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Guidelines for the Preparation of an Environmental Impact Statement

Baffinland Iron Mines Corporation
Mary River Project

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GUIDELINES FOR THE PREPARATION OF AN ENVIRONMENTAL IMPACT STATEMENT

BAFFINLAND IRON MINES CORPORATION MARY RIVER PROJECT

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GUIDELINES FOR THE PREPARATION OF AN ENVIRONMENTAL IMPACT STATEMENT

BAFFINLAND IRON MINES CORPORATION MARY RIVER PROJECT

SECTION 1.0 - INTRODUCTION

1.1 PROJECT OVERVIEW

The Mary River Project ("the Project") is a proposed iron ore mine and associated facilities located on North Baffin Island, in the Qikiqtani Region of Nunavut. Baffin Island is home to Inuit, who enjoy a culture that is unique and traditional to arctic regions. The land where the Project is located is important to Inuit culture, heritage, and their continued well-being in that these people use the resources on the land and from the sea for both their subsistence and in preserving their traditional way of life.

The Project involves the construction, operation, closure, and reclamation of an 18 million tonne-per-annum (Mt/a) open pit mine. The high-grade iron ore to be mined is suitable for international shipment after only crushing and screening and as such, no chemical processing facilities are required for this Project. A railway system will transport the ore from the mine area to an all-season deep-water port and ship loading facility at Steensby Inlet where the ore will be loaded into ore carriers for overseas shipment through Foxe Basin. A dedicated fleet of cape-sized ore carriers, capable of breaking ice, will be chartered by Baffinland from a consortium of ship owners organized by Fednav. Some non-icebreaking ore carriers and conventional ships will also be used during the open water season.

All major Project components will operate year round and, based on the currently-defined iron ore reserve, will continue to operate for about 21 years. Geological conditions suggest that additional ore may be delineated as exploration continues, potentially extending the life and/or increasing the production rate of the Project.

The Mary River site is located about 160 km south of the community of Pond Inlet (Mittimatalik) and 1000 km northwest of Iqaluit, the capital of Nunavut. Project facilities will be sited in the mine area at Mary River and port area at Steensby Inlet, with a railway line and access road connecting the two. Marine access and shipping through the construction phase and periodically during operation will occur seasonally through Milne Inlet and the existing Milne Inlet Tote Road will therefore be used periodically to access Mary River during frozen conditions. Shipping through Steensby Inlet will be seasonal through construction and year-round through operation. Access to the Project sites for personnel will be by chartered aircraft.

1.2 PURPOSE

Baffinland Iron Mines Corporation ("Baffinland" or "the Proponent") presented its Development Proposal for the Mary River Project ("the Project Description") dated March 2008 to authorizing agencies, the Nunavut Planning Commission (NPC), the Nunavut Impact Review Board (NIRB) and the Nunavut Water Board (NWB). The Project Description defines Baffinland's proposed plans for developing the Mary River iron ore mine and related infrastructure. Based on the Project information supplied to date, NIRB has determined that the proposed action will require a formal review pursuant to Article 12 of the *Nunavut Land Claims Agreement* (NLCA). These Guidelines have been developed for the purpose of defining for both the public and the Proponent that information must be addressed in the Project Environmental Impact Statement (EIS) for review pursuant to Article 12. On the basis of these Guidelines, Baffinland will prepare and submit an EIS that analyzes and predicts the effects of construction, operation, closure, and reclamation of its proposed Mary River Project on the environment.

1.3 SCOPE OF THE ENVIRONMENTAL IMPACT STATEMENT

The EIS will be prepared in accordance with these Guidelines, and give due consideration for any instructions from the Minister of Indian and Northern Affairs Canada (INAC), and any other requirements as per s.12.5.2(j) of the NLCA. The Guidelines also address the stated EIS requirements of the Nunavut Impact Review Board (NIRB), including:

1.3.1 Statement of Consultation Principles and Practices

Pre-project consultations with locally affected persons must meet or exceed usual consultation practices in Canada. When at all possible, information about the project must be distributed and comments collected with a view to resolving any differences. Discussions should include, but not be limited to, land uses, policies, resource uses, archaeological areas, infrastructure, and terrain sensitivities. Inuit cultural concerns must be highlighted throughout. All comments from the public must be summarized, documented, and presented in the EIS.

1.3.2 Project Definition

A definition of the project must include a discussion of any connected or down-the-road related projects in order to reveal the primary purpose and better understand complex or multi-staged related proposals.

1.3.3 Statement of Purpose

Based on the concepts of the precautionary principle and sustainable development, an EIS must contain a statement explaining the need for, and the purpose of the project. Where further economic development is needed for a given area, the Board expects the deficiencies in the economic status quo to be stated.

1.3.4 Anticipated Impacts Analysis

A comprehensive impact assessment must be carried out which includes, but is not limited to, environmental effects that are likely to result from the project in combination with other projects or activities that have been, or will be, carried out. Anticipated impacts include short and long-term, direct and indirect, positive and negative, cumulative, socio-economic, archaeological and cultural impacts. This element of the EIS must include a mitigation analysis that explains how the impacts could be avoided, minimized, cured, eliminated, or compensated.

1.3.5 Cumulative Effects Analysis

Cumulative effects must be analyzed for all Part 5 Reviews. A project proposal causes a cumulative effect if, when added to other projects in the region, or projects reasonably foreseeable in the region, will cause an additive effect. A comprehensive examination of all cumulative effects must be included in an EIS.

1.3.6 Significant Effects Analysis

The Board must be advised of the significant impacts of the project. This should be based upon:

a) the project setting, taking into account the location's unique ecosystemic characteristics, and
b) the severity of the impacts, taking into account public health, land use plans, protected areas, habitat, or species, public concern, etc. Ultimately, the Board will decide which effects are significant and report to the Minister accordingly.

1.3.7 Project Alternatives

This requirement includes, but goes well beyond, alternative means of carrying out the project that might be economically and technically feasible and the environmental effects of those alternative means. This assessment must include the "no-go" or "no-build" alternative, as well as the "preferred" alternative. The "no-go" alternative is not only a potentially stand-alone option; it also serves as a baseline for comparison with other development alternatives that might reasonably be proposed in the circumstances.

1.3.8 Sustainability Analysis

The EIS must contain an analysis of the ability of renewable resources affected by the project to sustain current and future generations in Nunavut and Canada.

1.3.9 Monitoring and Post-Project Analysis

The purposes of a Post-Project Analysis are to:

a) Measure the relevant effects of projects on the ecosystemic and socioeconomic environments of the Nunavut Settlement Area

b) Determine whether and to what extent the land or resource use in question is carried out within the predetermined terms and conditions
c) Provide the information base necessary for agencies to enforce terms and conditions of land or resource use approvals
d) Assess the accuracy of the predictions contained in the project impact statements

1.3.10 Transboundary Effects

Where relevant, the EIS will include an assessment of all significant adverse ecosystemic or socio-economic transboundary effects.

The EIS will also meet the requirements of Appendices J and K of the North Baffin Regional Land Use Plan, and the requirements identified by Federal interveners during public review of the Guidelines, to meet the requirements of the *Canadian Environmental Assessment Act* (CEAA).

1.4 SCOPE OF THE PROJECT AND STUDY AREA BOUNDARIES

The Project is comprised of five principal elements, including: 1) an open pit iron mine located at the Mary River site; 2) a railway from the Mary River site to Steensby Inlet; 3) a port at Steensby Inlet; 4) an existing beach at Milne Inlet and existing Milne Inlet Tote Road accessing the Mary River site; and 5) marine shipping within Foxe Basin to where the route intersects the established shipping lanes accessing Hall Beach and Igloolik at the Spicer Islands.

In order to adequately profile the existing environment relevant to the Project development plans, The Proponent will adhere at a minimum to the following spatial boundaries to address potential environmental and socio-economic effects related to the Project:

1.4.1 Climate, Air Quality, and Noise

These conditions will be characterized using regionally available information coupled with Project-specific baseline data. Air quality and noise study area boundaries will be defined by receptors and may be established at the Project boundary, closest point of public access, or at the nearest receptor. Based on the Project scoping conducted by the Proponent, the baseline area of influence for air quality will include a 10 km radius around the Mary River site and 10 km radius around the Steensby port site, unless otherwise justified. Study emphasis will be directed along the predominant wind direction. The study area for noise will include a 3 km radius around the Project footprints, unless otherwise justified.

1.4.2 Soils, Vegetation, and Physical Features

These environmental components will be studied and understood on a regional scale, with impacts assessed on a local scale considering 1 km buffer zones around proposed disturbance areas at camps and ports and a 500 m buffer along either side of the road and railway line as permitted by the terrain.

1.4.3 Surface Water and Freshwater Aquatics

Baseline investigations will target understanding regional freshwater aquatic environments and will establish defensible water quality and quantity profiles both up-stream and down-stream from potential Project activities. The study area for surface water and the freshwater aquatic environment in the Mary River area will include the Mary and Tom River drainage basins as well as associated lakes and rivers. Similarly, the study area at the Steensby Inlet port site will focus on surface drainage systems upstream and downstream from Project infrastructure locations and land disturbances.

1.4.4 Groundwater and Permafrost Conditions

Regional groundwater and permafrost conditions will be described as may be affected by Project disturbances.

1.4.5 Terrestrial Mammals

Regional studies for terrestrial mammals will be conducted within a 50 km wide study area centred on the alignments of the Milne Inlet Tote Road and the proposed railway, from Milne Inlet to Steensby Inlet.

Bird studies will cover the same area as terrestrial mammals, but will extend into the marine coastal environment in Steensby and Milne Inlets.

1.4.6 Marine Mammals and Aquatics

The study area for year-round shipping will cover Northern Foxe Basin from Steensby Inlet to where the shipping route deviates from established shipping lanes accessing Hall Beach and Igloolik. The study area should be inclusive of land use areas of Igloolik and Hall Beach to understand potential Project interactions with land use. The study area for open water shipping to Milne Inlet will include the Inlet area only.

1.4.7 Cultural Heritage and Archaeology

The study area for archaeological assessment will include the footprint of the mine, camp, and processing facilities surrounded by a 100 m buffer. Regional desk studies will be undertaken to assist in developing regional context to the findings from within the local study area, which may affect cumulative assessment findings as well as the need and procedures for data collection and recovery where existing resources may conflict with Project development plans. Inuit traditional knowledge will be collected from communities which have a historical tie to the Project development area, including Pond Inlet, Arctic Bay, Clyde River, Igloolik, and Hall Beach.

1.4.8 Social and Economic Conditions

The social zone of influence and study area will address those communities that have the potential to be directly affected by the Project. Socio-economic boundaries of the assessment will be Nunavut communities that are either economically affected through direct employment or community development opportunities, participation in the Inuit Impact and Benefit Agreement (Section 3.2.6), or eco-systemically affected by Project effects to local environmental resources. These communities are listed alphabetically as follows: Arctic Bay, Clyde River, Hall Beach, Igloolik, Iqaluit, and Pond Inlet.

1.4.9 Temporal Boundaries

Temporal boundaries include the various phases of the Project identified by the Proponent, including construction, operation, closure, and reclamation. The Proponent will describe the duration of and the Project's effects in relation to each of these phases.

1.5 ENVIRONMENTAL IMPACT STATEMENT ORGANIZATION

The EIS will be developed in accordance with the General Principles and EIS Format requirements outlined in NIRB's Guide to the Preparation of Environmental Impact Statements. The EIS will generally be organized into four main parts:

1.5.1 Summary

The Summary will present a concise non-technical overview of the Project and its effect on the social and environmental baseline conditions and will present the significant findings, recommendations, and actions contained in all other EIS volumes. Further details are provided in Section 2.

1.5.2 Impact Assessment

The Impact Assessment will identify the regulatory framework under which the Project will operate. It will also document the current site conditions, describes the Proponent's development and operating plans, outline engineering and environmental systems as appropriate that will be used to mitigate environmental impacts, present mitigation measures to limit social impacts, and identify the Project effects and residual impacts on both environmental and social resources. It will address the cumulative effects of Project development and evaluate economically and technically feasible alternatives. Impacts should be discussed in proportion to their potential significance. Maps, graphs, charts, diagrams, and other visual tools will be used to clarify the text. Where possible, maps will be in the same scale, colour and projection to facilitate comparison and will indicate, where available, common and accepted place-names used by the local communities. Further details are provided in Section 3.

1.5.3 Mitigation and Monitoring Plan

The Mitigation and Monitoring Plan will define the management, mitigation, monitoring, and institutional measures that are needed to mitigate, offset, or reduce the environmental and social impacts of the Project. It will define the actions that will be undertaken to implement mitigation identified in the Impact Assessment (Section 1.5.2). It will include a commitment summary and implementation schedule that cites all of the commitments made in the EIS documents in tabular form, and will include a schedule for when those commitments will be fulfilled and a cross-reference to where those commitments are made in the EIS text. Further details are provided in Section 4.

1.5.4 Appendices

The EIS documents will be presented in a concise, easy-to-read format which obliges that summaries and concepts be presented in the body of the EIS text, and the technical details supporting the information be presented in the Appendices. The Appendices will be used to provide supporting technical details for EIS text summaries of appropriate elements of the Project design, public consultation programs, baseline and impact assessments, and mitigation and monitoring plans. Further details are provided in Section 5.

1.5.5 Concordance

The EIS will include a concordance table that cross-references the requirements of this Guidance document with the final EIS content. This will direct reviewers to the specific location in the EIS where the information required by this Guidance document can be found. The reference location will be indicated by volume, document and section number as appropriate.

SECTION 2.0 - SUMMARY

The EIS Summary will present a succinct non-technical overview of the Project and its effects on the existing social and environmental setting and will present the significant findings, recommendations, and actions contained in the Impact Assessment and Mitigation and Monitoring Plan and their appendices. The Proponent will consider limiting the length of the EIS Summary to 150 pages, if possible.

2.1 EXECUTIVE SUMMARY

The Proponent will present a concise executive summary of the findings and conclusions of the Project Environmental Impact Statement. This summary should not exceed five pages in length. This Summary, at minimum, will be translated into Inuktitut and presented for local disclosure (the need for translation of other parts of the EIS will be determined through stakeholder engagement).

2.2 INTRODUCTION

The Proponent will present the Project objectives, give relevant background information, present the basis on which the Proponent has the right to develop the Project, and define the purpose and need for the Project. A schedule will define the major phases of the Project, including at minimum, the construction, operation, closure, and reclamation phases.

2.3 PROJECT SETTING AND SIGNIFICANT OUTCOMES

The Proponent will present an overview of the existing conditions within the Project study area boundaries in order to set the context for the outcomes and conclusions of the EIS. This discussion should allow the reader to understand the context of the Project and its impacts to local communities and the environment.

2.4 IMPACT ASSESSMENT OVERVIEW

The Proponent will present an overview and summary of the information, analysis, and residual Project impacts presented in the Impact Assessment. It will also summarize the alternatives evaluated, including the “no action” alternative, and the sustainability, transboundary and cumulative effects as presented in the Impact Assessment.

2.5 MITIGATION AND MONITORING PLAN OVERVIEW

The Proponent will present an overview and summary of the management systems, mitigation, and monitoring commitments made in the Mitigation and Monitoring Plan (Section 4.0).

2.6 DISCIPLINE-SPECIFIC MANAGEMENT PLAN OVERVIEWS

The Proponent will present summaries of each discipline-specific management system and the mitigation and monitoring commitments made in each discipline-specific management plan (Section 5.3).

2.7 CONCLUSION

The Proponent will summarize the overall findings, conclusions, and recommendations of the Environmental Impact Statement.

SECTION 3.0 - IMPACT ASSESSMENT

The Impact Assessment will identify the regulatory framework and performance targets under which the Project will operate. It will document the current environmental and social conditions that may be affected by Project development, describe the Proponent's development and operating plans, outline the engineering and environmental systems as appropriate that will be used to mitigate environmental impacts, present mitigation measures to limit impacts to acceptable levels, and identify the Project effects and residual impacts on both environmental and social resources. It will also address the cumulative and potential transboundary effects of Project development and evaluate economically and technically feasible alternatives to the preferred action, including the "no action" alternative.

3.1 INTRODUCTION AND PROJECT CONTEXT

The Proponent will define the purpose and need for the Project and provide an appropriate background on the history of the site and how it came to the condition it is currently in today. The Proponent will describe the organization proposing to develop the Project and its ownership and right to undertake the development. In addition to this background and introductory information, the Proponent will also include a concise overview of the Project and a summary of the significant outcomes associated with Project implementation in order to establish the context for the overall document.

3.2 REGULATORY FRAMEWORK

The Proponent will discuss the policy, legal, and administrative framework under which the Project will be carried out and will explain the environmental requirements of the NLCA, and territorial and national governments, including monitoring and reporting requirements. An important aspect of this discussion will be the identification of the specific laws, regulations, standards or guidelines that establish the specific numeric targets against which Project performance will be measured. It may also identify relevant international environmental agreements or conventions to which the country is participatory that may affect or be affected by the Project.

3.2.1 NIRB Principles for Environmental Review

The Proponent will describe NIRB principles and how they relate to the proposed Project and EIS analysis. An ecosystem-based approach will be adopted to assess the direct impacts of the Project on the various ecosystem components as well as the interactions that occur between components; socio-economic issues will be included; an understanding of past and potential future environmental, economic and social trends in the North Baffin Region of Nunavut, and how the Project will influence these trends; and the well-being of the residents of Canada outside Nunavut will be taken into account.

3.2.2 North Baffin Regional Land Use Plan

The Proponent will describe the relevance of the North Baffin Regional Land Use Plan to the Project, and how the EIS addresses any requirements of the Plan.

3.2.3 Canadian Environmental Assessment Act

The Proponent will explain the applicability of the *Canadian Environmental Assessment Act* (CEAA) in Nunavut and the factors that must be considered in the assessment as outlined in Section 16 of CEAA.

3.2.4 Relationship between Environmental Assessment and Water Licensing

The Proponent will describe the requirements of the Nunavut Water Board (NWB) relative to Project water needs, and will provide information to aid the water licensing process to support the coordination of efforts among NIRB and NWB.

3.2.5 Community and Inuit Knowledge

The Proponent will describe how it has collected and considered local community and Inuit Knowledge, as required by NIRB. Local and traditional information and knowledge will be factored in throughout the EIS documents.

3.2.6 Inuit Impact and Benefit Agreement

The Proponent will explain the requirements for an Inuit Impact and Benefit Agreement (IIBA) pursuant to the NLCA and the status of the IIBA that is under development between the Proponent and the Qikiqtani Inuit Association (QIA). The IIBA will relate predicted impacts to community benefits based on, but not limited to, potential Project impacts to wildlife, to conservation areas, to water and water rights, and to natural resource development. The Proponent should acknowledge that the IIBA will not be finalized until the NIRB review of the Project EIS is complete.

3.2.7 Other Nunavut or Canadian Requirements

The Proponent will describe any other relevant laws and regulations that are germane to the construction, operation, closure, or reclamation of the Project.

3.2.8 International Agreements and Leading Industry Practice

The Proponent may opt to describe other factors that play into the administrative framework for the Project. Such agreements and practices that may have been considered in the development of the EIS include agreements to which Canada is signatory.

3.2.9 Performance Targets

The Proponent will define performance targets for each of the following disciplines and cite the relevant laws, regulations, standards or guidelines and administrating agency responsible for their development and/or enforcement. This section is intended to present a clear and concise listing of the performance target, regulatory reference, administrating

agency, and specific numeric target, where they exist and if applicable, for at least the following:

- Air Quality
- Noise and Vibration
- Liquid Effluent
- Soil quality
- Water quality
- Greenhouse Gases

3.3 ALTERNATIVES CONSIDERED

The Proponent will discuss alternatives to the Project, alternatives required by the North Baffin Region Land Use Plan, and alternatives to Project components or activities including different locations or timing for such activities or components that have differing ecosystemic or socio-economic effects. In each case the Proponent will present the selected alternatives, discuss the rationale for options not chosen, and discuss the preferences of those consulted including the public. Factors affecting the alternatives assessment will include cost, environment, community preference and acceptability, and technical feasibility with particular attention given to proven northern performance.

The Proponent will systematically compare technically and economically feasible alternatives to the proposed Project site selections, technologies, designs, and operations in terms of their potential environmental impacts; the feasibility and practicality of mitigating those impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements. For each alternative, a preliminary assessment of the environmental impacts will completed, and economic values assigned where feasible, to help facilitate the comparison and ranking of the alternatives. This comparison of alternatives will include the “no action” alternative as a base-case against which Project impacts, positive and negative, can be compared and will establish the rationale for the Project selected alternative.

3.4 PROJECT DESCRIPTION

After an analysis of the Alternatives Considered (Section 3.3), the Proponent will describe the proposed Project and will include maps and/or figures showing the physical location of the Project site and zone of influence.

The Proponent has already submitted its Development Proposal for the Mary River Project (“the Project Description”) dated March 2008. This document generally defines the Proponent’s plans for the construction, operation, closure, and reclamation of the Project. This Project Description will be updated, with further detail added as necessary, to more fully illustrate Project interactions with the environment in order to allow an assessment of potential impacts.

The Proponent will describe the proposed Project components and related activities for the construction, operation, closure, and reclamation phases of the Project. Such description will focus

on the geographic locations, required land disturbances, and processes that will result in withdrawals from the environment (e.g., water supply and land exclosures) and discharges to the environment (e.g., air, water, and waste discharges). The description will address the five principal Project elements and their associated components as follows:

1. Mining Complex at the Mary River Mine Site

- Open pit operations
- Crushing and screening facilities
- Ore stockpiling facilities
- Waste rock storage
- Mine site infrastructure
- Building and other complexes
- Core shack, laboratories and storage facilities
- Communications system
- Site roads
- Laydown areas
- Airstrip
- Bulk fuel storage and distribution facilities
- Explosive manufacturing and storage
- Water supply
- Power generation
- Waste management
- Quarry and borrow sites

2. Railway from the Mary River Mine to the Steensby Inlet Port

- Rail line
- Transport (personnel, ore, fuel, explosives materials and supplies)
- Train loading and unloading facilities
- Communication systems
- Quarries and borrow sources
- Railway maintenance facilities and equipment

3. Port Facility at Steensby Inlet

- Ore stockpiling facilities
- Ore loading dock
- Construction and freight docks
- Ship loading and unloading facilities
- Port site infrastructure
- Building complexes
- Communication systems
- Navigation Aids
- Site roads
- Causeway
- Laydown areas/freight storage
- Airstrip
- Bulk fuel storage and distribution facilities
- Water supply
- Power generation
- Waste management

4. Marine Shipping within Foxe Basin from Steensby Port

- Vessels
- Routing
- Ice management
- Navigation and navigational aids
- Waste management

5. Supply Shipments Via Milne Inlet Beach and the Existing Milne Inlet Tote Road

- Freight receiving beach
- Temporary construction dock
- Building complexes
- Emergency shelters
- Communication systems
- Tote road
- Transport (fuel, materials and supplies)
- Laydown areas
- Airstrip
- Bulk fuel storage
- Water supply
- Power generation
- Waste management
- Quarries and borrow sources

Within the appropriate context of each of the principal Project elements, the Proponent will provide:

- An approximate timetable for Project operations, including the timing of construction, operation and reclamation
- The aerial extent of land disturbance to be worked at any one time
- A description of the construction methods, plans to be employed, and extent of surface disturbance
- A description of the resource to be mined, the mining method to be employed in each stage of operation, and extent of surface disturbance
- The explosives to be used, if applicable
- A description of the earthmoving processes and equipment to be used
- A description of the ore sizing process and equipment
- Plans for the permanent storage of mine waste rock
- A description of the railway infrastructure, including rolling stock, track, and terminal operations near the port
- A description of the port facility operations, including rail offloading facilities, ore stockpiles, ship loading and offloading systems, cargo operations, and marine dredging
- A description of the shipping routes
- A description of the water diversions and impoundments required
- A description of the water supplies, wastewater systems, power supplies, airstrips and other infrastructure and access routes that may be used
- An estimate of the Project water requirements, including flow rates, annual volumes based on location-specific water balances for all phases of the Project
- An estimate of the quantities of fuels, chemicals, solvents, and other materials that, if released, have the potential to adversely affect the environment that will be transported, stored, used, and/or consumed by the Project
- Plans for the supply, handling, and storage of fuels, chemicals, solvents and other materials that, if released, have the potential to adversely affect the environment
- A discussion on the employment opportunities and employment practices
- A summary of all environmental discharges that are anticipated during each phase of the project, including atmospheric emissions from stationery and mobile equipment, greenhouse gas emissions, noise, vibrations, liquid effluents, and solid, hazardous and medical wastes
- A description of the final grading and site configuration, including drainage, and plans for how the soil will be stabilized and protected from erosion if appropriate
- The planned post-Project land use to which reclamation strategies will target

- A comparison of the planned post-Project land use with other proximate land uses
- A schedule for reclamation implementation

3.5 IMPACT ASSESSMENT METHODOLOGY

The Proponent will explain the impact assessment methodology used in predicting Project impacts and their significance.

3.5.1 Valued Components

Valued components (also referred to as Valued Ecosystem Components (VEC) and Valued Socio-economic Components (VSEC)) focus impact assessments on specific aspects of the bio-physical and socio-economic environment. Individual species and community goals are commonly selected as valued components.

The Proponent will use the topics identified in Sections 3.6 and 3.7 of these Guidelines as the basis for the selection of valued components.

3.5.2 Key Issues and Subjects of Note

The EIS will prioritize the topics identified in Sections 3.6 and 3.7 of these Guidelines to focus the assessment. While acknowledging that all the issues require sufficient analysis to demonstrate whether it is likely to be the cause of significant effects, some issues require more attention than others. For this reason, the Proponent will distinguish between key issues and subjects of note as follows:

Key issues are areas of greatest interest requiring analysis and detail in the EIS. Key issues may warrant modelling combined with scientific and/or traditional expert evaluation to develop impact predictions. Key issues are those which have the highest potential for significant consequence to the environment and decision-making process. Key issues will require scientific and/or traditional expert evaluation to develop impact predictions.

Subjects of note have moderate-to-low potential consequence to the environment and decision-making process, but are nonetheless important to consider and address in the EIS. Although subjects of note do not require the same level of analysis as key issues, it is the Proponent's responsibility to demonstrate whether they are likely to be the cause of effects and to propose mitigation as necessary.

3.5.3 Impact Prediction

The Proponent will use accepted practices to arrive at impact predictions. Predictions will be presented with appropriate explanation and justification. When justifying impact predictions, where relevant, the Proponent will:

- explain how scientific, engineering, community and Inuit knowledge was used;

- document model assumptions and study methodologies;
- identify which studies included the assistance of communities and individuals, who was involved (if the information can be made public), and how participants were selected;
- document data collection methods and limitations thereof;
- support analyses, interpretation of results and conclusions with reference to appropriate literature;
- specify and reference sources for any contributions based on Inuit Knowledge;
- identify all proposed mitigation measures and adaptive management strategies, if applicable; and
- Describe the potential residual effects.

3.5.4 Significance Determination

The Proponent will define the terms used to describe the level of significance and will take into consideration the following attributes in determining the significance of both favourable and adverse potential residual effects:

- the environmental sensitivity of the geographic area to be potentially affected;
- the historical, cultural and archaeological significance of the geographic area to be potentially affected;
- the extent of potential effects, including the geographical area that may be affected;
- the magnitude and complexity of potential residual effects;
- the probability of the potential effects;
- the frequency and duration of potential effects; and
- The reversibility of potential effects.

3.5.5 Certainty

The level of certainty with predictions is related to limitations in the overall understanding of the ecosystem and limitations in accurately foreseeing future events or conditions. The Proponent will provide a reasonable description of the uncertainties associated with each prediction.

3.6 ENVIRONMENTAL CONDITIONS, IMPACTS, AND MITIGATION

The Proponent will describe the components of the existing environment and the processes affecting them to serve as a baseline against which the potential effects of the Project can be measured. The Proponent will assess the study areas and describe relevant physical, biological and historical conditions, including any changes anticipated before, during and after the Project commences. The data and information collected and presented will be of appropriate scale and purpose to facilitate relevant decision-making regarding the Project and proposed mitigation measures. The presentation will also indicate the methodology, limits of accuracy, reliability, and sources of the data where appropriate.

The Proponent will predict and assess the Project's likely positive and negative environmental impacts in quantitative and qualitative terms to the extent possible for each phase of the Project as outlined in Section 3.4. The following components and topics will be taken into consideration:

3.6.1 Climate

The Proponent will present:

- A description of the significant meteorological and climatological factors for the area, including daily and seasonal fluctuations
- A presentation of the mean annual precipitation, average direction and velocity of prevailing winds, mean monthly temperatures and temperature ranges, and evaporation and sublimation rates
- Climatic data sufficient to perform a suitable water balance for the Project
- Climatic data sufficient to reinforce and substantiate the presence of permafrost in the area
- An assessment of greenhouse gas contributions to Nunavut and Canada
- A discussion on the likelihood of climate change and limitations thereof, including related changes in mean and extreme environmental parameters such as air, temperature, precipitation, storms; its possible effect on the timing of ice formation; changes to active layer thickness; hydrology in the future; its long term potential effects on the Project; and an identification of Project components that would be sensitive to climate change

3.6.2 Air Quality

The Proponent will present:

- A description of the airshed conditions, including visibility
- A description of any current sources of emissions and seasonal variations or climatic conditions that could affect air quality
- A summary of air quality data that has been collected to establish background conditions
- An assessment of the potential effects of gaseous and air-borne emissions on air quality, water quality, vegetation, and wildlife uptake as well as occupational health and safety
- An analysis of atmospheric dispersion of emissions
- A discussion of the atmospheric conversion process of emissions and linkages between chemicals, the environment, and human health

3.6.3 Noise and Vibration

The Proponent will present:

- A description of the area noise regime, including any data that has been collected on background conditions
- An analysis of Project noise attenuation based on the climatic conditions (Section 3.6.1)
- An assessment of Project noise conditions and the potential for elevated noise conditions at key receptor points
- An assessment of the effects of vibration due to blasting and railway operations
- A discussion on the changes in atmospheric noise levels due to project activities such as ground transportation, power generation, equipment use, blasting, drilling, crushing, construction, rail and port operation, and air traffic
- An assessment of the changes in marine noise levels due to activity at the dock, blasting, and shipping, including noise propagation in the marine environment
- An assessment of the potential effect of changing noise levels on land users, workers, wildlife, marine fish and marine mammals

3.6.4 Geology, Permafrost and Landforms

The Proponent will present:

- A description of the topographic features and general lay of the land for each component area of the Project
- A discussion on the likelihood of the project area being visible to area receptors
- A description of any special, sensitive, or unique geological or landforms features and how they may be changed by the Project
- A description of the groundwater, permafrost, and ground ice conditions
- An explanation of the permafrost processes including a description of the active layer
- A discussion on the relationship between permafrost, surface water, and topography
- An evaluation of the changes to the stability of terrain and water crossings and the potential for erosion
- An assessment of the potential changes to permafrost and ground ice conditions as a result of Project activities, and of the potential for groundwater inflow into the open pit
- A description of the nature, depth, and thickness of the ore deposit to be mined and the volumes and characteristics of the waste rock to be removed
- A description of any natural geological hazards that may exist within the local Project study area
- A geotechnical evaluation of the geological hazards that may exist at the site in slopes, highwalls, waste rock stockpiles, or other areas as appropriate
- A description of the seismicity in the region and risks associated with cut/fill slopes and constructed facilities
- A stability analyses for cut/fill and final reclaimed slopes, highwalls and waste rock stockpiles as appropriate

- A discussion on how appropriate blasting, vibration, geotechnical, and structural engineering techniques will be implemented to minimize impacts to offsite areas
- An evaluation of any material that will be exposed by mining, stockpiled, or disposed of on the affected land relative to its potential to cause acidic drainage or to release metals or materials to the environment in excess of performance targets (Section 3.2.9)
    - Such evaluations will be conducted on the materials that are representative of the composition of the rocks or materials that are exposed or to be exposed during the life of the Project
    - Such evaluations will be appropriate for the intended use or fate of material exposed and will include the evaluation of weathering effects
    - Such evaluations will be conducted on ore and waste rock and will identify the reasonable sources, probable fate, and transport mechanisms that may be mobilized by ordinary weathering reactions
    - Where neutralization, metal adsorption, or metal ion exchange potential over the long term cannot be demonstrated, the Proponent will describe appropriate mitigating measures

3.6.5 Soils

The Proponent will present:

- A description of the general type, thickness, and distribution of soil over the affected land
- A description of the suitability of topsoil or other growth media for establishment and maintenance of plant growth
- An assessment of the potential effects to soil quality from the Project

3.6.6 Vegetation

The Proponent will present:

- A description of the vegetation types present, including estimated percentage cover and height for principal species, and the relationship of present vegetation types to soil types
- A discussion of the ecological zones and a classification system for plant associations in the study area
- A list of vascular plant species encountered on the project and a tentative list of non-vascular plants including lichens. A discussion on the presence of rare plants, including any species listed under the *Species at Risk Act* (SARA), in the Draft General Status Ranking for Vascular Plants of Nunavut, or other relevant publications
- A discussion on the plants that are important to wildlife
- Inuit Knowledge ascertained regarding plants and plant use in the North Baffin
- An evaluation of whether the proposed development is likely to affect a listed species or its habitat, including identification of any adverse effects on the species and its

habitat and description of measures to avoid or lessen those effects, consistent with relevant recovery strategy and action plans

- An assessment of the potential loss, disturbance, or changes to plant associations as a result of Project activities, including potential effects of airborne fugitive dust, and changes to water quality and quantity, permafrost, or snow accumulation
- An evaluation of the potential for transfer of invasive species by aircraft, ships, and trains, and suggestions, if necessary, for reduction of the possibility of invasive species entering the area
- Suggestions, if necessary, for mitigation of disturbance to plant associations, and preliminary suggestions regarding reclamation methods

3.6.7 Surface Water Resources

The Proponent will present:

- A description of the area hydrology, including watershed boundaries and a site water balance
- Physical and chemical characteristics of sediment within watercourses proximate to the Project
- Any surface waters of importance to local communities
- Natural fluctuations, variability, and sources of variability in flow and ice cover (seasonal patterns and spatial)
- A description of freeze/thaw timing; flood zones; ice conditions and typical thicknesses, formations and melt patterns
- A description of lake bathymetry and limnology
- A description of fluvial geomorphology and stability of stream and river crossings
- Physical and chemical characteristics of surface waters and seasonal variations
- A discussion of how run-off water from disturbed areas, stockpiled material, and operating surfaces will be managed
- An evaluation of storm water run-off and surface waters through the Project area relative to potential receiving water effects, including:
    - Flow rates and flow characteristics
    - Water quality
    - Hydrology
    - Erosion and sedimentation
- An evaluation of the receiving water effects from the mining activities based upon predictions from potential sources (e.g., waste rock areas), and the ability for Project discharges to surface water receiving systems to meet established performance targets (Section 3.2.9)
- A projection of the amount of water required from each water source
- Description of any proposed diversions of flow
- Prediction of the changes to water quantity including water levels, volumes, and patterns
- An assessment of the potential for pit water accumulation
- An assessment of the potential for ice damming and its consequent effects on other resources

3.6.8 Freshwater Aquatic Biota

The Proponent will present:

- A description of the existing aquatic environment, including fish species forage fish, non-native species, and primary and secondary producers and consumers
- A list of any species at risk as defined by the *Species at Risk Act*, and habitats of these species
- The seasonal distribution and relative abundance of Arctic char
- Identifying and characterizing habitat for fish species, including areas used for spawning, rearing, feeding and over-wintering, and any sensitive times for these habitats
- Migration patterns and routes, identifying sensitive time periods;
- Available published information on species and location of harvesting by subsistence fishers, guides, and outfitters
- An assessment of the potential changes to water and sediment quality (as a result of the Project
- An evaluation of the potential changes to identified spawning, rearing, and over winter habitat, nursery and food supply habitats, and seasonal migration patterns of fish
- An assessment of the potential for habitat alteration, disruption, or destruction and proposed mitigation, monitoring, and compensation options
- An assessment of the potential effect of blasting, noise, water intake, and potential accidental spills on aquatic biota and habitat
- An evaluation of the ability for fish to pass at crossings along Project roads and the railway
- An assessment of the changes in fishing activity
- An assessment of changes to fish health and populations

3.6.9 Oceanography and Coastal Areas

For the port facility at Steensby Inlet, the Proponent will present:

- A description of the water quality, including temperature, salinity, suspended solids and dissolved solutes sufficient to assess the impacts of discharges of ballast water, sewage effluent, and any other potential discharges or effects from shipping
- A description of water currents, tides, storm surges, and waves
- A discussion on the ice climate in the study area including ice formation, thickness, ridging, break-up, and movement
- A description of the landfast ice characteristics, including aerial extent and seasonal duration
- Inuit knowledge collected on coastal areas and ice conditions
- A discussion on the surficial coastal geology including sediment texture
- An analysis of sediment chemistry in the vicinity in the port area
- A discussion of seabed and coastal stability and sediment transport in the port area

- A description of pelagic fish and plankton communities in the port area
- A description of the benthic plant and animal (fish, epifauna, infauna) communities in the port area
- An evaluation of the potential effects of construction
- An assessment of the changes in sediment transport regime, coastal stability, and seabed stability
- An assessment of potential contaminant loading of the seabed from dust plume settlement and of the potential effects to water and ice quality
- An evaluation of potential propeller wash effects to surficial geology of seabed
- An assessment of potential effects of dredge material disposal, if proposed
- An assessment of potential indirect effects due to alteration of circulation by structures
- An assessment of potential effects associated with sea ice alteration due to ship transits
- An evaluation of the potential water quality effects due to waste discharge, brine discharge (desalination plant), contaminant input from freshwater runoff, and ballast water discharge

3.6.10 Wildlife

The Proponent will present:

- A description of the significant wildlife resources on the affected land
- A discussion on the seasonal use of the area by animals, birds, and marine mammals
- A discussion on the known fish, marine mammals, wildlife, and birds species present
- A discussion on species at risk as listed by the *Species at Risk Act* or other relevant publications
- An evaluation of whether the proposed development is likely to affect a listed species or its habitat, including identification of any adverse effects on the species and its habitat and description of measures to avoid or lessen those effects, consistent with relevant recovery strategy and action plans
- A description of the general effect on wildlife in the area, including but not limited to temporary and permanent loss of food and habitat, interference with migratory routes and the general effect on wildlife from increased human activity, including noise, during all phases of the project
- Information on those species that perform particularly important ecological functions, and those that are valuable for cultural or economic reasons
- The relative seasonal abundance and distribution of Valued Ecosystem Component (VEC) species where possible
- A discussion on the relevant characteristics for areas of fish habitat in areas potentially affected by the Project
- The key habitats as determined through baseline data and Inuit knowledge
- The seasonal range or habitat use of selected species including migratory patterns and routes of arctic char, caribou, geese, and local marine mammals (beluga, bowhead,

walrus, polar bear, ringed seal, bearded seal, and narwhal) identifying preferred corridors and corresponding sensitive periods, where known
- The known and historic trends within the study area for selected species through baseline data and Inuit knowledge
- Any known issues currently affecting fish, wildlife, marine mammals or birds

The following factors will be taken into consideration and discussed in the assessment of potential effects of Project implementation on birds:

- Potential habitat loss, alteration, alienation, or disturbance
- Changes to staging and moulting habitat
- Potential effect of overhead flights and aircraft collisions
- Changes to migratory routes
- Potential effects of Port activities
- Potential disturbance due to shipping on key migratory bird habitat areas and sanctuaries
- Changes to key habitat and nesting sites
- Potential disturbance/destruction of nests
- Changes in the territorial behaviour of raptors

The following factors will be taken into consideration and discussed in the assessment of potential effects of Project implementation to caribou:

- Changes to habitat quality and quantity including calving and protection areas
- Changes to known population characteristics, distribution, and behaviour
- Potential for habituation to access routes
- Changes in migration including movements across ice
- Life stage during which caribou may interact with the Project
- Changes in predation
- Changes in harvesting
- Changes in mortality due to the Project

The following factors will be taken into account and discussed in the assessment of potential effects of Project implementation on carnivores including wolves and foxes:

- Potential attraction and habituation to the mine site and activities
- Potential effects of development components that may cause a sensory disturbance
- Changes to habitat quality and quantity (den sites and eskers)
- Changes to carnivore mortality and harvest

The following factors will be taken into account and discussed in the assessment of potential effects of Project implementation to marine biota and habitat:

- Changes in water and sediment quality in the vicinity of the port site

- Changes to fish habitat in the vicinity of the port site
- Changes to Arctic char coastal movement patterns in the vicinity of the port site
- Changes to Arctic char health (muscle contaminants) in the vicinity of the port site
- Potential effects on fish habitat due to propeller scouring at the port site
- Changes in noise levels, from shipping activities and on-land activities including blasting and air traffic
- Potential effects of ship movements, ice breaking, and the potential for ship strikes in the regional study area
- Potential changes in distribution of walrus haul-outs in the study area
- Potential changes in distribution and abundance of marine mammal species in the regional study area
- Changes to ringed seal use of landfast ice within Steensby Inlet
- Potential effects on floe edge habitat along the edge of the landfast ice at the mouth of Steensby Inlet
- Potential for habitat alteration, disruption or destruction and proposed mitigation, monitoring and compensation options at the port site
- Potential effect of blasting, noise, water intake, potential accidental spills at the port site
- Potential effects of shipping related noise and potential accidental spills within the study area
- Changes in harvest patterns of marine mammals as a result of project activities

3.6.11 Historic and Archaeological Resources

The Proponent will present:

- A summary of the archaeological and paleontological resources, including historic and prehistoric sites
- The location of sites of special importance, as identified by archaeological survey, Inuit knowledge studies and community consultation relative to Project development activities and the procedures proposed for data recovery as appropriate
- An assessment of the potential for disturbance and effects to historic sites and/or graves
- Procedures for data recovery and the removal of artifacts and/or fossils that conflict with the development activities
- Evidence that the affected communities have been consulted and involved in any mitigation strategies planned for historic and archaeological resources

3.7 SOCIAL AND ECONOMIC CONDITIONS, IMPACTS, AND MITIGATION

The Proponent will assess the study area and describe relevant specific social and economic conditions in the zone of influence of the Project. Information presented will give due consideration to Inuit knowledge and traditional values. The data collected will be of a scale suitable to facilitate relevant decision-making regarding the Project and proposed mitigation measures. The section indicates the accuracy, reliability, and sources of the data.

The Proponent will predict and assess the Project's likely positive and negative social impacts, in qualitative terms, and quantitative terms to the extent possible, for each phase of the Project. Mitigation measures will be identified to reduce impacts. The Proponent will explore opportunities for enhancement with the local communities and their people where appropriate. The Proponent will identify and estimate the extent and quality of available data, key data gaps, and uncertainties associated with predictions, and will also specify topics that do not require further attention and the basis for those conclusions.

3.7.1 Social Organization and Population Demographics

Based on readily available information and engagement with local community leaders, the Proponent will present:

- The administrative structure and function of the local Inuit organizations
- The national, regional, and local community populations and available population trends
- A discussion of the local ethnicity, religion, and language characteristics
- An explanation of the significance of wildlife harvesting as it pertains to food security
- An assessment of direct and indirect effects as a result of the changes to the biophysical environment
- A assessment of the effects of pace and scale of the Project including the effect of temporary suspension of operations, and final closure
- An assessment of the potential for the Project to influence in- or out-migration in the affected communities

3.7.2 Education and Training

Based on readily available information and engagement with local community leaders, the Proponent will present:

- A discussion of the existing education (early childhood through post-secondary) system, training programs, and infrastructure
- Information on the local education facilities and institutional capacity
- A profile of the education, skill level, and experience of the local labour force based on available data
- An assessment of local capacity for Project employment and a discussion of planned training for specific jobs
- A discussion of the community capacity building programs that will be implemented
- A discussion of training programs emphasizing sensitivity to Inuit culture

3.7.3 Livelihood Activities and Employment Opportunities

Based on readily available information and engagement with local community leaders, the Proponent will present:

- A profile of local household incomes and income sources relative to the local and regional economy considering both traditional and wage economies
- A discussion on the significance of country food as a food source
- An assessment of the existing local employment opportunities and labour supply
- A discussion on the expectations and perceptions related to the mining sector
- An assessment of the potential for development of the local labour force
- An evaluation of the economic effects that may be realized and the number of jobs to be created and the skills and/or certification required
- An assessment of the extent to which the skills of the available workers match job requirements;
- An assessment of opportunities afforded to women
- A discussion of the commuting arrangements for workers
- An assessment of the effects of incentives/disincentives to working, motivations for working, and changing attitudes/values
- A discussion of the requirements for employment (e.g., criminal records, drug and alcohol policies, language abilities)
- An evaluation of the effect of changes in income earnings on patterns of savings, expenditure and sharing
- An assessment of the barriers and incentives to healthy financial management
- An evaluation of the effects of competition for labour between the Project and existing businesses, institutions, and traditional activities
- An assessment of potential for industry wages to result in local wage inflation

3.7.4 Human Health

Based on readily available information and engagement with local community leaders, the Proponent will present:

- An overview of the existing infrastructure and health services available in the area
- An assessment of the local health statistics compared with other parts of Nunavut and Canada as appropriate
- An assessment of the effect of employment on workers and their families
- An assessment of the health, safety and security of workers at the job site
- An assessment of community safety and security
- An assessment of the effect of the project on substance or alcohol abuse
- An assessment of the project on population mental and physical health and well-being
- An evaluation of potential effects to representative species in the food chain through changes in the level of contaminants in vegetation, freshwater systems, and the marine environment.

3.7.5 Community Infrastructure and Public Services

Based on readily available information and engagement with local community leaders, the Proponent will present:

- A discussion on local housing conditions and capacity
- A summary of the public services available in the area, including law enforcement, health care, dependency assistance, temporary accommodation and food services, and/or other relevant services
- The extent and capacity of the local transportation systems and community infrastructure
- An assessment of incremental costs imposed by the Project on public infrastructure and services
- An evaluation of the effect of the Project on public and private sector services and/or infrastructure
- An assessment of increased demand for emergency services and community infrastructure
- A discussion of community access to Project infrastructure upon closure

3.7.6 Economic Opportunities

Based on readily available information and engagement with local community leaders, the Proponent will present:

- An evaluation of the revenues accruing through taxes, rents and royalties
- An assessment of the contributions made to public, communities and Inuit
- An assessment of both adverse and beneficial socio-economic effects
- An assessment of the scope, progress, and potential success of the development of the IIBA
- An assessment of Project effects on other local and regional economic sectors
- An evaluation of the effects of increased income on the local business community
- An assessment of the availability and accessibility of carving stone
- An assessment of the effects of project-related procurement
- A discussion on barriers to local business capacity
- An assessment of opportunities for local communities to diversify their economic base and for Nunavut to produce and to supply new goods and services.

3.7.7 Cultural Heritage and Land Use

The Proponent will present:

- A discussion of Inuit culture and its relationship to the land
- A discussion of traditional activities and the current and traditional uses of the land and its resources
- An explanation of current and traditional hunting areas and the importance of those areas to food security
- An assessment of potential effects of the Project on current land uses and indirect effects to cultural heritage and food security

3.8 SUMMARY OF IMPACTS AND MITIGATION MEASURES

The Proponent will summarize the findings of the discipline-specific environmental and social assessments called for in Sections 3.6 and 3.7 in tabular form, cross-referencing the sections where each impact is predicted in the Impact Assessment with its respective mitigation implementation and monitoring plans as presented in the Mitigation and Monitoring Plan sections.

3.9 ASSESSMENT OF ACCIDENTS AND MALFUNCTIONS

The Proponent will assess accidents and malfunctions using standard risk assessment techniques and their probability of occurrence. The Proponent will, at a minimum, consider the following factors in assessing potential accidents and malfunctions associated with the Project:

- Hazardous materials handling and storage
- Dangerous goods, fuels and explosives
- Ship operations
- Railway operations
- Emergency response and preparedness
- Occupational health and safety
- Worker training
- Natural hazards such as extreme weather events and natural seismic events

3.10 SUSTAINABILITY ASSESSMENT

The Proponent will present an analysis of the ability of renewable resources affected by the project to sustain current and future generations in Nunavut and Canada. This will, at a minimum, include assessments on the sustainability of:

- Current hunting practices on important country food species and its affect on local residents' long-term food security
- The economic benefits to the region, Nunavut, and Canada provided by Project implementation through the IIBA and other Project returns
- Traditional cultures and values as wage-based economies become increasingly important in the region

3.11 CUMULATIVE IMPACT ANALYSIS

The Proponent will evaluate adverse and/or beneficial impacts on the biophysical and socio-economic environment that results from the incremental effects of a development when added to other past, present, and Reasonably Foreseeable Future Developments, regardless of what agency or person undertakes such other developments. Reasonably Foreseeable Future Developments are those future projects or activities which are currently under regulatory review or will be submitted for regulatory review in the near future, as determined by the existence a regulatory application filed with an Authorizing Agency. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The exact methods for assessing cumulative effects will be developed by the Proponent. Methods will be suitable to incorporate all different types of effects that could contribute to the cumulative effect on a given valued component.

3.12 LIST OF PREPARERS

The Proponent will identify the persons responsible for the key elements of the EIS, and a brief summary of their qualifications and experience. These will be presented in a single section within the Impact Assessment for all volumes of the EIS. It is noted that the Mitigation and Monitoring Plan and any Discipline-Specific Management Plans will be "living documents" that will be updated to conform to current Project conditions. The preparers presented in this section will include only those primary authors of the initial version of the Plan.

3.13 REFERENCES

The Proponent will cite all the relevant reference documents that have been used in preparing the EIS documents. These will be presented in a single section within the Impact Assessment for all volumes of the EIS.

SECTION 4.0 - MITIGATION AND MONITORING PLAN

The Mitigation and Monitoring Plan will define the management, mitigation, monitoring, and institutional measures that are needed to mitigate, offset, or reduce the environmental and social impacts of the Project. It will define the actions that will be undertaken to implement the mitigation identified by the Impact Assessment. The Mitigation and Monitoring Plan will be a "living document" that will be subject to updates from time to time throughout the life of the Project.

The Mitigation and Monitoring Plan will establish the policies, commitments, and resources that are needed to allow effective implementation and continuation of the programs and procedures called for by the Impact Assessment to mitigate the predicted impacts of the Project. It will provide the overarching structure for management of social and environmental responsibilities and will include discipline-specific management programs and standard service procedures where additional detail is warranted for certain activities.

4.1 INTRODUCTION AND DEFINITION OF ISSUES

The Proponent will present a concise summary of the Project in order to set the context for introducing the Mitigation and Monitoring Plan. The purpose and objectives of this Plan will be presented as well as the scope and structure of the document. In this section, the Proponent will re-introduce the Summary of Impacts and Mitigation Measures table (Section 3.8) as the transition table citing each of the discipline-specific environmental and social impacts and mitigation measures called for in Sections 3.6 and 3.7, and cross-referencing those sections where each impact is predicted in the Impact Assessment with its respective mitigation implementation and monitoring plans as presented in the Mitigation and Monitoring Plan sections. This table functions as the transition between where the Impact Assessment (the predictive document) leaves off and the Mitigation and Monitoring Plan (the implementation plan) starts.

4.2 MANAGEMENT SYSTEM

The Proponent will define the philosophy and objectives of the management system and the implementation and institutional measures that are needed to facilitate Project development, operation, closure, and reclamation consistent with the environmental evaluations and impact predictions made in the Impact Assessment. The structure of the management system will be designed in a three-tier approach, with each plan presenting a greater level of detail regarding on-the-ground implementation procedures. These will include the:

- **Mitigation and Monitoring Plan** - an integral part of the EIS, but a living document to grow with the Project
- **Discipline-Specific Management Plans** - some plans will be integral to the EIS and some will be committed for development at a later date
- **Standard Operating Procedures** - most procedures will be developed as Project on-the-ground activities commence and will not form part of the EIS

The management system will give due consideration for the Project schedule and timing of information needs. The Mitigation and Monitoring Plan will identify the Discipline-Specific Management Plans and Standard Operating Procedures that are needed to define the implementation of mitigation measures called for by the Impact Assessment. However, certain of those management plans and operating procedures will not be needed to support the EIS decision. For plans and procedures not required for the EIS decision, the Proponent will identify when the information is needed relative to the Project implementation schedule (Section 4.6).

The management system will present clear corporate policies on environmental, social, health and safety issues. These policies will define the corporate commitment, establish a clear statement of the corporate policy for each relevant discipline and define goals that will be implemented in order to achieve the policy. It may also be appropriate to discuss the general commitments made in the IIBA for community development initiatives in order to clearly articulate the company's commitment and goals in these areas.

The management system will disclose the key management responsibilities for the Project, including a presentation of the organizational structure and definition of corporate and divisional responsibilities for Plan implementation. It will clearly establish the chain of responsibility within the company so that when activities are assigned to a particular position within the organizational structure, it is clear who is responsible to implement that activity and to whom that individual is accountable.

4.3 TRAINING PROGRAMS

The management system will describe plans for training and capacity building for both Project employees and the local communities. Such training programs may include:

- Environmental Training
- Occupational Health and Safety Training
- Operational Skills Training
- Social and Cross-Cultural Integration Training
- Community Outreach and Capacity Building

4.4 SYSTEMS TO IDENTIFY, ORGANIZE, MONITOR AND MANAGE IMPACTS

The management system will define the processes and monitoring systems that will organize and manage the day-to-day activities and impacts of the Project and which will document the performance of key Project components or engineered controls relative to the performance predictions established in the Impact Assessment. These systems will be developed to a suitable level as to establish the direction, process and goals for each task and to clearly establish "what will be done, when, why, for how long."

The management system will identify waste streams that are generated by the Project, including waste rock, excess material from cut/fill excavation, and wastes generated from the shop, warehouse, laboratory, commissary, waste water treatment systems, medical clinic and offices. In

each case, plans or programs are defined as appropriate to limit the volume of waste produced, the aerial extent of disposal repositories, and to promote recycling and reuse of the materials.

The management system will identify, at a level commensurate with the need of the EIS, the procedures for monitoring and sample collection for the following disciplines:

- Air sampling
- Surface water sampling
- Monitoring programs for select fauna species
- Monitoring of mine, quarry and cut/fill highwalls and mine waste rock slopes
- Occupational health monitoring (where appropriate)
- Community engagement and support

The management system will present information on data management and interpretation regarding:

- The methods and procedures that will be implemented to control the quality and recoverability of documents; including where documents will be located, control procedures when revisions are made, clear processes to assure that current versions are available and obsolete documents are suitably identified and archived
- How data will be managed, including the management of both special and tabular data
- The procedures for interpretation of the collected data as may be relevant for each respective discipline being monitored
- The thresholds and a description of the procedures for corrective actions based on the performance targets established in Section 3.2.9 as may be relevant for each respective discipline being monitored

The management system will define the systems, procedures, protocols, and schedules for analyzing the information and results that are generated by the monitoring programs. This will be based, to the extent practical, on industry-accepted practice, government requirements, and may include generally accepted international guidelines. The reporting requirements will be described as defined in Section 3.2 to meet regulatory requirements, stakeholder commitments, and the disclosure of information to regional and local community leaders, interested stakeholders and the public as needed to maintain good working relations with all interested and affected parties.

The management system will define the systems and procedures for performing periodic program audits and for reviewing the ongoing monitoring programs to assess the relevance and performance of the environmental management systems to the Impact Assessment predictions. The systems and procedures will define the steps for evaluating specific system performance and provide direction on what to do if/when the field results deviate from the predictions made in the Impact Assessment.

The management system will define the programs that seek to improve the efficiency, effectiveness and overall environmental performance as a logical end result of the Mitigation and Monitoring Plan implementation. Implementing a Mitigation and Monitoring Plan will not by itself assure better

environmental or social program performance. The Proponent must establish a systematic process by which conformance with the policies, values, and directives of the system can yield consistent, predictable and ever-improving results.

4.5 SPECIFIC IMPACT-MITIGATING ACTIONS AND MONITORING

The Proponent will analyze the predicted impacts from the Impact Assessment (Section 3.0) and identify those elements of the valued ecosystem components and the human population that emerge as the more significant outcomes of Project implementation. The transitioning summary table from the Impact Assessment (Section 3.8) will compare the short- and long-term residual effects of those impacts after mitigation measures have been applied. This summary of impacts will establish the basis for prioritizing the actions presented in this section. This section will then focus on those mitigation measures that require specific action items for their implementation. It will present the actions, plans, and/or compensatory measures that are required to implement those mitigation measures in order to reduce potentially significant adverse environmental or social impacts to acceptable levels.

Based on the impact and mitigation summary table (Section 3.8), the Proponent will identify the issues that represent the key mitigation action items for the principal Project components that are required to reduce potential impacts to acceptable levels as well as the monitoring and reporting required to document their implementation and performance. The impacts will be grouped by significant major topic to focus the implementation efforts. Examples of such action groupings may include:

- Planning mitigation and monitoring of wildlife to reduce potential impacts to ecologically sensitive species and to important game species that are important to Inuit food security by implementing plans for the protection of important habitats and species
- Reducing potential impacts resulting from land use changes by implementing an effective closure and reclamation program that re-establishes the land to an appropriate post-mining land use
- Reducing potential impacts to local communities by promoting economic growth and diversification, managing change when transitioning to a wage-based economy, implementing training and capacity building programs, and limiting the effects of social ills to the extent possible
- Reducing potential impacts to downstream receiving waters by managing surface water base flow and quality impacts as well as the quality and quantity of marine waters in the vicinity of port operations
- Reducing potential impacts to Project employees and visitors by promoting worker health and safety and maintaining a clean and safe work environment, limiting occupational exposure to risks, and adequately managing wastes and emergency situations
- Reducing the potential for greenhouse gas emissions through the implementation of programs in energy conservation and consideration of green energy where feasible

4.6 COMMITMENT SUMMARY AND IMPLEMENTATION SCHEDULE

The Proponent will present a clear, concise synopsis of the monitoring, additional studies, and future activities that have been committed to in the EIS documents. The commitment summary will include the timing of implementation of those commitments and will cross-reference where the commitment is referenced in the EIS documents.

It is recognized that some Discipline-Specific Management Plans and all Standard Operating Procedures will be developed after the submittal of the EIS documents. However, all management plans committed to in the Mitigation and Monitoring Plan, whether they are prepared and included to support the EIS or will be developed at a later date, will be included in the commitment summary and implementation schedule. The commitment summary and implementation schedule will include a schedule for periodic updates of the Discipline-Specific Management Plans that will be included to support the EIS decision, and will include a schedule for the preparation and periodic update of those Plans that are not needed to support the EIS decision.

SECTION 5.0 - APPENDICES

The Proponent will present appendices that will include, but not be limited to, a record of interagency and consultation meetings, detail data and information presenting additional depth and detail to the information presented in the Impact Assessment and Mitigation and Monitoring Plan. These will generally be organized as follows.

5.1 BASELINE REPORTS

The Proponent will include such baseline reports as may be required to present the environmental and social baseline information in sufficient detail as to support the information and analyses presented in the Impact Assessment (Section 3.0). Such baseline reports will vary in number and scope to address the requirements of Sections 3.6 and 3.7. At minimum, the Proponent will include baseline reports for the following disciplines:

- Air quality, noise and climate
- Soil presence and quality
- Surface and marine water quantity and quality
- Groundwater and permafrost
- Oceanography and coastal areas
- Terrestrial and aquatic flora, including freshwater and marine species
- Terrestrial and aquatic fauna, including freshwater and marine species
- Historic and archaeological resources
- Inuit traditional knowledge
- Current and traditional land use

5.2 SUPPLEMENTAL REPORTS

The Proponent will include supporting reports and documentation as may be necessary to supplement the information presented in the Impact Assessment (Section 3). These plans will provide the additional detail needed to validate such information as the quantities of discharges to the environment (e.g., air and water discharges), demonstrate adequate containment of potential contaminants (e.g., sedimentation control systems), and justify resource withdrawals from public use (e.g., project water demand). Where the information can be clearly and succinctly presented within the body of the EIS document, it will be presented in the EIS. Where additional detail is needed to support a concise EIS presentation, supplemental reports will be appended. Such appended supplemental reports may include:

- Air quality assessment
- Noise assessment
- Site-wide water balance
- Geotechnical stability
- Waste characterization geochemistry
- Effluent water quality assessment

- Ballast water assessment
- Caribou assessment

5.3 DISCIPLINE-SPECIFIC MANAGEMENT PLANS

The Proponent will include discipline-specific management plans as may be required by the Mitigation and Monitoring Plan. The Mitigation and Monitoring Plan will identify what discipline-specific management plans are required for the Project as a whole, and will indicate which of those plans must be included with the EIS to facilitate the Part 5 review decision and which plans can be developed pursuant to the commitment summary and implementation schedule (Section 4.6). As a minimum, the Proponent will include the following discipline-specific management plans to support the EIS review process:

- Stakeholder engagement plan
- Waste management plan
- Emergency response and spill contingency plan
- Conceptual closure and reclamation plan
- Conceptual fisheries no-net-loss plan
- Construction phase wildlife mitigation and monitoring plan
- Construction phase marine mammal mitigation and monitoring plan
- Site water management plan
- Sediment and erosion control plan
- Oil Handing Facility Plan
- Heritage resources management plan
- Explosives management plan
- Construction quarry management plan

The Proponent will identify other discipline-specific management plans that are more appropriately developed at a later date based on further-developed Project details. For these forward-referenced plans, the Proponent will summarize their actions and commitments in the Mitigation and Monitoring Plan (Section 4.5) and the commitment summary and implementation schedule (Section 4.6). Such other discipline-specific plans may include:

- Waste rock management plan
- Railway management plan (including railway-specific emergency response protocols)
- Air and noise management and monitoring plan
- Effluent and aquatic effects monitoring plan

The above lists of discipline-specific management plans is indicative only, and the need for additional discipline-specific management plans will be based on the outcome of the Impact Assessment and may result in additional plans being needed, some plans not being needed, and/or multiple plans being combined into a single plan where appropriate.

SECTION 6.0 - TENTATIVE REVIEW SCHEDULE

NIRB reserves the right to make decisions regarding procedural matters and to only move forward when it determines that it has enough information to adequately review and assess the Project environmental impacts, to allow for adequate effective public disclosure and consultation, to ensure proper reporting and follow-up. Notwithstanding the preceding, NIRB also recognizes that the Proponent is keen to receive the necessary approvals authorizing them to proceed with Project development, as development activities must be carefully scheduled to coincide with seasonal opportunities in this harsh arctic environment. As such, NIRB and other Institutes of Public Government, authorizing agencies and the Proponent will strive to meet the following tentative schedule:

TENTATIVE SCHEDULE

Item	Proposed Schedule
Finalize EIS Guidelines	July 2008 (subject to Board direction)
Proponent Files Draft EIS	December 2008
Pre-Hearing Conference	June 2009 (subject to Board direction)
Proponent Files Final EIS	August 2009
Final Hearing	December 2009