be contained within the Local Study Area not extend to the Regional Study Area. On this basis, it concluded that no effluent water quality cumulative effect is anticipated. Environment Canada has indicated that it is satisfied with this information.

Cumulative effects were identified by a number of reviewers as an important concern.

Water and Sediment Quality (Quebec)

Issues related to cumulative effects were raised in relation to effects at the Kami Terminal site, and its potential contribution to water and sediment quality issues in Sept-Îles Bay. The Proponent states that an important focus of the EA has been on identifying, assessing and attempting to mitigate any adverse environmental effects resulting from the proposed Project, including its various components and activities at the Port of Sept-Îles, Québec. It asserts that the overall nature, scale and pace of current and future development activities at the Port of Sept-Îles, and ensuring that these are considered and addressed through appropriate planning and decision-making at the facility, is beyond the ability and responsibility of a single project Proponent. Rather, this falls within the realm of overall management and planning by the Port and municipality. That said, the Proponent will, continue to work with local and regional planning and management authorities and consult and cooperate with other proponents, as well as implement appropriate mitigation measures to ensure that the effects of the Project, and thus,

9 In response to the Report of the Joint Review Panel for the Lower Churchill Hydroelectric Generation Project, the Government of Newfoundland and Labrador agreed to "identify regional mechanisms to assess and mitigate the cumulative effects of future development projects in Labrador" (Government of Newfoundland and Labrador's Response to the Report of the Joint Review Panel for Nalcor Energy's Lower Churchill Hydroelectric Generation Project, March 15 2012. Recommendation 16.1).

its contribution to any such regional / cumulative effects, are minimized. Notably, effluents from the Kami Terminal will comply with all relevant regulations and will be collected and treated before discharge into the Sept-Îles Bay.

Caribou

Comments were received from Aboriginal groups about the cumulative effects to caribou. Since there are no caribou in the Project area (e.g., George River Caribou Herd, Lac Joseph herd), the Project is not expected to contribute to cumulative effects on caribou.

Agency Conclusions on the Significance of the Residual Environmental Effects

The Agency concludes that the Project is not likely to cause significant adverse cumulative environmental effects, when the implementation of mitigation is taken into account. It is noted that in addition to project-specific mitigation, the Proponent will take a regional approach to the management or monitoring of certain environmental effects including:

- participation in regional efforts aimed at wetland reclamation and rehabilitation to compensate for those wetlands that would be permanently altered as a result of the Project;
- evaluation of options to coordinate its activities with other mine operators (e.g., Iron Ore Company of Canada, Cliffs) in the region so that research into wetland reclamation / rehabilitation is initiated and supported;
- work with local and regional planning and management authorities and consult and cooperate with other proponents, in the Port of Sept-Îles; and
- participation, as a rail user, in any joint working group established to assess cumulative impacts on migratory and woodland caribou resulting from increased rail transportation of iron ore to the Port of Sept-Îles.

The Agency concludes that the Project is not likely to cause significant adverse cumulative environmental effects, when the implementation of mitigation is taken into account.

8. Follow-up

The former Act requires that the responsible authorities for the Kami Project EA (Transport Canada and DFO) design and ensure the implementation of a follow-up program to verify the accuracy of the EA and to determine the effectiveness of mitigation measures. The results of a follow-up program may also support the implementation of adaptive management measures to address previously-unanticipated adverse environmental effects.

The requirements of the follow-up program are outlined in Appendix C for various components of the environment (e.g., atmospheric environment, wetlands). Government agencies will be involved in the development of elements of the follow-up program that are relevant to their mandate and expertise. The program will take into account the terms and conditions of federal and provincial authorizations and approvals required to carry out the Project, any changes in environmental conditions, and the observation of environmental effects that could occur during project implementation. The results of the follow-up program will be reported to relevant agencies. The results or an indication of how the results may be obtained will be available to the public through the Agency's Canadian Environmental Assessment Registry (**www.ceaa-acee.gc.ca**).

9. Benefits to Canadians

The Agency, with the assistance of federal and provincial government authorities, assessed the potential effects of the Project on VECs of concern to Canadians. The public and Aboriginal groups were invited to participate at key points in the EA. As a result of the EA process, the Proponent modified its project design partially as a result of these consultations and to accommodate the issues and concerns that were raised including:

- construction of a new mine site access road to alleviate concerns about potential traffic congestion and safety implications in relation to the initial plan to use Grenfell Drive;
- moving the Rose South Waste Rock Disposal Area approximately 5 km east of Lac Daviault (near Fermont), in response to public concern about impacts on the lake and aesthetics;
- relocation of the rail route to avoid the Wabush PPWSA;
- siting the TMF to avoid water bodies, to the extent possible;
- locating project components as much as possible to avoid environmentally sensitive areas such as lakes and the Duley Lake Provincial Park Reserve;
- covering conveyors at the Kami Terminal to minimize dust generation and noise; and
- minimizing the footprint of the Kami Terminal in response to public comments and as part of advancing engineering design. The updated design and footprint has substantially reduced the cut-and-fill earthworks requirements and the amount of blasting that will be needed.

10. Conclusions of the Agency

In determining whether or not the Project is likely to cause significant adverse environmental effects, the Agency took the documentation submitted by the Proponent, including the EIS and associated amendments and the views of the public, government agencies, and Aboriginal groups into account.

The Agency concludes that the Kami Iron Ore Project is not likely to cause significant adverse environmental effects taking into account the implementation of the mitigation measures described in this report. Following a public consultation on this Report, the Minister of the Environment will decide whether, taking into account the implementation of mitigation measures, the Project is likely to cause significant adverse environmental effects. The Project will then be referred back to the responsible authorities, DFO and Transport Canada for appropriate course of action in accordance with section 37 of the former Act. The Sept-Îles Port Authority will also take into consideration the comprehensive study report and any comments submitted when making a course of action decision under the *Canada Port Authority Environmental Assessment Regulations*.

11. Appendix

Appendix A

Effects Analysis Summary

Notes:

- Where two values are provided (with a separator) for an effect characteristic, the first value is for Labrador and the second is for Quebec.
- The key below applies to all the tables in this appendix for the following effect characteristics: Direction, Frequency, Reversibility, Environmental and Socio-economic Context, and Significance. The keys for Magnitude, Geographic Extent, and Duration vary from VEC to VEC and therefore each table has an individual key, located at the end, for those characteristics.
- The key for table A-5 (Freshwater Fish, Fish Habitat, and Fisheries) contains additional VEC-specific detail for Significance.

KEY

Direction:

A Adverse: condition is deteriorating compared to baseline conditions and trends.

P Positive: condition is improving compared to baseline conditions and trends.

N Neutral: no change compared to baseline conditions and trends.

Frequency:

N Not likely to occur.

O Once/Occasional: effect occurs only once during the life of the Project or only occasionally (i.e., once per month or less).

S Sporadic: effect occurs at sporadic intervals, but not consistently throughout the life of the Project.

R Regular: effect occurs on a regular basis and at regular intervals.

C Continuous: effect occurs frequently or continuously throughout the Project's life.

Reversibility:

R Reversible: environment will likely recover to baseline conditions after the end of project decommissioning.

O Irreversible: environment is unlikely to recover to baseline conditions after the end of project decommissioning.

Environmental or Socio-economic Context:

U Undisturbed: effect takes place within an area that is relatively or not adversely affected by human activity.

D Developed: effect takes place within an area with human activity. Area has been substantially previously disturbed by human development or human development is still present.

N/A Not Applicable.

Significance:

S Significant.

N Not Significant.

Prediction Confidence:

Based on scientific information and statistical analysis, professional judgment and effectiveness of mitigation or effects management measure

L Low level of confidence.

M Moderate level of confidence.

H High level of confidence.

N/A Not Applicable.

Table A-1: Summary of Project Residual Environmental Effects: Atmospheric Environment

Project Phase	Residual Environmental Effects Characteristics								
	Direction	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Environmental or Socio-economic Context	Significance	Prediction Confidence
Change in Air Quality									
Construction	A	M	L	ST	R/S	R	D	N	H
Operation and Maintenance	A	M	L	MT/LT	C/R	R	D	N	H
Decommissioning and Reclamation	A	M	L	ST/LT	R	R	D	N	H
Change in GHG Emissions									
Construction	A	M/L	G/R	ST	R/S	R	D	N	H
Operation and Maintenance	A	M	G	MT	C	R	D	N	H
Decommissioning and Reclamation	A	M	G	ST	R	R	D	N	H
Change in Acoustic Environment									
Construction	A	M/L	L	ST	R	R	D	N	H
Operation and Maintenance	A	M/L	L	MT/LT	C	R	D	N	H
Decommissioning and Reclamation	A	M/L	L	ST	R	R	D	N	H
Change in Vibrations									
Construction	A	L	L/S	ST	S	R	D	N	H
Operation and Maintenance	A	M/L	L/S	MT/LT	S	R	D	N	H
Decommissioning and Reclamation	A	L	L/S	ST	S	R	D	N	H
Change in Light Emissions									
Construction	A	L	L/S	ST	S	R	D	N	H
Operation and Maintenance	A	L	L	MT/LT	R	R	D	N	H
Decommissioning and Reclamation	A	L	L/S	ST	S	R	D	N	H

KEY

Magnitude:

- N Negligible: no measurable adverse effect anticipated.
- L Low: effect is detectable but is within normal variability of baseline conditions.
- M Moderate: effect would cause an increase over baseline but is within regulatory limits and objectives.
- H High: effect would singly, or as a substantial contribution in combination with other sources, cause objectives or standards beyond the Project boundaries to be exceeded.

Geographic Extent:

- S Site-specific: effect restricted to the Project footprint within the LSA.
- L Local: effect restricted to the LSA.
- R Regional: effect restricted to the RSA.
- G Global: Provincial, National or Global scale (GHG Emissions only).

Duration:

- ST Short-term: less than two years.
- MT Medium-term: between 2 and 15 years.
- LT Long-term: more than 15 years but VEC will eventually return to pre-project state.
- P Permanent: VEC will not return to pre-project state.

Table A-2: Summary of Project Residual Environmental Effects: Landforms, Soils, Snow and Ice, and ARD/ML

Project Phase	Residual Environmental Effects Characteristics								
	Direction	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Environmental or Socio-economic Context	Significance	Prediction Confidence
Change in Landforms and Terrain Stability									
Construction	A	L-H	S	MT	S	I	N/A	N	H
Operation and Maintenance	A	L	S	ST	S	I	N/A	N	H
Decommissioning and Reclamation	N	L	S	P	O	I	N/A	N	H
Change in Soil Quality and Quantity									
Construction	A	L	L	MT	R	R	N/A	N	H
Operation and Maintenance	A	L	L	MT	O	R	N/A	N	H
Decommissioning and Reclamation	N	L	L	MT	R	R	N/A	N	H
Change in Ice and Snow									
Construction	A	M	L	ST	R	R	N/A	N	M
Operation and Maintenance	A	M	L	ST	R	R	N/A	N	M
Decommissioning and Reclamation	A	L	L	MT	R	I	N/A	N	H
ARD/ML									
Construction	N	N	L	ST	C	I	U	N	M
Operation and Maintenance	N	N	L	ST	C	I	U	N	M
Decommissioning and Reclamation	N	N	L	ST	C	I	U	N	M

KEY

Magnitude:

N Negligible.

L Low: for landforms, minor changes to shape and stability from a regional perspective; for soils, changes of less than or equal to 5%.

M Moderate: for landforms, moderate changes to shape and stability from a regional perspective; for soils, changes between 5 and 10%.

H High: for landforms, a major change to shape and stability in the regional area; for soils, changes of greater than 10%.

Geographic Extent:

S Site: effect confined to the PDA and 200 m beyond.

L Local: effect confined to the LSA.

R Regional: effect extends beyond the LSA but within the RSA.

Duration:

ST Short-term: effects last through the construction phase.

MT Medium-term: effects last beyond the construction phase, but not beyond the end of project decommissioning.

LT Long-term: effects are measureable for up to 30 years beyond the life of the Project.

P Permanent: VEC will not return to pre-project state.

Table A-3: Summary of Project Residual Environmental Effects: Water Resources

Project Phase	Residual Environmental Effects Characteristics								
	Direction	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Environmental or Socio-economic Context	Significance	Prediction Confidence
Change in Surface Water Quantity									
Construction	A	L	S	ST	R	R	U	N	H
Operation and Maintenance	A	L	L	MT	R	R	U	N	H
Decommissioning and Reclamation	P	L	S	ST	O	R	U	N	H
Change in Surface Water Quality									
Construction	A	L/N	S	ST	S	R	U/D	N	H
Operation and Maintenance	A	L	L	MT	R	R	U/D	N	H
Decommissioning and Reclamation	A	L/N	S	ST	S	R	U/D	N	H
Change in Surface Water Drainage Patterns									
Construction	A	L	S/L	ST/MT	R	R	U/D	N	H
Operation and Maintenance	A	L/N	S	MT/ST	R/S	R	U/D	N	H
Decommissioning and Reclamation	P/A	L/N	S	ST	S	R	U/D	N	H
Change in Groundwater Quality or Quantity									
Construction	A	L/N	S	ST	S	R	U/D	N	H
Operation and Maintenance	A	L	L	MT	R	R	U/D	N	H
Decommissioning and Reclamation	P/A	L/N	S	ST	O/S	R	U/D	N	H

KEY

Magnitude:

N Negligible: no measurable effect anticipated.

L Low: effect is detectable but is within normal variability of baseline conditions.

M Moderate: effect would cause an increase over baseline but is within regulatory limits and objectives.

H High: effect would singly, or as a substantial contribution in combination with other sources, cause objectives or standards within the RSA to be exceeded.

Geographic Extent:

S Site-specific: restricted to the project footprint within the LSA.

L Local: restricted to the LSA.

R Regional: restricted to the RSA.

Duration:

ST Short-term: less than 2 years.

MT Medium-term: between 2 and 20 years.

LT Long-term: more than 20 years but VEC will eventually return to pre-project state.

P Permanent: VEC will not return to pre-project state.

Table A-4: Summary of Project Residual Environmental Effects: Wetlands

Project Phase	Residual Environmental Effects Characteristics								
	Direction	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Environmental or Socio-economic Context	Significance	Prediction Confidence
Change in Wetland Quality and Quantity									
Construction	A	M	S	LT	O	I	U/D	N	H
Operation and Maintenance	A	L	S	LT	C	I	D	N	H
Decommissioning and Reclamation	A/P	M	S	LT	O	I	D	N	H

KEY

Magnitude:

- L Low: the residual project effects to wetlands (alteration/loss) are not expected to exceed 5% of the total area of wetland in the RSA.
- M Moderate: the residual Project effects to wetlands (alteration/loss) are expected to be between 5% and 25% of the total area of wetland in the RSA.
- H High: the residual Project effects to wetlands (alteration/loss) are expected to exceed 25% of the total area of wetland in the RSA. Effect can be easily observed, measured and described, and may be widespread.

Geographic Extent:

- S Site-specific: confined to the footprint for all project features (i.e., PDA). Effects limited to directly affected wetlands.
- L Local: extends beyond the project footprint into the surrounding areas (LSA), including potentially affected wetland communities within 1 km of the mineral license.
- R Regional: Effect extends into the RSA. Area where indirect or cumulative effects may occur.
- B Beyond Regional: extends beyond the RSA. Area where indirect or cumulative effects may occur.

Duration:

- ST Short-term: during the site-preparation or construction phase of the Project (i.e., 1 to 2 years).
- MT Medium-term: extends throughout the construction and operation phases of the Project (up to 17 years).
- LT Long-term greater than 17 years.
- P Permanent: persists indefinitely.

Table A-5: Summary of Project Residual Environmental Effects: Freshwater Fish, Fish Habitat, and Fisheries

Project Phase	Residual Environmental Effects Characteristics								
	Direction	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Environmental or Socio-economic Context	Significance	Prediction Confidence
Change in Fish Habitat									
Construction	N	L	S	P	C	I	U	N	H
Operation and Maintenance	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	H
Decommissioning and Reclamation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	H
Fish Health or Mortality									
Construction	A	N	S	T	O	R	U	N	M
Operation and Maintenance	N	N	L	T	C	R	D	N	M
Decommissioning and Reclamation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	H
Change in Use of Existing Fisheries									
Construction	A	N	L	L	C	I	U	N	H
Operations and Maintenance	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	H
Decommissioning and Reclamation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N	H

KEY

Magnitude:

N Negligible: no measureable adverse effects anticipated.

L Low: measureable effects anticipated in low-sensitivity habitats but no measureable reduction in the number of fish species.

M Moderate: measureable effects anticipated in moderately sensitive habitat, or mortality risk to non-listed species.

H High: measureable effects anticipated in highly sensitive habitat or habitat designated as important to listed species, or mortality risk to listed species.

Geographic Extent:

S Site Specific: restricted to PDA.

L Local: extends beyond the PDA but remain within the LSA.

R Regional: extends to the RSA.

Duration:

T Temporary: effects measureable from days to a few months.

M Moderate: effects measureable for up to a year.

L Long-term: effects measurable for multiple years but are not permanent

P Permanent: VEC will not return to pre-project state.

Significance:

S Significant:

- A permanent and irreversible reduction in the productive capacity of fish habitat that remains after mitigation and compensation measures are implemented and which will likely result in an uncompensated Harmful Alteration, Disruption, Disturbance or Destruction of fish habitat.
- The likelihood of fish mortality, after mitigation measures are implemented, at a level that would require regulatory bodies to implement specific management plans for the recovery of the affected fish populations.
- A significant measurable decrease in fish condition, below baseline conditions and directly attributable to project activities, and which threatens the sustainability of the regional fisheries.
- The Project is not compatible with recreational fishing activities, such that patterns of fishing are changed across the area.

N Not Significant.

Table A-6: Summary of Project Residual Environmental Effects: Birds, Other Wildlife and their Habitat; and Protected Areas

Project Phase	Residual Environmental Effects Characteristics								
	Direction	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Environmental or Socio-economic Context	Significance	Prediction Confidence
Change in Habitat									
Construction, Operation and Maintenance	A	L	S	LT/ST	O/C	I	U/D	N	H
Change in Distribution and Movement									
All Phases	A	L	S/L	LT/ST	O/C	I	U/D	N	H
Change in Mortality Risk									
Construction	A	L	S/L	ST	O/C	R/I	U/D	N	H
Operation and Maintenance	A	L	S	ST	O	R	U/D	N	H
Decommissioning and Reclamation	A	L	S	ST	O	R	U/D	N	H
Change in Health									
Construction	A	L	S/L	ST	R/C	I	U/D	N	H
Operation and Maintenance	A	L	S	ST	R	I	U/D	N	H
Decommissioning and Reclamation	A	L	S	ST	R	I	U/D	N	H
Change in Protected Areas									
Construction	A	L	L	LT	C	I	U/D	N	H
Operation and Maintenance	A	L	L	LT	C	I	U/D	N	H
Decommissioning and Reclamation	A	L	L	LT	C	I	U/D	N	H

KEY

Magnitude:

L Low: the residual project effects (alteration/loss) are not expected to exceed 5% of the known population in the RSA, and are not measureable.

M Moderate: the residual project effects (alteration/loss) are expected to be between 5% and 25% of the known population in the RSA and are measureable.

H High: the residual project effects to (alteration/loss) are expected to exceed 25% of the known population in the RSA and can be easily observed, measured and described, and may be widespread.

Geographic Extent:

S Site-specific: confined to the Project footprint for all project components (i.e., PDA) and limited to directly-affected environmental components.

L Local: extends beyond the Project footprint into the surrounding areas within the LSA.

R Regional: extends beyond the LSA into the RSA, where indirect or cumulative effects may occur.

B Beyond Regional (provincial, national, or international): extends beyond the RSA, where indirect or cumulative effects may occur.

Duration:

ST Short-term: occurs during the site preparation or construction phase of the Project (i.e., 1 to 2 years).

MT Medium-term: extends throughout the construction and operation phases of the Project (up to 17 years).

LT Long-term: greater than 17 years.

P Permanent: VEC will not return to pre-project state.

Table A-7: Summary of Project Residual Environmental Effects: Species at Risk and Species of Conservation Concern

Project Phase	Residual Environmental Effects Characteristics								
	Direction	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Environmental or Socio-economic Context	Significance	Prediction Confidence
Change in Critical or Important Habitat									
Construction	A	M/L	S	LT/ST	O/C	I	U/D	N	H
Operation and maintenance	A	L	S	LT	O	I	U/D	N	H
Change in Distribution and Movement									
All phases.	A	L	S	LT/ST	O/C	I	U/D	N	H
Change in Mortality Risk									
Construction	A	L	S	LT/ST	O/C	I	U/D	N	H
Operation, Maintenance, Decommissioning and Reclamation	A	L	S	LT	O	I	U/D	N	H
Change in Health									
Construction	A	L	S	LT/ST	O/C	I	U/D	N	H
Operation and Maintenance	A	L	S	LT	O	I	U/D	N	H
Decommissioning and Reclamation	A	L	S	LT	O	I	U/D	N	H

KEY

Magnitude:

- L Low: the residual alteration or loss is not expected to exceed 5% of the known population in the RSA. No measurable effect on VEC as a whole.
- M Moderate: the residual alteration or loss is expected to be between 5% and 25% of the known population in the RSA and the effect can be measured.
- H High: the residual alteration or loss is expected to exceed 25% of the known population in the RSA; the effect can be easily observed, measured and described, and may be widespread.

Geographic Extent:

- S Site-specific: confined to the project footprint for all project components (i.e., PDA) and limited to directly-affected environmental components.
- L Local: extends beyond the project footprint into the surrounding areas within the LSA.
- R Regional: Effect extends beyond the LSA into RSA, where indirect or cumulative effects may occur.
- B Beyond Regional (provincial, national, or international extent): extends beyond the RSA. Area where indirect or cumulative effects may occur.

Duration:

- ST Short-term: occurs during site preparation or construction phase of the Project (i.e., 1 to 2 years).
- MT Medium-term: extends throughout the construction and operation phases of the Project (up to 15 years).
- LT Long-term: greater than 15 years.
- P Permanent: VEC will not return to pre-project state.

Note: (a) Although there are no thresholds to assess the potential alteration or loss of individual listed plants or plant populations, an accepted guideline in the collection of vascular and non-vascular plant voucher specimens is that an immediate population can withstand the loss of 1 in 20 individuals or 5 percent of a population (Alberta Native Plant Council [ANPC] Native Plant Collection and Use Guidelines 2000).

Table A-8: Summary of Project Residual Environmental Effects: Historical and Cultural Resources

Project Phase	Residual Environmental Effects Characteristics								
	Direction	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Environmental or Socio-economic Context	Significance	Prediction Confidence
Construction	A	N/L	S	P	S	I	U	N	H
Operation and Maintenance	A	N/L	S	P	S	I	U	N	H
Decommissioning and Reclamation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

KEY

Magnitude:

N Negligible: no likely effect on Archaeological and Cultural Resources.

L Low: disturbance of Archaeological and Cultural Resources but with prior retrieval of the resource and associated information, and with all necessary regulatory approvals.

M Moderate: disturbance or loss of a portion of an Archaeological and Cultural Resource, with retrieval of a portion of the resource and its associated information, or a direct effect on a known Archaeological and Cultural Resource that is of interest and concern to the associated community, but that does not reduce the overall integrity and cultural value of the site.

H High: disturbance or loss of an Archaeological and Cultural Resources, with no retrieval of the resource and its associated information, or a direct effect on Archaeological and Cultural Resources, which reduces the overall integrity and cultural value of the site.

Geographic Extent:

S Site: confined to the PDA.

L Local: limited to the LSA.

R Regional: may extend beyond the LSA.

Duration:

T Temporary: effect will occur but measures are taken to salvage and retrieve information from the resources, or move or rehabilitate the site.

P Permanent: VEC will not return to pre-project state.

Table A-9: Summary of Project Residual Environmental Effects: Current Use of Lands and Resources for Traditional Purposes by Aboriginal Persons

Project Phase	Residual Environmental Effects Characteristics								
	Direction	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Environmental or Socio-economic Context	Significance	Prediction Confidence
Change in Activity Distribution (Location and/or Timing)									
Construction	N	-	-	-	N	-	D	N	H
Operation and Maintenance	N	-	-	-	N	-	D	N	H
Decommissioning and Reclamation	N	-	-	-	N	-	D	N	H
Change in Overall Activity Levels									
Construction	N	-	-	-	N	-	D	N	H
Operation and Maintenance	N		-	-	N	-	D	N	H
Decommissioning and Reclamation	N		-	-	N	-	D	N	H
Resulting Change in Overall Quality and Cultural Value of the Activity									
Construction	N	-	-	-	N	-	D	N	H
Operation and Maintenance	N	-	-	-	N	-	D	N	H
Decommissioning and Reclamation	N	-	-	-	N	-	D	N	H

KEY

Magnitude:

L Low: affects a small group of users.

M Moderate: affects less than half of users across multiple activities.

H High: affects the majority of land and resource users across multiple activities.

Geographic Extent:

S Site: includes PDA and 200 m beyond.

L Local: LSA.

R Regional: RSA.

Duration:

S Short term: construction phase only.

M Medium term: continues through operation and maintenance phase.

L Long term: continues beyond operation and maintenance.

P Permanent.

Table A-10: Summary of Project Residual Environmental Effects: Other Current Use of Lands and Resources

Project Phase	Residual Environmental Effects Characteristics								
	Direction	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Environmental or Socio-economic Context	Significance	Prediction Confidence
Change in Access									
Construction	A	M	S	MT	C	R	D	N	H
Operation and Maintenance	A/P	M	S	MT	C	R	D	N	H
Decommissioning and Reclamation	P/A	L	S	ST/LT	C	R	D	N	H
Change in Level of Activity / Use									
Construction	A	L	S	ST	C	R	D	N	H
Operation and Maintenance	A	L	L	MT	C	R	D	N	H
Decommissioning and Reclamation	P	L	S	LT	C	R	D	N	H
Change in Cabin Use									
Construction	A	L	S	LT	C	R	D	N	H
Operation and Maintenance	A	M	L	LT	C	R	D	N	H
Decommissioning and Reclamation	P	L	L	P	O	R	D	N	H
Change in Viewscape									
Construction	A	L	L	MT	C	R	D	N	H
Operation and Maintenance	A	L	L	MT	C	R	D	N	H
Decommissioning and Reclamation	P	L	L	P	C	R	D	N	H
Change in Designated Land Use									
Construction	A	L	S	ST	C	R	D	N	H
Operation and Maintenance	A	L	S	MT	C	R	D	N	H
Decommissioning and Reclamation	P	L	S	P	C	R	D	N	H
Changes to Industrial Development									
Construction	A	L	S	ST	O	I	D	N	H
Operation and Maintenance	A	L	S	LT	O	I	D	N	H
Decommissioning and Reclamation	A	L	S	ST	O	I	D	N	H
Changes to Residential and Recreational Property									
Construction	A	L	L	LT	O	I	D	N	H
Operation and Maintenance	A	L	L	LT	S	I	D	N	H
Decommissioning and Reclamation	A	L	S	ST	O	I	D	N	H

KEY

Magnitude:

- L Low: affects a small group of land and resource users.
- M Moderate: affects less than half of land and resource users across multiple activities.
- H High: affects the majority of land and resource users across multiple activities.

Geographic Extent:

- S Site: within the PDA.
- L Local: within the LSA.
- R Regional: within the RSA.

Duration:

- ST Short-term: restricted to construction phase.
- MT Medium-term: continues through operations and maintenance phase.
- LT Long-term: 16 to 50 years.
- P Permanent.

Table A-11: Summary of Project Residual Environmental Effects: Health and Community Health

Project Phase	Residual Environmental Effects Characteristics								
	Direction	Magnitude	Geographic Extent	Duration	Frequency	Reversibility	Environmental or Socio-economic Context	Significance	Prediction Confidence
Changes in Air Quality (Which Could Affect Human Health)									
Operation and Maintenance (Representative of all project phases)	A	L	L	M	C	R	D	N	M
Changes in Water Quality (Which Could Affect Human Health)									
Operation and Maintenance (Representative of all project phases)	A	L	S	M	C	R	D	N	M
Changes in Soil Quality (Which Could Affect Human Health)									
Operation and Maintenance (Representative of all project phases)	A	L	L	P	C	R	D	N	M
Changes in Vegetation Quality (Which Could Affect Human Health)									
Operation and Maintenance (Representative of all Project phases)	A	L	L	M	C	R	D	N	M
Changes in Perceptions of Quality of Life and Well-Being									
Construction	A/P	L	L	M	S	R	D	N	H
Operation and Maintenance	A/P	L	L	M	S	R	D	N	H
Decommissioning and Reclamation	N	-	-	-	-	-	-	-	-

KEY

Magnitude:

- L Low: affects a small number of persons and may be indistinguishable from the normal condition or natural variability of the VEC.
- M Moderate: effect is detectable within a population, but is within normal range of variability or within regulatory standards and objectives.
- H High: effect causes clear and sustained exceedences of regulatory standards or objectives.

Geographic Extent:

- S Site: PDA and 200 m beyond.
- L Local: LSA.
- R Regional: RSA.

Duration:

- S Short-term: construction phase only.
- M Medium-term: continues through operation and maintenance phase.
- L Long-term: continues beyond operation and maintenance.
- P Permanent.

Appendix B

Summary of Mitigation Measures

The following table includes measures that the Canadian Environmental Assessment Agency considers necessary to mitigate the environmental effects of the Kami Project (the Project). Note that additional mitigation may be articulated in authorizations that may be issued by the federal or provincial governments or the Sept-Îles Port Authority.

Mitigation listed in Table B.1 takes into account modifications made to the Project by the Proponent since the commencement of the environmental assessment, including:

- relocation of the rail line to avoid passing adjacent to the water supply for the town of Wabush, and
- relocation of the Rose South Waste Rock Disposal Area to minimize viewshed and atmospheric effects on the town of Fermont.

Table B.1: Summary of Mitigation Measures

Note: Mitigation listed below relates to the mine site, unless otherwise indicated.

Mitigation	Project Phase/Timing
Project Description / General	
• Develop and implement Environmental Protection Plans for the mine site and terminal. Consult with Environment Canada in the development of the Environmental Protection Plan and on-site water management procedures for the Kami Terminal.	P/D C, O/M, D/R
• Further advance rehabilitation and closure planning through the detailed design stage, prior to construction.	P/D
• Develop a Waste Management Plan to ensure that waste (hazardous and non-hazardous) generated through all phases of the Project is managed and disposed of in an approved manner.	P/D,
• Implement progressive rehabilitation.	O/M, D/R
• Use best practices and comply with provincial and federal regulations with respect to the handing, storage, disposal and transportation of waste and hazardous materials.	P/D, C, O/M, D/R
• Allow fuel trucks to travel only on approved access roads.	C, O/M, D/R
• Minimize construction footprint (i.e., mine site PDA) and apply standard best construction and environmental protection measures (mine site and terminal).	C
Emergency Planning/Response	
• Develop and implement an Emergency Response Plan and Spill Contingency Plan for all potential accidents and malfunctions. The plans will include consideration of: • potential product spills between the train offloading area and the proposed Port Authority common load-out point; • a potential breach, spill, or unplanned release from the storm water retention pond (terminal). • specific procedures for sensitive sites; and • consideration of cross jurisdictional incidents.	C, O/M, D/R
• Ensure that emergency response plans address the requirements of the Port of Sept-Iles and the requirements of the *Environmental Emergency Regulations*, where applicable (terminal).	P/D, C, O/M, D/R
• Inspect equipment arriving on-site to ensure there are no fluid leaks.	C, O/M, D/R
• Establish a site for equipment maintenance, repair and cleaning that is at least 100 m from any lake, river, stream, or wetland (mine).	C, O/M, D/R

Table B.1: Summary of Mitigation Measures continued

Mitigation	Project Phase/Timing
• Clean, maintain and store work site machinery and vehicles on a designated site at least 30 m from surface waters or wetlands and ensure there is an adequate on-site supply of absorbent materials in case of accidental spills, and properly-identified, sealed receptacles for collecting petroleum products and waste materials (terminal).	C, O/M, D/R
• Ensure sedimentation ditches and ponds are sized to address extreme weather events.	C, O/M, D/R
• Develop and implement a forest fire prevention and response plan (terminal).	C
• Operate the rail line that connects the mine to the Quebec North Shore and Labrador Railway in accordance with industry standards and best practices to reduce the risk of a derailment. Use double-jacketed tank cars for fuel transportation.	O/M
Atmospheric Environment	
• Suppress fugitive dust in accordance with provincial *Air Pollution Control Regulations*. Use provincially- approved dust suppressant or road watering as needed (mine site and terminal).	C, O/M, D/R
• Use best practice design and progressive rehabilitation techniques to limit dust generation from waste rock piles.	O/M
• Cover or enclose conveyors at mine site and terminal to reduce dust.	O/M
• Use drilling machinery equipped with dust collectors or water dust suppression (terminal).	C, O/M, D/R
• Enclose car-dumping in building equipped with dust collector (terminal).	O/M, D/R
• Equip transfer points with dust collectors (terminal).	O/M
• Spray water over exposed ground surface to minimize wind erosion as needed (terminal).	C, O/M, D/R
• Develop a blasting plan in consultation with relevant agencies such as Environment Canada (mine site and terminal). The blasting plan will meet the local regulations with respect to noise and vibration.	P/D
• Use full horizontal cut off light fixtures, locate lateral lighting fixtures on south side of facility and direct lateral lighting away from the Baie des Sept-Îles (terminal).	C, O/M, D/R
• Limit lighting to that required for safe operation, shield exterior lights from above and use motion sensors for security lighting at the mine site. Locate portable lighting equipment so that it is not visible in surrounding urban areas.	C, O/M, D/R
• Adhere to equipment maintenance programs and implement a policy to minimize equipment idling.	C, O/M, D/R
• Develop and implement a Greenhouse Gas Management Plan.	C, O/M, D/R
• Design stacker to include adjustable height (terminal).	O/M
• Use low CO_2 hydroelectricity for infrastructure operation (terminal).	C, O/M, D/R
• A Noise Management Plan will be included and part of the Project's Environmental Protection Plan to be revised by appropriate regulatory authorities prior to construction.	C O/M
• Use mufflers on construction equipment.	C
• Maintain a vegetation buffer between the Project and nearby residents and cabins.	C, O/M, D/R
• Use continuous welded track and ballast system.	O/M
• Limit train speed on the rail line connecting the mine to the Quebec North Shore and Labrador Railway and to 50 km/h or less.	O/M
• Implement enforceable low-speed standards (mine site and terminal) for vehicles.	C, O/M, D/R
Landforms, Soils, Snow and Ice	
• Minimize use of esker material for aggregate.	C
• Promote vegetation of soil stockpiles to prevent erosion.	C, O/M, D/R

Table B.1: Summary of Mitigation Measures continued

Mitigation	Project Phase/Timing
• Design surface drainage to prevent flooding of stockpile areas.	P/D, C
• Implement erosion and sediment control measures (mine site and terminal). Use silt fencing downstream of the work area and at the limits of the work zone to reduce the carriage of silt and fines in any water runoff from the area (terminal).	C, O/M, D/R
• Prohibit earth-moving or excavation work near streams during high-water periods or heavy rain (terminal).	C, O/M, D/R
• Stabilize slopes as soon as possible using recognized bioengineering techniques that take into account instability, sensitivity to erosion, slope and height of the embankment (terminal).	C, O/M, D/R
• Manage blasting so that the vibrations will not affect ice cover of nearby lakes.	C, O/M
• Detailed engineering design will incorporate the ability to add ARD treatment in the future if monitoring results show ARD is a concern.	P/D
Water Resources	
• Design and operate effluent treatment systems to meet the requirements of the *Metal Mining Effluent Regulations* (mine effluent) and the Newfoundland and Labrador *Environmental Control Water and Sewage Regulations* (sewage discharge).	O/M
• Treat water before release to the environment to comply with subsection of 36(3) the Fisheries Act and ensure that final effluent quality will not exceed the Ministère du Développement durable, de l'Environnement de la Faune et des Parcs (MDDEFP) Directive 019 (terminal).	O/M, D/R
• Design and operate treatment and systems at Long Lake to maintain receiving water within the *Canadian Water Quality Guidelines for the Protection of Aquatic Life, Guidelines for Canadian Drinking Water Quality* and *Guidelines for Recreational Water Quality*.	P/D
• Implement specific controls for red water, beyond meeting regulatory requirements.	O/M
• Restore pre-project baseline water balance conditions as part of mine and terminal closure.	D/R
• Conduct ammonia contamination management including appropriate procedures for use of explosives and pH adjustment and detoxification of mine effluent if necessary.	C, O/M, D/R
• Construct perimeter ditches around the open pit mine and waste rock disposal area.	C
• Construct access roads and rail line cross drainage.	C
• Prohibit disposal of debris in the aquatic environment and remove as soon as possible any debris that is introduced (terminal).	C, O/M, D/R
• Line the concentrate storage area in conformance with Port requirements (terminal).	O/M, D/R
• Collect storm water from the concentrate storage area and direct it into a lined retention pond (terminal).	O/M, D/R
• Develop and implement a water management plan to describe how water on the site will be diverted, collected, treated, and stored so as to minimize adverse environmental effects. The details required to complete this plan will become available at the permitting stage when the project design is sufficiently detailed and finalized to prescribe site-specific measures. The plan will be submitted to appropriate regulatory agencies for review prior to the initiation of Project activities (terminal).	O/M, D/R
• If it is confirmed in detailed design that the flows, normal or maximum, in the downstream sections of the Ruisseau à la Baleine are higher than the baseline condition, review areas of the stream that are susceptible to erosion and fortify as necessary to prevent erosion (terminal).	P/D, C
Wetlands	
• Minimize disturbance and infilling within adjacent wetlands and maintain hydrological conditions.	C

Table B.1: Summary of Mitigation Measures continued

Mitigation	Project Phase/Timing
• Develop and implement an invasive species management plan outlining the potential invasive species likely to occur and procedures to prevent their introduction and/or spread, as part of the Environmental Protection Plan.	C, O/M, D/R
• Develop a wetland mitigation and monitoring plan as part of the Environmental Protection Plan based on the mitigation hierarchy of avoidance, minimization, and compensation (mine site and terminal). To be developed in consultation with Environment Canada.	P/D
• Develop a wetland compensation and rehabilitation strategy, in conjunction the wetland mitigation and monitoring plan as part of the Environmental Protection Plan.	P/D
• Evaluate options to integrate or coordinate activities with other operators (e.g., IOC, Cliffs) to ensure research into wetland reclamation and rehabilitation in the region is initiated and supported.	P/D, C, O/M, D/R
Fish, Fish Habitat and Fisheries	
• Compensate for loss of fish habitat or production	C
• Correctly size and install culverts to allow fish passage and maintain hydrology at stream crossings. Minimize riparian disturbance.	C
• Conduct fish relocation as required by DFO prior to dewatering ponds or streams.	C
• Install screens on all water intakes in fish habitat.	C
Birds, Other Wildlife and Their Habitats, and Protected Areas	
• Rehabilitate access routes that are no longer needed.	C, O/M, D/R
• Locate borrow pits more than 100 m away from the high water mark of water bodies.	C
• Establish buffers along the high mark of water bodies (1:100 year Flood Zone) in order to maintain movement corridors for migratory birds.	C O/M
• Avoid unnecessary encroachments in the riparian habitat on either side of streams (terminal).	C, O/M, D/R
• Develop, in consultation with Environment Canada, and implement an Avifauna Management Plan (mine site and terminal) (e.g., to address incidental take). The plan will provide details on the density of nesting pairs per species and per habitat type in the Anse à Brochu and Anse à la Baleine.	C
• Restrict clearing activities to outside of the breeding bird season (mine site and terminal).	C
• Restrict clearing and other activities within 800 m of an active raptor nest, and within 200 m of an inactive nest.	C
• Clearly mark the boundaries of sensitive areas (e.g., wildlife and their habitat, species at risk species of conservation concern) before commencing any work in the area.	C
• Do not hunt or harass wildlife on project sites (mine site and terminal). Do not harvest on the project site. Prohibit firearms on the project site.	C, O/M, D/R
• Conduct clearing using mulching and mechanized forestry equipment where practicable.	C
• Survey cabins and caves prior to construction. If bat colonies are identified, contact the Newfoundland and Labrador Department of Environment and Conservation and follow advice of provincial regulators.	P/D
• Utilising the results (successes and failures) from other mining operations in the area, conduct independent vegetation studies and trials, given the specific overburden, topography, drainage, and mine design conditions for the Kami Project. Integrate lessons learned into progressive reclamation for the Project.	P/D, O/M D/R
• Direct storm water, wastewater or surface water away from wildlife habitat (terminal).	C

Table B.1: Summary of Mitigation Measures continued

Mitigation	Project Phase/Timing
• Survey area for presence of sensitive wildlife prior to blasting. Delay blasting until wildlife is out of the area.	C O/M
• Use native local species during progressive re-vegetation, provided that it is effective in preventing dust lift and erosion.	O/M
Species at Risk and Species of Conservation Concern	
• Avoid plant species of conservation concern, where possible. If avoidance is not possible, transplant plant species of conservation concern to alternate sites.	C, O/M, D/R
• Develop and implement location-specific protection measures and environmental management techniques as part of the Environmental Protection Plan if any species at risk or species of conservation concern are encountered.	C, O/M, D/R
Historical and Cultural Resources	
• Develop and implement an Environmental Protection Plan in the event of an unexpected discovery (mine site and terminal).	P/D, C, O/M, D/R
KEY P/D = Preconstruction/Design C = Construction O/M = Operation and Maintenance D/R = Decommissioning and Reclamation	

Appendix C

Summary of Follow-up

The following requirements have been identified by the Canadian Environmental Assessment Agency for the Kami Project (Project) follow-up program. Responsible authorities must ensure that a follow-up program is designed and implemented under the former *Canadian Environmental Assessment Act*. Additional follow-up requirements may be articulated in authorizations that may be issued by the federal or provincial governments or the Sept-Îles Port Authority.

Table C-1: Follow-up Program

Follow-Up (applies to Mine Site unless otherwise indicated)	Project Phase
Atmospheric Environment	
• Monitor dust composition (including metals screening) to confirm the ambient concentrations of regulated trace metals at sites selected in co-operation with the Newfoundland and Labrador Department of Environment and Conservation.	C, O/M, D/R
• Model project emissions during operation following the development of the final mine design plan. Incorporate particle composition in ambient air quality monitoring.	P/D O/M
• Monitor ambient air quality for compliance with applicable Quebec regulations and guidelines in order to confirm impact predictions (terminal).	C, O/M, D/R
• Conduct routine inspections of dust collectors (terminal).	O/M
• Report annual GHG emissions to Environment Canada (mine and terminal).	C, O/M, D/R
• Monitor vibrations along rail route located near cabins and in residential areas (mine).	C, O/M
• Monitor CO emissions from blasting at nearby receptors with portable monitors (terminal).	C, O/M, D/R
• Develop a noise monitoring plan in consultation with regulatory authorities prior to the start of Project construction. Monitor sound quality by measuring sound pressure levels in specific noise sensitive areas and/or along the site perimeter. Develop a noise complaint follow-up and response procedure.	C, O/M, D/R
• Participate in air quality monitoring program initiated in Sept-Îles by *Table de concertation sur la qualité de l'air* in order to monitor and address air quality issues in the area (terminal).	C, O/M, D/R
Landforms, Soils, Snow and Ice	
• Measure and track volumes of stockpiled soil from salvage to replacement.	O/M, D/R
• Monitor soil stockpiles to ensure erosion control and re-vegetation measures are effective and proper signage is in place.	O/M, D/R
• Monitor vegetation growth and erosion on replaced soils against reclamation standards.	O/M, D/R
• Monitor runoff from stockpiles, discharge from the Tailing Management Facility, and mine water from the pit for pH, Total Dissolved Solids, sulfate, and dissolved metals, as per the *Metal Mining Effluent Regulations* and the Newfoundland and Labrador *Environmental Control Water and Sewage Regulations*.	O/M, D/R
• Conduct humidity cell and batch cell tests to confirm drainage interaction within the waste rock disposal areas.	
• Confirm environmental assessment predictions related to Acid Rock Drainage by basing future characterization of waste rock acid-generating potential on the results of direct measurement of total carbonate and sulphide content.	P/D

Table C-1: Follow-up Program continued

Follow-Up (applies to Mine Site unless otherwise indicated)	Project Phase
Water Resources	
• Monitor water quality of the storm water retention pond discharge to ensure compliance with subsection 36(3) of the Fisheries Act and the Ministère du Développement durable, de l'Environnement de la Faune et des Parcs Directive 019.	P/D, O/M
• Monitor stream water quality of Ruisseau à la Baleine and Unnamed Stream during operation to verify that the total suspended solids concentration remains within the *Canadian Water Quality Guidelines for Protection of Aquatic Life* (terminal).	P/D, O/M
• Conduct groundwater sampling as part of the detailed engineering phase of the project and incorporate this baseline (existing) groundwater data into the Project monitoring and follow-up program for groundwater quality (mine). • Monitor groundwater quality during operations to confirm the performance of the retention pond liners (mine).	P/D, O/M
• Monitor receiving environment surface water quality during construction, operations and closure, using methods recommended by regulatory agencies in order to confirm impact predictions and implement adaptive management, if predictions or regulatory thresholds are exceeded.	C, O/M, D/R
• Conduct water sampling for total and fecal coliforms in Long Lake to identify background levels prior to development of the Kami mine.	
• Monitor water quantity withdrawal and discharge, in comparison to pre-established thresholds. Use results in order to optimise water use or re-use.	O/M, D/R
• Monitor the effectiveness of erosion and sedimentation control measures as related to effluent quality.	O/M,D/R
• Monitor channel and water feature naturalization.	O/M, D/R
• Install permanent monitoring wells and monitor groundwater quality at the open pit mine, Tailings Management Facility and select mine facilities.	O/M, D/R
• Monitor perimeter and off-site water levels (open pit mine, Tailings Management Facility, mine site).	O/M, D/R
• Monitor water quality and volume in the open pit sump discharge.	O/M
• As part of ongoing project design, continue field work and analyses to update and refine the current model of the existing hydrogeological environment around the proposed open pit, and the potential impacts of the open pit development. Present the results of the advanced hydrogeological work for review by regulators.	P/D
• Undertake long-term pumping tests when site access is approved to assess the role and impact of geological features such as faults and fractures. • Update the 3D numerical groundwater flow model for the Project to include data from pumping tests that focuses on dewatering of the open pit prior to and during operation. • Monitor for potential effects of the pit dewatering and if water levels in surrounding lakes are affected, develop mitigation strategies to address the effects. • Refine and update hydraulic conductivity estimates when additional investigation of soil and bedrock hydraulic properties is carried out during the detailed engineering and design phase of the Project.	P/D
• Implement additional mitigation measures as required, if further test work, groundwater and surface water modeling and design, conducted as part of the detailed design phase of the project, indicate that there is a potential impact to groundwater or surface water resources.	P/D, C, O/M, D/R

Table C-1: Follow-up Program continued

Follow-Up (applies to Mine Site unless otherwise indicated)	Project Phase
Wetlands	
• Monitor to confirm that wetland mitigation measures are appropriately implemented.	O/M, D/R
• Participate in regional efforts aimed at wetland reclamation and rehabilitation to compensate for those wetlands that will be permanently altered.	C, O/M, D/R
Fish, Fish Habitat and Fisheries	
• Monitor for potential impacts on sediment quality due to red water discharge.	O/M
• Monitor to ensure mitigation to protect fish and fish habitat is implemented and effective (i.e. erosion control, fish passage, minimum flows and water levels in nearby ponds), as per the Environmental Protection Plan.	C, O/M, D/R
Birds, Other Wildlife and Their Habitats and Protected Areas	
• Monitor Anse à Brochu and Anse à la Baleine to determine concentrations of waterfowl prior to and during blasting, if it is to occur during the migration season (terminal).	C
• Conduct monitoring to confirm that mitigation measures identified in the EIS and in the Avifauana Management Plan are appropriately implemented and achieving the desired outcome. Implement adaptive management if monitoring shows that mitigation is not being effective.	C, O/M, D/R
• Undertake targeted dusk surveys for Common Nighthawk (*Chordeiles minor*) in 2013. Integrate results into the avifauna management plan.	P/D
Historical and Cultural Resources	
• Undertake monitoring for compliance with measures outlined in the EPP related to historical and cultural resources.	O/M, D/R
Current Use of Lands and Resources for Traditional Purposes by Aboriginal Persons	
• Conduct ongoing engagement with Aboriginal communities and organizations, as required.	C, O/M, D/R
• Conduct a country food sampling program to evaluate any changes in the environment that may occur as a result of the project.	P/D, C, O/M, D/R

Appendix D

Summary of Concerns Raised by Aboriginal Groups

Group	Subject	Comment/ Concern	Summary of Proponent Response	Agency Response
Innu Nation, NNK, NCC, ITUM	Cumulative Effects	Concern with the approach to assessing cumulative ecological and socio-economic effects of extensive economic development in the region.	In the EIS, Alderon assessed the potential cumulative environmental effects of the Project in combination with other projects and activities that have been or will be carried out, and whose environmental effects will likely overlap in space and time with those of the Project for each VEC. This included defining appropriate environmental assessment boundaries (spatial and temporal) for each VEC, considering potential project-specific environmental interactions and effects, and the larger geographic perspectives to assess cumulative effects on a regional scale (LSA and RSA defined for each VEC). The Project is located within the municipal planning boundaries of Labrador City and Wabush, in areas that are zoned for mineral exploration and associated activities. The town planning process was conducted under the *Urban and Rural Planning Act, 2000* and considered the significance of mining to the region, provided opportunities for public consultation and contemplated the cumulative effects of these activities within the region. Alderon has therefore assessed the Project's cumulative effects in accordance with the requirements of provincial and federal environmental assessment legislation, and with the EIS Guidelines issued to Alderon by governments.	The Proponent assessed the cumulative effects of the Kami Iron Ore Project, in combination with other known projects or activities that have been or will be carried out. The proponent's analysis is consistent with the Agency's *Operational Policy Statement – Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act (2007)*; and *Cumulative Effects Assessment Practitioners Guide (1999)*. The Agency is satisfied with the proponent's approach of considering the effects of past and on-going projects in the existing baseline for this Project.

ITUM: Innu-takuaikan Uashat mak Mani-utenam
NCC: NunatuKavut Community Council
NNK: Naskapi Nation of Kawawachikamach

Summary of Concerns Raised by Aboriginal Groups continued

Group	Subject	Comment/ Concern	Summary of Proponent Response	Agency Response
NCC Innu Nation, ITUM	Cumulative environmental effects and cumulative impacts on Aboriginal and Treaty Rights	Desire that a more regional approach be developed by government to assess the environmental impacts of industrial development and the environment.	NA	The Agency is satisfied that the proponent's approach of considering the effects of past and on-going projects in the existing baseline for this Project is consistent with the Agency's *Operational Policy Statement – Addressing Cumulative Environmental Effects under the Canadian Environmental Assessment Act (2007);* and *Cumulative Effects Assessment Practitioners Guide (1999)*. With respect to the regional assessment of cumulative effects; in March 2012, the Government of Newfoundland and Labrador responded to a recommendation made by the Joint Review Panel in relation to the Lower Churchill Hydroelectric Generation Project stating that it will work to identify regional mechanisms to assess and mitigate the cumulative effects of future development in Labrador. Newfoundland and Labrador.
Innu Nation, ITUM	Historical and Cultural Resources	Concern over potential impacts to historical and cultural resources. Precautionary measures are also required to prevent damage to historical and cultural resources that may exist in the project area in addition to mitigation measures taken in the event of an unexpected find.	There are no areas in the Project Development Area that are known to have high potential for historical and cultural resources. A project-specific Environmental Protection Plan will outline procedures to follow in the event of an unexpected discovery and measures will be taken to mitigate any adverse effects. In addition, the archaeological potential mapping of the Local Study Area will be used to plan further field investigations and mitigation as Project planning progresses, consistent with provincial guidelines and in adherence to a precautionary approach. Any cultural / spiritual sites identified during any phase of the Project would be avoided until appropriate means and measures of documentation, interpretation and long-term conservation and stabilization are established in consultation with Aboriginal groups, other stakeholders, and the Provincial Archaeology Office.	The Proponent has provided information about the potential effects, mitigation measures and follow-up measures relating to preservation of historic and heritage resources. The Agency is satisfied that the Proponent has considered this issue within the EIS and, taking into account the identified mitigation measures, concludes that there are not likely to be significant adverse environmental effects to historic and heritage resources (including archaeological resources) as a result of the Project.

ITUM: Innu-takuaikan Uashat mak Mani-utenam
NCC: NunatuKavut Community Council
NNK: Naskapi Nation of Kawawachikamach

Summary of Concerns Raised by Aboriginal Groups continued

Group	Subject	Comment/ Concern	Summary of Proponent Response	Agency Response
Innu Nation, NCC	Tailings Management	Concern over management and effects of tailings. Desire for additional information on tailings management alternatives and effectiveness analysis, including treatment methods and waste rock disposal sites.	Plant operation is based on reuse of process water. Excess water will be treated to meet regulatory quality standards and requirements before discharge. A mechanical treatment system with enhanced coagulation and settling will be used, similar to that used at a number of other iron ore facilities. The geometry of the pit generally precludes disposal of tailings or waste rock in the pit during the operating life of the pit. Additional details were provided by the Proponent on the preferred tailings management system and waste rock disposal management.	The Agency is satisfied with the proponent's analysis of alternatives for the tailings management system and waste rock disposal.
Innu Nation	Accidents and Malfunctions	Concern about the effects of potential accidents and malfunctions. Concern with respect to how coordination would occur for a spill event impacting both provinces.	The EIS considered accidents and malfunctions as prescribed in Section 4.6.1 of the EIS Guidelines, focusing on those that may result from project activities. An Emergency Response and Spill Response Plan will be developed for all identified accidental events. A list of the emergency/spill responses to various accident scenarios was provided. In the case of a cross jurisdictional event, the plan will include detailed notification and response procedures involving parties such as the Newfoundland and Labrador Department of Environment and Conservation, Environment Canada Quebec, and emergency services in western Labrador and Fermont, Québec. Alderon will commit to providing draft plans, upon request, to Innu Nation for their information at the same time as it provides these plans to government. Alderon has committed to continued and meaningful engagement with Aboriginal groups, including Innu Nation, during the life of the Project and has reiterated its preparedness to discuss mitigation measures and other matters related to the Project and its implementation. Alderon is confident that the plans and programs referenced will comply with regulatory standards and achieve high standards of environmental performance and will be subject to review by Aboriginal groups, regulators and other stakeholders.	The potential effects of accidents and malfunctions were assessed for each VEC within the EIS. The proponent's responses to concerns are reasonable, and the Proponent included in its analysis specific scenarios identified by Aboriginal groups. While further detail is required regarding the scope and nature of a coordinated response among various emergency response organizations, for the purposes of the EA, the Agency is satisfied with the Proponent's conclusions.

ITUM: Innu-takuaikan Uashat mak Mani-utenam
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Summary of Concerns Raised by Aboriginal Groups continued

Group	Subject	Comment/ Concern	Summary of Proponent Response	Agency Response
Innu Nation, ITUM	Rehabilitation and Closure	Comments relate to the importance of rehabilitation of the mine site, particularly in relation to the potential for the lands affected by the Project to be returned to conditions suitable for traditional land use by Aboriginal peoples. Concern related to the perceived vagueness and limited nature of rehabilitation and closure objectives, and concerns over potential challenges of rehabilitation. Additional information was requested related to the successes and challenges associated with the rehabilitation of similar projects.	Alderon's Rehabilitation and Closure Plan will outline measures to return the site to one that can be safely accessed and supports flora and fauna species native to the area. Information on rehabilitation of similar mines in the region is limited because there have been no mine closures in this area. Additional information was provided on the scope, nature, methods, and objectives of rehabilitation and closure activities. The Rehabilitation and Closure Plan will be based on the early stages of engineering and will be further advanced through the detailed design stage, prior to submission to the Newfoundland and Labrador Departments of Natural Resources and of Environment and Conservation as a component of the required submissions to obtain construction and operational approvals for the Project. The Rehabilitation and Closure Plan will be updated through an iterative process as detailed design and construction proceeds. The plan will be in accordance with all regulatory requirements. Alderon will commit to providing draft plans, upon request, to Aboriginal groups for their information at the same time as it provides these plans to government. Alderon has committed to continued and meaningful engagement with Aboriginal groups, including Innu Nation, during the life of the Project and has reiterated its preparedness to discuss mitigation measures and other matters related to the Project and its implementation. Alderon is confident that the plans and programs referenced will comply with regulatory standards and achieve high standards of environmental performance and will be subject to review by Aboriginal groups, regulators and other stakeholders.	The Agency is satisfied with the proponent's consideration and response to Aboriginal concerns related to rehabilitation and closure. Regulatory requirements related to rehabilitation and closure lie within provincial jurisdiction.

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Summary of Concerns Raised by Aboriginal Groups continued

Group	Subject	Comment/ Concern	Summary of Proponent Response	Agency Response
Innu Nation, NCC, ITUM	Aboriginal and Treaty Rights	General concern about effects on Aboriginal and treaty rights and effects on lands and resources used for traditional purposes. Concern related to the assessment in the EIS, or lack thereof, of the nature and scope of Aboriginal and treaty rights and the potential impact of the Project on those rights. Concern about failure to engage directly with Aboriginal groups in relation to section 35 matters and failure to assess the scope and depth of the rights and interests concerned has resulted in a lack of key information on which to make assessments of specific impacts and make proposals for mitigation and/or accommodation.	With respect to impacts of the Project on Aboriginal rights, Alderon believes it has fully assessed the effects of the Project upon the contemporary exercise of asserted Aboriginal rights and the current use of land and resources for traditional purposes by Aboriginal persons. Alderon has concluded that the Project will not have significant adverse effects upon any Aboriginal group's current use of land and resources in the project area. Additionally, the Project Development Area is located within a heavily industrialized region and within the municipal planning boundaries of the communities of Labrador City and Wabush in areas zoned for mineral exploration and development. The EIS does not seek to assess the strength of any particular rights claim or how the proposed Project will affect Aboriginal rights per se. Alderon's assessment focused on the historical basis for each asserted right, how the asserted Aboriginal rights in the vicinity of the Project are currently being exercised and how the proposed project is likely to affect those current activities. In the proponent's view, the level of information and assessment that was presented in the EIS was appropriate for an environmental assessment, which is intended to assess the likely impacts of a proposed project on the contemporary exercise of Aboriginal rights. The Proponent maintains that the proposed Project is not likely to interact with or affect (and especially, to have significant adverse effects on) the Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons, and will therefore contribute little (if at all) to any cumulative effects on this VEC within the RSA. Alderon reiterates its efforts to engage Aboriginal groups potentially affected by the Project, and incorporate their knowledge and concerns into the EIS, including the potential effects of the Project on Aboriginal and treaty rights. The Proponent has committed to continued engagement with Aboriginal groups throughout the life of the Project and should any evidence be provided of adverse effects upon current land and resource usage, Alderon will discuss appropriate mitigation and avoidance measures.	The Proponent has committed to ongoing consultation and engagement with Aboriginal groups to minimize the Project's effects on Aboriginal rights and current use of lands and resources for traditional purposes. The Agency is satisfied with the proponent's efforts to engage the community, and its commitment to continue those efforts. The Agency is satisfied that the project's effects on asserted Aboriginal rights and current use of lands and resources for traditional purposes will be minimal based on the analysis carried out with the available information.

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Summary of Concerns Raised by Aboriginal Groups continued

Group	Subject	Comment/ Concern	Summary of Proponent Response	Agency Response
Innu Nation	Environmental effects	Concern that the Proponent has excluded certain pathways between potential effects on VECs and the subsequent potential effects on Aboriginal use and treaty rights in their assessment.	The EIS (and in particular, Volume 1, Chapter 22) assesses the potential environmental effects of the Project on the Current Use of Land and Resources for Traditional Purposes by Aboriginal Persons VEC. The environmental effects assessment for this VEC recognizes and considers the potential for such land and resource use activities to be affected both directly (through direct disturbance) and indirectly (as a result of any associated environmental effects on other components of the biophysical and socio-economic environments), and these potential "effects pathways" have been considered integrally within the assessment. The environmental effects assessments for the various biophysical and socio-economic VECs provide a detailed analysis of the potential effects of the Project on these environmental components. This includes identifying and defining the likely spatial and temporal extents of these effects, most of which have been determined to be relatively limited in distribution (and for the most part, restricted to the PDA and/or immediately adjacent area, encompassed by the LSA). Available information does not indicate that the Labrador Innu currently use lands and resources within the PDA or even within the larger LSA. Therefore, even with the potential for such indirect effects and effect pathways, a lack of current Innu land and resource use within the likely zone of influence of the Project and its environmental effects leads to the conclusion that there will be no project-related effects (either direct or indirect) on such activities.	The Agency is satisfied that the information provided through the EA process is sufficient to determine the potential impact of the project on current use of land and resources by Aboriginal people and impacts to Aboriginal or treaty rights. The Agency is satisfied that the project's effects on rights will be minimal after mitigation and follow-up.

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Summary of Concerns Raised by Aboriginal Groups continued

Group	Subject	Comment/ Concern	Summary of Proponent Response	Agency Response
Innu Nation, NNK, NCC, ITUM	Caribou	Concern over the Project's effects on woodland caribou, particularly the Project's contribution to cumulative effects and its detraction from recovery efforts. Concern that, regardless of whether or not caribou are currently present in study area, the land and resources affected by the Project will result in loss of productive and potentially viable habitat for an extended period of time. Concern over the effects on caribou of increased rail traffic along the line to Sept-Îles.	There were no areas of primary caribou habitat identified in the Project Ecological Land Classification (ELC). It was estimated that 242 km^2 of potential secondary habitat and 497 km^2 of potential tertiary caribou habitat exists within the RSA. The total area of potential secondary and tertiary caribou habitat that could be lost in the PDA was estimated as 23 km^2. Regardless of the quality of habitat within the RSA for caribou, as determined by the ELC habitat types, it is unlikely that the Project will have an impact on the capability of the lands within the vicinity of the Project to support caribou. Studies suggest that nearby herds do not use the project area, and caribou were not observed in the vicinity of the Project during ground-based or aerial surveys. Interviews with local area residents and stakeholders indicate that caribou are not using the area. In considering the potential effects of the Project within the context of the RSA, the project area is located within the existing industrial area of Western Labrador that includes several existing mining developments within the municipalities of Labrador City and Wabush, Labrador and Fermont, Québec. Given the existing developments in the surrounding area, it is unlikely that lands within the vicinity of the Project would support caribou in the future. The QNS&L existing infrastructure has been in operation for decades. On average, approximately 12 to 14 trains per day travel the QNS&L. The Project will contribute one to two additional trains. Therefore, the Project's incremental contribution to existing caribou disturbance levels is not substantial and is not likely to result in cumulative environmental effects. Alderon will participate, as a rail user, in any joint working group established to assess cumulative impacts on migratory and woodland caribou resulting from increased rail transportation of iron ore to the Port of Sept-Îles.	The Proponent investigated the potential for the Project to affect caribou, and found that the project's effects do not overlap with caribou habitat, and therefore did not assess the impacts or propose mitigation measures. The project footprint does not overlap any critical habitat defined for this species according to the Recovery Strategy for Boreal Woodland Caribou. Effects on wildlife and their habitat will be mitigated through measures designed to limit the area disturbed by the Project and to control emissions and discharges. The Agency concludes that the Project is not likely to cause significant adverse environmental effects on wildlife and their habitat, taking into account the implementation of mitigation measures. Rail transport of the ore between the mine site and the Port of Sept-Iles is not included in the project scope for this EA.

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Summary of Concerns Raised by Aboriginal Groups continued

Group	Subject	Comment/ Concern	Summary of Proponent Response	Agency Response
NNK, ITUM	Vegetation	Concern over the Project's impacts on vegetation and deforestation. Specific concern over the Project's effects on rare plants and the lack of detail regarding the mitigation and monitoring.	The effects of the Project on vegetation were assessed in the EIS. Information pertaining to the follow-up program was provided in Section 8.3 of Volume 1 of the EIS. Alderon will submit an EPP to appropriate regulatory authorities for review prior to initiation of Project activities. The EPP will specify the mitigation measures and procedures to be used on site in sufficient detail to allow contractors and employees to implement these commitments in the field.	The Proponent provided information about the potential effects and mitigation measures relating to the potential impacts on vegetation. Taking into account mitigation measures, the Agency concludes that the Project is not expected to result in a significant adverse environmental effect to vegetation.
NNK, NCC, ITUM	Air and Water Quality	Concern that the Project will increase the frequency and likelihood of events where air quality and water quality guideline parameters are exceeded. General concern over the cumulative effects on air and water quality.	The method used to assess the potential effect of the Project on air quality and water quality inherently assesses the cumulative effects from the Project and existing industrial activities in the region. The EIS predicts that the cumulative effects from the Project and surrounding industry will not be significant. The EIS also identified specific mitigation measures to reduce the effect of the Project on air and water quality. In addition, the Environmental Management System will be developed as a component to Alderon's Sustainable Management Framework for the Project and will incorporate best industry practices for ambient air quality and water quality monitoring and mitigation measures.	The Agency is satisfied that the Proponent has considered the impacts of the Project on air and water quality and, taking into account the identified mitigation and monitoring measures, concludes that there are unlikely to be significant adverse environmental effects. A follow-up program to verify the predicted effects in the EA and the effectiveness of mitigation measures will be implemented.
NNK, NCC, ITUM	Birds and Other Wildlife	Concern over impacts to birds and other wildlife, including cumulative effects, and the methods used to undertake the assessment.	As per Sections 3.3 and 4.21 of the EIS Guidelines, birds, wildlife and their habitats and protected areas were included as a VEC. The information presented includes summaries from surveys and discussions on potential environmental effects on the specific environmental components that were identified and represented in the Birds, Wildlife and their Habitats, and Protected Areas VEC. A habitat-based approach, based on the ELC and habitat types, was used to assess potential Project effects on bird and wildlife species. In this way, the primary Project effects (i.e., physical disturbance, removal of habitat) on various species groups are comprehensively assessed. Overall conclusions were gathered from the data and results of the individual components or attributes of the VEC that were conducted separately. The grouping of the various components in this VEC was done to comply as closely as possible with the direction provided in the EIS Guidelines.	The Agency is satisfied that the Proponent has considered the impacts of the Project on birds and other wildlife and, taking into account the identified mitigation and monitoring measures, concludes that there are unlikely to be significant adverse environmental effects.

Summary of Concerns Raised by Aboriginal Groups continued

Group	Subject	Comment/ Concern	Summary of Proponent Response	Agency Response
NCC	Wetlands	Concern over the effects on wetlands and the potential for the Project to destroy rare and limited wetlands in the region.	Owing to the nature of the Project, with an ore body dispersed throughout a significant depth below bedrock and a requirement for open pit mining operations, Alderon acknowledges that there will be a loss of natural wetlands associated with the social and economic imperatives of developing the Project. As identified in the EIS (Chapter 17, Section 17.6.2, Table 17.8), development of the Project will result in the loss or alteration of approximately 572 ha of wetlands in the PDA, with the majority of the wetland area comprised of wetland types considered relatively common in the region. Avoidance and minimization of adverse effects to wetlands and their functions will be practiced through development of the final Project design and the EPP. Furthermore, wetlands will be rehabilitated where possible and the construction of wetlands will be considered where feasible.	The Proponent, in its EIS, conducted an analysis of the Project's potential effects on the VEC, and concluded that, while the construction, operation, maintenance, and decommissioning and reclamation activities will affect wetlands and wetland habitat, the residual effects are not considered to be significant, as the wetlands that are to be disturbed are representative of the wetlands and wetland habitats that are generally available throughout Western Labrador. The Agency is satisfied that the Proponent has considered the impacts of the Project on wetlands and, taking into account the identified mitigation and monitoring measures, concludes that there are unlikely to be significant adverse environmental effects.
NCC	Transmission Line	If a transmission line will be built to supply the Project with power, it should follow the Trans Labrador Highway.	Nalcor has completed preliminary engineering design for a 315 kV transmission line from Churchill Falls to Wabush and related infrastructure in response to Alderon's formal request for power. Stage III engineering and investigation work for the provision of transmission and electrical plant and services associated with supplying power to the Project will be completed by Nalcor and commenced in December 2012. Nalcor will be responsible for the routing of the new transmission line and is responsible for assessing the impact of the Nalcor project components required to deliver power to the Project.	The Agency is satisfied with the Proponent's response.

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Summary of Concerns Raised by Aboriginal Groups continued

Group	Subject	Comment/ Concern	Summary of Proponent Response	Agency Response
NCC	Traditional Use	The Proponent states that the use of the land in Western Labrador by NCC members may not be Traditional Use. The NCC disagrees with this statement, as NCC ancestors used and sustained themselves off areas in the Height of Land and Western Labrador for countless generations and this has continued on into today's contemporary land use by NCC members in Western Labrador.	Alderon acknowledges the concern expressed by NCC and that NCC asserts traditional rights in that area. Alderon withdraws the following statement in the EIS (EIS Volume 1, Part II 22-36): "NCC members live and work in the Labrador West area, and currently undertake a number of recreational land and resource use activities throughout the region, including hunting, trapping, camping and general travel. As "traditional use" is, however, generally understood to mean activities that have been exercised (and are being exercised) by an identifiable Aboriginal community since before European contact or control of a specific area, these land and resource use activities may not be considered traditional in that they are not necessarily a continuation of ancestral activities that took place historically within this area of western Labrador (although they do reflect local knowledge and use of the area)". Alderon has assessed all available information on current land and resource use activities undertaken by members of the NCC including information provided directly by NCC members themselves. Notwithstanding the classification of use as traditional or otherwise, the results of the assessment demonstrate that there is not anticipated to be any significant residual adverse effects from the project on any land and resource use by NCC members.	The Agency is satisfied with the Proponent's response to this issue and the withdrawal of the statement.

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