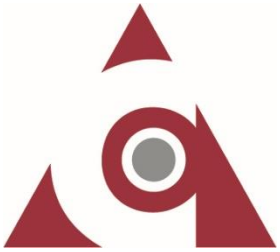
Joyce Lake Direct Shipping Iron Ore Project

Western Labrador

Newfoundland and Labrador

Summary of the Environmental Impact Statement/ Plain Language Summary



Joyce Direct Iron Inc.

May 2021

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ACRONYMS AND ABBREVIATIONS

Acronyms and abbreviations used in the Application are provided in the following list.

°C	Degree Celsius
µg	microgram
S/cm	Siemens per centimetre
AANDC	Aboriginal Affairs and Northern Development Canada
AC CDC	Atlantic Canada Conservation Data Centre
AD	Anno Domini
AET	Actual evapotranspiration
AFDC	annual flow duration curve
AIP	Agreement In Principle
ANFO	ammonium nitrate with fuel oil
ARD	acid rock drainage
ARD/ML	acid rock drainage/metal leaching
AREMA	American Railway Engineering and Maintenance of Way Association
As	arsenic
AST	above-ground storage tank
BMP	beneficial management practices
Bq	becquerel
CAC	criteria air contaminants
$CaCO_3$	Calcium carbonate
CCME	Canadian Council of Ministers of the Environment
Cd	cadmium
CDPNQ	Centre de données sur le patrimoine naturel du Québec
CEA Agency	Canadian Environmental Assessment Agency
CEAA 2012	*Canadian Environmental Assessment Act, 2012*
CEM	Coastal Engineering Manual
Century	Century Global Commodities Corporation
CEPA	*Canadian Environmental Protection Act*
CEQG	Canadian Environmental Quality Guidelines
CFU	colony-forming unit
CGS	Canadian Geological Survey
CH_4	methane
CIE	Commission Internationale de L'Éclairage
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
CLSC	Local Community Service Centre
cm	centimetre
Cn	cyanide

CO	carbon monoxide
CO_2	carbon dioxide
CO_{2eq}	carbon dioxide equivalent
COSEWIC	Committee on the Status of Endangered Wildlife In Canada
CPNIMLJ	Conseil de la Première Nation des Innus de Matimekush-Lac John
Cr	chromium
CSQG	Canadian Sediment Quality Guidelines
CSQG-PAL	Canadian Sediment Quality Guidelines for the Protection of Aquatic Life
CWQG	Canadian Water Quality Guidelines
CWQG-PAL	Canadian Water Quality Guidelines for the Protection of Aquatic Life
CWS	Canadian Wildlife Service
dB	decibel
dBA	A-weighted decibels
DFO	Fisheries and Oceans Canada
DGSNL	Digital Government and Service NL
DO	Dissolved oxygen
DOC	dissolved organic carbon
DSO	Direct Shipping Ore
EA	Environmental Assessment
ECCC	Environment and Climate Change Canada
ECWSR	*Environmental Control Water and Sewage Regulations*, 2003
EEB	Economy, Employment and Business
EEM	Environmental Effects Monitoring
EIS	Environmental Impact Statement
ELC	Ecological Land Classification
EMP	Environmental Management Plan
EMS	Environmental Management System
EPP	Environmental Protection Plan
EPR	Environmental Preview Report
ERP	Emergency Response Plan
ET	Evapotranspiration
FDC	Flow duration curves
FIFO	Fly-In Fly-Out
FOS	Factor of Safety
FPWC	Federal Policy on Wetland Conservation
FRPC	fixed-radius point count
FS	Feasibility Study
FTA	Federal Transit Administration
GDP	Gross Domestic Product
GHG	Greenhouse gas

GHGRP	Greenhouse Gas Emissions Reporting Program
GIS	Geographic information system
GLC	Ground-level concentrations
GOC	Government of Canada
GPS	Global Positioning System
GRCH	George River Caribou Herd
GWh	Gigawatt-hour
HA	Highly annoyed
Ha	Hectare
HADD	harmful alteration, disruption or destruction
IAAC	Impact Assessment Agency of Canada
IBA	Impact Benefit Agreement
IDF	intensity-duration-frequency
IOC	Iron Ore Company of Canada
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization of Standardization
ISQG	Interim Sediment Quality Guideline
ITK	Indigenous Traditional Knowledge
ITUM	Innu Takuaikan Uashat mak Mani-Utenam First Nation
JLNPD	Joyce Lake North Perimeter Ditch
JLSPD	Joyce Lake South Perimeter Ditch
JTU	Jackson Turbidity Unit
Km	kilometre
km²	kilometre squared
KPa	kiloPascal
Kt	kilotonne
kW	kilowatt
L	litres
Labec Century	Labec Century Iron Ore Inc.
LEED	Leadership in Energy and Environmental Design
LEMV	Loi sur les espèces menacées ou vulnérable
LiDAR	Light Detection and Ranging
LIL	Labrador Innu Lands
LIM	Labrador Iron Mines Ltd.
LISA	Labrador Inuit Settlement Area
LM&E	Labrador Mining and Exploration
LNAPL	Light Non-Aqueous Phase Liquids
LOM	life of mine
LRC	Lower Red Chert
LSA	Local Study Area

LSI	Langelier Saturation Index
m	metre
m^2	square metre
m^3	cubic metre
MAF	mean annual flow
mAMSL	metres above mean sea level
MBCA	*Migratory Birds Convention Act*
MDMER	*Metal and Diamond Mining Effluent Regulations*
MEND	Mine Environment Neutral Drainage
Mg	magnesium
MRC	municipalité régionale de comté
MUSLE	Modified Universal Soil Loss Equation
MW	megawatt
N_2O	nitrous oxide
NAAQ	National Ambient Air Quality
NAO	North Atlantic Oscillation
Ni	nickel
NL	Newfoundland and Labrador
NLDF	Newfoundland and Labrador Department of Finance
NLDFFA	Newfoundland and Labrador Department of Fisheries, Forestry and Agriculture
NLDIET	Newfoundland and Labrador Department of Industry, Energy and Technology
NLDIPGS	Newfoundland and Labrador Department of Immigration, Population Growth and Skills
NLDLAA	Newfoundland and Labrador Department of Labrador and Aboriginal Affairs
NLDNR	Newfoundland and Labrador Department of Natural Resources
NLDOECC	Newfoundland and Labrador Department of Environment and Climate Change
NLDTCAR	Newfoundland and Labrador Department of Tourism, Culture, Arts and Recreation
NLEPA	Newfoundland and Labrador *Environmental Protection Act*
NLESA	Newfoundland and Labrador *Endangered Species Act*
NLWLA	Newfoundland and Labrador *Wild Life Act*
NO_X	nitrogen oxides
NPR	Neutralization Potential Ratio
NPV	Net Present Value
NRCan	Natural Recourses Canada
NS	Nova Scotia
NTS	National Topographic System
NTU	Nephelometric Turbidity unit
NW	northwest
OHSA	Newfoundland Occupational Health and Safety
OPS	Operational Policy Statement
PAG	potentially acid generating

PAO	Provincial Archaeology Office
Pb	lead
PDA	Project Development Area
PEA	Preliminary Economic Analysis
PEL	Probable effect levels
PET	potential evapotranspiration
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PMP	probable maximum precipitation
PoF	probability of failure
Ppb	parts per billion
PPV	peak particle velocity
QC	Quebec
QNS&L	Quebec North Shore and Labrador
RMS	root mean square
RNC	Royal Newfoundland Constabulary
ROM	Run-of-Mine
RSA	Regional Study Area
SAR	Species at Risk
SDR	systematic data recovery
Se	selenium
SE	southeast
SFE	Shake Flask Extraction
SO_2	sulphur dioxide
SOCC	Species of Conservation Concern
SSAC	Species Status Advisory Committee
SW	southwest
t	tonne
t/d	tonne per day
TCU	true colour unit
TDS	Total Dissolved Solids
TFe	Total iron
The Project	Joyce Lake Direct Shipping Iron Ore Project
TP	Total phosphorus
TPM	total particulate matter
TRT	Tshiuetin Rail Transportation
TSP	Total suspended particulate matter
TSS	Total suspended solids
U	uranium
UNFCCC	United Nations Framework Convention on Climate Change

US	United States
US EPA	United States Environmental Protection Agency
USgpm	US gallons per minute
USGS	United States Geological Survey
UV	Ultraviolet
V	Volt
VC	Valued Component
WLEMDIBAA	Western Labrador Economic Major Development Impacts and Benefits Agreement Area
WNS	White-nose Syndrome
WQMA	Water Quality Monitoring Agreement
WWTP	Wastewater Treatment Plant
Yr	Year
Zn	Zinc

1.0 INTRODUCTION AND ENVIRONMENTAL ASSESSMENT CONTEXT

Joyce Direct Iron Inc. (Joyce Direct Iron; the Proponent), is proposing to develop an iron ore mine in Newfoundland and Labrador, approximately 20 kilometres (km) to the northeast of the Town of Schefferville, Québec. The deposit for the Joyce Lake Direct Shipping Iron Ore Project (the Project) lies on a peninsula of land in Attikamagen Lake. The mine will produce up to 2.5 million tonnes (Mt) of product per year. The products will be trucked to the existing rail owned by Tshiuetin Rail Transportation Inc. (TRT), and then on the Quebec North Shore and Labrabor (QNS&L) rail for transportation to the Port of Sept-Îles.

Joyce Direct Iron succeeded Labec Century Iron Ore Inc. ("Labec Century") as the Project Proponent on February 18, 2021 following an internal reorganization. All references to Labec Century as the Project proponent may be interpreted as now referring to Joyce Direct Iron Inc.

Joyce Direct Iron and Labec Century are both 100% owned by Century Global Commodities Corporation (“Century”), a Toronto Stock Exchange (TSX) listed company.

The Project is a Designated Project under the *Canadian Environmental Assessment Act, 2012* (CEAA, 2012). An environmental impact statement (EIS) has been prepared to fulfill the requirements of the Impact Assessment Agency of Canada (IAAC) EIS Guidelines.

This document fulfills the requirements for a summary of the EIS required by the IAAC EIS Guidelines (Appendix AD). The purpose of this document is to provide an overview of key findings of the EIS with respect to potential Project-related environmental effects, as well as commitments to managing those effects to acceptable levels over the life of the Project. This document is intended to support ongoing Indigenous engagement and public consultation during the environmental assessment (EA) process.

2.0 PROJECT OVERVIEW

Joyce Direct Iron is proposing to develop an iron ore mine in western Labrador producing up to 2.5 Mt of product per year. The Project will use a process involving the dry crushing and dry screening of ore to produce iron ore products. Products will be trucked to the existing TRT, then along the QNS&L rail for delivery to the Port of Sept-Îles, Québec.

2.1 Purpose and Need for the Project

The purpose of the Project is to develop an open pit iron ore mine at the Joyce Lake property for the production of lump and fines products, suitable for export sales to international steel makers. Chinese steel producers are expected to be the primary market for the products, with potential for some products to be sold in European markets. Existing community and transportation infrastructure will be used by Joyce Direct Iron to support its endeavors to produce iron ore products.

2.2 Project Location

The Project is located on the eastern end of the Labrador Trough (a belt of iron ore that stretches through Labrador and northern Québec) and is approximately 20 km northeast of the Town of Schefferville, Québec. The Project location is shown in Appendix A, Figure A1 of this summary document.

2.3 Project Components

The Project includes construction, operation, maintenance, and closure and decommissioning of the following primary components:

- Open pit;
- Low grade stockpile;
- Waste rock and overburden stockpiles;
- Modular/portable dry crushing and screening processing plant;
- Accommodations complex;
- Ancillary infrastructure to support the mine and dry processing plant, including a workshop, explosives magazine, office buildings, warehouse area, employee facilities, conveyors, stockpiles, sewage and water treatment units, generators, fuel storage, mobile equipment, and drainage infrastructure (e.g., ditches, settling ponds);
- Haul road between the processing plant and rail yard, including a rock causeway linking the open pit area to the mainland across Iron Arm and other service roads; and
- A rail loop and rail yard for loading products.

These components are shown in overview in Appendix A of this summary document, Figures A1, A2, A3, and A4. All components will be permitted, constructed, operated, and decommissioned in accordance with governing federal, provincial, and industry regulations and standards.

These components are described in further detail below, as well as in Chapter 2 of the EIS.

2.3.1 Open Pit

The Project will include an open pit mine. The pit designed for the Joyce Lake deposit is approximately 1,100 metres (m) long and 575 m wide at surface, with a maximum pit depth of 200 m. The total surface area of the pit footprint will be approximately 0.72 square kilometres (km^2) (72 hectares (ha)). The mining method selected for the Project is a conventional open pit drill and blast operation with rigid-frame haul trucks and hydraulic excavators.

During the first year of mining, Joyce Lake will need to be de-watered in order to access a portion of the iron ore deposit underneath the lake. A ditch will be established around the perimeter of the final pit to intercept and minimize water infiltration into the pit. Rainwater and groundwater in the pit will be collected in an in-pit sump and will be pumped to a settling pond at surface.

2.3.2 Waste Rock and Overburden Disposal Areas

The development of the open pit mine is expected to generate approximately 70 Mt of waste and 2.33 Mt of overburden over the life of the mine (based on a waste to ore ratio of 4.09:1). The waste rock stockpile will be located on the northwest side of the pit beyond the limits of the mineralized zone. The stockpile will have an overall slope of 22° to account for the re-vegetation required during rehabilitation, a capacity of 33 million cubic metres (m^3). The maximum height of the stockpile will be 90 m. The overburden stockpile will have a maximum height of 30 m and a maximum capacity of 1.3 million m^3 These features are shown in Appendix A of this summary document, Figure A-2.

2.3.3 Modular Processing Plant and Other Mine Site Infrastructure

The processing plant will consist of mobile, self-contained, primary (jaw) and secondary (cone) crushing units and a mobile screening unit. Other processing plant equipment will include a mobile surge bin and various modular conveyors. The processing plant will have a nominal throughput ranging from 10,500 to 12,500 tonnes per day on a 240 days per year schedule (April to November).

Trailers will be used at the crushing and screening plant for office space and as a lunchroom/ restroom. There will be a workshop for open pit mobile and other equipment maintenance (an insulated fabric dome with an internal structure). A marine container (sea can) will be set up on a gravel pad and used for storage of spare parts for the plant. Power will be supplied by a centralized power plant.

Fuel is stored on site in different areas in proximity of its end users. Fuel storage is done in skid type, double-walled horizontal tanks each having a 50,000 litre capacity, with integrated containment and overfill protection. Each of the fuel storage areas, with the exception of the central power plant, is equipped with a fueling station with metering. To minimize the risk of leakage, and to contain spills, all fuel tanks will be housed within secondary containment.

2.3.4 Accommodations Complex

The accommodations complex will have capacity for approximately 144 workers. Services provided will include housing, cafeteria, meal preparation section, laundry, pumping and distribution system, entertainment / recreational room, medical facility for first aid and minor interventions, organic waste collection, and helipad for emergency transportation.

2.3.5 Effluent Control Infrastructure

The crushing and screening plant will use a dry process to produce final products; therefore, no tailings management is required. A diversion ditch system for surface run-off and mine contact water will be constructed around mine infrastructure. Water from the system will be directed to settling ponds for treatment prior to discharge to the environment. The water management infrastructure will be maintained during the Operation and Maintenance phase.

2.3.6 Haulage, Site and Access Roads

The road network for the Project will be designed with a maximum right-of-way width of 32 m. The roads in the mine area will be designed with a maximum width of 25 m to accept ~100 tonne (t) rigid-frame trucks, loaded with product. All roads will be designed to reduce cut and fill and will have a maximum grade of 10 percent; this is acceptable for the safe operation of a 100 t open pit trucks and 150 t articulated product haul trucks. Excavated rock will be used, without any further crushing, for the sub-base to a thickness of 1 m. The base of the road will have a thickness of 1.1 m and will be made of crushed rock. The following roads will be built in the mine area:

- Mine site road (i.e., located on the peninsula) from the pit to the overburden, waste rock, and low grade stockpiles (**2.20** km);
- Mine site road from the pit to the mineral processing plant (**2.09** km);
- Haul road from the mineral processing area to the rock causeway (**5.57** km); and
- Haul road connecting the rock causeway to the rail yard (rail loop) (**36.97** km).

2.3.7 Causeway

A single rock causeway linking the open pit area to the mainland will be constructed across Iron Arm and will replace the previously proposed ice bridges to increase operational efficiency and flexibility. The rock causeway will be approximately 1.2 km long, and will include two bridges, to facilitate navigation and fish passage. Rock from the causeway will be sourced from quarries on the south side of Iron Arm and will be sized to meet engineering and fish habitat requirements. The causeway will be used from April to November each year (approximately 240 days) for the haulage of products and year round for access to the mine site.

2.3.8 Rail Loop and Rail Yard

The new rail loop, approximately 7 km in length, will be tied into the existing TRT. The rail loop is designed to serve two trains of 240 ore gondolas (rail cars) each and will be constructed to align with the existing railway as much as possible to minimize its associated footprint.

The load out area infrastructure includes three trailers housing a dispatch office, a dry room and a lunch room, each able to receive up to six workers. Potable water for these facilities will be supplied in bottles and a provision for chemical, maintenance free toilets has been made to avoid the installation of sewage containment units. The product front end loaders will have a designated area on an open pad for light maintenance and oil changes.

2.4 Project Activities

The Project will involve the Construction, Operation, Maintenance, and eventual Closure and Decommissioning of each of the components and facilities described above.

2.4.1 Construction

Subject to market conditions, Project construction is scheduled to begin upon completion of all necessary approvals and financing. General construction activities for the Project components will include site preparation (i.e., clearing of vegetation, access road, haul road and causeway, initial pit excavation, construction of infrastructure, installation of utilities, and commissioning).

Areas requiring site surface preparation include: waste rock disposal areas, mine infrastructure area, process plant site, rail loop, rail loading yard, all new roads including causeway, stockpile, and all ancillary infrastructure such as buildings, drainage infrastructure, fuel storage, and sewage and water treatment units. Site grading is required to support the installation of the required site facilities, including sedimentation and erosion control measures, including drainage infrastructure. Ongoing monitoring of these control measures will be conducted throughout the construction stage.

2.4.2 Operation and Maintenance

Operation for the Project will consist of mining the high grade, direct shipping ore (DSO) that needs only crushing and screening to produce iron ore lump and fines products for market. Lower grade ore will be temporarily stockpiled and be processed at the end of high grade ore mining. Mining activities will occur throughout the year. Crushing and screening will occur from April to November. During winter, the primary focus will be to mine waste which will be placed on the waste stockpile. Any ore mined during the winter will be stockpiled at the crushing and screening plant. Products will be trucked to the rail loop during summer months (approximately 8 months) via the rock causeway and dedicated haul road.

Maintenance requirements during Operations include:

- Control of precipitation and groundwater using in-pit sumps (if necessary) and Open Pit perimeter wells;
- Regular inspection and occasional maintenance of surface run-off diversion ditching;
- Mine site and haulage road and access road maintenance including winter snow clearing and traction control (gravel), as well as summer dust suppression (water); and
- Suppression of dust at the open pit and other exposed areas as required.

2.4.3 Closure and Decommissioning

A detailed Closure and Reclamation Plan will be prepared for the Project. The Plan will incorporate progressive rehabilitation during all stages of the Project to limit the work required after cessation

of Operations and to limit the environmental effects. Public health and safety will be considered at all stages of progressive rehabilitation, closure and post-closure.

Progressive rehabilitation will be completed, where practical, throughout the life of a mine, and will include activities that would contribute to closure rehabilitation. Closure rehabilitation will involve measures undertaken after Operation and Maintenance to restore or reclaim the property as close as reasonably possible to its pre-mining condition. Upon completion of the closure rehabilitation activities, a period of “post-closure monitoring” will be required to confirm that the rehabilitation activities have been successful in achieving the prescribed goals. The duration of post-closure monitoring is to be confirmed in consultation with applicable regulatory agencies.

The Closure and Reclamation Plan will to be approved by applicable regulatory agencies prior to implementation.

2.5 Project Schedule

There are three main Project phases:

- One-year Construction Phase
- An approximate seven-year Operation Phase; and
- An approximate one-year Closure Phase.

Environmental studies to support the EA were initiated in Q2 2012 and completed in Q3 2014. The EA process was initiated in Q3 2012 and is anticipated to be completed by Q3 2022. Permitting is anticipated to begin Q2 2022 with completion of the EA process and be completed by Q2 2023.

3.0 SCOPE OF THE PROJECT AND ASSESSMENT

3.1 Scope of the Project to be Assessed

The scope of the Project for the purpose of the EA includes all activities and physical works associated with Construction, Operation, Maintenance, and Closure and Decommissioning of the Project.

3.2 Factors to be Considered

The EIS gives full consideration to all of the applicable factors outlined in Section 19 of CEAA, 2012 and as defined in the IAAC EIS Guidelines (March 2013). This includes consideration of the environmental effects of the Project, the significance of effects, public, Indigenous and regulatory comments, technically and economically feasible mitigation measures, follow-up and monitoring programs, the purpose of the Project, alternative means of carrying out the Project, and any change of the Project that may be caused by the environment. The EIS also addresses any other

matter relevant to the EA that the associated government departments and agencies require to be taken into account.

3.3 Scope of the Factors to be Considered

The EIS focuses on specific environmental components called Valued Components (VCs) in the IAAC EIS Guidelines (March 2013). VCs are broad components of the ecological, social, and economic systems that comprise the environment and which, when interacting with the Project, may be of concern to regulatory agencies, Indigenous peoples, resource managers, scientists, and/or the general public. In this context, environment is defined to include not only biophysical conditions but also human, social, and economic conditions that are affected by changes in the biophysical environment.

The VCs considered in this EIS include:

- Atmospheric Environment and Climate;
- Water Resources;
- Groundwater Resources;
- Terrain and Acid Rock Drainage/Metal Leaching (ARD/ML);
- Wetlands;
- Fish and Fish Habitat;
- Birds, Wildlife and Their Habitat;
- Species at Risk (SAR) and Species of Conservation Concern (SOCC);
- Historic and Cultural Resources;
- Current Use of Land and Resources for Traditional Purposes by Indigenous Persons;
- Other Contemporary Land and Resource Use;
- Community Services and Infrastructure; and
- Economy, Employment and Business (EEB).

The spatial boundaries include the:

- Project Development Area (PDA) includes the pit, waste rock disposal areas, processing area, accommodations area, on-site roads, and rail loop (Appendix A of this summary document, Figures A1, A2, A3, and A4);

- Local Study Area (LSA) includes the PDA and any adjacent areas where Project-related environmental effects may reasonably be expected to occur; and

- Regional Study Area (RSA) is the area within which the significance of residual Project environmental effects and cumulative environmental effects is predicted.

LSAs and RSAs are defined for each VC.

The temporal boundary for Construction is one year (pre-operation), for Operation and Maintenance is approximately seven years, and for Closure and Decommissioning is approximately one year.

A summary of existing VC conditions is provided in Section 6 and a summary of an evaluation of potential effects is presented in Section 7.

4.0 ALTERNATIVE MEANS TO CARRYING OUT THE PROJECT

As required under federal and provincial EA legislation and the IAAC EIS Guidelines, the EIS addresses alternative means of carrying out the Project that are technically and economically feasible, and the potential environmental effects of any such alternative means. As part of Project planning and design, alternatives were identified and evaluated for the following elements: dry vs. wet processing including tailings management; waste rock storage (management and location); transportation across Iron Arm; products transport to existing rail head by rail or trucks; power supply; de-watering options at Joyce Lake; life of Project; labour supply; mining methods; contaminated water treatment; location of infrastructure; and worker accommodations and transportation.

The alternatives analysis completed for the Project is summarized in Appendix A of this summary document, Table A1. Additional detail for each of these alternatives are provided in Chapter 2 of the EIS.

5.0 PUBLIC AND INDIGENOUS ENGAGEMENT

A key requirement of any EA process is to conduct comprehensive public, stakeholder, and Indigenous engagement. The overarching goals of such engagement are to inform interested parties about the Project, to assist in the identification of key issues and concerns regarding the Project, to obtain information that may assist in carrying out baseline or predictive studies for the EA, to collect information on the current use of land and resources for traditional purposes by Indigenous persons, and to share information about the Project with local communities, stakeholders, Indigenous groups, and the general public.

Labec Century has engaged and consulted with a variety of stakeholders, Indigenous groups, and members of the public throughout the EA process, and is committed to being responsive to questions and concerns that arise. Issues and concerns raised during public and Indigenous engagement are summarized in context of VCs where relevant in Section 7. Additional details on public and Indigenous engagement are provided in Chapter 3 of the EIS.

5.1 Public Consultation

Throughout the consultation and engagement process, a number of meetings were held with various regulatory agencies and stakeholders. Detailed consultation records, and the location within the EIS where each issue is addressed, is provided in Appendix A of this summary document, Table A2.

5.2 Indigenous Engagement

Consultation and engagement with Indigenous groups began in 2010 and will be ongoing through the EA process. Throughout this time, Labec Century has held more than 30 meetings and phone calls with the Innu Nation of Labrador, Naskapi Nation of Kawawachikamach, Innu of Matimekush-Lac John, Innu of Uashat mak Mani-Utenam, and the NunatuKavut Community Council.

6.0 EXISTING ENVIRONMENT

6.1 Atmospheric Environment and Climate

The Project site is located within the Interior Labrador climate zone. The PDA has a continental climate with significant seasonal variations in temperature. Average daily temperatures typically remain below freezing between October and April. Monthly mean temperature extremes range from -29 degree Celsius (°C) to 17°C, with a mean annual temperature of -5.3°C. Average annual precipitation is 823 millimetres (mm) (based on the normal climate period of 1971-2000) and is typical of western Labrador. The most frequent wind direction is from the northwest and averages approximately 17 km/h.

Baseline dust monitoring results show particulate matter levels well below the Newfoundland and Labrador Department of Environment and Climate Change standards except for one sample collected on October 7th, 2009, near the proposed Labrador Iron Mines Ltd. (LIM) Houston 1 & 2 Project, which showed elevated levels of total particulate matter.

Baseline sound monitoring results indicate that the acoustic environment near the Project is relatively pristine, and that current noise emissions generally occur from meteorological or wildlife phenomena. There are no known vibration generation sources identified near the proposed rail line or other areas within the proposed Project site. Due to the absence of major anthropogenic activities in the vicinity of the PDA, ambient vibration is expected to be well below average human perception. Also, due to the relatively pristine environment, existing levels of light pollution are therefore assumed to be very low.

Section 10.5.3 of the EIS provides a detailed summary of the existing atmospheric environment, including a description and discussion of climate, temperature, precipitation, wind, air quality, greenhouse gases (GHGs), acoustics, vibrations, and lighting.

6.2 Surface Water

Snow cover is an important hydrological parameter in the region. When temperatures climb above zero, snow melt substantially contributes to high run-off flows in the spring. The spring freshet typically occurs in May or June and accounts for most of the annual flow. Streamflow gradually decreases throughout the summer and early fall, with periodic peaks in response to precipitation events. In this region, a period of high streamflow typically occurs in October in response to seasonal rainfall trends. Streamflow is highly variable across small and large watersheds within the Labrador area (Hare 1965; Findlay 1967; Rollings 1997).

Surface water is used locally by cottagers within the LSA. The closest public water supply is located outside the LSA. In the Town of Schefferville, drinking water is taken from Lac Knob, which lies within the municipal boundary. Freshwater quality in the western Labrador region tends to be good to excellent (Environment and Climate Change Canada 2020). The larger lakes in the LSA and RSA likely have the greatest potential as water supply sources for the Project.

In previous surveys in the Schefferville area (Hornbrook et al. 1989), sediment has been reported to have high levels of gold, copper, nickel, zinc, and antimony in previous surveys. Copper and zinc mineralization occurrences are also known to occur. Laboratory analysis showed samples from the Schefferville area generally have higher values for arsenic, cadmium, chromium, copper, and zinc, which exceeded the Canadian Interim Sediment Quality Guideline for the protection of aquatic life but below the probable effect level values.

Sediments in Attikamagen Lake – Bay 3, Joyce Lake and Iron Arm are described as silty clay and sand with a trace of gravel. Sediments in Gilling River are predominantly sand with traces of gravel and clay. Sediment at Petitsikapau Lake is gravel with sand and silt. Most metals concentrations from sediment samples were below their respective Canadian Interim Sediment Quality Guideline and the probable effect levels.

Section 11.5.3 of the EIS provides a detailed summary of the existing surface water environment and includes a description and discussion of local climate, topography, surficial geology, vegetation, drainage patterns, environmental balance, watershed delineation, hydrological characteristics, water and sediment quality, local water supplies, and local receiving water assimilative capacity.

6.3 Groundwater Resources

Based on topography and drainage patterns, surface drainage in the vicinity of the open pit mine is contained within a defined sub-watershed containing Joyce Lake, an upland lake that drains to the south by an unnamed brook to Hollister Lake. In general, sandy to silty glacial till can have low to moderate hydraulic conductivity. Measured groundwater levels varied from above ground surface (artesian flow) to 36.4 m below ground (mbg), and averaged 17.1 mbg across the site.

Based on its upland location on a bedrock peninsula in Attikamagen Lake, the local groundwater supply is likely maintained by snow and rainfall. Groundwater flow directions in the vicinity of the open pit mine are mostly towards Joyce Lake; flow directions typically follow topography. The shallow groundwater at Joyce Lake is characterized by low concentrations of chloride, major ions, nutrients, metals, and dissolved solids.

Section 12.5.3 of the EIS provides a detailed summary of the hydrogeological setting for the Project with respect to physiography and drainage, overburden, bedrock, and baseline, pre-mining groundwater flow and quality conditions.

6.4 Terrain and Acid Rock Drainage and Metal Leaching

This section considers landforms, terrain stability, soil quality and quantity, snow and ice, as well as the potential for acid rock drainage (ARD) and metal leaching (ML). Existing information on baseline conditions was used to develop this assessment, including existing background data, provincial mapping, and examination of aerial imagery of the LSA. Borehole data assessed in support of this document include boreholes drilled as part of LVM's 2014 geotechnical program and exploration boreholes advanced in the area of the proposed open pit. The assessment of potential ARD / ML effects is based on the testing of the geological materials collected from the site and on historical data from similar mines in the surrounding area (Labrador Iron Mines 2009).

Existing environment in the LSA has been defined based on the resources listed above. The bedrock geology is mapped as part of the Attikamagen property. The natural overburden material in the immediate vicinity of Joyce Lake and the proposed mine area is mapped as predominantly undifferentiated till (e.g., moraine), with frequent areas of exposed bedrock. Some esker structures have been identified radially from the height of the land. The Project is located within relatively rugged terrain with rolling hills and valleys, reflecting the northwest trending structure of the underlying bedrock. The area has numerous areas of apparent wetlands. According to the geotechnical study, no evidence of permafrost exists in the LSA. In the mapped forested and shrubland areas of the LSA (Genivar 2013), podzolic soils are anticipated to consist of moderately coarse sandy loam with moderate to good drainage. Snow cover in the area is usually present from October through May, with a mean a monthly value of 7 centimetre (cm), and freeze-over typically occurs from November through June, with mean ice thickness ranging from 125 cm to 150 cm, depending on waterbody size. No ARD has been associated with mines in the surrounding area, and the waterbodies in the LSA and RSA present good-quality water with results typical of low-productivity waters. Static testing for ARD/ML is currently being completed, while kinetic tests are still on-going. A Phase One ARD/ML Assessment contains the results of static tests, which are discussed in the EIS.

Additional information on baseline conditions for overburden geology, physiography and landforms, permafrost, soils, geological hazards, snow and ice conditions, and ARD/ML are discussed in Section 13.5.3 of the EIS.

6.5 Wetlands

Wetlands are relatively common throughout the RSA, LSA and PDA. Ten wetland vegetation types were identified in the LSA, with fens being the most abundant (refer to Table 14.6 in the EIS

for wetland types and relative abundance). In addition to providing habitat for SOCC, the wetlands in the LSA are also noted to play an important role in carbon sequestration, and provision of waterfowl and waterbird habitat.

Section 14.5.3 of the EIS describes the existing ecological context, wetland types, and wetland functions in detail.

6.6 Fish and Fish Habitat

Approximately 16 fish species are known to occur within the RSA (New Millennium Iron Corporation (NML) 2009; Genivar 2013; WSP 2013). None of these species are listed under the Newfoundland and Labrador *Endangered Species Act* (NLESA) or the federal *Species at Risk Act* (SARA). A total of 12 fish species were found in the LSA: longnose sucker, longnose dace, white sucker, lake chub, threespine stickleback, mottled sculpin, burbot, pearl dace, round whitefish, northern pike, brook trout, and lake trout. A total of 17 stream crossings were identified with respect to the mine site and proposed haul road. With the exception of Gilling River, all streams to be crossed by the access roads are unnamed watercourses.

Section 15.5.3 of the EIS provides additional detail on existing fish and fish habitat.

6.7 Birds, Wildlife, and their Habitat

The RSA is located within Bird Conservation Region 7: Taiga Shield and Hudson Plains, as defined by the North American Bird Conservation Initiative (Rich et al. 2004). In total, 66 bird species were identified during surveys conducted in the LSA in 2012, including 17 species of waterfowl and waterbirds (geese and loons), 4 species of raptors, 8 species of shorebirds and 37 species of terrestrial birds. Although waterfowl / waterbird density was comparable to published densities from surveys at similar latitude, further to the west (Guérette Montminy et al. 2009; Lepage and Bordage 2010), there were fewer Canada Goose (*Branta canadensis*) and American Black Duck (*Anas rubripes*) recorded during the 2012 surveys in the LSA than reported in other surveys. Green-winged Teal (*Anas crecca*), common in the Taiga Shield and Hudson Plains Bird Conservation Region, was not recorded at all in the 2012 surveys.

Four bird of prey species were observed during surveys: Osprey (*Pandion haliaetus*), Bald Eagle (*Haliaeetus leucocephalus*), Red-tailed Hawk (*Buteo jamaicensis*) and Great Horned Owl (*Bubo virginianus*). Nests were identified for Osprey and Bald Eagle, and three immature Bald Eagles were observed. Red-tailed Hawk and Common Raven (*Corvus corax*) pairs were recorded, but no nests were found. Only one Great Horned Owl was sighted.

In total, 37 terrestrial bird species were encountered, comprising 35 migratory species and 2 resident species. Eight species of shorebirds were recorded during surveys.

The RSA falls within the documented wintering range of the George River Caribou Herd, the only caribou (*Rangifer tarandus caribou*) population likely to be found within the Project RSA (Couturier et al. 2004). The winter range of the George River Caribou Herd is unpredictable but the herd aggregates each June on traditional calving grounds (Schmelzer and Otto 2003), which are located approximately 200 km northeast of the RSA. Within the LSA, there are approximately

1,470 ha of suitable foraging habitat for caribou. Habitats favourable to moose (*Alces alces*) are uncommon in the RSA and consequently, population density is likely low. The presence of black bear (*Ursus americanus*) was confirmed in the LSA during 2012 surveys. Beaver (*Castor canadensis*), snowshoe hare (*Lepus americanus*), red fox (*Vulpes vulpes*), and grey wolf (*Canis lupus*) were also confirmed to be present in the LSA during the field surveys in 2012. Only six small mammal species have been confirmed present in the RSA through various surveys and incidental observations.

Two species of bats have been confirmed in Labrador: little brown myotis (*Myotis lucifugus*) and more recently, northern myotis (*Myotis septentrionalis*) from two locations in southern Labrador (NLDOEC 2012; Broders et al. 2013; T. Parr pers. comm.). Both species are possible in the LSA in low numbers, though the little brown myotis is the more likely of the two based on current knowledge on distribution. American toad (*Anaxyrus americanus*), mink frog (*Lithobates septentrionalis*), wood frog (*Lithobates sylvaticus*) and spring peeper (*Pseudacris crucifer*) were recorded within the RSA (NML 2009). Incidental observations of mink frog and wood frog were recorded in the LSA during the 2012 field surveys.

Section 16.5.3 of the EIS provides additional detail on wildlife and wildlife habitat.

6.8 Species at Risk and Species of Conservation Concern

There were no observations of any vascular plant species listed under Schedule 1 of SARA or the NLESA during surveys of the PDA and LSA. One species, Norwegian Arctic-cudweed (*Omalotheca norvegica*), which is a rare species in Canada (Argus and Pryer 1990), and on the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) Candidate List, was observed in the LSA only during 2012 field surveys. Although attempts to relocate the occurrence in 2013 were unsuccessful, it is assumed the species could still be present in the LSA. A number of vascular plant species of conservation concern (SOCC) have been previously recorded in western Labrador. Based on known preferred habitat for these species and known occurrences in the LSA, nine species are considered to be potentially more vulnerable to the Project, including sticky false asphodel (*Triantha glutinosa*), Indian pipe (*Monotropa uniflora*), Richardson's pondweed (*Potamogeton richardsonii*), small pondweed (*Potamogeton pusillus* subsp*. tenuissimus*), Siberian water-milfoil (*Myriophyllum sibiricum*), northern water-starwort (*Callitriche hermaphroditica*), slender stinging nettle (*Urtica dioica* subsp*. gracilis*), lesser-panicled sedge (*Carex diandra*), and creeping sandwort (*Arenaria humifusa*). These species are mostly associated with wetland or calcium-rich soils.

Several bird species that may occur in the LSA are listed by SARA and / or the NLESA including Olive-sided Flycatcher (*Contopus cooperi*), Grey-cheeked Thrush (*Catharus minimus*), and Rusty Blackbird (*Euphagus carolinus*). There were four species identified in the LSA with small breeding populations in Labrador (AC CDC 2012) and likely at the northern limit of their range: Bufflehead (*Bucephala albeola*); Hooded Merganser (*Lophodytes cucullatus*); Red-eyed Vireo (*Vireo olivaceus*); and Cedar Waxwing (*Bombycilla cedrorum*). In addition, two species previously not thought to breed in Labrador (AC CDC 2012) were confirmed breeding in the LSA: White-winged Scoter (*Melanitta fusca*); and Lesser Yellowlegs (*Tringa flavipes*). With the exception of the lesser yellowlegs (assessed as Threatened by COSEWIC), none of these species are listed by COSEWIC, SARA, or NLESA.

At least two mammal SOCC may occur in the LSA. Pygmy shrew (*Sorex hoyi*) and least weasel (*Mustela nivalis*) are both considered rare by Atlantic Canada Conservation Data Centre (ranked "S1?" and "S2?", respectively) and vulnerable to extirpation from the province. There are no known fish SAR within the RSA.

Section 17.5.3 of the EIS provides more detail on the existing environment for rare plants and uncommon plant communities, birds, and other wildlife SOCC.

6.9 Historic and Cultural Resources

Background research for the Project confirmed that the RSA lies within a region that has been occupied intermittently by Indigenous people for the past several millennia, and that the use by Indigenous people, Europeans and Euro-Canadians continued throughout the Historic Period and to the present day.

Previous archaeological research conducted in the interior of northwestern Labrador and adjacent parts of Québec in Western Labrador has focused on six broad regions including the Schefferville Region in which the RSA is located. Archaeological surveys in the Schefferville Region revealed limited evidence of pre-contact use of the area, but ample evidence of evidence of contemporary (since 1960) Innu land use.

A review of existing studies on Indigenous culture, spirituality (Armitage 1992; Weiler 1999) and land use (Tanner and Armitage 1986; LIM 2009; Armitage 2010; Nalcor Energy 2010) indicated that although cultural / spiritual sites are known for the RSA, none are documented for the LSA (Stassinu Stantec 2014). Two sites of cultural / spiritual importance were identified along the Ashuanipi drainage system, more than 100 km from the LSA. Historic and cultural resources assessments conducted in the LSA and RSA for the Project in 2012 and 2013 resulted in the identification of one archaeological site and six contemporary sites. One Pre-contact Period archaeological site (GfDp-01 - Attikamagen Lake 1) was identified on the east side of Iron Arm. Based on historic research, field studies, and aerial observations of ground conditions, it was determined that, within the PDA, one zone is rated as having High potential, six zones are rated as having Moderate potential, and 27 zones were rated as having of Low potential.

Section 18.5.3 of the EIS provides additional detail on historic and cultural resources.

6.10 Current Use of Land and Resources for Traditional Purposes by Indigenous Persons

The Project is within an area that is subject to asserted land claims by the following Indigenous groups:

- Innu Nation of Labrador (Labrador);
- NunatuKavut Community Council (Labrador);
- Naskapi Nation of Kawawachikamach (Québec);

- Innu First Nation of Matimekush-Lac John (Québec); and
- Innu First Nation of Uashat mak Mani-Utenam (Québec).

Historic mining activity has shaped Indigenous land use in the region to the present day. Mining played a crucial role in the re-location of Indigenous (Innu and Naskapi) people to the Schefferville area. Employment opportunities as well as installation of roads and railway influenced resource harvesting areas and activities.

Current traditional land resource use activities known to occur in the RSA include fishing, waterfowl hunting, small game harvesting, trapping, berry picking, and gathering of medicinal plants. For both the Naskapi of Kawawachikamach and the Innu of Matimekush-Lac John, land and resource use activities appear to be concentrated in areas within relatively short distances of their respective communities. Attikamagen (including Iron Arm), Astray and Petitsikapau Lakes are important locations for fishing and wildlife harvesting activities. The peninsula of land where Joyce Lake is located is not, itself, an area of use. Indigenous consultation indicated that Joyce Lake itself is not used for fishing or other activities. While Historic Resource Assessments associated with the Project uncovered Pre-contact sites in the area of the causeway, there was no evidence of historic or contemporary land use in the immediate vicinity of the Joyce Lake.

The area in the vicinity of the Project appears to have been used as both a resource harvesting area and as a travel route, connecting the St. Lawrence North Shore with the interior and Ungava Bay, as well as with North West River and the Atlantic coast of Labrador (Mailhot 1986). Key areas of Naskapi land use have been identified within the RSA, with mining roads in the area used to increase access to hunting areas.

The area between Schefferville and Iron Arm, along the existing road to the area, has a number of cabins that are seasonally occupied by Naskapi residents of Kawawachikamach. These cabins are used as a base for many land and resource use activities in the region, particularly fishing activity in Iron Arm and bird hunting in the Attikamagen Lake area. Similar cabins identified along Astray Lake have been identified as belonging to Innu of Matimekush-Lac John. Section 19.5.3 of the EIS provides a detailed summary of traditional land and resource use by Indigenous persons for the historical period, contemporary period, and present day.

6.11 Other Contemporary Use of Land and Resources

No contemporary outdoor recreation and tourism activities (such as fishing, berry picking and plant harvesting, walking trails, recreation parks and beaches, snowmobiling trails, camping) by non-Indigenous people have been identified in the LSA. Currently, there are no commercial forestry operations in the PDA; however, some forestry-related activities occur in the RSA. Other than ongoing iron ore exploration activities by Labec Century, there are no other mineral exploration activities in the PDA. However, there is mineral exploration and mining activities within the LSA and RSA. The QNS&L Railway overlaps with the LSA and RSA.

Section 20.5.2 of the EIS includes a detailed summary on a number of recreational, subsistence and commercial activities that occur in western Labrador including: cabin use, hunting, fishing, boating / water navigation; trapping (for commercial and recreational purposes); snowmobiling

and skiing; wood harvesting (for firewood and saw-logs); berry-picking; birding; geo-caching; guiding; forestry; mineral exploration; agriculture, transportation; seaplane usage; communications towers; and municipal water supplies. This section focuses on Contemporary Use of Land and Resources by non-Indigenous people.

6.12 Community Services and Infrastructure

In Kawawachikamach, water is supplied to households from two community wells with a pump station, while sewage is pumped to a community septic tank and lagoon. In Schefferville, drinking water is taken from Lac Knob which lies within the municipal boundary. The 18.7 megawatt (MW) Menihek generating station is the only source of electricity for this area; it is not connected to the main Labrador interconnected system (NL Hydro 2007). The Schefferville landfill opened in 1997 and services the three communities of Kawawachikamach, Lac-John and Schefferville.

Schefferville has an 8 km municipal road network, including access roads to the airport and railway station. Matimekush-Lac John, which has no year-round access to the highway system, is accessible by plane or train only. Kawawachikamach can be accessed by a gravel-surfaced, all-season road from Schefferville (AANDC 2011; Transport Ferroviaire Tshiuetin Inc. 2009; Naskapi Nation of Kawawachikamach n.d.).

The Schefferville Airport is owned by Transport Canada and leased and operated by the Schefferville Airport Corporation. Schefferville is serviced by TRT. Owned by Innu Takuaikan Uashat Mak Mani-Utenam, the Innu Nation of Matimekush-Lac John, and the Naskapi Nation of Kawawachikamach, TRT connects to the 420-km QNS&L (Transport Ferroviaire Tshiuetin Inc. 2009). QNS&L is an Iron Ore Company of Canada-operated service that transports iron ore to Sept-Îles (IOC 2015). Through agreements with QNS&L, TRT also provides regularly scheduled, year-round, passenger service (Newfoundland and Labrador Department of Transportation and Works 2006).

Since 2001, healthcare and social services in Kawawachikamach have been provided by the Naskapi Local Community Service Centre (Naskapi Nation of Kawawachikamach n.d.). Health services in Matimekush-Lac John are available through the Poste de soins infirmiers (CPNIMLJ 2012). Schefferville Indigenous healthcare and social services are provided by the Innu Local Community Service Centre.

In total, the Québec communities near the Project site contained 431 occupied dwellings in 2016. The majority of these units are band housing (Statistics Canada 2017). There are four hotels with in the Schefferville region: the Hôtel Innutel Rodeway; the Hôtel Auberge Guest House; the Hôtel-Motel Royal; and the Hôtel du Bla Bla (CLD de la MRC de Caniapiscau 2018).

A detailed description of existing municipal services and infrastructure, transportation infrastructure, health services and facilities, safety, and housing and accommodation is provided in Section 21.5.3 of the EIS.

6.13 Economy, Employment, and Business

The provincial unemployment rate has decreased since the 2009 recession (Newfoundland and Labrador Statistics Agency 2020). In 2019, unemployment declined to 11.9 percent, the lowest on record since 2013 (NLDF 2020).

Provincial economic decline was expected in 2020 compared to 2019. This is due to several factors, including responses to the coronavirus disease of 2019 pandemic, declines in oil production, and project delays in the Labrador mining industry (NLDF 2020). Labrador's economy is traditionally based on raw material extraction and the service industry. The main economic drivers in western Labrador are mining, hydroelectricity generation at Churchill Falls, and tourism. Churchill Falls is located approximately 240 km east of Labrador City. The community is centred on Nalcor Energy's Churchill Falls hydroelectric generating station, which employs approximately 250 people (Nalcor Energy, n.d.).

The communities of Kawawachikamach, Schefferville, and Matimekush-Lac John share a similar economic structure, which is largely based on small businesses in the sales and services sector. While employment and business in these communities are primarily service-based, mining and other industrial activity continues to play a role in the regional economy.

In 2019, there were 15,861 businesses in Newfoundland and Labrador. Small businesses formed the majority, with 54.1 percent employing one to four persons. In 2019, there were 642 businesses in Labrador, representing 4.0 percent of the total for the province. As of 2013, the business community of western Labrador included 259 companies, representing 1.6 percent of all businesses in the province (Newfoundland and Labrador Statistics Agency 2020).

Section 22.5.3 of the EIS provides additional detail on economy, employment, and business.

7.0 SUMMARY OF ENVIRONMENTAL EFFECTS ASSESSMENT

7.1 Environmental Assessment Methods

7.2 Overview of Approach

The EIS has been completed using the methodological framework developed by Stantec to meet the requirements of CEAA, 2012 and the Newfoundland and Labrador *Environmental Protection Act*. These methods are based on a structured approach that:

- focuses on issues of greatest concern;
- considers the issues raised by the public and stakeholders;

- incorporates Indigenous Traditional Knowledge and Local and Community Knowledge; and

- integrates engineering design and programs for mitigation and follow-up into a comprehensive environmental planning process.

The potential environmental effects of Project activities and components are assessed using a standard framework to facilitate individual assessment of each VC. Residual Project-related environmental effects (i.e., those environmental effects that remain after the planned mitigation measures have been considered) are characterized for each individual VC using specific analysis criteria (i.e., nature of the effect, magnitude, geographic extent, duration, frequency, reversibility, and environmental context). The significance of residual Project-related environmental effects is then determined based on pre-defined standards or thresholds (i.e., significance rating criteria).

If the residual environmental effects are rated as significant, then the likelihood of the environmental effect occurring (high, medium or low likelihood) is indicated. The confidence of the predictions is discussed, based on quality and / or quantity of data, understanding of environmental effect mechanisms, and / or effectiveness of the mitigation / effects management.

In addition to the assessment of residual Project-related environmental effects, the EA also considers the following:

- the assessment of environmental effects associated with potential accidental events;

- the assessment of effects of the environment on the Project; and

- the assessment of cumulative environmental effects (i.e., where there is potential for the residual environmental effects of the Project to interact cumulatively with the residual environmental effects of other past, present, or future physical activities in the vicinity of the Project).

7.2.1 Identification of VCs

The EIS focuses on VCs, which are components or attributes of the environment that are important for ecological, legal, scientific, cultural, economic, or aesthetic reasons. The VCs assessed in the EIS were selected based on the potential for interaction between the Project and the components of the biophysical and human environments prescribed in the IAAC Guidelines (Sections 9.1.2 and 9.1.3).

7.2.2 Spatial and Temporal Boundaries

The spatial boundaries reflect the geographic range over which the Project's environmental effects may occur, recognizing that some environmental effects may extend beyond the PDA. The PDA is the area of physical disturbance resulting from the Project and includes the pit, waste rock disposal areas, processing area, accommodations area, on-site roads, and rail loop.

The LSA is the maximum area within which Project-related environmental effects can be predicted or measured with a reasonable degree of accuracy and confidence. The LSA is defined for each VC to capture the likely direct interactions of the Project with the VC. It includes the PDA and any adjacent areas where Project-related environmental effects may reasonably be expected to occur.

The RSA is a broader area defined for each VC to capture the expected overall spatial extent of the Project's effects, based on factors such as the distribution or movement of the VC (e.g., the range of the various animal populations that may be affected, the communities or regions / economic zones that may feel Project benefits or effects). It is also the area within which cumulative effects for each VC may occur, depending on physical and biological conditions and the type and location of other past, present, and reasonably foreseeable projects. The RSA is the area within which the significance of residual Project environmental effects and cumulative environmental effects is predicted. LSA and RSA's are defined for each VC.

The temporal boundaries for the EA include the Project phases of Construction, Operation and Maintenance, and Closure and Decommissioning. The temporal boundary for Construction is one year (pre-operation), for Operation and Maintenance approximately seven years, and for Closure and Decommissioning approximately one year.

7.3 Atmospheric Environment and Climate

Atmospheric Environment and Climate includes air quality, acoustics, GHGs, vibration, and lighting. It has been selected as a VC because of the potential interaction between air contaminant releases, noise emissions, ground-borne vibrations, aesthetics, and their effect on human and ecological health and the communities. As well, there are national and provincial concerns from the potential release of GHGs.

7.3.1 Potential Effects

Potential environmental effects of the Project on Atmospheric Environment and Climate are:

- Change in Air Quality;
- Change in Acoustic Environment;
- Change in GHGs;
- Change in Vibrations Environment; and
- Change in Lighting Environment.

Project activities are expected to interact with the Atmospheric Environment and Climate through a change in air quality, acoustic environment, GHGs, vibration, and lighting temporarily during Construction and longer term during Operation and Maintenance. Construction and Operation activities will require numerous vehicles and machinery, which will in turn release air contaminant into the atmosphere. The air contaminant emissions from these activities could interact with the atmospheric environment beyond the acceptable thresholds without the application of mitigation measures.

Construction and Operation activities will produce noise emissions. The Construction phase will require machinery such as bulldozers, excavators, and graders, which will generate the majority of noise emissions on-site. The distances are sufficient so that individual sound is unlikely to be distinguished, but an industrial “hum” may be perceived in the closest affected zones. The Operations phase will be longer in duration, employ more equipment and operate concurrently over a larger area, and is therefore more likely to produce an adverse effect of the Project on the acoustic environment.

The construction of the Project will result in emissions of GHGs (carbon dioxide, methane, nitrous oxide) through fuel consumption and energy use during site preparation and construction of infrastructure. GHG emissions are generated by combustion of gasoline and diesel fuel in light vehicles, heavy trucks, light and heavy earth-moving equipment, and construction equipment. During Operation and Maintenance, GHG emissions will result from the combustion of fuel in mining equipment, locomotives and on-site vehicles and through the combustion of fuel oil to generate electricity. These emissions will occur throughout both phases of the Project.

Blasting, rail transportation and rail loading have the potential to result in vibration that may cause adverse effects. The nearest sensitive receptor is approximately 3.5 km away from the open pit mine where blasting will occur. The nearest receptor to the rail loop is approximately 0.35km away. Ground-borne noise is typically attenuated beyond 75 m of the source of vibrations and negligible beyond 500 m. These receptors are well beyond the distance at which changes in vibrations could be perceived.

During Operations, light emissions will result from a number of mining activities. Lighting from the mining operations on the Joyce Lake side of Iron Arm will be generally visible to the seasonal cabins on the west shoreline. The night time transportation of on-site vehicles and equipment operations could also lead to effects on lighting through changes in sky glow or glare from headlights.

7.3.2 Mitigation Measures

The following mitigation measures are proposed to avoid or reduce Project-related effects on Atmospheric Environment and Climate during the Project Construction phase:

- Use of dust suppressants (e.g., water and/or chloride based suppressants) during activities and situations that have an increased potential to generate airborne dust;
- Adherence to a comprehensive equipment preventative maintenance program to maintain the vehicles, and to maximize fuel efficiency and vehicle performance;
- Where possible, implementation of plans to minimize haul route distance to and from the site;
- Reduce equipment and vehicle idling times to extent practicable;
- Limit cold starts to extent possible;

- Turn off lighting when not required; Capture waste heat from generators to extent possible to heat living and work spaces;
- Speed restrictions on vehicle used;
- Advance warning to nearby sensitive receptors of noise-causing activities.
- GHG Management Plan; and
- Locate portable lighting equipment where, to the extent possible, it is not visible at nearby seasonal cabins.

The following mitigation measures are proposed to avoid or reduce Project-related effects on Atmospheric Environment and Climate during the Operations and Maintenance phase:

- Application of chloride-based dust suppressant on all road segments;
- Proper road maintenance to control silt content;
- Limiting the speed of open pit equipment;
- Selecting stockpiling sites that are as far away from sensitive receptors as practically and economically feasible;
- Advance warning to nearby sensitive receptors of noise causing activities; and
- GHG Management Plan;
- Limit train speed to 5MPH in the rail loop;
- Full horizontal cutoff fixtures; and
- Locate portable lighting equipment where, to the extent possible, it is not visible at nearby cabins.

7.3.3 Residual Effects

The construction and operation of the Project will result in increased levels of criteria air contaminants and GHGs through the operation of diesel powered equipment (including on site vehicles, heavy haul trucks, mining equipment, generators, locomotives, etc.) and the fugitive releases of particulate matter through material handling, ore processing, wind erosion of stockpiles and vehicle and haul truck travel on unpaved roads. The increased levels of criteria air contaminants due to the operation of the Project will reach essentially zero at the boundaries of the LSA. In addition, Project predictions plus existing background values do not exceed provincial regulations within the vicinity of the cabins.

A GHG emissions inventory was prepared for the operation of the Project (EIS Appendix AF). GHG emissions resulting from the operation of the Project will represent approximately

0.79 percent of the industrial standard for the mineral products industry, 0.64 percent of the provincial total reported emissions and less than 0.01 percent of the national reported emissions. Based on this information the Project would be considered to be a “medium” emitter.

Existing sound pressure levels within and surrounding the proposed Project will increase due to the construction and operation of the Project, through the operation of diesel powered equipment and the rail line, blasting, drilling and ore processing (crushing and screening). Noise levels related to the operation of the Project were predicted and added to existing baseline data. Predicted sound pressure levels as a result of project activities are within levels recommended by Health Canada. As well, while sound pressure levels will increase at nearby cabins beyond baseline conditions, the corresponding increase in % highly annoyed is minimal.

The construction and operation of the Project could result in vibration effects as a result of rail transport, rail loading and blasting. Such activities are not anticipated to result in a residual adverse environmental effect on vibration due to the separation distances from the activity and nearest seasonal cabins.

Proper lighting during all phases of the Project is necessary for safe and productive mining operations. Improperly designed lighting can result in adverse effects ranging from a minor social nuisance to environmental disruption. The proposed Project is located in an area that would be representative of a rural/natural environment with limited existing sources of light. Lighting requirements will arise during the construction and operation of the Project and are an integral component to ensure safe and proper work condition. During the development of the Project’s Lighting Plan the proponent will adopt standard and regulatory accepted guidelines to limit light trespass; glare and sky glow in surrounding areas, locate portable lighting equipment with limited visibility at nearby seasonal cabins and install full horizontal cut-off fixtures.

7.3.4 Government, Indigenous and Public Comments and Proponent’s Response

Labec Century has met with government, Indigenous and other stakeholders to discuss the Project and document issues and concerns with the Project. Issues and comments related to Atmospheric Environment (and where they are addressed in the EIS) are listed in Appendix A, Table A2 of this summary document.

7.4 Water Resources

The Water Resources VC includes surface water component of freshwater resources, including the lacustrine environment. Surface Water has been selected as a VC because it is the freshwater habitat for fish, aquatic organisms and vegetation; it is critical in the hydrologic cycle; for its recreational value for fishing, boating, snowmobiling, bathing and other recreational uses; and it is important to society aesthetically for its visual place within the natural environment.

7.4.1 Potential Effects

Potential environmental effects of the Project on Surface Water are:

- Change in Surface Water Quantity;
- Change in Surface Water Quality; and
- Change in Surface Water Drainage Patterns.

Changes to surface water quantity during Construction activities arises from Project alterations to the environmental water balance, such as tree removal reduction in evapotranspiration and surface hardening increases in runoff. The primary potential adverse effects to Surface Water during the Construction phase include increasing runoff from disturbed ground surfaces due to increases in imperviousness (i.e., reduction in infiltration), reduction of vegetative cover, and increased erosion scour and sediment in watercourses. There is potential for a change in water and sediment quality as well as flow reductions arising from water extraction for dust suppression, and Construction activities.

During the Operation and Maintenance phase, potential adverse effects to surface water include changes to flow regimes, water and sediment quality, and changes to drainage patterns. The primary Project activities that will affect surface water are open pit mining, dewatering of Joyce Lake, ore processing, waste rock, low grade ore and overburden stockpiles runoff management, stockpiles and fuel storage and dispensing.

7.4.2 Mitigation Measures

The following mitigation measures are proposed to minimize and mitigate Project-related effects on surface water during the site preparation and Project construction phase:

- Minimize construction footprint (i.e., PDA) to the extent possible;
- Implement erosion and sedimentation control, including installation of silt fencing and construction drainage ditches and sedimentation ponds to address construction phase watercourse erosion and water quality concerns;
- Design fill lines and general earthworks platform levels at elevations above the 100-year return period flood elevation;
- Construct the sedimentation ponds early in the construction phase to enable initial pond filling from runoff and construction phase sedimentation; and use pond water for construction uses, such as dust suppression and cement batching;
- Prioritize consumptive raw water extraction sources to Attikamagen and Petitsikapau Lakes for most Construction phase uses;
- Construct open pit mine and waste rock, low grade ore and overburden stockpile perimeter ditches;

- Construction of the causeway from quarried aggregate rock not sourced from the Project mineralized zone; and

- Establish a site for equipment maintenance, repair and cleaning that is at least 100 m from any lake, river, stream or wetland.

In addition, the following measures will be followed in relation to access routes (e.g., roads, rail line, and power easement):

- Fugitive dust suppression programs;

- Maintain existing hydrological inflow to receiving waterbodies;

- Minimize drainage interactions and alterations; and

- Construct access roads and rail line cross drainage.

The following mitigation measures are proposed to reduce and mitigate Project-related effects on surface water during the Project Operational phase:

- Complete construction of Joyce Lake diversion works prior to commencement of lake dewatering;

- Divert non-mine contact Open pit dewatering groundwater to Joyce Lake perimeter ditches;

- Commence dewatering of Joyce Lake after spring freshet peak and maintain dewatering at levels less than freshet peak;

- Operate sedimentation ponds as per design criteria to ensure adequate residence time for sedimentation;

- Monitor nitrate concentrations to ensure effluent criteria are not exceeded and activate ammonia management plan if nitrate concentrations exceed the recommended trigger threshold; and

- Monitor wind and wave conditions affecting the Iron Arm causeway depending on remedial alternative selected.

The following mitigation measures are proposed to minimize and mitigate Project-related effects on surface water during the Project Closure and Decommissioning phase:

- Decommissioning and capping of mine infrastructure and waste stockpiles;

- Work zone isolation with appropriate silt fencing;

- Erosion and sedimentation controls similar to the site preparation and construction phase;

- If required, maintenance of sedimentation ponds/ facilities during the decommissioning and reclamation phase until disturbed ground surface are re-stabilized;

- Allow sedimentation ponds to evolve into ponds and wetland features using upstream catchment areas;

- Restoration of natural drainage patterns which would include the filling of the open pit, and refilling of Joyce Lake with water for eventual reestablishment of Joyce Lake drainage conditions; and

- Remove causeway and water crossing bridges and culverts to facilitate reestablishment of existing drainage conditions.

7.4.3 Residual Effects

Several residual effects are predicted related to surface water quantity, quality and drainage patterns. Surface water quantity effects related to the Project at assessment nodes range from -3.4% to 109% during Operation and Maintenance and are limited to the LSA. These water quantity effects related to the Project are negligible on Attikamagen and Petitisikapau Lakes system. The change in flows are within the natural range of flows experienced in local receiving waters and the Attikamagen and Petitsikapau Lake Systems. Water levels in Iron Arm upstream of causeway are expected to increase to 0.20 m during the mean annual flow conditions and to 1.0 m during the 1:100 year flood conditions. These water level changes are expected to be within the natural water level variation of Attikamagen Lake.

Surface water quality effects related to the mixing zones required in Attikamagen Lake to attenuate effluent quality back to baseline or Canadian Water Quality Guidelines (CWQG) thresholds. The assessment has demonstrated that mixing zones would be contained within the LSA and that baseline or CWQG background conditions would be achieved at the boundary of the LSA. Therefore, no significant residual effect for surface water quality is predicted.

Changes in drainage patterns in the PDA and LSA scale result in no significant residual effects after Closure and Decommissioning.

7.4.4 Government, Indigenous and Public Comments and Proponent's Response

Labec Century has met with government, Indigenous and other stakeholders to discuss the Project and document issues and concerns with the Project. Issues and comments related to Water Resources (and where they are addressed in the EIS) are listed in Appendix A, Table A2 of this summary document.

7.5 Groundwater Resources

Groundwater Resources include domestic, commercial, and industrial groundwater-source water supplies, and the groundwater component of freshwater ecosystems. Groundwater is defined as the water held beneath the Earth's surface in the pores, fractures, crevasses, and seams of bedrock and overlying surficial materials. Groundwater Resources is selected as a VC because

it is an important concern for rural residents who might use groundwater via springs, dug wells or drilled wells as their potable water supply.

7.5.1 Potential Effects

Potential effects of the Project on Groundwater Resources are:

- Change in Groundwater Level; and
- Change in Groundwater Quality.

The construction and development of the open pit mine, including overburden removal and dewatering of Joyce Lake, will involve ground disturbance, with the potential to cause local changes in groundwater recharge, flow directions, or water quality.

During clearing and Construction, potential effects are likely to be localized, and will not affect existing Groundwater Resources. Project activity during Operation and Maintenance associated with the excavation and operation of the open pit mine at the north end of Joyce Lake has the potential to affect Groundwater Resources. Potential effects include change of the water table in overburden and bedrock due to mine dewatering, blasting effects on any nearby drilled water wells, and interactions with nearby surface water sources.

Groundwater quantity effects can include lowering of local water levels, resulting in a reduction in water levels and yield capacity in water supply wells within the drawdown radius of influence of the open pit mine and reduction in domestic well yield and quality in proximity to Project activities due to blasting. A reduction in local stream flows during the summer and winter due to shallow groundwater diversion caused by excavation and associated mine dewatering may also occur. A related concern is the potential for diversion of surface water from the Attikamagen Lake system towards the open pit mine in the event that intervening permeable overburden or bedrock structures are encountered, with consequent increase in dewatering requirements.

7.5.2 Mitigation Measures

The following mitigation measures are proposed to avoid or reduce Project-related effects on Groundwater Resources quantity during the Project Construction phase:

- use of beneficial management practices (BMPs) for drainage control and excavation dewatering;
- identification and inspection of any camps using groundwater supplies located along Project corridors; and
- use of multi-level monitoring wells with water level monitoring data loggers to detect changes in water levels during / after Construction.

The following mitigation measures are proposed to avoid or reduce Project-related effects on Groundwater Resources quantity during the Project Operation and Maintenance phase:

- monitoring of water levels in bedrock around and at distance from the open pit mine using multi-level monitoring wells established between proposed dewatering wells;
- continuous monitoring of groundwater pumping rates from dewatering wells;
- use of a system of deep vertical dewatering wells distributed around the perimeter of the open pit that should result in a better water discharge quality than collection ditches, mine sumps and horizontal drains (e.g., less characteristic red water and iron); and
- provision of back-up redundancy for dewatering well systems;

A mine water management strategy will be developed to deal with the major components of water inflow, namely: rainfall, overland run-off, and groundwater seepage (See Chapter 12 – Surface Water Resources), including the following:

- Groundwater seepage into the open pit mine will be controlled with a series of deep high capacity dewatering wells distributed around the pit perimeter. The water from these wells is expected to be of sufficient quality for direct discharge to the local receiving waters.
- Non-contaminated surface run-off into the open pit mine will be controlled by the placement of a ring dyke system to redirect overland run-off away from the pit area towards the wastewater control measures, and ultimately discharge to the nearest lake through a suitable settling pond;
- Control of overburden seepage will involve a ring diversion trench at the base of the overburden cut at the bedrock high wall to intercept and redirect groundwater seepages emanating from the overburden;
- Control of precipitation and groundwater within the open pit mine will be conducted using appropriate drainage and storage measures; and
- A sump pit will be maintained below the working elevation of the open pit mine to collect and discharge combined rainfall and groundwater seepage collected in the open pit. Water will be pumped out of the pit to an engineered settling pond for control of suspended solids and residual chemistry to meet regulated limits prior to release to Attikamagen Lake.

7.5.3 Residual Effects

The local disruption of shallow groundwater flow pathways and lowering of water level during excavation of the open pit mine will not cause an effect on groundwater levels or groundwater chemistry outside of the PDA. No groundwater users are identified in the vicinity of Joyce Lake and effluent will be controlled with the proposed surface water measures.

The residual environmental effect of the dewatering of the open pit mine is expected to be negligible, since there are no groundwater resource users. The Project will result in large changes

in local groundwater levels and groundwater gradients during the Operation and Maintenance phase; the effects will be limited to the PDA and nearby LSA bounded by the major lakes; and are likely to be measurable over 6 to 10 years. Water level drawdown effects will occur throughout the life of the mine, but will not affect off-site groundwater users, will be reversible once decommissioning occurs, and will occur in an undisturbed area (e.g., no existing groundwater resources users).

Upon closure and reclamation, the pit will be allowed to flood to equilibrium, resulting in a pre-mine water table condition. The effects of mine dewatering during Operation and Maintenance are expected to be eliminated once the mine floods to equilibrium, resulting in a positive effect on local groundwater levels.

7.5.4 Government, Indigenous and Public Comments and Proponent's Response

Labec Century has met with government, Indigenous and other stakeholders to discuss the Project and document issues and concerns with the Project. Issues and comments related to Groundwater Resources (and where they are addressed in the EIS) are listed in Appendix A, Table A2 of this summary document.

7.6 Terrain and Acid Rock Drainage / Metal Leaching

Terrain and ARD / ML has been chosen as a VC because of its relationship to Project planning and its potential to interact with Project activities. This VC includes the following elements: landforms and terrain integrity, soil quality and quantity, and snow and ice. ARD and ML are also considered in the context of the geology and geochemistry of the site.

7.6.1 Potential Effects

Potential environmental effects of the Project on Terrain and ARD / ML are:

- Effects on landforms and terrain stability (terrain integrity);
- Change in soil quality and quantity;
- Change in snow and ice; and
- ARD / ML.

The Construction phase of the Project has the potential to affect landforms and terrain stability by altering the spatial distribution of surficial materials during earthworks, changing the thermal regime of potential permafrost zones and altering natural drainage patterns. Landforms, including eskers and wetlands, may be altered to some extent depending on the specific Project element (road, mine pit, etc.) that is constructed. During Operation, the dewatering of Joyce Lake may have some effects on landforms immediately bordering the lake, and affect the stability of the lake shores.

Construction activities have the potential to change soil quality and quantity. Changes to surface and groundwater flow patterns associated with the Project may result from Construction activities

and have the potential to affect soil moisture conditions and alter soil quality. Disturbances to native soils during construction have the potential to contribute to erosion, including streambank and wind erosion, and deposition of airborne sediment and dust. During operation, waste rock disposal on the surface has the potential to alter soil moisture and affect soil chemistry.

Potential environmental effects on snow and ice may occur during all Project phases and include changes in timing of snowmelt as a result of fugitive dust accumulation, changes in snow distribution and drifting as a result of Project infrastructure, and changes in winter ice conditions on nearby lakes resulting from blasting activities and dewatering processes.

Site-preparation and construction will result in the exposure of substantial quantities of bedrock and overburden and will extend into the operation and maintenance phase causing the potential for ARD / ML.

7.6.2 Mitigation Measures

Areas of sensitive terrain, including steep slopes will be avoided where practicable, and where not possible further investigation will be conducted and additional mitigation measures implemented. Open pit walls, roads, ore stockpile and waste rock piles will be engineered for slope stability and managed to acceptable engineering risk factors.

A Rehabilitation and Closure Plan will be prepared and submitted, as required under the Newfoundland and Labrador *Mining Act*, Chapter M-15.1, Sections (8), (9) and (10). This plan will include measures to re-establish site drainage patterns, as near as practical, to natural, pre-development conditions and grade disturbed areas and/or otherwise scarify or landscape to control erosion and sedimentation. This plan will provide procedures for stripping, handling, storage and replacement of soils to manage soil quality and quantity in the LSA.

Based on historical data and static tests of geological materials from the Project, ARD/ML is not likely to occur in the overburden, open pit, ore stockpiles or waste rock disposal areas. Discharge from runoff from the stockpiles and mine water will be monitored for pH and concentrations of metals, sulfate and total dissolved solids to verify predictions. If additional kinetic testing, modeling, and monitoring water quality show potential effects from ARD/ML, the discharges will be treated to meet *Metal and Diamond Mining Effluent Regulations* (MDMER) discharge criteria.

7.6.3 Residual Effects

Two potential esker features have been identified within the PDA, but due to high silt content would not be suitable for construction. No historic resources or high potential for historic resources have been identified in the vicinity of the two eskers and, as they occur commonly in the RSA, they are not considered to be unique from the perspective of wildlife habitat. There is no evidence of any landslides in the PDA and, with the application of standard and prescribed mitigation such as maintaining existing drainage conditions, no low-angle landslides are likely.

Project activities will require earthworks and ground disturbance, and will therefore affect soil quantity and quality within the PDA. Organic soils will be salvaged, using appropriate stripping methods, and stockpiled during Construction for use during rehabilitation and closure.

The effect of accelerated snowmelt resulting from dust accumulation will likely be confined to a distance of 200 – 300 m from Project transportation infrastructure; however, complete cover by dust is likely to be restricted to a few metres from the roadways, and within the working mine area. Based on available studies, the temporal extent of the acceleration of snowmelt is estimated to be four days. Effects of the Project on the integrity of nearby lake ice will be managed by best practices during drilling and blasting operations at the open pit and through sound engineering of the causeway.

Effects of ARD/ML are not likely based on testing to date of site materials and experience with other operations. Ongoing kinetic testing is required to confirm the assessment, as presented herein, and will be completed prior to final design. In the event that potentially acid generating materials are discovered, proactive mitigation strategies may include segregation of potentially acid-generating materials and treatment of effluents to meet regulatory requirements, if needed.

7.6.4 Government, Indigenous and Public Comments and Proponent's Response

Labec Century has met with government, Indigenous and other stakeholders to discuss the Project and document issues and concerns with the Project. Issues and comments related to Terrain and ARD/ML (and where they are addressed in the EIS) are listed in Appendix A, Table A2 of this summary document.

7.7 Wetlands

Wetlands are an important feature of the landscape, covering a sizable proportion of the natural landscape of Labrador and are a major constituent of the undisturbed boreal ecosystem. Wetlands perform in many biological, hydrological, social / cultural, and socio-economic functions that are of value to regulatory agencies, the public, and environment as a whole.

7.7.1 Potential Effects

Potential environmental effects of the Project on Wetlands are:

- Change in Wetland Area or Function.

Effects to wetland habitat may occur during all Project phases but will mostly occur during site preparation activities, which include the clearing, grubbing, and infilling of upland and wetland habitat. Direct effects on wetlands including temporary or permanent alteration or loss of wetland area or function, or portions thereof can result from a physical disturbance associated with Project activities. The Project is estimated to result in the direct disturbance of 65 wetlands throughout its lifespan, accounting for approximately 32 ha, or 4.7 percent of the wetland area available in the PDA.

There is potential for indirect changes in wetland area and associated function during Project Construction as a result of erosion and sedimentation, introduction of non-native and invasive plant species, and through changes in local hydrology.

Erosion and sedimentation during construction can result in a disturbance (temporary loss of area and associated function) beyond the area of direct disturbance. Erosion in areas draining to wetlands may result in the deposition (i.e., sedimentation) of non-wetland soils into wetland areas.

Site preparation activities associated with each Project component can facilitate opportunities for colonization by non-native and invasive plant species. Non-native and invasive plants could affect wetland function, as non-native and invasive plants often have higher rates of reproduction when compared to native plant species and have the potential outcompete these species for resources (e.g., available nutrients) through competitive exclusion.

Dewatering of Joyce Lake has the potential to interact with wetlands during the Operation and Maintenance phase of the Project through changes to surface water flow and water table drawdown.

Alterations in water chemistry, soils or hydrology can adversely affect characteristic wetland vegetation. These effects could extend beyond construction limits, extending into the LSA with potential effects on downgradient waterbodies / wetlands.

7.7.2 Mitigation Measures

Mitigation measures have been recommended to avoid or minimize potential environmental effects on Wetlands during the Construction, Operation and Maintenance, and Closure and Decommissioning phases of the Project. Also consistent with the goals of the Federal Policy on Wetland Conservation and the provincial Policy for Development in Wetlands, a Wetland Mitigation and Monitoring Plan will be developed as part of the Environmental Protection Plan (EPP), incorporating the hierarchical progression of mitigation alternatives outlined in these guidelines, where feasible. The following general mitigation is proposed to reduce direct and indirect effects on wetlands:

- Reduce construction footprint (i.e., PDA) to the extent feasible;
- Select the final locations of Project facilities and infrastructure, including overburden and low grade waste rock disposal areas, haul roads and rail corridors, to avoid wetlands to extent feasible;
- Implement a pre-construction communication plan for communicating with the construction crew on the environmental sensitivities of wetlands, wetland flagging, keeping machinery and vehicles out of wetlands, and maintaining sediment and erosion control around wetlands;
- Where possible maintain natural buffers around wetlands and riparian zones (a minimum vegetation buffer zone of 30 m should be maintained around wetland areas not planned for alteration);
- Flag the boundaries of wetlands clearly in the field before commencing construction, and avoid locations of avoidable wetland boundaries, to the extent feasible;

- Avoid siting of temporary work areas (for example, lay-down areas for equipment and materials storage) in wetlands;

- An on-site environmental monitor will be assigned to confirm that construction practices are consistent with the goals and plans of the Wetland Mitigation and Monitoring Plan in the Project-specific EPP;

- Avoid known areas of sensitive species and their habitats associated with wetlands, where feasible;

- Maintain natural wetland hydrology, where possible, through assessment of pre-construction hydrology and use of appropriately sized and place culverts, infiltration galleries, berms, vegetated channels, etc.;

- Reduce disturbance and infilling within adjacent wetlands and maintain hydrological conditions to the extent feasible;

- Protect remnant wetlands that have not been affected by mine activities and maintain natural buffers around wetlands and riparian zones;

- Where feasible, limit construction within wetlands to winter months, when soil and water are more likely to be frozen and vegetation is dormant;

- Use mats (e.g., rig mats) and wide-track vehicles to spread the distribution of equipment weight when crossing wetlands (if crossing is unavoidable) during the growing season or when wetlands are not frozen;Salvage and stockpile wetland soils (peat) separately from upland soils for use in site reclamation;

- Implement erosion prevention and sediment control measures, with an emphasis on reducing the area of exposed soils at any one time;

- Conduct invasive species management; and

- Conduct progressive rehabilitation and/or wetland restoration.

7.7.3 Residual Effects

Residual environmental effects on Wetlands associated with the Project are primarily associated with the Construction phase, where with application of identified mitigation, the potential residual effects associated with the Project on wetland area and its associated function, are predicted to be adverse owing to a permanent alteration and/or reduction in the amount of available wetland area.

At the completion of Project Construction, wetlands are anticipated to decrease by approximately 38 ha or less than 5 percent of the LSA. Disturbance to wetlands in the PDA will be accompanied by a corresponding loss to wetland functions. However, wetland functions in the PDA are well represented throughout the LSA. The proportions of wetland area that are contributing functions within the LSA estimated to be affected by the Project range from approximately 2.5 to 5.2

percent. The Project will result in large changes in local groundwater levels and groundwater gradients during the Operation and Maintenance phase. Effects will be limited to the PDA and nearby LSA bounded by the major lakes; and are likely to be measurable over 6 to 10 years. Water level drawdown effects will occur throughout the life of the mine, will affect on-site and nearby wetlands, but will be reversible once decommissioning occurs. Following the Operation and Maintenance phase, it is anticipated that an additional 2.6 ha of wetland will be affected. Upon Closure and Reclamation, the pit will be partially filled with waste rock, and allowed to flood to equilibrium, resulting in a pre-mine water table condition. The effects of mine dewatering on Wetlands during Operation and Maintenance are expected to be eliminated once the mine floods to equilibrium, resulting in a positive effect on local groundwater levels, and in turn pre-disturbance wetland condition.

Within the RSA, the Project will however have a limited effect on wetlands, with a net loss of less than one percent (32 ha of 15,914 ha available in the RSA). Wetlands are expected to remain abundant and widely distributed throughout the RSA.

7.7.4 Government, Indigenous and Public Comments and Proponent's Response

No issues or comments were brought forward with respect to Wetlands.

7.8 Fish and Fish Habitat

Fish and Fish Habitat includes the populations and habitats for all freshwater fish species within areas that may or will be affected by the Project. Fish and Fish Habitat represent an important resource and that is likely to be affected by the Project.

7.8.1 Potential Effects

Potential environmental effects of the Project on Fish and Fish Habitat are:

- Changes in Fish Habitat / Production
- Changes in Fish Health and Mortality

Potential environmental effects from the Project on fish habitat and productivity include changes to water and sediment quality, habitat area, and disruption of migration corridors. Effects on fish and fish habitat are anticipated during the Construction and Operation and Maintenance phases of the Project. Approximately 29,000 square metres (m^2) of fish habitat will be altered or lost as a result of construction activities of the Project. A total of 17 watercourse crossings will be required for the Project access and haul roads and the dewatering of Joyce Lake will result in the permanent loss of fish habitat.

Potential environmental effects from the Project on fish health or mortality include direct loss of fish attributable to the Project, loss of fish species of management concern, and changes to fish condition from effluent or sedimentation. No fish SOCC within the RSA were identified. Direct mortalities associated with the Project are likely to occur during the construction of the Iron Arm

causeway and the dewatering of Joyce Lake. Effluent resulting from the operation of the Project may result in changes to fish health.

7.8.2 Mitigation Measures

Adverse effects to fish habitat and productivity will be mitigated through:

- the use of the best available current technology and BMPs during construction and operation in the freshwater environment;
- the development of a comprehensive Fish Habitat Offset Plan for the habitat altered by the causeway or watercourse crossings;
- the use of designed controls or treatment for surface water contaminants; and
- a rigorous water quality control and monitoring system for surface, process, and subsurface waters.

MDMER requirements will be adhered to for all discharges with follow-up monitoring designed in accordance with MDMER guidelines.

Adverse environmental effects to fish health or mortality will also be mitigated through adherence to federal and provincial operational procedures.

7.8.3 Residual Effects

The magnitude of the residual adverse environmental effect on fish habitat and production is considered low within the RSA because it is restricted to the PDA, and will be offset in accordance with the *Fisheries Act, 2012*. With respect to fish health or mortality, the likely residual adverse environmental effect will be limited to injury and loss of fish during relocation efforts and infilling for the causeway and effects will be limited to waterbodies within the LSA.

7.8.4 Government, Indigenous and Public Comments and Proponent's Response

Labec Century has met with government, Indigenous and other stakeholders to discuss the Project and document issues and concerns with the Project. Issues and comments related to Fish and Fish Habitat (and where they are addressed in the EIS) are listed in Appendix A, Table A2 of this summary document.

7.9 Birds, Wildlife and Their Habitat

Birds, wildlife species, and their habitats all have the potential to interact with all phases of the Project. Of particular concern are areas where concentrations of migratory animals may occur (e.g., breeding, denning, and / or wintering areas), or breeding areas of species high in the food chain but believed to be low in number, in the vicinity of the Project.

7.9.1 Potential Effects

Potential environmental effects of the Project on Birds, Wildlife and Their Habitat are:

- Change in Habitat;
- Change in Distribution and Movement;
- Change in Mortality Risk; and
- Change in Health.

Project activities associated with Construction, Operation and Maintenance, and Closure and Decommissioning have the potential to affect the abundance and distribution of rare or sensitive species. The Project will result in the alteration of habitat comprised primarily of forested and non-forested uplands (e.g., spruce-moss forest and shrub lichen barrens, respectively). This change in habitat may result in adverse environmental effects such as the loss of breeding, nesting, rearing, or other habitat (e.g., foraging). The loss or alteration of important habitat for birds and other wildlife species may result in the displacement of some species as well as habitat fragmentation on the landscape, hindering accessibility to preferred corridors, home ranges, and habitat connectivity, with potential effects on species such as caribou.

Project activities associated with site preparation and the construction could also potentially result in mortality of birds and wildlife. Direct mortality is likely to occur to small species such as hibians, small mammals, and the eggs or flightless young of birds, particularly during clearing activities. Other species that hibernate may be particularly susceptible to direct mortality during winter (i.e., when they are not mobile). Some birds and wildlife species are attracted to open disturbed sites (e.g., Common Nighthawk (*Chordeiles minor*) and Short-eared Owl (*Asio flammeus*)) created by clearing and grubbing, that use such habitats for nesting.

7.9.2 Mitigation Measures

Project planning and design, as well as proven mitigation measures will be used to avoid or minimize potential environmental effects. This will include compliance with all applicable permits and guidelines, and the use of BMPs. The following mitigation measures are proposed to mitigate Project-related effects:

- avoid sensitive species (e.g., caribou) and their habitats to the extent feasible;
- conduct invasive species management;
- conduct wildlife awareness training for staff and contractors;
- construct roads perpendicular to key movement corridors for birds and wildlife (particularly caribou), to the extent feasible, to encourage animals to cross over versus linger alongside roads;
- develop and implement an Avifauna Management Plan;

- do not feed wildlife;
- establish a site for equipment maintenance, repair and cleaning that is at least 100 m from any lake, river, stream or wetland;
- grade or engineer slopes along roads at locations of potential crossing points for caribou;
- implement nuisance bear management programs, including awareness training programs, if required;
- maintain natural buffers around wetlands and riparian zones (a minimum vegetation buffer zone of 30 m should be maintained around existing wetland areas);
- post maximum speed limits on site roads to reduce the potential for vehicle-wildlife collisions;
- prohibit hunting or harassment of wildlife on Project site;
- record the location, observations of poaching, and results of any monitoring programs conducted by Joyce Direct Iron related to wildlife populations in the area, and provide this information to relevant governing departments;
- relocate raptor nests where necessary;
- restrict clearing activities to outside of the bird breeding season, whenever feasible, and implement an Avifauna Management Plan;
- schedule Project activities and reclamation activities so that not all available habitat is disturbed simultaneously; and
- survey for any birds, wildlife, nests or eggs before disposing of any materials on the surface (e.g., stockpiling), using a qualified biologist.

Mitigation measures will be finalized by Joyce Direct Iron in consultation with experts, and where appropriate, the Regulatory Authority (e.g., Newfoundland and Labrador Department of Fisheries, Forestry and Agriculture).

7.9.3 Residual Effects

Residual environmental effects associated with the Project are primarily associated with the Construction phase and the loss or alteration of habitat that occurs as a result of site preparation. Residual environmental effects also include a potential change in distribution and movement of some individuals (through ongoing sensory disturbances and avoidance behaviours), increased risk of mortality (direct and indirect effects associated with collisions and increased access/hunting, respectively), and changes in individual health (through sensory disturbances and increased stress and/or masking of auditory signals).

7.9.4 Government, Indigenous and Public Comments and Proponent's Response

Labec Century has met with government, Indigenous and other stakeholders to discuss the Project and document issues and concerns with the Project. Issues and comments related to Birds, Wildlife and Their Habitat (and where they are addressed in the EIS) are listed in Appendix A, Table A2 of this summary document.

7.10 Species at Risk and Species of Conservation Concern

SAR and SOCC was selected as a VC because of the potential for interactions between vegetation (i.e., habitat) and Project activities, particularly species or communities that are of conservation interest. SAR and SOCC contribute to overall species diversity in an area and, in terms of rare plant species, are often associated with unusual or uncommon habitats. Furthermore, some plant communities (i.e., wetlands) harbor a comparatively large numbers of rare plant species or uncommon species assemblages and federal / provincial policy is directed at preventing loss of important wetland functions.

7.10.1 Potential Effects

Potential environmental effects of the Project on SAR and SOCC are:

- Change in habitat;
- Change in distribution and movement;
- Change in mortality risk; and
- Change in health.

Activities associated with Project Construction, Operation and Maintenance, and Closure and Decommissioning have potential to affect habitat, distribution and movement, mortality risk and health of rare or sensitive species.

During Construction, the most substantive and likely interactions are the direct loss of rare plants through ground disturbances associated with site preparation that will result in the permanent loss of some vegetation communities (i.e., wetlands). The Project will result in the alteration or loss of approximately 4 km^2. This change in habitat may result in adverse environmental effects such as the loss of breeding, nesting, rearing, or other habitat (e.g., foraging).

Site preparation activities can also potentially create favorable conditions for the introduction and growth of non-native and invasive plant species, which could affect rare plant species, as non-native and invasive plants often have higher rates of reproduction when compared to rare plant species and have the potential outcompete natural vegetation.

The distribution and movement of individuals and species on the landscape may also change as a result of construction activities and sensory disturbances (e.g., noise, light, dust, and human presence) resulting from Project activities during all phases. Some birds and wildlife species are attracted to open disturbed sites (e.g., Common Nighthawk and Short-eared Owl*)* created by

clearing and grubbing, that use such habitats for nesting. Direct mortality is likely to occur to small species (e.g., spring peeper and pygmy shrew (*Sorex hoyi*)), and the eggs or flightless young of birds, particularly during clearing activities. Activities associated with the Operation and Maintenance phase of the Project that have the potential to interact with rare plant species and uncommon plant communities are dewatering of Joyce Lake, waste rock disposal on surface, and water treatment and discharge, including mine water and surface water runoff.

7.10.2 Mitigation Measures

Project planning and design, as well as proven mitigation measures, will be used to avoid or reduce potential effects. This will include compliance with all applicable permits and guidelines, and the use of BMPs. Mitigation measures for SAR and SOCC are consistent with those provided in Section 7.9.2 of this summary.

Mitigation measures will be finalized by Joyce Direct Iron in consultation with experts, and where appropriate, the Regulatory Authority (e.g., Newfoundland and Labrador Department of Environment and Climate Change).

7.10.3 Residual Effects

Residual environmental effects on SAR and SOCC associated with the Project are primarily associated with the Construction phase and the loss or alteration of habitat that occurs as a result of site preparation. Residual environmental effects specific to bird and wildlife SAR and SOCC also include a potential change in distribution and movement of some individuals (through ongoing sensory disturbances and avoidance behaviours), increased risk of mortality (potential collisions), and changes in individual health (through sensory disturbances and increased stress and / or masking of auditory signals).

7.10.4 Government, Indigenous and Public Comments and Proponent's Response

No issues or comments were brought forward with respect to SAR and SOCC.

7.11 Historic and Cultural Resources

Historic and Cultural Resources include sites, materials, geological deposits and, in certain instances, landscape features of archaeological, historic, cultural / spiritual, paleontological or architectural importance. Historic and Cultural Resources have been selected as a VC because they frequently comprise the only physical information on the lives of Indigenous people prior to the arrival of Europeans in North America. Moreover, they can aid in the understanding the early history of a region and the interactions that occurred between different cultural groups and the connections they had with the environment in which they lived.

7.11.1 Potential Effects

Potential environmental effects of the Project on Historic and Cultural Resources are:

- Loss or Disturbance to Archaeological and Cultural Resources

Any activities that disturb the existing ground cover have the potential to affect Archaeological and Cultural Resources. Alterations to the landscape (through forest, earth or rock extraction), and increased human activity resulting from improved access to the area also increase the likelihood that environmental effects will occur. Within the current PDA, there is one archaeological site registered with the Provincial Archaeology Office, which was identified during the Stage 1 Assessment field survey carried out in September 2012. No additional resources were discovered during the 2013 Stage 2 Assessment.

The majority of ground disturbance effects with potential to affect Archaeological and Cultural Resources will occur during the Construction phase. During the Project Operation and Maintenance phase, the only additional ground disturbance beyond those areas affected during Project Construction will result from the development of the open pit mine and disposal of waste rock. With the exception of the one archaeological site identified within the PDA, no Archaeological and Cultural Resources have been identified within the LSA, and both the PDA and LSA lie within zones considered to hold Low potential for such materials. Therefore, considering the above information, the Operation and Maintenance of the Project will not have an effect on, or physically disturb, any known sites.

7.11.2 Mitigation Measures

Potential interaction with the identified archaeological site (GfDp-01- Attikamagen Lake 1) will be mitigated by either Project design changes, or systematic data recovery of the materials. Additionally, a Project-specific EPP will detail the procedures to follow in the event of an accidental/inadvertent discovery of other Archaeological and Cultural Resources. Construction personnel will be provided with orientation and training that will include briefings related to Archaeological and Cultural Resources. In the event that undiscovered Archaeological and Cultural Resources are identified as a result of Project activities, the Proponent will implement a Stage 1 Assessment in accordance with provincial guidelines. No further activity would proceed in the area until an appropriate approach is approved by the Provincial Archaeology Office.

7.11.3 Residual Effects

There is one registered archaeological site situated within the PDA, which could be subject to permanent loss or disturbance from construction of the causeway. However, with the proposed mitigation measures, the site will either be avoided, or the information it contains will be recovered, documented and preserved, with the research results and the archaeological materials made available for publication, educational purposes and/or public display. The geographic extent of potential interactions is limited to the PDA where first-time ground disturbance occurs. Mitigation measures will be implemented in the event of an unexpected discovery. In the unlikely event that the Project does affect an Archaeological and Cultural Resource, it is anticipated that the affected resource would be small in magnitude (i.e., negligible or low) because none were observed during the field surveys and appropriate measures would be undertaken to salvage and retrieve the material culture and all associated information it contains.

7.11.4 Government, Indigenous and Public Comments and Proponent’s Response

No issues or comments were brought forward with respect to Historic and Cultural Resources.

7.12 Current Use of Land and Resources for Traditional Purposes by Indigenous Persons

The Project is located in a region that is the focus of land and resource use activity by a number of Indigenous groups. Current Use of Land and Resources for Traditional Purposes by Indigenous Persons assesses the potential effects of the Project on the practices, traditions, and customs that distinguish the distinctive culture of Indigenous persons and which were practiced prior to European contact. The VC also discusses these effects in the context of effects on the biophysical and other aspects of the socio-economic environment.

7.12.1 Potential Effects

Potential environmental effects of the Project on Current Use of Land and Resources for Traditional Purposes by Indigenous Persons are:

- Change in Activity Distribution (location, timing, and / or intensity)

The Project will result in changes in the accessibility of certain areas within the PDA during specific periods of the Construction and Operation phases. This change will be due to both site access restrictions and landscape alterations resulting from the development of Project components and activities within the PDA. Project activities may therefore result in changes in patterns of traditional land and resource use both in terms of the location, timing, and / or intensity of activities.

Construction phase activities such as site preparation (including clearing, excavation), construction of roads, and site infrastructure, as well as on-site vehicle and equipment operation, will limit traditional land and resource use opportunities in some locations, while creating additional opportunities in previously inaccessible areas. This has the potential to result in changes in activity distribution and may also result in changes in the intensity of use, depending on changes in the distance travelled from the community or other activity base. This includes Iron Arm and Attikamagen, Astray, and Petitsikapau Lakes, which have been identified as important locations for fishing and wildlife harvesting for the Indigenous communities in the Schefferville area.

A number of activities during the construction phase of the Project will generate noise. Activities include blasting, excavation, grading, the installation or construction of facilities / buildings, and construction of road and railway. Increases in ambient noise may have effects on sensitive receptors, including certain fish or wildlife species, and therefore may have indirect effects on traditional land and resource use activities.

Although there may not be any substantial additional land disturbance or access restrictions with respect to the Operation and Maintenance phase of the Project, many of the access restrictions implemented during the Construction phase will remain in place. Therefore, potential implications for Indigenous land and resource use are likely to be a continuation of those experienced during the Construction phase. Relevant mitigation measures in place during the Construction phase will continue throughout Operations.

7.12.2 Mitigation Measures

A number of mitigation measures will be implemented to avoid or minimize adverse effects of the Project on Indigenous land and resource use activities. Rotational work schedules will be used to provide maximum flexibility for Indigenous employees who work for the Project, but still wish to participate in traditional land and resource use activities. This will also benefit any Indigenous employees who have homes outside the RSA, such as in western Labrador or Happy Valley-Goose Bay, and who wish to continue to take advantage of land and resource use opportunities near their communities or in other traditional locations.

All mine employees who are staying in camp will be prohibited from engaging in consumptive land and resource use activities. This will be controlled by prohibitions on bringing fishing or hunting gear into camp. Indigenous Residents of nearby communities who commute to the Project will be allowed to engage in these activities during non-working hours and the rotational work schedule will facilitate their use outside the Project area during non-work hours.

7.12.3 Residual Effects

In general, any Project components or activities that have the potential to restrict access, result in the disturbance of habitat, interact with or restrict access to fish habitat, or result in emissions to the atmospheric aquatic or terrestrial environments, have the potential to directly or indirectly affect the location, timing, and/or intensity of land and resource use activities. While the Project is in an area of relatively high use by the Indigenous groups in nearest proximity, the overall magnitude of the habitat disturbance is low in the context of overall habitat in both the LSA and RSA. Much of the disturbance related to the Project is limited to the Joyce Lake Peninsula, which consultation determined is not an area that was typically used by groups in the vicinity.

Changes in access within the LSA as a result of construction and operations will be both adverse and positive, with both access restrictions and increased access as a result of Project activities. The Project footprint and associated site disturbance will also result in the alteration of the landscape within the LSA, and could subsequently alter the perceived value of the area for land and resource use activities.

7.12.4 Government, Indigenous and Public Comments and Proponent's Response

Labec Century has met with government, Indigenous and other stakeholders to discuss the Project and document issues and concerns with the Project. Issues and comments related to Current Use of Lands and Resources for Traditional Purposes by Indigenous Persons (and where they are addressed in the EIS) are listed in Appendix A, Table A2 of this summary document.

7.13 Other Contemporary Land and Resource Use

This VC focuses on the Other Contemporary Land and Resource Use by non-Indigenous people, and assesses the potential effects of the Project on activities conducted by this group. These effects are also considered in the context of potential effects on the biophysical and socio-economic environments.

7.13.1 Potential Effects

Potential environmental effects of the Project on Other Contemporary Land and Resource Use are:

- Change in Access for Recreational Purposes; and
- Change in Level of Activity / Use for Recreational Purposes.

Potential environmental effects on access to recreational areas and level of use for recreational purposes from other routine activities in the Construction, Operation and Closure phases have been assessed to be manageable to acceptable levels through standard operating practices and through the application of wildlife management as required by the Province of Newfoundland and Labrador. For example, although no prime recreational areas have been identified in the PDA, access to recreational areas in the LSA or RSA will not be inhibited by Project infrastructure. In addition, potential Project effects on biophysical VCs (such as air and water quality) on the level of use of the LSA and RSA for recreational activities will be mitigated by implementing an Environmental Management Plan (EMP).

7.13.2 Mitigation Measures

Mitigation proposed for potential environmental effects on the biophysical and socio-economic environment will also serve to mitigate potential effects on Other Contemporary Land and Resource Use (e.g., BMPs, EMP). No specific mitigation measures are proposed or required for Other Contemporary Land and Resource Use.

7.13.3 Residual Effects

No residual environmental effects have been identified for Other Contemporary Land and Resource Use.

7.13.4 Government, Indigenous and Public Comments and Proponent's Response

No issues or comments were brought forward with respect to Other Contemporary Land and Resource Use.

7.14 Community Services and Infrastructure

As a result of Project development, there will be increased economic activity in the area of Schefferville, Québec, which is the closest community to the Project. There will also likely be increased activity in the communities of western Labrador, which serves as the economic and service centre for the region and could therefore face demands on local business, services, and infrastructure, such as highways, medical facilities, and accommodation.

Although the Project will house employees on-site in an accommodations complex (on a rotational schedule), there is potential for increased demand on services and infrastructure in nearby communities. This has been raised as a concern by residents of the communities closest to the

PDA. Community Services and Infrastructure has therefore been selected as a VC to address these concerns.

7.14.1 Potential Effects

Potential environmental effects of the Project on Community Services and Infrastructure are:

- Change in Capacity of Community Services and Infrastructure

The potential for this effect to occur depends on population-based factors, including the number of workers required for each Project phase, accommodations strategies for Project workers, and the extent to which any in-migrant Project workers interact with community residents and make use of Community Services and Infrastructure.

7.14.2 Mitigation Measures

Key mitigation measures include the use of an accommodation complex, the Project work rotation schedule, and transportation plan, all of which will reduce the potential for interactions with Community Services and Infrastructure.

An accommodation complex will be in operation year-round and it will house approximately 144 workers at a time to minimize any effects that additional people in the PDA will have on housing and accommodations in the LSA communities. Due to the fact that some workers will already have housing in these communities, along with the design of the work rotation schedule, it is likely that all of the workers who require accommodation, even at peak employment, will be able to be housed at the accommodations complex.

The accommodation complex will have a kitchen so workers will be able to eat at the camp and will not have to rely on food services provided within the LSA communities. The Project will not rely on municipal services and infrastructure, such as water, sewer and power, from LSA communities, as potable water will be available at the accommodation complex and Project site through the installation of groundwater wells and water treatment units. All power required for the Project will be supplied by local generators, which will run on diesel fuel.

As a result of the work rotation schedule and design of the transportation system for workers, there will be few occasions when commuting workers will spend more than a short period in western Labrador and Québec communities while travelling to or from the workplace. Therefore, there is a very small likelihood of interactions between workers and local residents that might place demands on safety and security services, policing, or healthcare services and infrastructure.

Most workers will continue to receive general healthcare in their home communities. Any minor injuries or health problems will be addressed through the provision of first-aid at the worksite. Effects of the Project on local healthcare services and infrastructure will also be minor because of the size of the labour force. Accidents will be minimized through rigorous enforcement of Joyce Direct Iron’s occupational health and safety standards.

7.14.3 Residual Effects

The Project will have a negligible short-term direct effect on the communities of western Labrador and Québec. Construction Phase employment is expected to peak at approximately 310 workers while the peak employment during Operations and Maintenance is expected to peak at approximately 269, approximately half of which will be on site at a given time. Given the Project's relatively small workforce and work schedule, it is very unlikely that any workers and their families will move to the LSA communities as a result of Project Construction and Operation. In addition, mitigation measures including the use of an accommodation complex will reduce potential increased demand on existing services and infrastructure.

7.14.4 Government, Indigenous and Public Comments and Proponent's Response

Labec Century has met with government, Indigenous and other stakeholders to discuss the Project and document issues and concerns with the Project. Issues and comments related to Community Services and Infrastructure (and where they are addressed in the EIS) are listed in Appendix A, Table A2 of this summary document.

7.15 Economy, Employment and Business

The Project will generate economic benefits through all phases of the Project, including increases in government revenues through gross domestic product, taxes, and royalties. The Project will also result in regional and provincial employment and contract procurement. The proposed implementation of a Project Benefits Plan and Diversity Plan will optimize economic benefits, including those realized by under-represented groups such as women, Indigenous people, and persons with disabilities. EEB has been selected as a VC because of the opportunity for the Project to deliver economic benefits to Labrador and the Province as a whole. Project effects associated with EEB are generally of interest to the public and to the Government of Newfoundland.

7.15.1 Potential Effects

Potential environmental effects of the Project on EEB are:

- Change in Economy;
- Change in Employment; and
- Change in Business.

Mining projects can have a range of positive effects on local, regional, provincial, and national economies. Many of these economic effects are consequent of the effects on employment and business. The Project will cause effects on EEB through the employment and expenditures on supplies and services that are involved in all of the Project activities and works. The direct, indirect, and induced effects of Project expenditures and employment, together with proponent and other Project-related business taxes and royalties, will also contribute to local, regional, and

provincial economies. Project expenditures and employment are expected to have substantial effects and are of public and regulatory interest.

7.15.2 Mitigation Measures

Mitigation measures for EEB focus on enhancing positive economic effects and industrial benefits throughout all Project phases and include implementation of a Project Benefits Plan and Diversity Plan and other measures to increase local and Indigenous employment and manage contract procurement.

7.15.3 Residual Effects

During Construction, the Project will generate economic benefits, including increased employment rates and income paid to workers through direct, indirect, and induced employment. Construction activities and physical works will also require the procurement of a wide range of goods and services. Business contracts secured through the construction of major projects result in increased employment and income locally and regionally and may allow for the establishment or further development of local, regional, and provincial business capacity and expertise related to mining and other industries increasing competitiveness for future economic opportunities.

During Operation and Maintenance, the benefits to the regional and provincial economies will continue as residents gain employment, enhance their skills during training, and Project workers purchase goods and services, and generate other economic activity, leading to increased personal incomes and taxes for government. Proponent taxes and royalties will also contribute to government revenue. Projects of this type offer the potential for relatively highly-paid jobs and business opportunities. These economic benefits can also result in substantial positive social effects on individuals, families, and businesses in communities near the Project.

During Closure and Decommissioning, there will be reduced expenditures and associated direct, indirect, and induced economic effects. There will be diminishing employment during Closure and Decommissioning, leading to the eventual end of Project employment. Expenditures during decommissioning and reclamation will include short-term opportunities for people and businesses in Labrador and the rest of the Province.

7.15.4 Government, Indigenous and Public Comments and Proponent's Response

Labec Century has met with government, Indigenous and other stakeholders to discuss the Project and document issues and concerns with the Project. Issues and comments related to EEB (and where they are addressed in the EIS) are listed in Appendix A, Table A2 of this summary document.

7.16 Effects of the Environment on the Project

The EIS Guidelines from the federal and provincial governments require that the EIS consider how local conditions and natural hazards, such as severe and / or extreme weather conditions and external events (e.g., drought, flooding, ice jams, landslides, avalanches, fire, erosion, subsidence, outflow conditions and seismic events) could adversely affect the Project and how

this in turn could affect the environment (e.g., extreme environmental conditions result in malfunctions and accidental events). They also require consideration of longer-term effects of climate change, including a description of climate data used. The following potential environmental conditions could affect the Project:

- climate conditions, including air temperature, precipitation, wind, and storms;
- climate change including, but not limited to, the effect of extreme weather events associated with climate change;
- geotechnical and geophysical hazards, including potential seasonal subsidence, seismicity and faulting, risks associated with cut / fill slopes, and constructed facilities;
- geological fractures and faults and associated implications of these features on foundation stability of major Project components, Project planning, and engineering design;
- extreme and/or unusual hydrological conditions, including drought, flooding, or ice jams;
- groundwater level and potential effects on mining operations; and
- forest fires and potential effects on Project infrastructure and safe operations.

Planning and design of the Project has and will continue to consider extreme climatic, hydrologic, and geohazard criteria. Experience of other iron ore mines in the area, in combination with prescribed codes and standards, provides a high level of confidence that potential environmental effects resulting from environmental conditions can be mitigated to acceptable levels, with the potential exception of a large-scale fire. Site monitoring will be undertaken to identify potential problems and verify effective mitigation. Therefore, there is limited potential for the environment to result in effects on the Project that in turn would result in effects on the environment (i.e., as a result of an accident or malfunctions).

7.17 Cumulative Environmental Effects

The consideration of other projects or activities that have been or will be carried out with potentially overlapping environmental effects is a necessary component of the assessment of cumulative environmental effects to meet the requirements of the IAAC EIS Guidelines.

Projects and activities identified as having potential to act in combination with the Project to result in cumulative environmental effects included the Kami iron ore project, Mont-Wright Mine, Fire Lake North Iron Mine, Scully Mine, Bloom Lake Mine and Rail Spur, Iron Ore Company of Canada Labrador Operation, Houston 1&2 iron ore project, Lower Churchill Hydroelectric Generation Project, Maritime Transmission Link Project, and Tata Steel Minerals Canada (TSMC) DSO Iron Ore Project.

Given the localized nature of Project's residual environmental effects and separation distances from the Project to most of these other projects, there is limited predicted spatial or temporal overlap of environmental effects that would result in cumulative environmental effects, particularly for biophysical effects. Due to their proximity to the Project and understanding of potential effects

from these activities, LIM's Houston 1&2 iron ore project and the TSMC DSO Iron Ore Project, have potential to interact with residual environmental effects of the Project to result in cumulative environmental effects on all VCs, with the exception of Groundwater Resources and Historic and Cultural Resources. No Project residual environmental effects are predicted for these VCs; therefore, there are no potential cumulative environmental effects.

Most potential cumulative environmental effects can be managed with standard mitigation and BMPs. Of particular concern is the potential for adverse cumulative environmental effects on Birds, Wildlife and their Habitat, and bird and wildlife SAR and SOCC. Effects from the Project can potentially cumulatively interact with effects from LIM's Houston 1&2 iron ore project and the TSMC DSO Iron Ore Project, resulting in a change in distribution and movement, a change in mortality risk, and a change in health for these VCs where species' geographic ranges may overlap with the PDA and other projects. As a result of these potential changes to these biophysical VCs, there could also be adverse cumulative environmental effects on the Current Use of Lands and Resources for Traditional Purposes by Indigenous Persons with respect to a change in distribution of activities.

In addition to the implementation of proposed mitigation to address the Project's residual environmental effects, additional mitigation may include the support of any future initiatives, including collaboration with other proponents, government agencies, or other third parties, in regards to mitigation, environmental protection planning, BMPs, or research and recovery planning. Of particular importance is the need for effective wildlife and resource management through the Newfoundland and Labrador Department of Industry, Energy and Technology and Newfoundland and Labrador Department of Fisheries, Forestry and Agriculture.

With respect to Community Services and Infrastructure, and EEB, potential cumulative effects are not limited to consideration of LIM's Houston 1&2 iron ore project and the TSMC DSO Iron Ore Project. The residual effects of the Project have the potential to interact cumulatively with effects from other projects and activities where there could be overlapping needs and expenditures related to services and infrastructure in surrounding communities. The combined economic contribution of the Project and other projects and activities will provide benefits to the economy of Labrador and the Province, including employment and business contracts associated with the mining industry. The cumulative economic effect of the Project with other active projects will also offset losses in employment and business as a result of project closures and delays.

7.18 Accidental Events

Accidental events that are a result of Project activities that could affect VCs include:

- train derailment;
- forest fire;
- hydrocarbon spill;
- settling / sedimentation pond overflow;

- premature or permanent shutdown; and
- collisions with wildlife.

The accidental event scenarios are described in Section 2.6.3 of the EIS. With the exception of Atmospheric Environment and Climate, Water Resources, Groundwater Resources, Wetlands, Fish and Fish Habitat, Birds, Wildlife and their Habitats, and SAR/SOCC, it is predicted that accidental events will not result in significant effects. Depending on the extent of the event and time of year, forest fires could result in significant effects to Atmospheric Environment and Climate, Water Resources, Wetlands, Birds, Wildlife and their Habitats, and SAR/SOCC. Hydrocarbon spills could result in significant effects to Water Resources, Groundwater Resources, and Fish and Fish Habitat. Train derailment could result in significant effects to Water Resources, Groundwater Resources, and Fish and Fish Habitat. Settling pond overflow could result in significant effects to Fish and Fish Habitat. Premature shutdown was not predicted to result in significant environmental effects. Contingency measures to be implemented in the event of an accident will be detailed in the Emergency Response Plan. Preventative measures will be detailed in the EMP.

8.0 MITIGATION MEASURES

Mitigation measures and / or effects management measures are proposed for each VC to reduce adverse environmental effects, as well as measures to address public concerns. Types of mitigation measures considered include:

- BMPs and environmental protection strategies;
- site-specific measures (i.e., timing of activities to avoid biologically sensitive periods, site-specific mitigation design measures); and
- contingency measures to address the possibility of accidental events that could affect the environment.

A summary of mitigation measures, effects management and commitments is provided in Appendix A, Table A3 of this summary document.

9.0 EFFECTS ON CAPACITY OF RENEWABLE RESOURCES

The Project will be developed in a manner that will reduce the environmental effects on renewable resources such as fish, wildlife and their habitats. This will be accomplished through the principles of sustainable development, which seeks to meet the needs of present generations without compromising the ability of future generations to meet their own needs. The objectives of sustainable development are:

- the preservation of ecosystem integrity, including the capability of natural systems to maintain their structures and functions and to support biological diversity;
- respect for the right of future generations to the sustainable use of renewable and non-renewable resources; and
- the attainment of durable and equitable social and economic benefits.

Additional details regarding the effects on sustainable resources are described in Sections 7.8, 7.9, 7.10, 7.12, and 7.13 of this summary.

10.0 SIGNIFICANCE DETERMINATION

The significance of adverse residual environmental effects resulting from the Project is determined based on the VC-specific significance thresholds, and in consideration of the application of mitigation or effects management measures.

If the environmental effects are rated as significant, then the likelihood of the environmental effect occurring (high, medium or low likelihood) is indicated. The confidence of the predictions is discussed, based on quality and/or quantity of data, understanding of environmental effect mechanisms, and/or effectiveness of the proposed mitigation/effects management.

Table 10.1 summarizes the effects determination for routine activities, accidental events, and cumulative interactions.

Table 10.1 Summary of Significance Determination

VC	Project Effects	Accidental Effects	Cumulative Effects
Atmospheric Environment and Climate	N	S	N
Surface Water	N	S	N
Groundwater Resources	N	S	N
Terrain and Acid Rock Drainage/Metal Leaching	N	N	N
Wetlands	N	S	N
Fish and Fish Habitat	N	S	N
Birds, Wildlife and Their Habitat	N	S	N

Table 10.1 Summary of Significance Determination

VC	Project Effects	Accidental Effects	Cumulative Effects
Species at Risk and Species of Special Concern	N	S	N
Historic and Cultural Resources	N	N	N
Current Use of Land and Resources for Traditional Purposes by Indigenous Persons	N	N	N
Other Contemporary Land and Resource Use	N	N	N
Community Services and Infrastructure	N	N	N
Economy, Employment and Business	N	N	N
Key: N = Not significant residual environmental effect (adverse) S = Significant residual environmental effect (adverse)			

Project activities and components assessed include potential effects from Construction, Operation and Maintenance, and Closure and Decommissioning of an open pit mine. With the implementation of the proposed mitigation measures, adverse residual environmental effects of routine Project activities, including cumulative effects, are predicted to be not significant for all VCs.

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APPENDIX A

JOYCE LAKE DIRECT SHIPPING IRON ORE PROJECT:
Environmental Impact Statement Summary

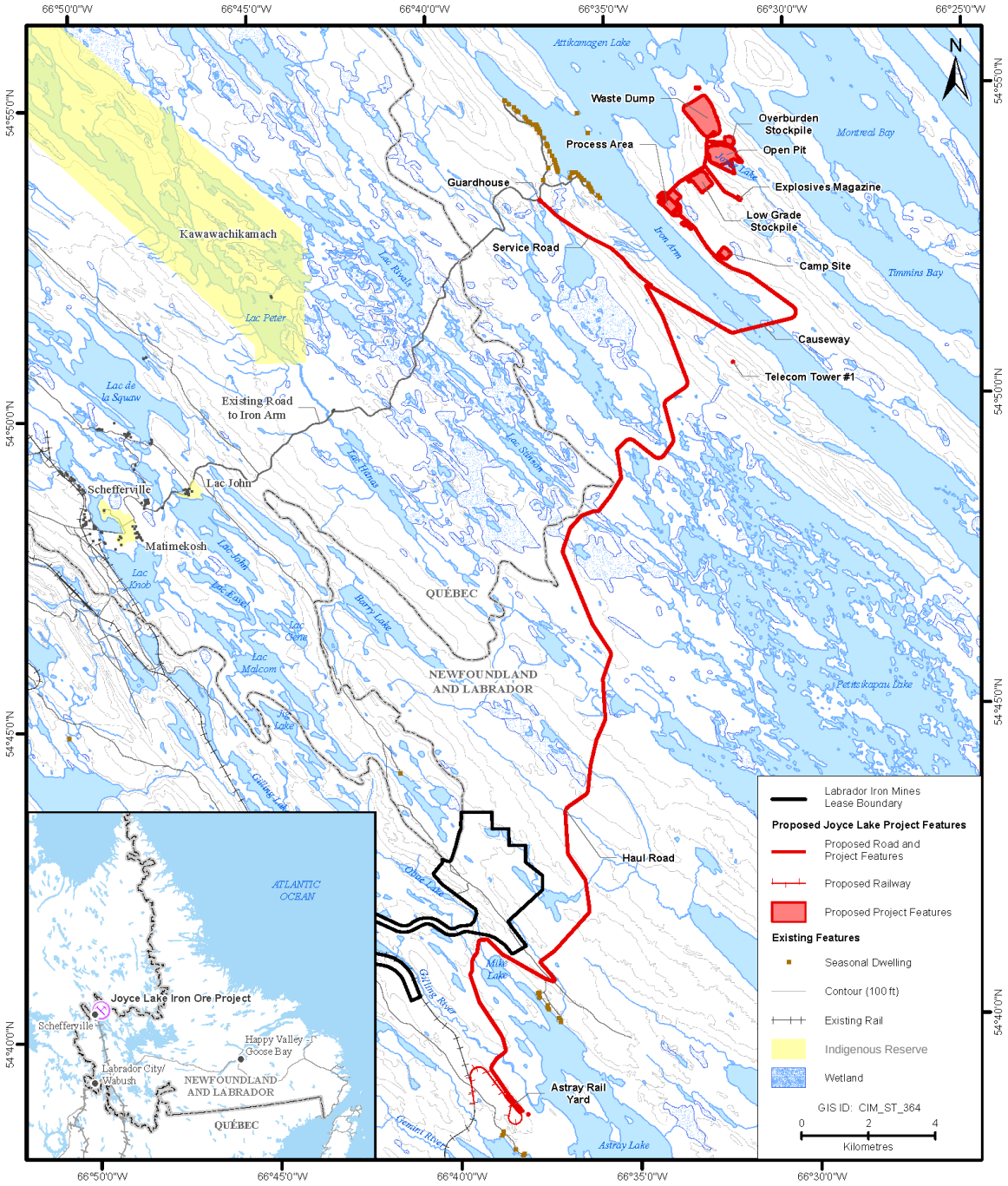

FIGURE TITLE: **Proposed Joyce Lake Direct Shipping Ore Mine Infrastructure Layout**				
CLIENT: **LABEC CENTURY IRON ORE INC.**				
CHECKED BY: **DF**	FIGURE ID: **FIGURE A1**	PROJECT NUMBER: **121511139**	FIGURE SOURCES: Project features provided by BBA version 2v3 received 2015/07/20. Basemap information from NRCan CanVec database and Newfoundland and Labrador Department of Natural Resources.	Stassinu Stantec Limited Partnership

JOYCE LAKE DIRECT SHIPPING IRON ORE PROJECT:
Environmental Impact Statement Summary

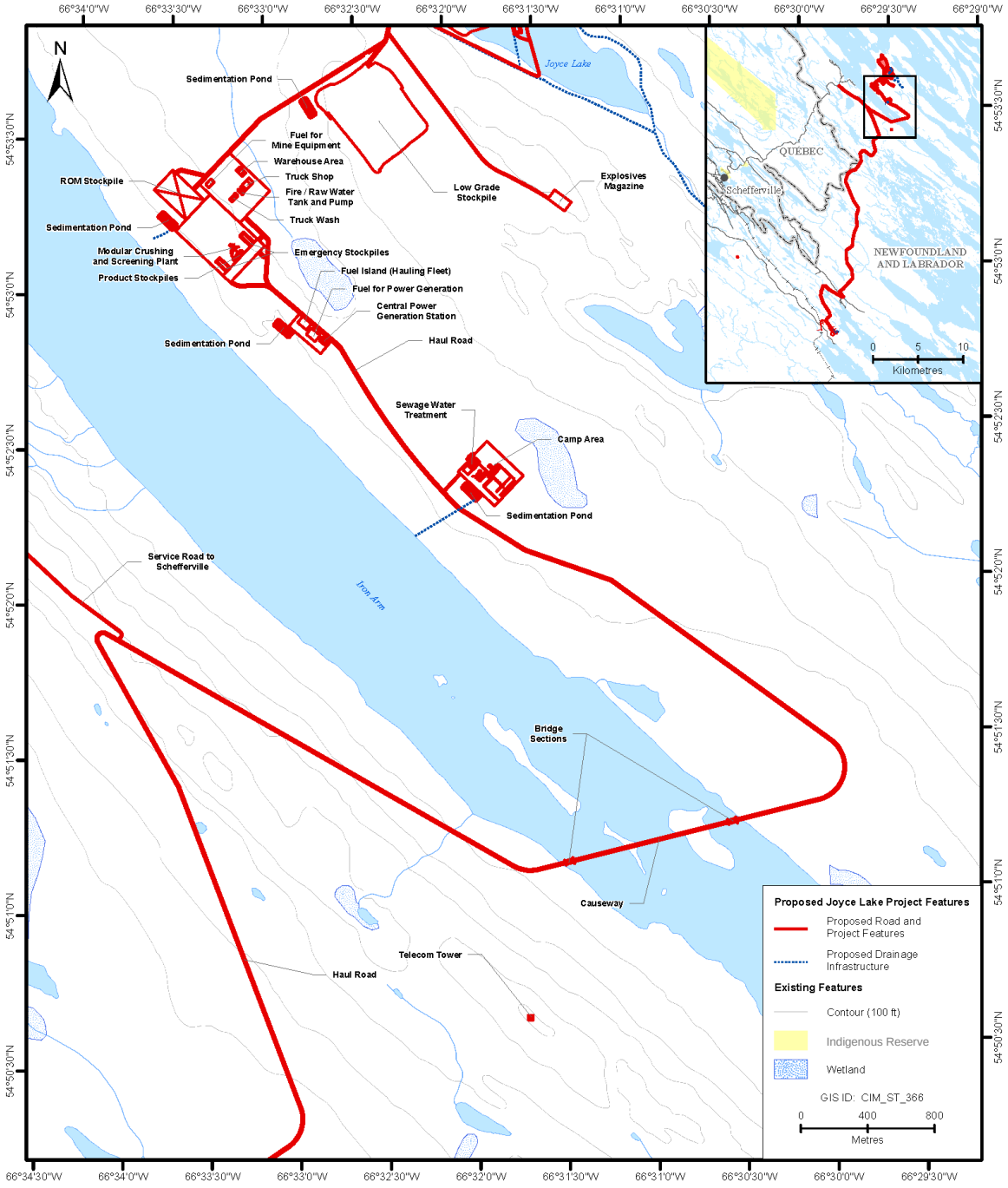

	FIGURE TITLE: **Crushing and Screening (Processing) Plant Area and Causeway**			
	CLIENT: **LABEC CENTURY IRON ORE INC.**			
CHECKED BY: **DF**	FIGURE ID: **FIGURE A2**	PROJECT NUMBER: **121511139**	FIGURE SOURCES: Project features provided by BBA version 2v3 received 2015/07/20. Basemap information from NRCan CanVec database and Newfoundland and Labrador Department of Natural Resources.	Stassinu Stantec Limited Partnership

JOYCE LAKE DIRECT SHIPPING IRON ORE PROJECT:
Environmental Impact Statement Summary

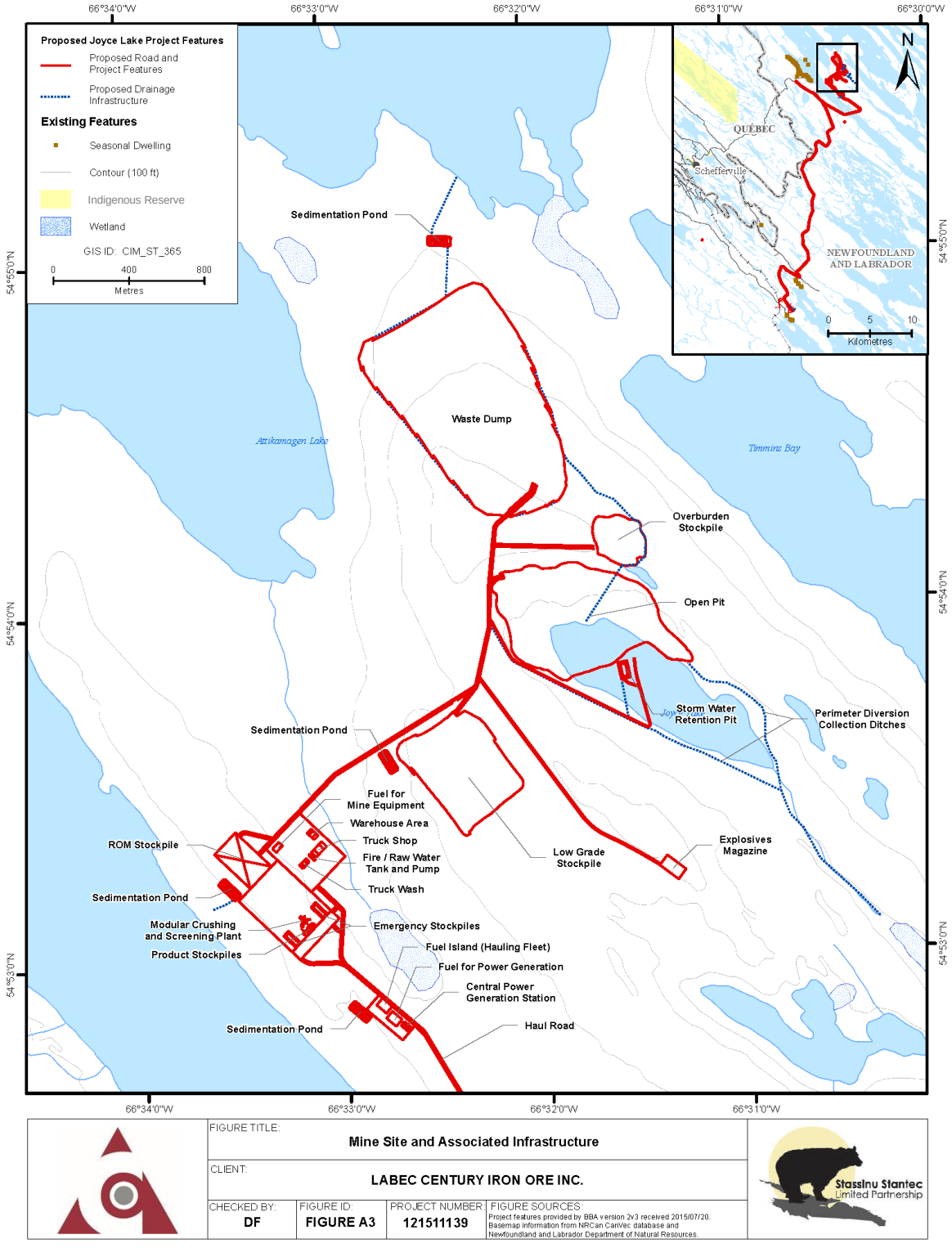

FIGURE TITLE: Mine Site and Associated Infrastructure				
CLIENT: LABEC CENTURY IRON ORE INC.				
CHECKED BY: DF	FIGURE ID: FIGURE A3	PROJECT NUMBER: 121511139	FIGURE SOURCES: Project features provided by BBA version 2v3 received 2015/07/20. Basemap information from NRCan CanVec database and Newfoundland and Labrador Department of Natural Resources.	Stassinu Stantec Limited Partnership

JOYCE LAKE DIRECT SHIPPING IRON ORE PROJECT:
Environmental Impact Statement Summary

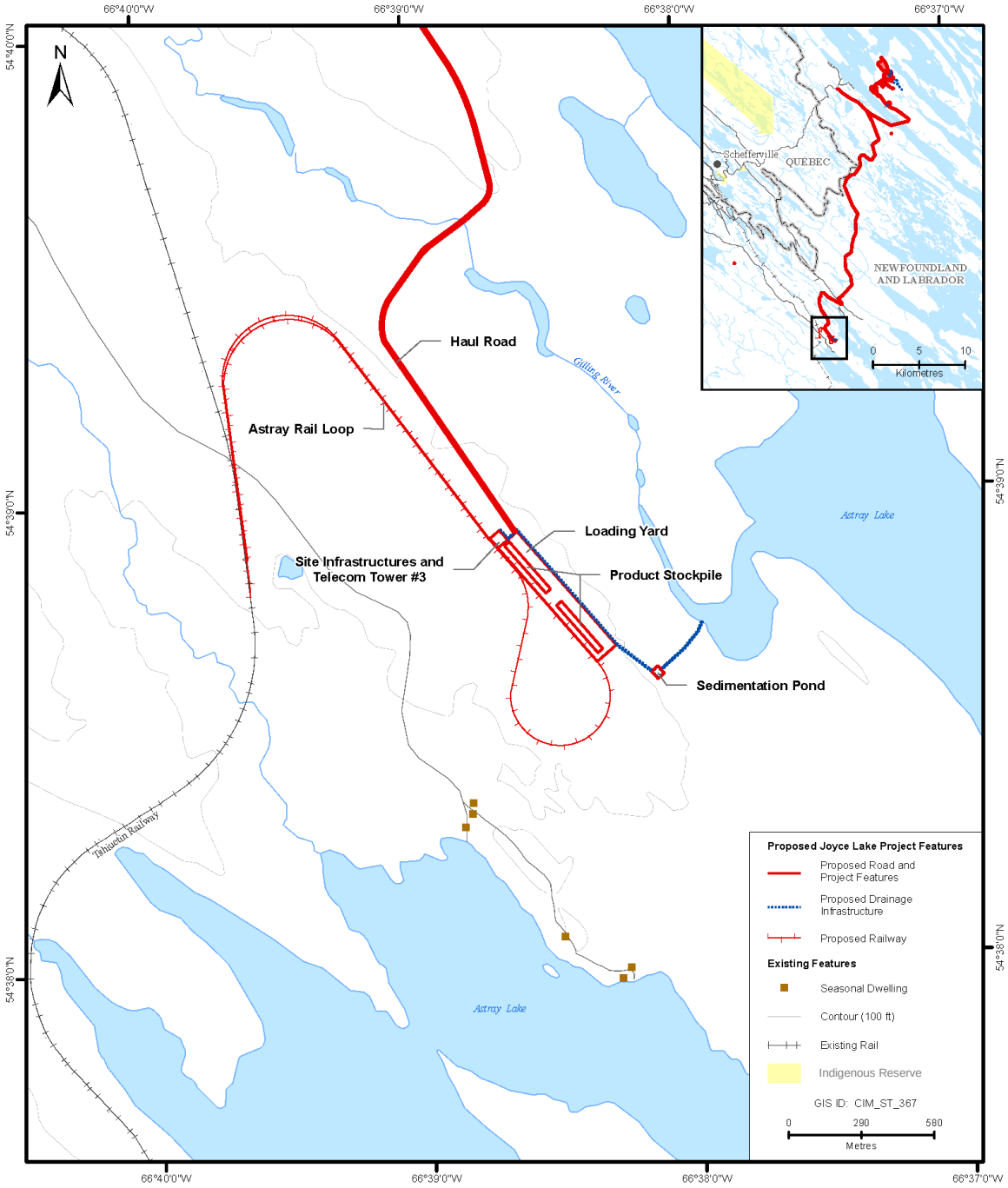

FIGURE TITLE: Astray Rail Infrastructure				
CLIENT: LABEC CENTURY IRON ORE INC.				
CHECKED BY: DF	FIGURE ID: FIGURE A4	PROJECT NUMBER: 121511139	FIGURE SOURCES: Project features provided by BBA version 2v3 received 2015/07/20. Basemap information from NRCan CanVec database and Newfoundland and Labrador Department of Natural Resources.	Stassinu Stantec Limited Partnership

Table A1 Alternatives Analysis Completed for Project

Option	Description	Technical Feasibility	Economic Viability	Environmental Implications/Acceptability	Preferred Option
Processing and Tailings Management					
1a	Site Ore Processing • Wet	• Feasible	• Uneconomic	• Tailings generated • Tailings impoundment required • Red water potentially created	**Option 1b**
1b	Site Ore Processing • Dry	• Feasible	• Economic	• Lowest impact • 100% ore recovery to products • No tailings, therefore no red water created	
Open Pit Waste Rock Storage Management and Location					
2a	Waste rock stockpile placed close to open pit	• Feasible and normal practice worldwide	• Economic	• Good drainage and positioning of perimeter catchment • Ground slopes assisting drainage and catchment • 104 m maximum pile height • Shallow angles on sides of stockpile to reduce erosion and encourage continuous re-vegetation • Maximizes distance from major water body	**Option 2a**
2b	Waste rock stockpile placed further from the open pit	• Feasible	• Less economic or uneconomic depending on distance from open pit	• Similar footprint and height to 2a • Less catchment and drainage advantage • Closer to water body	
2c	Waste rock returned to open pit	• Feasible for some but not common practice	• Uneconomic	• GHG emissions from mining equipment to move the waste rock • The open pit would not be large enough to contain all of the waste rock removed	

Table A1 Alternatives Analysis Completed for Project

Option	Description	Technical Feasibility	Economic Viability	Environmental Implications/Acceptability	Preferred Option
Transportation					

3a	Ice Bridges across Iron Arm to truck ore/products over ice	• Not practical - poor reliability
		  ◦ Worker safety issues
		  ◦ Shipping from mine to Process Plant limited to approximately 3 months per year
			• Uneconomic	• Process Plant would be located on the south side of Iron Arm, closer to cabins
				• Increased site footprint
				• Risk of loss of ore into Iron Arm
					Option 3d

3b	Ore and Service Barge Across Iron Arm	• Not Practical
		  ◦ Worker safety issues
		  ◦ Available ~6 months annum
			• Uneconomic	• Process Plant would be located on the south side of Iron Arm closer to cabins
				• Increased site footprint
				• Risk of loss of ore into Iron Arm
					Option 3d

3c	Cable suspended conveyor and skip to move ore over Iron Arm	• Not Practical ◦ Service ice bridge and summer service barge still required	• Uneconomic	• Process Plant would be located on the south side of Iron Arm, closer to cabins • Increased site footprint • Risk of ore spillage into Iron Arm	
3d	Rock Causeway Across Iron Arm	• Practical ◦ Safe for products transfer, service vehicles and personnel access	• Economic	• Process Plant would be located close to Open Pit • Reduces site footprint • Increases Process Plant distance to cabins	

Table A1 Alternatives Analysis Completed for Project

Option	Description	Technical Feasibility	Economic Viability	Environmental Implications/Acceptability	Preferred Option
4a	All Season Dedicated Haul Road (~43km) to connect Process Plant to Rail Loop, for rail transport to Sept-Îles on existing lines	• Feasible ◦ Although it can be operated 12 months of the year, the haul road will be operated only during the eight-month Process Plant operational period	• Economic	• Only practical and economic method to move products between Process Plant and Rail Loop.	**Option 4a**
4b	Rail extension to Process Plant from existing main rail line (Schefferville to Sept-Îles).	• Feasible	• Highly uneconomic	• Less dust would be generated during operation compared to haul trucks • Extension of the rail line requires low grades and major backfilling and rock cuts, creating large footprint	

5a	Products transported from rail loop 20km south of Schefferville by rail to Sept Iles port on existing rail line	• Feasible
		  ◦ Tshiuetin Rail Transportation (TRT) line used by other mines and also connects to the Quebec North Shore and Labrador (QNS&L) line (owned by IOC)
		  ◦ TRT line owned and operated by Indigenous groups
			• Only practical and available economic way to transfer products to port.	• Operating practices well established and risks are mostly associated with spillage of iron ore products which is relatively benign	**Option 5a**

5b	Pipeline to transfer products from Process Plant to Sept-Îles	• Not practical
		  ◦ Operation of a pipeline in these remote conditions and low temperatures is not proven
			• Uneconomic
			  ◦ Pipeline for this tonnage is not economic
				• Risk of pipeline plug-up and breakage causing spill of significant volume of iron ore product in slurry form which would be more difficult to clean up compared to solid iron ore products	**Option 5a**

Table A1 Alternatives Analysis Completed for Project

Option	Description	Technical Feasibility	Economic Viability	Environmental Implications/Acceptability	Preferred Option
Power Supply for the Mine and Facilities					
6a	Five diesel generators skid mounted near Process Plant to meet an estimated 2.4 MW of demand and smaller diesel generation capacities at the pit for water pumping, at the rail loop, at the explosive magazine, at the guardhouse, and at the telecommunication towers for minor power requirements	• Feasible	• Economic but expensive per kWh produced ◦ Low capital and generation units can be added, subtracted, replaced or relocated to match requirements	• Small footprint • Low noise levels • Use same fuel as mobile equipment • Power generated fluctuates to power demand	**Option 6a**

6b	Tie to local grid and supply grid power to site	• Inadequate power available in local area as fully used by others
		• Grid power in area from Menihek Generating Station and increasing power generation is complex and expensive and not technically feasible for this Project
			• Uneconomic
			  ◦ Distance to existing power line from site (~28km)
			  ◦ Complex and not viable to increase hydro generation at Menihek Hydro dam for this project
			  ◦ Inadequate power available
				• Small footprint
				• Low noise levels
					Option 6a

Table A1 Alternatives Analysis Completed for Project

Option	Description	Technical Feasibility	Economic Viability	Environmental Implications/Acceptability	Preferred Option

6c	Solar or Wind electrical power generation for primary or supplemental requirements	• Not practical because Project has continuous demand: 24 hours/day required for 8 months each year and 12 months/year for open pit
		• Solar or wind systems do not provide continuous power required for this Project, so 100% diesel power backup is required
			• Uneconomic
			  ◦ Short project life of ~8 years including construction cannot justify solar or wind installation, even for provision of supplemental power
			  ◦ Solar or wind systems do not provide continuous power required for this Project, so 100% diesel power backup is required
			  ◦ Solar or wind installations are too distant from communities to be of use after closure of Project
				• Solar or wind power generation would reduce diesel emissions	**Option 6a**

Dewatering Options at Joyce Lake					

7a	Full dewatering	• Feasible
		  ◦ Full dewatering of Joyce Lake requires complete water removal prior to pit edge incursion into the lake area
			• Greater economic viability
			  ◦ does not require the construction of an in-lake dam
				• Loss of Joyce Lake during operations; however, water levels restored after closure	**Option 7a**

Table A1 Alternatives Analysis Completed for Project

Option	Description	Technical Feasibility	Economic Viability	Environmental Implications/Acceptability	Preferred Option

7b	Partial dewatering with dam installed within Joyce Lake to isolate Open Pit	• Feasible
		  ◦ Partial dewatering of Joyce Lake would require lowering of lake levels to a level compatible with an in-lake dam
			• Uneconomic
			  ◦ Dam consequence level would be high to very high due to potential loss of life to pit workers in the event of a dam failure (e.g., from Open Pit blasting). Thus, the dam would be an extremely robust structure and high cost to construct
				• Partial loss of Joyce Lake during operations
				• Blasting may result in impacts on residual fish communities
					Option 7a

Life of Project					
8a	Approximately seven years of production including processing of low grade ore at end of mine life	• Feasible	• Economic	• Waste rock will be stockpiled close to Open Pit and re-vegetated	**Option 8a**
8b	Greater than approximately seven years of production	• Feasible	• Uneconomic ◦ Would only be economic if additional mineral reserves discovered in Open Pit area	• Likely increase in waste rock produced and stockpiled • Likely increase in footprint of Open Pit • Amount of ground water pumped from open pit perimeter wells will be greater as pumping time increased • Contact water pumped from open pit would increase as pumping is for greater duration • Diesel emissions from open pit power generators and mobile equipment would increase as longer duration • Labour force would be downsized later, as compared to Option 8a	

Table A1 Alternatives Analysis Completed for Project

Option	Description	Technical Feasibility	Economic Viability	Environmental Implications/Acceptability	Preferred Option
8c	Less than approximately seven years of production	• Feasible	• Uneconomic ○ Production duration may be curtailed and mine closed if selling price of iron ore is low for extended period	• If mine closes prematurely then closure plan and rehabilitation would be done earlier • Size of waste stockpiles would be reduced and size of open pit footprint would be smaller • Ground water pumped from Open Pit perimeter wells would be less as operational duration would be less • Contact water pumped from pit would be less as duration of pumping is less • Diesel emission from Open Pit power generation and from mobile equipment would be less as shorter duration • Labour force would be down-sized earlier as compared to option 8a	**Option 8a**
Labor Supply					
Labour supply will be determined in a manner consistent with the Benefits Policy outlined in Chapter 1 of the EIS and in the Project Benefits Plan					
Mining Methods (e.g., open pit versus others)					
10a	Open Pit mining with conventional drilling and blasting with shovels and trucks to move ore and waste	• Open Pit is highly practical way to extract this iron ore deposit, especially with significant ground water present	• Economic	• Residual open pit that will flood post closure to existing elevation of connected Joyce Lake • Waste and overburden stockpiles of 70.08 Mt that will be drained, contoured and re-vegetated	**Option 10a**
10b	Underground mining	• Could practically be done but difficult with quantities of ground water present and shallow nature of deposit	• Uneconomic ○ Underground mining of this deposit is not economically viable at any foreseeable iron ore selling price	• Smaller physical footprint	

Table A1 Alternatives Analysis Completed for Project

Option	Description	Technical Feasibility	Economic Viability	Environmental Implications/Acceptability	Preferred Option
Contaminated Water Treatment					
11a	Based on the characterization of mine water, sedimentation pond infrastructure is the only practical option to meet regulatory standards	Mine site contact water discharge will be treated through a series of sedimentation ponds to MDMER and applicable NL effluent criteria	Sedimentation ponds are economically viable and an efficient means to manage both mine water quantity and quality	The potential for sedimentation, ARD/ML, ammonia and red water quality were assessed; it was determined that the sedimentation ponds in combination with monitoring and if required ammonia management will achieve effluent regulatory criteria	Sedimentation ponds are the preferred mine water treatment approach
Location of Infrastructure					

12a	For the operation phase, a permanent accommodations facility will be installed at site
	• For the construction phase, accommodations requirements will be sourced from the Schefferville area
		• Feasible
		  ◦ For the operation phase, locating a self-contained camp at site is a practical and convenient arrangement
			• Economic
			  ◦ This is economically viable and is part of the quality of accommodation necessary to attract and retain production employees
				• Operation phase site accommodations will be self-sufficient and effluents will be treated before discharge
				• Impact of operation phase accommodation on community services is expected to be minimal due to on-site accommodations
				• On-site accommodations will result in fewer emissions due to commuter traffic
					Option 12a

12b	Accommodation for both construction and operation phases in local area in Labec Century owned facilities, rented camps, private residences, and hotel rooms	• Feasible ◦ Transportation from local area viable when rock causeway is operational	• Economic but unlikely to provide operational accommodation of adequate quality to attract and retain employees in production phase	• The impact will be principally dust generated and the diesel and gasoline emissions from vehicles for those employees who commute from local residence along the service road and the causeway to site • Speed restrictions will be in place on the service road wildlife collision is expected to be minimal	**Option 12a**

Table A1 Alternatives Analysis Completed for Project

Option	Description	Technical Feasibility	Economic Viability	Environmental Implications/Acceptability	Preferred Option
				• For employees and contractors commuting to site from area residences and accommodations, generation of dust and diesel and gasoline emission resulting from traffic will be increased as compared to Option 12a • Impact on community services will be increased as compared to Option 12a • Impacts with wildlife are expected to be minimal as speed restrictions will be in place on the service road	
Location of Rock Causeway					
13a	Rock Causeway across Iron Arm • Shallow water and near shore to shore distance	• Practical in planned location with shallow water draft and distance shore to shore (~1.2 km), allowing removal after Project closure or retention if requested by local communities and acceptable to regulators	• Economic ○ Comparison of methods of crossing of Iron Arm and associated location of Process Plant, identified the rock causeway as the most practical, safest and most economic alternative	• Minimal clean waste rock mined and placed • Two 8 m wide bridges to keep water movement to low velocity to allow for continued fish migration patterns and navigation • Rock placement during fish spawning season will be reduced	**Option 13a**
13b	Rock Causeway across Iron Arm • Deep water location and greater distance shore to shore	• Less practical if not totally impractical in deep water especially with increased shore to shore distance as amount of rock required increases dramatically and reclamation at closure of project becomes impossible	• Uneconomic ○ Quantity of waste rock for stability, footprint on lake bottom will dramatically increase, as will capital cost of placement and, if attempted, cost of removal	• Increased rock required • Larger footprint	**Option 13a**

Table A1 Alternatives Analysis Completed for Project

Option	Description	Technical Feasibility	Economic Viability	Environmental Implications/Acceptability	Preferred Option
Location of Final Effluent Discharge					
14	Final effluent discharge point	Final Discharge Points are located downstream of each of the six proposed sedimentation ponds and the discharge pipe from the sanitary effluent treatment plant	The Final Discharge Points are economically viable to monitor	Appropriate MDMER and NL effluent regulatory criteria will be achieved at Final Discharge Points	The proposed Final Discharge Points are the preferred Final Discharge Points

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Safety and Liability	Naskapi of Kawawachikamach	What happens if someone gets injured while on the job? Will Naskapi employees be given security?	While the details of employment at the Project are not yet available there will be a comprehensive system of training and control processes regarding all aspects of Safety, Health and the Environment. While accidents are expected to be infrequent, in the event an employee is injured then if the injury is minor he would be given first aid at the mine site. In the event the injury was more serious he would be evacuated to either Schefferville for medical treatment or in severe cases flown to a larger community for treatment in a hospital there. Labec Century will develop plans and processes to coordinate with medical staff and facilities both in Schefferville and elsewhere to ensure availability of the best treatment for an injured employee or contractor. Security of employment will be in compliance with regulations in effect in Newfoundland and Labrador and will be the same for all employees. Benefits for eligible employees will include workers compensation and short term sickness coverage as well as annual vacation etc.	Chapter 1: Introduction
Project Design	Wildlife Division	Planned rail loop crossing of Gemini River and its effects on wildlife Division representatives asked about the rail loop and the planned crossing of the Gemini River. This river is already crossed by the existing rail line and representative wondered if two crossings were required.	This was addressed by Project design changes that were successful in avoiding two crossings.	Chapter 2: Project Description

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Transportation infrastructure	Naskapi of Kawawachikamach Elders and Band Council	Clarification on where the planned road is going. There were some concerns that it was going to the east – reports of trail markers Importance of road from the community to Iron Arm cabins was addressed	The road route was clarified at the time of the discussion. As the Project advances, Century will put additional funds in maintaining this road.	Chapter 2: Project Description
Mine Waste	Naskapi of Kawawachikamach	Can waste be placed elsewhere?	For the Project to be economic waste rock must be placed in the immediate vicinity of the open pit and this is a standard practice throughout the world.	Chapter 2: Project Description
Mine Waste	Naskapi of Kawawachikamach	Can waste be put back in pit?	Replacing waste rock back into the open pit is very expensive and if done will result in the Project being uneconomic. Storage of waste in the immediate vicinity of the open pit is the standard practice throughout the world.	Chapter 2: Project Description
Mine Waste	Naskapi of Kawawachikamach	What will the waste pile look like after the project is over?	The stockpiles will be encouraged to naturally revegetate and eventually are expected to be covered with grasses and small trees. The waste stockpiles remaining at the end of mine life will be geotechnically stable and graded to 22^{o} along their slopes to minimize gulleying and erosion by water runoff. The maximum height of the waste stockpiles will be 90 m above ground level measured from the base of the stockpile.	Chapter 2: Project Description
Closure and Decommissioning	Naskapi of Kawawachikamach	What will the area look like after closure?	A detailed Closure and Reclamation Plan will be prepared for the Project, as required by the Newfoundland and Labrador Mining Act. The Plan will provide a final closure strategy for the open pit, waste piles, mine roads, and other mine facilities, and will incorporate progressive rehabilitation during all stages of the Project, to limit the work required after cessation of operations and to limit the environmental effects during the Project life. A preliminary plan for the closure of the mine includes erosion control by re-vegetation wherever	Chapter 2: Project Description

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
			possible, stabilized slopes, and barricades around the open pit. Once work on the Closure and Reclamation Plan is complete the site will not have any building or plant installations remaining and the open pit and Joyce Lake will eventually refill with ground water and precipitation to the level that Joyce Lake is at today. Where possible significant parts of the disturbed area will be revegetated and the entire site will eventually revegetate naturally. The haul road and the causeway will be removed unless regulations and local community approve them remaining to allow ongoing vehicle access.	
Closure and Decommissioning	Naskapi of Kawawachikamach	What will the closure plan be? Who will approve closure plan?	A detailed Closure and Reclamation Plan will be prepared for the Project, as required by the Newfoundland and Labrador Mining Act. The Plan will detail a final closure strategy for the open pit, waste piles, mine roads, and other mine facilities, and will incorporate progressive rehabilitation during all stages of the Project to limit the work needed after cessation of operations and also to limit the environmental effects during the Project life. Public health and safety and land use will be considered at all stages of progressive rehabilitation, closure and post-closure. A preliminary plan for the closure of the mine includes erosion control by re-vegetation wherever possible, stabilized slopes, and barricades around the open pit. The Closure and Reclamation Plan will to be approved by applicable regulatory agencies prior to implementation along with input by various regulatory bodies such as DFO and NLDTI and through consultations with various Indigenous groups	Chapter 2: Project Description

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Closure and Decommissioning	Naskapi of Kawawachikamach	What if you run out of funding half way through the project, as LIM has? LIM started Houston Road but might have to leave it the way it is. Naskapis do not want a repeat of LIM and IOC.	Labec Century JV is owned by WISCO and Century. WISCO Canada, a major subsidiary of Wuhan Iron & Steel (Group) Corporation ("WISCO Group"), headquartered in the People's Republic of China and in 2014 was ranked No.310 on the Fortune Global 500 list. Century Iron Mines Corporation is headquartered in Toronto and listed on the TSX and controls one of the world's largest iron ore resources principally in Quebec and Newfoundland and Labrador in several deposits. WISCO and Century are determined not to start Project development until they have a comprehensive understanding of Project economics and the Project demonstrates that during operations it is adequately robust to be profitable during the up's and down's of the mining cycle. While bonding arrangements with the province of Newfoundland and Labrador have not yet been discussed, normally financial bonding is to be provided by Labec Century. These funds are held as security by the province of Newfoundland and Labrador, ensuring that the extent of bond funding at any time during construction or operation will be adequate to rehabilitate the site if work permanently stops. In the event that Labec Century permanently stops work at the site and does not rehabilitate the site, then the province of Newfound and Labrador will be entitled to use the bond as security to rehabilitate the site.	Chapter 2: Project Description

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Project Viability	Naskapi of Kawawachikamach	What is iron ore price at which project is viable?	The price of iron ore necessary to justify proceeding with Project development will only be known when the bankable feasibility study is complete and published and this is expected in approximately the first quarter of 2015 and will be available to the public when complete. The iron ore price at which the project will be economically viable will be contained in the study. We expect that an iron ore price in excess of US$100 tonne for 62% Fe fines CFR China is likely necessary before consideration could be given to project development. Despite current iron ore prices which are well below US$100 per tonne Labec Century has continued to advance Joyce Lake through a bankable feasibility study and an Environmental Impact Statement (“EIS”) and additionally last summer did exploration work for DSO style mineralization at the Blackbird exploration target.	Chapter 2: Project Description Chapter 9: Economic and Social Benefits of the Project
Mine Waste	Naskapi of Kawawachikamach	How high will the waste pile be?	The maximum height of any of the waste stockpiles will be 90m above ground level measured from the base of the stockpile. Waste stockpiles will be geotechnically designed for stability and the design will include the impact of precipitation and ground water sources that may accumulate on or around the stockpile. Stockpile side slopes will also be designed to slope at 22º such that water flows will not cause gulleys or erosion of the stockpile. The stockpiles will also have perimeter ditches to collect runoff and groundwater seepage and direct it to sedimentation ponds before release to the environment.	Chapter 2: Project Description Chapter 13: Terrain and Acid Rock Drainage/Metal Leaching

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Infrastructure	Naskapi of Kawawachikamach	There is already too much traffic on Iron Arm road, what will be done to avoid this?	The existing road between Schefferville and Iron Arm will be upgraded and widened where necessary. This road once improved is planned to be used for Project construction access and during operations for service vehicles only. No product will be hauled on this road and the road will be open for use by the public. The improved road will provide better public access by vehicle to the Iron Arm area.	Chapter 2: Project Description Chapter 21: Community Services and Infrastructure
Consultation	NLDECCM	Concern regarding transparency of the consultation process and need to provide opportunities for public comment on revised Project Description.	Consultation and engagement activities will be fully documented in Chapter 3: Engagement and Traditional Knowledge. The revised Project description has been communicated to communities and Indigenous groups in the immediate area.	Chapter 3: Engagement and Traditional Knowledge
Consultation	Bande de la Nation Innu Takuaikan Uashat mak Mani-Utenam	Importance of consultation and proper protocol for communicating with residents – all communication or engagement must go through the Chief and his Band Council.	Century assured the Chief and Band Council that Century would follow the protocol strictly and he would not allow any breach or deviation	Chapter 3: Engagement and Traditional Knowledge
Consultation	Bande de la Nation Innu Matimekush-Lac John	Importance of consultation and proper protocol for communicating with residents – all communication or engagement must go through the Chief and his Band Council.	Century assured Chief Real McKenzie that Century would follow the protocol strictly and he would not allow any breach or deviation.	Chapter 3: Engagement and Traditional Knowledge

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Indigenous Rights/ Engagement	Naskapi of Kawawachikamach	The other mining companies are already in the area so the community doesn't have much to say about them. But this project has not yet happened so we do have a say. We need to be educated and share and talk about this project. This is what we have left. We were nomadic people, then the government restricted us to a bit of land and now mining companies are restricting us even more. It is good that the people are being informed and I am happy that Council made the company come and speak with the community. We need to be educated and our voices need to be heard.	Labec Century recognizes and respects the heritage and culture of the Naskapi and is committed to ensure that the Naskapi are fully informed about the Project. Extensive consultation has taken place and we expect this process to be ongoing. This will provide for the opportunity for all community concerns to be raised and discussed.	Chapter 3: Engagement and Traditional Knowledge
Indigenous Rights/ Engagement	Naskapi of Kawawachikamach	You come into our community and say "we" as if you are part of this community, but you are not, it is not "we". Don't talk to us like you own us, we don't sell our spirits. I am wide awake here and you have to listen to the people. This is the truth, we are saying no to this project. People are going to gather together and we're going to talk about this.	Labec Century intends to earn your trust and respect and be part of the community. Extensive consultation has already taken place with the Naskapi, including a town hall meeting, and consultation is expected to be ongoing. During the December 2014 town hall meeting Labec Century gave an assurance that alignment with the Naskapi would be obtained prior to proceeding with the Project. This demonstrates that Labec Century is listening and responding to the community.	Chapter 3: Engagement and Traditional Knowledge

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Indigenous Rights	Naskapi of Kawawachikamach	Hunters must be respected and fully compensated for impacts of mine.	Labec Century fully appreciates and respects hunters, however research and consultation has not identified the mine site area as a preferred area for hunting and other land use activities. Other areas, such as the lakes and rivers adjacent to the causeway, haulage road, and rail loop, have been identified as key land use areas for Indigenous residents and compensation for the impact of the mine will be addressed in negotiations towards an Impact and Benefits Agreement. Hunters and fishermen will be able to cross the haul road and additionally the upgraded and improved Iron Arm Project service road will improve access for vehicles to the Iron Arm area. The Project is expected to have minimal impact on species habitat and details of this are provided in the Environmental Impact Statement. Employees residing in camp will be restricted from hunting in the Project area.	Chapter 3: Engagement and Traditional Knowledge Chapter 8: Establishment of Indigenous Treaty Rights Chapter 19: Current Use Of Land And Resources For Traditional Purposes By Indigenous Persons Chapter 23: Effects of the Project on Indigenous Treaty Rights
Land and Resource Use/Indigenous Rights	Naskapi of Kawawachikamach	In the 80s or early 90s the Newfoundland Government banned hunting and seized firearms. The Naskapis went to court and fought this. There was a document produced by the Government protecting the land use of the Naskapis and this area specifically. Therefore if the Newfoundland Government says that Naskapis have no say, that is simply not true and we need to remind them of this document.	Labec Century recognizes the rights of area Indigenous groups to engage in land use activities in Newfoundland and Labrador. The effects of the Project on these rights are discussed in our Environmental Impact Statement for the Project and this document is public and part of the consultation process.	Chapter 3: Engagement and Traditional Knowledge Chapter 8: Establishment of Indigenous Treaty Rights Chapter 19: Current Use Of Land And Resources For Traditional Purposes By Indigenous Persons Chapter 23: Effects of the Project on Indigenous Treaty Rights

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Fuel Storage	Naskapi of Kawawachikamach Elders and Band Council	Concern about fuel storage safety	Barrels are stored farther away from Iron Arm than is required by regulations. Detailed Emergency Response and Spill Response Plan will be developed by Labec Century and submitted to appropriate regulatory agencies for review prior to the initiation of Project activities. It will contain specific measures related to train derailment and hydrocarbon spill response.	Chapter 7: Environmental Management
Waste Management	Naskapi Nation of Kawawachikamach	Concerns about waste management and sewage affecting the water supply	Mine contact runoff will be treated to the regulatory effluent criteria in sediment ponds located throughout the project area. Sanitary effluent will also be treated to regulatory effluent criteria in several septic systems located at worker concentration points throughout the Project area. A filtration system was installed at Iron Arm camp after 2012 band council visit resulted in some concerns and Century is committed to environmental compliance.	Chapter 7: Environmental Management Chapter 11: Water Resources
Waste management	Naskapi of Kawawachikamach Elders and Band Council	Question of what will be done with raw sewage from the camp.	Sanitary effluent will be treated to regulatory effluent criteria in several septic systems located at worker concentration points throughout the Project area. A filtration system was installed at Iron Arm camp after 2012 band council visit resulted in some concerns and Century is committed to environmental compliance.	Chapter 7: Environmental Management Chapter 11: Water Resources
Waste Management	Naskapi of Kawawachikamach	How will waste, including human waste, be treated? We do not want a dump.	Mine contact runoff water will be controlled and will comply with the regulatory effluent criteria in sediment ponds located throughout the project area. Sanitary effluent will also be controlled to regulatory effluent criteria in several septic systems located at worker concentration points throughout the Project area. Waste management practices are discussed in Chapter 7 of the EIS under Environmental Management.	Chapter 7: Environmental Management Chapter 11: Water Resources

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
			Plans will be developed and put in place for the management of all Project wastes in accordance with provincial regulations and in recognition of community concerns.	
Waste Management	Naskapi of Kawawachikamach	Every 4-5 years a lot of snow is dumped on that area, what are they going to do to avoid any oil spills or spills of human waste into the environment? We drink the water in Iron Arm.	The sediment ponds are designed to capture all runoff, including snow melt from storms up to the 1: 100 year return period event. Sediment ponds and other features also intercept and contain potential oil and fuel releases. Sanitary sewage will be treated in appropriately sized and located septic systems to avoid potential release of sanitary waste to the environment.	Chapter 7: Environmental Management Chapter 11: Water Resources
Waste Management	Naskapi of Kawawachikamach	There will be runaway fuel and oils relating to operations. How will this be cleaned-up and prevented?	Risk of oil and fuel spills will be addressed through design of oils and fuels storage and containment facilities to ensure they meet all applicable codes and regulations. Any spilled oil or fuel will additionally be collected in runoff trapped in sediment ponds. A detailed Emergency Response and Spill Response Plan will be developed by Labec Century and submitted to appropriate regulatory agencies for review prior to the initiation of Project activities. It will contain specific measures related to train derailment and hydrocarbon spill response.	Chapter 7: Environmental Management Chapter 11: Water Resources
Waste Management	Naskapi of Kawawachikamach	Will the water quality be affected by mining, i.e. tailings? Surface runoff?	The Project ore processing during operations will comprise “dry” crushing and screening only. Tailings will not be created. Mine contact water will be controlled to regulatory effluent criteria in sediment ponds prior to release to the environment.	Chapter 7: Environmental Management Chapter 11: Water Resources Chapter 12: Groundwater Resources

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Indigenous Rights	Naskapi of Kawawachikamach	The project will only go ahead if the project is approved by Naskapi. Naskapi approval is required. It is not Century's land. Century must listen to the population.	Labec Century will continue to consult with the Naskapi and also expect to negotiate an Impact and Benefits Agreement with the Naskapi.	Chapter 8: Establishment of Indigenous Treaty Rights Chapter 23: Effects of the Project on Indigenous Treaty Rights
Indigenous Rights	Naskapi of Kawawachikamach	Naskapi have not said yes, and have not said no.	Consultation has already taken place with the Naskapi, including a town hall meeting, and consultation is expected to be ongoing. During the December 2014 town hall meeting Labec Century gave an assurance that alignment with the Naskapi would be obtained prior to proceeding with the Project.	Chapter 8: Establishment of Indigenous Treaty Rights Chapter 23: Effects of the Project on Indigenous Treaty Rights
Impact Benefits Agreement	Naskapi of Kawawachikamach	How do we know we will get what we were promised?	Labec Century expects to enter into Impact and Benefit Agreements with several Indigenous groups as well as employment related matters with the province of Newfoundland and Labrador. The Impact Benefit Agreement to be negotiated between Labec Century and the Naskapi will be legally binding. Negotiation of an IBA has not yet started but will likely be negotiated prior to work starting on the Project.	Chapter 9: Economic and Social Benefits of the Project
Impact Benefits Agreement	Bande de la Nation Innu Matimekush-Lac John	Experience with past dealing with other mining companies has been disappointing since they hadn't received payments as per signed IBA	Labec Century expects to enter into Impact and Benefit Agreements with several Indigenous groups as well as employment related matters with the province of Newfoundland and Labrador. The Impact Benefit Agreement to be negotiated between Labec Century and Bande de la Nation Innu Matimekush-Lac John will be legally binding. Negotiation of an IBA has not yet started but will likely be negotiated prior to work starting on the Project.	Chapter 9: Economic and Social Benefits of the Project

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Impact Benefits Agreement/ Employment	Bande de la Nation Innu Takuaikan Uashat mak Mani-Utenam	IBA too general and business opportunities for the communities were not specific enough – looking for job opportunities and business opportunities, and that they were seeking to grow business in order to facilitate empowerment IBA needs to benefit all four Band Councils (Innu Takuaikan Uashat mak Mani-Utenam, Innu Matimekush-Lac John, Naskapi Nation of Kawawachikamach, Innu Sheshatshiu and Natuashish) and benefits should be the greatest for Innu Takuaikan Uashat mak Mani-Utenam and the Band Council of Chief Real McKenzie, Innu Matimekush-Lac John	Century maintained that there had been no discussions with other Band Councils about the IBA and that Century wanted to take things slowly and prudently in accordance with the Project timetable. Century asked how to balance opportunities between the Bands in Sept-Îles and in Schefferville and suggested that Chief Mike McKenzie and Chief Real McKenzie work together to ensure that there would be no favoritism among the families in their Bands	Chapter 9: Economic and Social Benefits of the Project
Employment	Naskapi of Kawawachikamach Elders and Band Council	Concern about the ages of the workforce Question about how people can find employment with the Project	Opportunities will not be limited to younger residents. Ability to do the work is the main consideration. Century promotes from within – a Naskapi resident who began as a helper is now being trained as a driller. In the past, Century has accepted referrals from the Band Council or from other Indigenous Employees.	Chapter 9: Economic and Social Benefits of the Project Chapter 22: Employment, Economy and Business
Employment	Naskapi Nation of Kawawachikamach	Chief asked who will be responsible for hiring for the project. Chief Swappie explained that the Naskapi Nation Band Council had a Human Resources coordinator that would be able to provide a list of qualifications of suitable workers to assist in the hiring process.	It was explained that Leonard McKenzie would be assisting in the hiring process for projects and he will follow up with the Human Resources coordinator to obtain the list for future consideration.	Chapter 9: Economic and Social Benefits of the Project Chapter 22: Employment, Economy and Business

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Noise	Naskapi of Kawawachikamach Elders and Band Council	Questions related to blasting and how far away it would be heard	Blasting is not considered as part of the worst case scenario for the chapter. Blasting activities are interrupted within a large security perimeter. Many factors can influence the noise produced during blasting, including the type and amount of explosives and the sequence.	Chapter 10: Atmospheric Environment and Climate
Noise	Naskapi – anonymous	Concern about operation noise affecting cabin owners but stakeholder thought that they would be open to finding a fair solution to the problem	Based on the current anticipated production rate, blasting will likely occur once every five to six days. Blasting will involve a comprehensive blast design and will be implemented under a strictly controlled environment. Typical assessments of vibration effects on sensitive receptors due to blasting is expected to be below the limit due to the setback	Chapter 10: Atmospheric Environment and Climate
Dust	Naskapi of Kawawachikamach	What about the dust? How will they control dust on the road?	Appropriate dust management will be in place including vehicle speed restrictions on the service road which will be accessible to the public.	Chapter 10: Atmospheric Environment and Climate
Water Quality	Naskapi of Kawawachikamach	Will there be any red lakes?	Red water is a specific water quality effect associated with iron ore tailings effluent. This DSO Project will use dry crushing and screening and will not generate tailings, so no red water is expected.	Chapter 11: Water Resources
Water quality	Naskapi of Kawawachikamach Elders and Band Council	Some of the elders who were at the meeting used to work for IOC and had concerns related to their history with that operation.	Water will be captured and cleaned before discharge to the environment	Chapter 11: Water Resources
Water Quality	Naskapi of Kawawachikamach	Weather changes a lot in that area, how are they planning to secure the waste so that it will not leak into the lake, the soil, the groundwater, etc.?	Overburden, waste rock and low grade ore stock piles will be graded (sloped at 22º) to avoid issues with erosion and gullying. These stockpiles will also have perimeter ditches to collect runoff and groundwater seepage and direct it to sedimentation ponds before release to the environment..	Chapter 11: Water Resources Chapter 12: Groundwater Resources

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Waste Water	Naskapi of Kawawachikamach	Can the plant be placed further than 200m from lake? It seems very close and will create dust. Water runoff will bring oil and waste into lake.	Dust suppression will be an ongoing maintenance activity to reduce impacts to soil and water quality. Also oil and fuel potentially collected in runoff will be trapped in sediment ponds. The 200m between the plant and Attikamagan Lake will be a buffer zone and is considered adequate to ensure there is no impact on the lake.	Chapter 11: Water Resources
Dewatering/Water Quality	Naskapi of Kawawachikamach	Will water being pumped out be of same quality as lake water?	Water drained from Joyce Lake will be naturally-occurring water, the same water that is currently in Joyce Lake, This water will not be used for any purpose but will simply be drained by pumping to Attikamagan Lake.	Chapter 11: Water Resources
Dewatering	Naskapi of Kawawachikamach	How will you prevent flooding from occurring once the mine is closed?	To prevent flooding once the mine is closed Joyce Lake and the open pit will refill with water naturally from precipitation and ground water recharge. When water levels reach the current elevation of Joyce Lake today, water in the lake and open pit will spill out through the existing outlet system, mitigating potential flooding, as it is doing today. To prevent flooding on other areas of the Project site including the haul road and rail loop after closure, mine features will be removed/rehabilitated to eliminate potential barriers to water flow (e.g., culverts and bridges) and to maintain flooding conditions that currently exist.	Chapter 11: Water Resources Chapter 12: Groundwater Resources

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Dewatering	Naskapi of Kawawachikamach	How will they drain the open pit (Joyce Lake)? Where will the water drain? How will drainage of Joyce Lake affect Iron Arm Lake water levels? How will 'filling-up' Joyce Lake affect water levels?	Joyce Lake dewatering will take place during the first year of operations. Water from the lake will be pumped to perimeter ditches where it will gravity drain to the Joyce Lake outlet system, currently in place at the east end of Joyce Lake. The open pit will be dewatered in two ways: using a series of drawdown wells around the pit perimeter drilled to intercept clean groundwater; and drained by pumping water directly to the Joyce Lake perimeter ditches and also if necessary by using pumps in sumps within the pit to pump mine contact water out to a sediment pond before release to the environment. The dewatering of Joyce Lake and pumping from the open pit are not expected to increase water levels in Attikamagan Lake. When the mine is closed, Joyce Lake and the open pit will refill with water from precipitation and ground water recharge to the same level that Joyce Lake is today.	Chapter 11: Water Resources Chapter 12: Groundwater Resources
Closure and Decommissioning	Naskapi of Kawawachikamach	What will happen with the mine once you are done mining the iron ore?	A detailed Closure and Reclamation Plan will be prepared for the Project, as required by the Newfoundland and Labrador Mining Act. The Plan will provide a final closure strategy for the open pit, waste piles, mine roads, and other mine facilities, and will incorporate progressive rehabilitation during all stages of the Project to limit the work required after cessation of Operations and to limit the environmental effects during the Project life. A preliminary plan for the closure of the mine includes erosion control by revegetation wherever possible, stabilized slopes, and barricades around the open pit.	Chapter 2: Project Description Chapter 11: Water Resources Chapter 12: Groundwater Resources

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Effects on water and aquatic environment	Naskapi of Kawawachikamach	What are the impacts on water and on the environment?	Overburden, waste rock and low grade ore piles will be graded (sloped and stable) to avoid issues with erosion and gullying. The overburden, waste rock and low grade ore stockpiles will also have perimeter ditches to collect runoff and groundwater seepage and direct it to sedimentation ponds before release to the environment. The primary potential effects of the quarried rock for causeway construction on Iron Arm water will arise from some explosives residue on the surface of the blasted rock. The explosives residue may cause elevated ammonia or nitrogen concentration for a short and temporary period, however the concentrations are not expected to exceed the long term exposure limits of the Canadian Water Quality Guidelines for the Protection of Aquatic Life	Chapter 11: Water Resources Chapter 12: Groundwater Resources Chapter 15: Fish and Fish Habitat
Rock Causeway on Iron Arm	Naskapi of Kawawachikamach	How will the year-round bridge and rock causeway affect the fish and the lake? (we fish in that area near those islands).	Stantec has assessed fish passage through the causeway bridges and their recommendations to reduce water velocities for resident species such as Northern Pike and Lake Trout to pass has been adopted and incorporated into the bridges and causeway designs by increasing the width of both bridges from 4 m to 8 m. The causeway bridge designs also allow for easy passage of fishermen and others in small boats under both of the bridges.	Chapter 11: Water Resources Chapter 15: Fish and Fish Habitat

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Water Quality/ Fish and Fish Habitat	DFO	Would like to know plans for crossing structures. Project design should try to stay out of water to avoid issues with fish and fish habitat. Consider bottomless culverts or bridge with no in-water footprint. Flow data required for stream crossings as it is important for determining impacts on existing fish habitats at potential impact areas and any areas downstream that may rely on them. Potential impacts of pit drainage on Joyce Lake.	There are four bridge structures proposed at this point. Two along the access road and two in the causeway. All bridges and culverts area designed for fish passage which for culverts means culvert embedment as per DFO recommendations. Regional flow data will be gathered to size all culverts and bridge openings The Joyce Lake and open pit water management plan provides details regarding the recommended Joyce Lake dewatering strategy and the approach to draining non-contact water from the Joyce Lake watershed to the downstream receiving water system during operations.	Chapter 11: Water Resources Chapter 15: Fish and Fish Habitat
Water Quality/ Fish and Fish Habitat	Kawawachikamach Band Council (Paul Mameanskum, George Guanish, Ken Lam, Léonard McKenzie)	Concern about potential Project effects of Iron Arm on water quality and fish populations	Mine contact water will be treated to regulatory effluent criteria in sediment ponds to meet Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic	Chapter 11: Water Resources Chapter 15: Fish and Fish Habitat
Fish and Fish Habitat	DFO	Important to consider Indigenous and recreational fisheries.	These fisheries have been considered in the assessment.	Chapter 15: Fish and Fish Habitat
Wildlife and Wildlife Habitats	Naskapi of Kawawachikamach	What about the environment and the wildlife for our future generations?	With the proposed mitigation and environmental protection measures, the environmental effect of the Project on Birds, Wildlife and their Habitat is anticipated to be not significant, as there are no unique or limiting habitats within the Project Development Area, and the species occurring in the Regional Study Area are expected to maintain sustainable populations outside the Project Development Area. Studies, reviews and evaluations as well as other details regarding Birds, Wildlife and their Habitat are contained in several chapters of the EIS.	Chapter 16: Birds, Wildlife and Their Habitats

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Wildlife/Land and Resource Use	Naskapi of Kawawachikamach	How will the project affect hunting? We are still hunting heavily in that area, helicopters have already caused disturbance, and animals are already scared off by exploration activities. What will the hunters do once the mine is being constructed and operations begin? Caribou have been seen, but seem to flee the noise of choppers. Will caribou flee the sound of mining? What about other animals like moose? Future generations are going to inherit disturbed land.	Habitat loss for key species is expected to be low (<0.5% of habitat available in the area). Research and consultation has not identified the mine area as a preferred area for hunting and other land use activities. Other areas, such as the lakes and rivers adjacent to the causeway, haulage road, and rail loop, have been identified as key land use areas for Indigenous residents. Mitigation measures to reduce effects on habitat include: • Reduce construction footprint to the extent feasible; and • Restrict activities associated with maintenance (e.g., vegetation management, periodic grading and ditching). It is anticipated that if caribou were to return to the region in large numbers, they would generally avoid the open habitat created from Project construction. The EIS and Environmental Protection Plan include measures to reduce the effects on the movement and distribution of species. Mitigation will include: • Limit noise through the use of mufflers on equipment, enclosed motors and other equipment to attenuate sound propagation, and regular maintenance on vehicles and other equipment to reduce air and sound emissions; • Limit lighting to that required for safe operation, use motion sensors for security lighting, and/or shield exterior lights from above; and • Grade or engineer slopes along roads at locations of potential crossing points for caribou. A complete description of mitigation and effects on wildlife is provided in the EIS.	Chapter 16: Birds, Wildlife and Their Habitats Chapter 19: Indigenous Land and Resource Use for Traditional Purposes

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Land and Resource Use	Naskapi of Kawawachikamach	Tata Steel has restricted people from hunting on some traditional grounds, (for security reasons) will this also happen with the construction of the project and the haulage road?	While there will be access restrictions to the mine site for public safety and security reasons, this area has not been identified as a preferred area for hunting and land use activities. While there will be access restrictions for public vehicles on the haul road, users will not be prevented from crossing the road to access adjacent areas. After mining operations end, the haul road would facilitate access to areas not previously accessible by vehicles, if regulations and consultation allow the road to remain in place after mining operations end. Similarly, the causeway, if consultation and regulations allow it to remain in place after mining operations end, will provide vehicle access to previously inaccessible areas. Concerns about access will also be addressed through ongoing consultation with area residents.	Chapter 19: Indigenous Land and Resource Use for Traditional Purposes
Land and Resource Use	Naskapi of Kawawachikamach	Outsiders will use the area to hunt and fish. This will affect Naskapis.	All mine employees who are staying in camp will be prohibited from hunting or fishing. This will be controlled by prohibitions on bringing fishing gear and/or hunting equipment into camp. Indigenous residents of nearby communities who commute to the Project can engage in these activities during non-working hours and the rotational work schedule will facilitate their use of the area during non-work hours	Chapter 19: Current Use Of Land And Resources For Traditional Purposes By Indigenous Persons

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Employment and Benefits	Naskapi of Kawawachikamach	What will be done to encourage Naskapis to work there? What assistance will be given to young families?	Labec Century's employment and benefits policy will be governed in part by any contractual agreements, yet to be negotiated, and include Impact and Benefit Agreements with several Indigenous groups and also agreements with the government of Newfoundland and Labrador. Labec Century expects to negotiate these agreements prior to starting work on the Project. Whenever possible priority for employment as well as provision of goods and services will be given to skilled and qualified residents and competitive businesses in the local area of the Project (i.e., Schefferville, Matimekush-Lac John, and Kawawachikamach). Priority for employment as well as the competitive provision of goods and services will also be given to skilled and qualified residents and competitive businesses in compliance with Newfoundland and Labrador as well as federal government requirements. Additional initiatives will be explored to facilitate initiatives related to training and diversity. More detail on employment and benefits initiatives will be defined in the Project Benefits and Diversity Plans. These plans are subject to approval by the Government of Newfoundland and Labrador, which is the governing jurisdiction of the Joyce Lake Project.	Chapter 22: Economy, Employment and Business Other: Benefits Plan

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Employment and Benefits	Naskapi of Kawawachikamach	Local population must be prioritized and trained in advance. Ambitious targets must be set. Will the local Naskapi people be prioritized for employment opportunities? (Not just residents of Newfoundland and Labrador.)	Labec Century's employment and benefits policy will be governed in part by any contractual agreements, yet to be negotiated, which include Impact and Benefit Agreements with Indigenous groups and agreements with the government of Newfoundland and Labrador. Labec Century expects to negotiate these agreements prior to starting work on the Project. Whenever possible priority for employment as well as provision of goods and services will be given to skilled and qualified residents and competitive businesses in the local area of the Project (i.e., Schefferville, Matimekush-Lac John, and Kawawachikamach). Priority for employment as well as the competitive provision of goods and services will also be given to skilled and qualified residents and competitive businesses in compliance with Newfoundland and Labrador as well as federal government requirements. Labec Century will facilitate initiatives related to training and diversity. More detail on employment and benefits initiatives will be defined in the Project Benefits and Diversity Plans. These plans are subject to approval by the Government of Newfoundland and Labrador.	Chapter 22: Economy, Employment and Business Other: Benefits Plan

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Employment and Benefits	Naskapi of Kawawachikamach	Working conditions must be good for Naskapis and adapted to address: Training, Benefits (pension, sick days), and Workshifts (hours). Such conditions must also apply to sub-contractors.	Labec Century's employment and benefits policy will be governed in part by any contractual agreements, yet to be negotiated, which include Impact and Benefit Agreements with Indigenous groups and agreements with the Government of Newfoundland and Labrador. Labec Century expects to negotiate these agreements prior to starting work on the Project. Labec Century expects to provide good working conditions for all employees and contractors and to be in full compliance with all regulatory requirements. Additional training will be available to ensure that any employee or contractor is competent and safe to perform tasks associated with his work. Additionally explicit training will be provided to employees new to the workplace. While arrangements must be in compliance with the requirements of the Project, extended shifts are planned on a rotational system with continuous days of work followed by several days of rest, an excellent arrangement for employees requiring time away from work for hunting, fishing or family recreation. The employee benefits package regarding pension, sick days and other benefits has not yet been determined. Labec Century will have a competitive benefits package for all employees and whenever possible similar benefits for sub-contractors.	Chapter 22: Economy, Employment and Business Other: Benefits Plan

Table A2 Issues Raised During Engagement Activities

Question / Issue	Community/ Organization	Summary of Comments	Response	Chapter
Employment	Naskapi of Kawawachikamach	People come by plane and get jobs and don't know anything of where they are and who lives here.	Whenever possible priority for employment as well as provision of goods and services will be given to skilled and qualified residents and competitive businesses in the local area of the Project (i.e., Schefferville, Matimekush-Lac John, and Kawawachikamach). Priority for employment as well as the competitive provision of goods and services will also be given to skilled and qualified residents and competitive businesses in compliance with Newfoundland and Labrador as well as federal government requirements. Labec Century will facilitate and support initiatives promoting living in the region.	Chapter 22: Employment Economy and Business
Cumulative Effects	Naskapi of Kawawachikamach	Other mines are in operation and it was done in a precipitated manner. Naskapi want to take time to do this one right. Have everyone in community involved. Elders, Hunters, Mothers, Youth, etc.	Consultation has already taken place with the Naskapi, including a town hall meeting, and consultation is expected to be ongoing. This will provide a full opportunity for all community concerns to be raised and discussed.	Chapter 24: Cumulative Effects

Table A3 Summary of Mitigation Measures, Effects Management and Commitments

No.	Proponent Commitments	EIS Section Reference	Relevant Category of Environmental Effect Under Section 5 of CEAA, 2012				
			Changes to the Environment			Effects of Changes to the Environment	
			Changes to Components within Federal Jurisdiction	Changes Occurring on Federal or Transboundary Lands	Changes that are Directly Linked or Necessarily Incidental to Federal Decisions	Effects on Indigenous People	Effects that are Directly Linked or Necessarily Incidental to Federal Decisions
General							
1	Joyce Direct Iron will comply with conditions attached to permits, authorizations and approvals issued by mandated government agencies	n/a	✓		✓	✓	✓
2	A committee of the Board of Directors of Joyce Direct Iron will oversee the continuing development and implementation of environmental policies on an open and transparent basis to build cooperation and trust with the local community and stakeholders	Section 1.2.1	✓		✓	✓	✓
Project Design							
3	All roads will be designed to reduce cut and fill and will have a maximum grade of 10 percent.	Section 2.5.4	✓			✓	
4	The rock causeway in Iron Arm will be designed and constructed to allow access for navigation and to not impede passage of fish and other wildlife.	Section 2.5.4	✓		✓	✓	✓
5	Management of surface run-off and drainage will include construction of diversion ditches.	Section 2.5.7	✓		✓	✓	✓
6	Run-off from stockpiled material areas (i.e., overburden, waste rock, and ore) will be managed and captured through the use of diversion ditches and local appropriately-sized settling ponds, to control discharge to meet regulated limits prior to discharge.	Section 2.5.7	✓		✓	✓	✓
7	Ditches, culverts and settling ponds will be designed, as a minimum, for a 1-in-100 year storm event.	Section 2.5.8	✓		✓	✓	✓

Table A3 Summary of Mitigation Measures, Effects Management and Commitments

No.	Proponent Commitments	EIS Section Reference	Relevant Category of Environmental Effect Under Section 5 of CEAA, 2012				
			Changes to the Environment			Effects of Changes to the Environment	
			Changes to Components within Federal Jurisdiction	Changes Occurring on Federal or Transboundary Lands	Changes that are Directly Linked or Necessarily Incidental to Federal Decisions	Effects on Indigenous People	Effects that are Directly Linked or Necessarily Incidental to Federal Decisions
8	Road alignments will be planned to reduce, to the extent practicable, the number of watercourse crossings, habitat disturbance of sensitive habitats (such as wetlands), and direct and indirect effects on species of conservation concern.	Section 2.6.1	✓		✓	✓	✓
9	Sediment control measures (e.g., sediment traps) will be implemented to control sediment from entering adjacent watercourses.	Section 2.6.1, 2.6.2	✓		✓	✓	✓
10	In addition to dust associated with access roads, dust will be suppressed at the open pit and other exposed areas as required.	Section 2.6.4	✓		✓	✓	✓
11	Locomotives will be arranged for distributed power operation within the 240 car train with two units on the front and a second locomotive approximately at the 160 car point. This will help reduce excessive stresses in railcar couplings and provide adequate air pressure for braking systems in severe weather conditions.	Section 2.6.3	✓		✓	✓	✓

Table A3 Summary of Mitigation Measures, Effects Management and Commitments

No.	Proponent Commitments	EIS Section Reference	Relevant Category of Environmental Effect Under Section 5 of CEAA, 2012				
			Changes to the Environment			Effects of Changes to the Environment	
			Changes to Components within Federal Jurisdiction	Changes Occurring on Federal or Transboundary Lands	Changes that are Directly Linked or Necessarily Incidental to Federal Decisions	Effects on Indigenous People	Effects that are Directly Linked or Necessarily Incidental to Federal Decisions
12	Mitigation measures to prevent train derailment include: • Inspection of rolling stock will be undertaken before trains are loaded at the rail loop, to confirm there are no problems with wheels, couplers, carbody, or brakes. Defective equipment will be removed from the train and kept out of service until repaired. • Track inspections of the rail loop will be conducted and haulage contractor will be required to inspect main haulage rail lines in accordance with Transport Canada regulations. • Fuel will be transported along the rail line to Schefferville. The volume of fuel will be limited to the quantities necessary to supply the needs of the mine and associated facilities. • In the rail loop, the maximum speed will be 5 miles per hour or 8 km/hr.	Section 2.6.3	✓		✓	✓	✓
13	Response measures to recover lost fuel from a spill event will include: • Immediate response through use of absorbent booms and pads. • Liquids cleanup including the use of a vacuum truck, if available. This process can be used to capture both fuels and groundwater near the site for removal and disposal. • Physical reclamation of contaminated soils; removal of contaminated soil and replacement with clean soil.	Section 2.6.3	✓			✓	
14	Fire water systems will be maintained on site.	Section 2.6.3	✓			✓	✓

Table A3 Summary of Mitigation Measures, Effects Management and Commitments

No.	Proponent Commitments	EIS Section Reference	Relevant Category of Environmental Effect Under Section 5 of CEAA, 2012				
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15	Animals will have the right-of-way in all cases, except along the train route for safety reasons.	Section 2.6.3	✓			✓	
16	As required, water trucks will be available on site for dust suppression at waste rock disposal areas and on roadways.	Section 2.6.4	✓			✓	
Environmental Management and Planning							
17	Detailed EMPs, including an ERP and EPP, for all phases of the Project will be developed in consultation with provincial and federal governments, Indigenous groups, the public, and other stakeholders	Section 7.1	✓		✓	✓	✓
18	A Water Management Plan will be developed for the Project. This plan will outline water management in and around the major Project component areas (i.e., ore stockpiles and overburden/waste rock disposal areas, open pit, and roads, rail yards, and water crossings)	Section 7.2.2	✓		✓	✓	✓
19	A sewage facility site will be located at the workers camp. It will develop solid waste that will be disposed of through a contracted service.	7.2.3	✓	✓	✓	✓	✓
20	Domestic solid waste will be separated into recyclable and non-recyclable portions, and sent to licensed facilities	Section 7.2.3				✓	
21	All staff authorized to handle hazardous materials will be appropriately trained in handling, storage and disposal of these hazardous material s	Section 7.2.3	✓		✓	✓	✓
22	The site-specific ERP will be developed to minimize, contain, and control potential releases of hazardous material	Section 7.2.3	✓		✓	✓	✓
23	An idling policy will be in place for all passenger vehicles	Section 10.6.1				✓	

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24	The Project footprint will be progressively rehabilitated throughout the duration of the Project as opportunity allows	Section 7.2.6	✓			✓	
25	A Rehabilitation and Closure Plan will be prepared and submitted, as required under the Newfoundland and Labrador *Mining Act*, Chapter M-15.1, Sections (8), (9) and (10)	Section 7.2.6	✓			✓	
26	A follow-up and monitoring program will be designed in consultation with provincial and federal governments, and Indigenous groups, and conducted, as appropriate, during all phases of the Project	Section 7.3	✓		✓	✓	✓
Atmospheric Environment and Climate							
27	Joyce Direct Iron will install a dust control system on sections of the product haul road in the immediate vicinities of the seasonal cabins during periods when generation of dust is high and to ensure the regulatory standards are not exceeded at the cabins.	Section 10.6.1				✓	
28	Speed restrictions will be in place for vehicles, on the public service road	Section 10.6.1					
29	Advance warning to nearby sensitive receptors of noise-causing activities	Section 10.6.2				✓	
30	Selecting stockpiling sites that are as far away from sensitive receptors as practically feasible	Section 10.6.1				✓	
31	Development of GHG Management Plan	Section 10.6.3					
32	Waste heat from generators will be partially captured and used to heat living and working spaces.	Section 10.6.3					

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33	Blasting will be conducted according to a comprehensive blast design and will be implemented under a strictly controlled environment.	Section 10.6.4				✓	
34	A complaint driven noise monitoring plan will be developed in consultation with regulatory authorities, and will be incorporated into the Project Environmental Management and/or Protection Plans.	Section 10.10.2				✓	
35	Worker accommodation will offer a variety of plant-based foods to reduce the project's carbon footprint.	Section 10.6.3					
36	Worker accommodations will be designed with sufficient ventilation so as to reduce the need to open windows and reduce heating efficiency.	Section 10.6.3					
37	Worker accommodations will be insulated to reduce heating power requirements.	Section 10.6.3					
38	The GHG Management Plan would include features to promote comprehensive equipment maintenance to maximize fuel efficiency, and anti-idling policies for personnel vehicles to avoid the unnecessary release of GHG emissions when equipment is not used	Section 10.6.3					
39	Limit train speed to 5 mph on rail loop	Section 10.6.4	✓		✓	✓	✓
40	Locate portable lighting equipment where it is not visible in surrounding urban areas	Section 10.6.4				✓	
41	Proper shielding and the use of full horizontal cutoff fixtures will be implemented as appropriate.	Section 10.6.4				✓	

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Water Resources							
42	Optimize water harvesting and re-use	Section 11.6.1, Table 11.74				✓	
43	Restore existing water balance conditions, to the extent feasible	Section 11.6.3, Table 11.74				✓	
44	Use of appropriately sized sedimentation ditches and ponds	Table 11.74	✓		✓	✓	✓
45	Restore natural drainage patterns and maintain or restore existing water balance condition, to the extent feasible	Table 11.74				✓	
46	Manage effluent treatment to meet MDMER and Newfoundland and Labrador *Environmental Control Water and Sewage Regulations* discharge limits	Table 11.74	✓		✓	✓	✓
47	Reduce drainage interactions and alterations	Section 11.6.1, Table 11.74	✓		✓	✓	✓
48	Construct open pit mine, Joyce Lake, waste rock, low grade ore and overburden stockpile area perimeter ditches	Section 11.6.2, Table 11.1, Table 11.74, Figure 11.50	✓		✓	✓	✓
49	Construct access roads and rail line drainage	Section 11.6.2, Table 11.74, Figure 11.50, Figure 11.51				✓	
50	Prepare and implement Water Management Plan	Section 11. 6.2, Table 11.1, Table 11.77	✓		✓	✓	✓

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51	Construction and operation of wastewater treatment plant to treat sanitary effluent to regulatory criteria	Section 11.5.3, 11.6.2, Table 11.74					
52	Storage tanks for petroleum or other hazardous materials will comply with regulations and have secondary containment.	Section 11.6.2, 11.8.3				✓	
53	Installation of oil-water separator devices downstream of areas with hydrocarbon release	Section 11.6.2, 11.8.1, 11.8.3	✓		✓	✓	✓
54	Use of bottom-draw, reverse slope outlet pipes at facility sedimentation ponds to capture LNAPLs	Section 11.6.2	✓		✓	✓	✓
55	Availability of spill containment and clean up supplies and materials	Section 11.6.2, 11.8.1, 11.8.3	✓		✓	✓	✓
56	Routine spill/hydrocarbon monitoring and surveillance	Section 11.8, Table 11.76				✓	
57	DFO guidance on culvert embedment and fish passage will be followed so water crossing do not constitute a barrier to fish passage	Section 11.6.2, Table 11.1, Table 11.54,	✓		✓	✓	✓
58	A minimum culvert size of 600 mm to be installed, although larger may be required in many instances. This reduces the potential for blockage due to ice, sediment, beaver activities and vegetation.	Section 11.6.2	✓		✓	✓	✓
59	Where the water table is close to the ground in areas of peat, culvert will be installed to maintain equal water levels and natural drainage on both sides of the road to reduce excessive ponding or drying of peat areas and wetland areas on either side of the road	Section 11.6.2				✓	

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Groundwater Resources							
60	Blast monitoring as needed	Section 12.10.1				✓	
61	Excavation drainage water control using settling pond	Section 12.6.1	✓		✓	✓	✓
62	Install groundwater monitoring wells at the open pit mine and select mine components (i.e., waste rock stockpiles, bulk fuel storage areas, etc.) for regular monitoring of groundwater levels and groundwater quality during the Operation and Maintenance phase, as well as post-closure.	Section 12.4.2					
63	Install groundwater monitoring wells around the perimeter and at varying distances out from the open pit mine to observe the extent of groundwater level decline around the open pit mine as part of mine development/ operation, and to determine whether or not there is any effect on Project water supply wells, or nearby surface water features.	Section 12.10.1					
64	Install groundwater monitoring wells adjacent to the northeast and southwest shores of Joyce Lake, and along the watershed divide between Joyce Lake and the other water bodies to monitor groundwater levels and hydraulic gradients during and after the lake dewatering operations.	Section 12.10.4					
65	Monitoring wells installed in the waste rock stockpile area will be used to detect and characterize chemistry of seepage leaving the waste rock stockpile area during operations, and to determine whether or not long term (post-closure) monitoring is warranted	Section 12.10.2					

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66	Carry out regular groundwater level monitoring at the open pit mine, and select mine components (i.e., waste rock stockpiles, bulk fuel storage areas) over the Operation and Maintenance phase.	Table 12.6					
67	Select wells located at the open pit mine and other specific mine components will be sampled for groundwater quality during the Operation and Maintenance phase following a regular schedule, as deemed appropriate based on consultation with provincial and federal regulators as part of development of the Project's EPP.	Section 12.10	✓		✓	✓	✓
68	Groundwater quality sampling will be carried out of any water supply wells installed at the mine site over the Operation and Maintenance phase. Water supply wells will be sampled for groundwater quality following a regular schedule, as deemed appropriate based on consultation with provincial and federal regulators as part of development of the Project's EPP.						
69	Select wells located adjacent to open pit mine and other specific mine components (i.e., waste rock stockpiles, bulk fuel storage areas, etc.) will be monitored for groundwater levels and groundwater quality following decommissioning for a period of time, as deemed appropriate based on consultation with provincial and federal regulators as part of development of the Project's EPP. Post-closure groundwater monitoring will be carried out to confirm effectiveness of mitigation or decommissioning, and/or declining trends in established seepage plumes	Section 12.10	✓		✓	✓	✓

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70	Groundwater quality monitoring at the open pit mine and select mine components (i.e., waste rock stockpiles, bulk fuel storage areas), during both the Operation and Maintenance phase and following decommissioning will be carried out for a variety of chemical parameters, as determined based on the water quality issue of concern and in consultation with provincial and federal regulators as part of development of the Project's EPP.	Section 12.10.	✓		✓	✓	✓
71	Avoid water well development in any area affected by fuel spills	Table 12.11					
72	If required, the volume and chemistry of the Open Pit sump discharge will be regularly monitored for general chemistry and metals on a scheduled as deemed appropriate, based on consultation with provincial and federal regulators as part of development of the Project's EPP.	Section 12.10.1	✓		✓	✓	✓
73	The pit wall rock, excavated waste rock, and ore will be inspected on a regular basis for sulfide mineralization. Standard ARD abatement procedures will be implemented if warranted	Section 12.6.1	✓		✓	✓	✓
74	The pit walls will be regularly monitored for measurable groundwater inflows; with a contingency plan for management of anomalous joint-related groundwater inflows from pit walls using interception, depressurization techniques and/or other groundwater inflow management strategies	Section 12.6.1				✓	
75	Precipitation will be monitored as an aid in differentiating the proportions of rainfall and groundwater seepage in the total Open Pit discharge	Section 12.6.1					

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76	Groundwater quality monitoring is unlikely necessary but may be warranted at site-specific sources of contaminations, such as the above-ground storage tanks, generator fuel tanks, hazardous chemical storage compounds, and any solid waste landfill	Section 12.10.4	✓		✓	✓	✓
77	Results of groundwater monitoring will be reported to authorities as required.	Section 12.10.5	✓		✓	✓	✓
78	In the unlikely event that an on-site water supply well is adversely affected by drawdown from the mine operation, it will be inspected, assessed, and if warranted, remediated to the requirements of the user. Options include: • Provision of bottled water (temporary) due to effects from equipment, vibration or blasting during road, mine or infrastructure development; • Provision of particulate filters (temporary to permanent) • Well deepening (in case of water level lowering leading to substantial yield loss) • Well replacement (in case of total well collapse, loss of yield).	Section 12.6.1					
Terrain and ARD/ML							
79	Steep slopes will be avoided where possible. Areas of sensitive terrain will be avoided where practicable	Section 13.6.1, Table 13.6					
80	Where steep slopes and sensitive terrain cannot be avoided, further detailed investigations may be considered by qualified personnel and additional mitigation measures may be implemented	Section 13.6.1, Table 13.6				✓	

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81	Compacted snow pads will be used for winter Project activities on sensitive terrain, if necessary	Section 13.6.1, Table 13.6				✓	
82	Where thaw sensitive or previously identified potentially unstable slopes, monitoring and additional mitigation will be considered	Section 13.6.1, Table 13.6				✓	
83	Banks of stream crossings will be stabilized where required	Section 13.6.1, Table 13.6				✓	
84	Manage the collection and storage of soil stockpiles	Section 13.6.1, Table 13.6					
85	Promote the vegetation of soil stockpiles to prevent erosion	Section 13.6.1, Table 13.6				✓	
86	Design surface drainage to prevent flooding of stockpile areas	Section 13.6.1, Table 13.6				✓	
87	Follow erosion control protocols	Section 13.6.1, Table 13.6	✓		✓	✓	✓
88	Measure and track volumes of soil stored in stockpiles from salvage to replacement	Section 13.6.5 Table 13.6					
89	Undertake progressive rehabilitation	Section 13.6.5 Table 13.6				✓	
90	Follow through with fugitive dust suppression programs	Section 13.6.5 Table 13.6				✓	

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91	Design facilities and activities to minimize dust emissions	Section 13.6.5 Table 13.6				✓	
92	Use of snow fences and snow removal	Section 13.6.5 Table 13.6				✓	
93	Implementation of speed limits on service road	Section 13.6.5 Table 13.6					
94	Manage blasting so that the vibrations will not affect ice cover at nearby lakes	Section 13.6.5 Table 13.6				✓	
95	Effluent discharge will be monitored to meet MDMER discharge criteria	Section 13.6.5 Table 13.6	✓		✓	✓	✓
96	In the event potentially acid generating (PAG) materials are discovered, strategies may include degradation of PAG materials and treatment of effluents to meet regulatory requirements.	13.11	✓		✓	✓	✓
Wetlands							
97	Development and implementation of a Wetland Mitigation and Monitoring Plan	Section 14.6.2, Table 14.10				✓	
98	Develop an Environmental Management System (EMS) that will provide detailed management of regulatory and permit requirements and includes EPPs and procedures	Section 14.6.2, Table 14.10	✓		✓	✓	✓
99	Assign environmental monitor to oversee implementation of proposed mitigation measures	Section 14.6.2, Table 14.10				✓	

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100	Avoid sensitive species and their habitats, where feasible	Section 14.6.2, Table 14.10				✓	
101	Reduce effects on wetlands by limiting construction activities to the PDA, and minimize Project footprint	Section 14.6.2, Table 14.10				✓	
102	Protect remnant wetlands that have not been affected by mine activities and maintain natural buffers around wetlands and riparian zones whenever possible	Section 14.6.2, Table 14.10				✓	
103	Maintain natural drainage, where possible	Section 14.6.2, Table 14.10	✓		✓	✓	✓
104	Where practical limit construction to winter months when soil and water are more likely to be frozen and vegetation is dormant, if feasible	Section 14.6.2, Table 14.10				✓	
105	Adjust distribution line pole placements to span wetlands or limit the number of poles located in wetlands, wherever possible	Section 14.6.2, Table 14.10				✓	
106	Use mats (e.g., rig mats) and wide-track vehicles to spread the distribution of equipment weight when crossing wetlands during the growing season or when wetlands are not frozen, if possible	Section 14.6.2, Table 14.10				✓	
107	Maintain hydrology at stream crossings	Section 14.6.2, Table 14.10	✓		✓	✓	✓
108	Conduct invasive plant species management	Table 14.10				✓	

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109	Conduct progressive rehabilitation and wetland restoration	Section 14.6.2, Table 14.10				✓	
110	Rehabilitate access routes that are no longer needed	Table 14.10				✓	
111	Reclamation of disturbed sites will be initiated as soon as the work areas are no longer required and will be carried out progressively over the lifespan of the Project	Table 14.10				✓	
112	Restrict clearing activities to outside of the bird breeding season, whenever feasible	Table 14.10				✓	
113	Flagging the avoidable wetland boundaries clearly in the field where they intersect with construction activities.	Section 14.6.2, Table 14.10					
114	Pre-construction communication with the construction crew on regarding wetland flagging, keeping machinery and vehicles out of wetlands, and maintaining sediment and erosion control around wetlands.	Section 14.6.2, Table 14.10	✓		✓	✓	✓
115	On-site environmental observer assigned to confirm that construction practices are consistent with the goals and plans of the Project-specific EPP.	Section 14.6.2, Table 14.10				✓	
116	Avoid siting of temporary work areas (for example, lay-down areas for equipment and materials storage) in wetlands	Section 14.6.2, Table 14.10				✓	
117	Salvage and stockpile wetland soils (peat) separately from upland soils for use in site reclamation	Section 14.6.2, Table 14.10					

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Fish and Fish Habitat							
118	Development and implementation of a Fish Habitat Offsetting Plan, if required.	Table 15.15	✓		✓	✓	
119	Design and application of erosion protection and control measures on site and application of an approved dewatering plan for Joyce Lake.	Table 15.15	✓		✓	✓	
120	Preparation and implementation of a Fish Removal Plan/Fish Salvage and Relocation Plan for Joyce Lake.	Table 15.15	✓		✓	✓	
121	Where feasible, in-water construction or maintenance will be limited to the provincial timing windows established by DFO to mitigate effects from in-water construction (June 15 – September 15). As required, additional mitigation measures to manage construction outside of these windows will be agreed upon in consultation with DFO and with local Stakeholder groups.	Table 15.15	✓		✓	✓	
122	Two 8 m bridge spans will be incorporated to allow fish passage through the causeway. Additional culverts may be added as necessary to increase fish passage.	Table 15.15	✓	✓	✓	✓	
123	Reducing in-water works associated with the Iron Arm causeway, and if such is required, using available measures to isolate these works which minimize potential fish mortalities.	Table 15.15	✓	✓	✓	✓	
124	The use of open-bottomed culverts at crossings AR4 and AR7 and a clear span bridge across the Gilling River (AR14).	Table 15.15	✓	✓	✓		

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125	The watercourse crossing structures will be inspected, cleaned and repaired on a regular basis, as required, to maintain normal water flows.	Table 15.15	✓		✓		
126	Fuel storage tanks will be equipped with secondary containment to control spills and will comply with requirements of the applicable provincial and federal acts and regulations, and the conditions of the permit and authorizations. Storage area around railyard will include surface water collection system	Section 15.8.1	✓		✓	✓	
127	Fire water systems will be maintained on site. Any additional Water pump intakes will be screened in compliance with the DFO Freshwater Intake End-of-Pipe Fish Screen Guideline (DFO 1995).	Section 15.8.3.	✓		✓	✓	
128	Settling/sedimentation ponds will be established at the waste rock, overburden and run-of mine stockpile areas, at the process crushing and screening plant, at the accommodation camp area and at the Astray rail loop.	Section 15.8.4					
129	Adherence to relevant federal and provincial regulations, statutory requirements and mitigation included in relevant permits.	Table 15.15					

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Birds, Wildlife and Their Habitats							
130	Develop and implement an Avifauna Management Plan	Section 16.6.3	✓			✓	
131	Install stream crossings (e.g., bridges, culverts, ditches) in accordance with pertinent regulations and guidelines	Section 16.4.2	✓		✓	✓	✓
132	Allow fuel trucks to travel only on approved access roads	Section 16.6.3, Section 16.6.4	✓		✓	✓	
133	Flag the boundaries of sensitive areas before commencing any work in the area, and avoid locations of sensitive species, to the extent feasible	Section 16.6.1, Section 16.6.2, Section 16.6.4				✓	
134	Consider clearing by mulching and mechanized forestry equipment.	Section 16.6.1				✓	
135	Equipment will be required to arrive on-site free from fluid leaks	Section 16.6.3, Section 16.6.4	✓		✓	✓	✓
136	Establish a site for equipment maintenance, repair and cleaning that is at least 100 m from any lake, river, stream or wetland	Section 16.6.3, Section 16.6.4	✓		✓	✓	✓
137	Locate borrow pits more than 100 m away from the high water mark of water bodies, where feasible	Section 16.6.1	✓		✓	✓	✓
138	Maintain natural buffers around wetlands and riparian zones	Section 16.6.1	✓		✓	✓	✓
139	Reduce disturbance and infilling within adjacent wetlands and maintain hydrological conditions to the extent feasible	Section 16.6.1	✓		✓	✓	✓

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140	Nuisance Black Bear management program will be included in the EPP	Section 16.6.2, Section 16.6.4				✓	
141	Runoff from development will be directed away from wetlands	Section 16.6.1, Section 16.6.2				✓	
142	Monitor ashkui formation and use by waterfowl in spring. This will be conducted through efforts of the Onsite Environmental Monitor and is an opportunity to incorporate additional Traditional Knowledge going forward.					✓	
143	Allow wildlife to pass through construction sites without harassment	Section 16.6.2				✓	
144	Construction of roads at right angles to key movement corridors for birds and wildlife (particularly caribou), to the extent feasible, to encourage animals to cross over versus linger alongside roads;	Section 16.6.2, 16.6.3				✓	
145	Graded or engineered slopes to be constructed along roads at locations of potential crossing points for caribou	Section 16.6.2, Table 16.1				✓	
146	Reduce or eliminate disturbance to or encounters with caribou and other wildlife where feasible	Section 16.6.3				✓	
147	Invasive species management					✓	
148	Limit lighting to that required for safe operation	Section 16.6.1, Section 16.6.2				✓	
149	Limit situations leading to potential collisions (e.g., maximum speed limits on service roads)	Section 16.6.3				✓	

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150	Record the location, observations of poaching, and results of any monitoring programs conducted by Joyce Direct Iron related to wildlife populations in the area, and provide this information to relevant governing departments	Section 16.6.3				✓	
151	Use fences and passageways as a means to intercept dispersing amphibians, if necessary	Section 17.6.4					
152	Develop and implement a site-specific Emergency Spill Prevention and Response Plan	Section 16.6.3, Section 16.6.4	✓			✓	
153	When taking water from a body of water, pump hoses, where necessary will be equipped with an appropriate device to avoid entrainment of amphibian larvae, eggs, or other aquatic species, as necessary	Section 17.6.3	✓		✓	✓	✓
154	Waste/garbage will not be buried in the pit during progressive reclamation activities	Section 16.6.4				✓	
155	Dust control measures will be implemented and may include wet suppression techniques and through limiting the maximum speed of vehicle	Section 16.6.2				✓	
156	Do not feed wildlife	Section 16.6.2					
157	Relocate raptor nests where necessary	Section 16.6.1					
158	Restrict clearing activities to outside of the bird breeding season, whenever feasible	Section 16.6.1	✓			✓	
159	Where feasible schedule Project activities and reclamation activities so that not all available habitat is disturbed simultaneously	Section 16.6.1	✓			✓	

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160	Survey for birds, wildlife, nests or eggs before disposing of materials on the surface (e.g., stockpiling), using a biologist	Section 16.6.3	✓			✓	
Species at Risk/Species of Conservation Concern							
161	Maintain natural buffers around wetlands and riparian zones	Section 17.6.2	✓		✓	✓	✓
162	Avoid direct effects to rare plant and/or their habitats to the extent feasible	Section 17.6.1				✓	
163	Delineate locations where rare plants occur, and avoid those locations to the extent feasible	Section 17.6.1				✓	
164	To preserve growth medium, the topsoil will be stripped and stored for later reclamation (seed source), where feasible	Section 17.6.1					
165	Non-native and invasive species management	Section 17.6.2, Section 17.6.3				✓	
166	Use of seed mixtures free of non-native and invasive species weeds and use of native species (where available) during site reclamation	Section 17.6.1				✓	
167	Incorporate bat surveys into an EPP and avoid known roosting locations						
168	Install bat boxes in appropriate locations / habitats, if necessary	Section 17.6.2, Section 17.6.3					
169	Establish a site for equipment maintenance, repair and cleaning that is at least 100 m from any lake, river, stream or wetland	Section 17.6.4, Section 17.6.5	✓		✓	✓	✓
170	Implement various erosion, sediment and dust control measures	Section 17.6.3	✓		✓	✓	✓

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171	When taking water from a body of water, pump hoses, where necessary will be equipped with an appropriate device to avoid entrainment of amphibian larvae, eggs, or other aquatic species, if necessary		✓		✓	✓	✓
172	Reduce disturbance to or encounters with SAR/SOCC					✓	
173	Prohibit hunting or harassment of wildlife on Project site	Section 17.6.4				✓	
174	Maintain hydrology at stream crossings through approved methods to install culverts	Section 17.6.3	✓		✓	✓	✓
175	Restrict clearing activities to outside of the bird breeding season, whenever feasible, and implement an Avifauna Management Plan	Section 17.6.3	✓			✓	
176	Mitigation measures will be finalized by Joyce Direct Iron in consultation with experts, and where appropriate, the regulatory authority	Section 17.4.2, Section 17.6.2	✓			✓	
177	Comply with provincial and federal legislation, permits, approvals and guidelines	Section 17.6.1	✓			✓	
178	Reduce construction footprint (i.e., the PDA) to the extent feasible and restrict construction activities to the PDA	Section 17.6.1, Section 17.6.4	✓			✓	
179	Sediment control measures will be taken to prevent the release of material into surface water features with bordering Project components during construction.	Section 17.6.1	✓			✓	
180	Natural surface water flow patterns will be maintained in wetlands. The drainage structures (e.g., ditches) will also provide storage for sediment and runoff associated with higher precipitation events	Section 17.6.1				✓	

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181	Scheduling construction in potentially sensitive rare plant habitats (e.g., wetlands, riparian areas) to occur during seasonally dry or frozen ground conditions (i.e., negligible risk of ground disturbance/compaction), if practicable and feasible.	Section 17.6.1					
182	Regularly inspecting and cleaning equipment prior to, during and immediately following construction in wetland areas to limit the amount of plant matter that is transported from one construction area to another	Section 17.6.1				✓	
Historic and Cultural Resources							
183	Discovery will be mitigated by either avoidance through Project design or through recovery.	Section 18.6.1				✓	
184	Develop and Implement EPP in the event of an unexpected discovery	Table 18.4				✓	
185	Construction personnel will be provided with orientation and training that will include briefings related to Archaeological and Cultural Resources	Section 18.6.1				✓	
186	Potential interaction with the identified archaeological site (GfDp-01) will be mitigated by either Project design changes, or systematic data recovery for the materials	Section 18.6.1				✓	
Current Use of Land and Resources by Indigenous Persons							
187	Complete reclamation activities, including re-vegetation with native plant species as per the Reclamation and Closure Plan and other regulatory requirements.	Section 19.6.4				✓	

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188	After closure, some access points will remain to allow future resource use, if approved	Table 19.2-				✓	
189	Ongoing consultation and engagement during construction and operation with local communities	Table 19.2		✓		✓	
190	Participation of Indigenous Communities in effects monitoring activities	Section 19.6.3		✓		✓	
191	All mine employees who are staying in camp will be prohibited from engaging in consumptive land and resource use activities. This will be controlled by prohibitions on bringing hunting or fishing gear into camp. Indigenous residents of nearby communities who commute to the Project will be allowed to engage in these activities during non-working hours and the rotational work schedule will facilitate their use of the area during non-work hours.	Section 19.6.3				✓	
192	Disruptions in access to cabins along Iron Arm and closures of Iron Arm road during construction will be minimal, made in consultation with local communities, and strictly for safety purposes	Section 19.5.3.2				✓	
193	Rotational work schedules to be used to provide maximum flexibility for Indigenous employees who work for the Project, but still wish to participate in traditional land and resource use activities.	Section 19.6.3				✓	

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Other Contemporary Use of Land and Resources							
194	Response measures to recover lost fuel and iron ore from a train derailment incident include: • Immediate response through use of absorbent booms and pads; • Liquids cleanup including vacuum truck, if available. This process can be used to capture both fuels and groundwater near the site for removal and disposal; • Removal of the iron ore from the site of the train derailment, if practicable; and • Physical reclamation of contaminated soils; removal of contaminated soil and replacement with clean soil.	Section 20.8.2	✓		✓	✓	✓

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195	Other mitigations to prevent train derailment and minimize effects on Current Use of Land and Resources by non-Indigenous people include the following: • Inspection of rolling stock will be undertaken before trains are loaded at the rail loop at the mine site, to confirm there are no problems with wheels, couplers, carbody, or brakes. Defective equipment will be removed from the train and kept out of service until repaired; • Track inspections to be carried out in accordance with Transport Canada regulations to identify track defects that could lead to derailment; and • Fuel will be transported along the rail line to the rail loop or Schefferville. The volume of fuel will be limited to the quantities necessary to supply the needs of the mine vehicles and other facilities.	Section 20.8.2	✓		✓	✓	✓
196	Fire suppression water systems will be maintained	Section 20.8.3	✓		✓	✓	✓
197	Measures to reduce the likelihood of settling pond overflow include: • regular inspections of water levels in the settling ponds as part of site-wide infrastructure monitoring program • the capacity of settling ponds will be maintained by periodically removing settled solids for disposal as per permit conditions as part of water management infrastructure maintenance program.	Section 20.8.4	✓		✓	✓	✓

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198	Measures to be taken during premature/permanent shutdown include: • Fencing of the entrance ramp to the open pit using boulders or other means to prevent inadvertent access; • Posting of signage indicating an “Open Hole” around the perimeter of the open pit; • Locking of buildings housing mechanical, hydraulic and electrical systems to prevent inadvertent access; • Fencing, locking, or otherwise securing (e.g., with warning signage) electrical systems on the Project site to prevent inadvertent entry or contact; • Identifying and quantifying remaining chemicals and petroleum products on the Project site for transfer off site for other uses or disposal at approved facilities; • Visually inspecting ore and waste rock stockpiles to assess stability at the start of temporary or permanent closure and stabilizing stockpiles, if required; and • Maintaining Project site water management infrastructure (e.g., settling ponds, diversion ditches) as per design specifications.	Section 20.8.5	✓		✓	✓	✓

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Community Services and Infrastructure							
199	An on-site accommodation camp with wastewater treatment systems will be in operation year-round	Section 21.4.2	✓		✓	✓	✓
200	All power required for the Project will be supplied by local generators, which will run on diesel fuel.	Section 21.4.2					
201	General site and camp security to be established	Section 21.4.2					
202	An ERP will be developed to deal with all potential incidents that could occur during Project construction, operation and closure activities	Section 21.8	✓		✓	✓	✓
203	Fire water systems will be maintained on site	Section 21.8.3	✓			✓	✓
204	Staff will be trained to prevent and control fires. A plan for preventing and combating forest fires will be incorporated into the ERP	Section 21.8.3	✓		✓	✓	✓
205	Work rotations will allow workers to travel to their original place of residence during their time off and, as a result, they will continue to use the services and infrastructure of their local place of residence	Section 21.11				✓	
206	An accommodation complex will be in operation year-round and will house approximately 144 workers at a time to reduce effects that staff new to the area will have on housing in the LSA communities	Section 21.4.2				✓	
207	Accommodation complex will have a kitchen so workers will be able to eat at the camp and will not have to rely on food services provided within the LSA communities.	Section 21.4.2				✓	

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208	The Project will not rely on municipal services and infrastructure, such as water, sewer, power, from LSA communities.	Section 21.4.2				✓	
209	Most workers will continue to receive general health care in their home communities. Any minor injuries or health problems will be addressed through the provision of first aid at the worksite.	Section 21.4.2				✓	
Economy, Employment and Business							
210	Joyce Direct Iron's employment and benefits policy will be governed in part by any contractual agreements, yet to be negotiated, which include IBAs with Indigenous groups and agreements with the Government of Newfoundland and Labrador. Joyce Direct Iron expects to negotiate these agreements prior to starting work on the Project.	Section 22.6.1		✓		✓	
211	Additional initiatives will be explored to facilitate initiatives related to training and diversity.	Section 22.6.1					
212	Detail on employment initiatives will be defined in the Project Benefits and Diversity Plans. These plans are subject to approval by the Government of Newfoundland and Labrador.	Section 22.6.1					

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213	Provide quarterly reports to meet the approval of the Minister of Education, during the construction phase, as well as for the duration of the operations phase, including information by gender on the following: • the number employed (by 4-digit NOC 2006) • the number of full-time/part-time employees • the number of apprentices (by level) and journeypersons • Indigenous organizations • source of the workforce.	Section 22.2.1					
214	Develop and implement employment and business access strategies for women and other under-represented groups, including members of Indigenous groups	Section 22.6.2		✓		✓	
215	Joyce Direct Iron will work with education and training institutions to facilitate the employment of local residents.	Section 9.3.3; Section 22.1.1					
216	The Proponent will negotiate an IBA with the Innu Nation and reach appropriate agreements with the other Indigenous communities that have asserted claims.	Section 9.3.4; Section 22.6.1				✓	

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217	Joyce Direct Iron has committed to making additional recruitment efforts to encourage more women to apply and is prepared to participate in supporting training programs specifically designed for women entering the mining industry as a career.	Section 9.3.4; Section 22.6.2					
218	Joyce Direct Iron will also work to promote business access by companies owned and operated by women, cooperating with appropriate organizations.	Section 9.3.4; Section 22.6.3					