Baffinland
Iron Mines Corporation

MARY RIVER PROJECT
FINAL ENVIRONMENTAL IMPACT STATEMENT

VOLUME 2
CONSULTATION, REGULATORY FRAMEWORK AND ASSESSMENT METHODOLOGY

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PROJECT FACT SHEET

Location	• Located at Mary River, North Baffin Island. 1000 km north of Iqaluit, 160km south of Pond Inlet
Reserves	• Comprised of nine known iron ore deposits around Mary River. The current project is focused on Deposit No.1 with known reserves of 365 million tonnes estimated at >64 % iron
Construction Phase	• Construction of the project could commence as early as 2013 • Milne Port will support construction activities, receiving materials during the open water season and moving them to the Mine Site along the existing Tote Road • Construction materials will also be received at Steensby Port • 4 years to complete construction
Operational Phase Open Pit Mine Processing	• Operations will involve mining, ore crushing and screening, rail transport and marine shipping to European markets • Projected production of 18 million tonnes per year for 21 years • No secondary processing required; no tailings produced due to the high grade of ore
Rail Transport and Shipping	• A rail system will be built for year round transfer (~150 km) of ore to Steensby Inlet • A loading port constructed at Steensby Inlet will accommodate cape sized vessels • These specially designed ships will transport to the European market year round • Milne Port will be used to receive construction materials in the open water season and then very rarely to ship, during the open water season, oversized materials
Environment	• Baseline studies have been conducted by Baffinland since 2005 • Inuit Qaujimajatuqangit (traditional knowledge) information collected since 2006 • These baseline studies form the foundation for the environmental impact statement and provide information for the development of mitigation and management plans • Studies cover terrestrial environment, marine environment, freshwater environment, air quality, and resource utilization • Extensive ongoing consultation with communities and agencies • Monitoring during project activities will be important in validating predictions and mitigating potential affects
Social and Economic Benefits	• Mineral royalties will flow to NTI • Taxes will flow to governments of Nunavut and Canada • Baffinland finalizing negotiations with the Qikiqtani Inuit Association (QIA) for an Inuit Impact Benefits Agreement (IIBA) • During the four year construction period employment will peak at 2,700 people • Through the 21 years of operations about 950 people on the payroll each year
Closure and Post-Closure Phase	• Conceptual mine closure planning has been completed • Closure will ensure that the former operational footprint is both physically and chemically stable in the long term for protection of people and the natural environment • Post closure environmental monitoring will continue as long as needed to verify that reclamation has successfully met closure and reclamation objectives

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1.1 CONTEXT

Consultation with stakeholders for the Mary River Project (the Project) has focused on the Inuit communities proximate to the Project sites, and has included the public, local and regional Inuit organizations, the Government of Nunavut, and federal agencies with a mandate relevant to the Project.

Inuit of the Baffin Region enjoy a rich oral tradition, and this has influenced how Baffinland has engaged local communities. The emphasis has been on establishing a presence in the region, meeting several times within the communities, and recording in-person discussions. Since the dominant language is Inuktitut, with regional dialects across Baffin Island, translation using local interpreters has been an important element in the consultation process. Translation that enables effective comprehension has been the goal at meetings and in the production of written materials.

1.2 OBJECTIVES

Baffinland Iron Mines Corporation (Baffinland) has expended considerable effort to engage local communities and knowledge holders, through dialogue and participation from 2004 through 2011. Efforts have been and continue to be guided by the following objectives:

- To adequately scope and conduct environmental and socio-economic baseline studies;
- To understand local conditions and issues, through the scientific process and by engaging in dialogue with local communities and knowledge holders to acquire Inuit knowledge and understand current and historical patterns of land and resource use;
- To incorporate local knowledge and concerns in Project design at an early stage;
- To appropriately scope the environmental assessment of the proposed Project, including selection of valued ecosystem components (VECs) and valued socio-economic components (VSECs);
- To identify mitigating measures and monitoring plans, and to assist in Baffinland's evaluation of significance of residual impacts (impacts after mitigation has been applied); and
- To ensure that local stakeholders have current information about the project and how potential changes to the environment could affect them.

1.3 THE PROPONENT – BAFFINLAND IRON MINES CORPORATION

Baffinland Iron Mines Corporation (Baffinland) is a Canadian corporation owned by steel making giant ArcelorMittal (70 %) and Iron Ore Holdings LP (30 %). Baffinland head office is located in Toronto, Ontario. Baffinland Iron Mines Corporation is a Canadian company that was formed pursuant to Articles of Incorporation under the Business Corporation Act (Ontario) on March 10, 1986. Since 2004 until recently the company has operated as a publicly-traded junior exploration company focused solely on the exploration and development of the Mary River Project. In March 2011, Baffinland was acquired by 1843208 Ontario Inc., a corporation owned 70% by ArcelorMittal and 30 % by Iron Ore Holdings, LP.

Baffinland's head office is located at:

120 Adelaide Street West

Toronto, Ontario Canada M5H 1T1

Main Telephone: (416) 364-8820

Main Fax: (416) 364-8095

General Inquiries: info@baffinland.com

The Company has 36 full-time employees. In addition to its head office, Baffinland maintains a year-round presence at its exploration camp at the Mary River site and community liaison offices in Iqaluit, Igloolik, and Pond Inlet.

ArcelorMittal, since assuming a controlling interest in Baffinland, has built an executive team with experience in the development, construction and operation of arctic mines, as summarized in Table 2-1.1.

Table 2-1.1 Baffinland Officer's Register

Name	Position	Summary of Experience Relevant to the Mary River Project	Start Date
Michael T. Zurowski	Executive Vice President	Decades of experience in the iron ore exploration industry; started the current Baffinland Iron Mines Corporation.	June 2005
Stephanie Anderson	Chief Financial Officer	Years of experience, recently was the Executive Vice-President and CFO of Dundee Precious Metals	November 2011
Richard Matthews (Dick)	Vice President, Technical Services	Extensive experience in various technical and management roles in various commodities	July 2008
Gregory Missal	Vice President, Corporate Affairs	Involved in all phases of the Jericho Diamond Mine in western Nunavut at the community and executive levels	March 2010
Ronald Hampton	Vice-President and Project Director	Operations experience at Voisey's Bay Nickel Mine in Labrador, and construction of the Diavik Diamond Mine; executive experience at ArcelorMittal	January 2011
Thomas F. Paddon (Tom)	President Chief Executive Officer	Executive level experience at Voisey's Bay Nickel Mine in Labrador	May 2011

Table 2-1.1 Baffinland Officer's Register (Cont'd)

Name	Position	Summary of Experience Relevant to the Mary River Project	Start Date
Erik Madsen	Vice President, SD, HS&E	Long-term Northwest Territories resident; involved in environmental management at Diavik Diamond Mine in exploration, construction and operation phases	June 2011
Michael Anderson	Vice President, Operations	Operations experience at Voisey's Bay Nickel Mine in Labrador	July 2011

In addition, the Company has an experienced operations team based at Mary River, most of whom have been involved in the Project since the bulk sampling program was executed in 2007 and 2008.

Exploration and Bulk Sampling Programs

Since 2004, Baffinland has been undertaking advanced exploration of its known iron ore deposits, as well as a regional exploration program. In 2007 and 2008 the Company completed a bulk sampling program that involved upgrading the Milne Inlet Tote Road from winter use only to be capable of hauling the 113,000 t iron ore bulk sample to Milne Inlet. The ore sample was shipped to steelmakers in Europe. The Company expanded camp facilities at Mary River and established camps at Milne Inlet and Steensby Inlet and along the railway alignment. Bulk fuel storage facilities were filled from a tanker in both years, and the Company used this activity to carry out mock spill response measures. To carry out the bulk sampling program, the Company worked with experienced Nunavut contractors, Qikiqtaaluk Corporation and Nuna Logistics Ltd. Baffinland has gained on-site experience in carrying out its exploration and bulk sampling programs to date, including Arctic construction, mining on Deposit No. 1, crushing and screening of the ore into the intended iron ore products, management of logistics and weather, and human resource elements.

In terms of environmental protection and compliance, in 2007 Baffinland established an Environmental Protection Plan (EPP) to provide guidance to on-site personnel regarding meeting legislative and permitting requirements. The Company submits various monthly and annual reports in accordance with permit requirements. The Company is in compliance with its permits and authorizations and has not experienced any major spills or other environmental emergencies at its operation, and no major accidents resulting in fatalities. The Company files regular updates to its existing Abandonment and Restoration Plan (A & R Plan) and the Qikiqtani Inuit Association (QIA), as the main landowner, currently holds financial assurance for the closure costs identified in the latest update to the plan. Following the environmental review process and during the water licensing process, the Company expects to identify, and provide to either or both the NWB and QIA, additional financial assurance in stages to cover mine closure costs as the Project proceeds. The Company maintains comprehensive liability and standard protection and indemnity insurance policies to cover accidental health and safety and environmental accidents.

Baffinland's Record of Community Engagement

Baffinland has been proactively engaged in consultation with local communities, increasing the scope of its consultation activities progressively since 2004. In 2007, Baffinland established community liaison offices in the five North Baffin communities closest to the Project and in Iqaluit staffed by local Baffinland Liaison

Officers, though due to financial constraints and a scaling back of operations in late 2008 it became necessary for the Company to reduce the number of Baffinland Liaison Officer offices to two from five. With the exception of 2009, Baffinland has carried out bi-annual public meetings in its five North Baffin communities (and starting in 2010, Cape Dorset and Kimmirut). Details of the Company's past consultation activities are provided later in this section.

Negotiating an Inuit Impact and Benefit Agreement

On the development of a future Inuit Impact and Benefit Agreement (IIBA), Baffinland started discussions with the QIA in 2006, and in March 2009 the two organizations reached an agreement-in-principle on the economic provisions of a future IIBA through the signing of a Memorandum of Understanding (MOU). Additional sections of the IIBA have also been successfully negotiated and the Company and the QIA expect to complete a signed Agreement-in-Principle in the upcoming months. In a November 24, 2011, letter to the NIRB, the QIA indicated that it is close to completing negotiations with Baffinland on an IIBA for the overall project and anticipate having a final draft agreement by the end of January 2012.

The Company Moving Forward to Develop the Mary River Project

The Company is well-positioned to advance the Mary River Project to mine development, with local experience, existing environmental management procedures, an excellent environmental compliance track record, and experienced long-term executive and site personnel. The Company is committed to designing and executing a well planned Project, and has developed a comprehensive EHS Management System, presented as Volume 10. To safely and responsibly execute the Project, Baffinland has engaged FedNav to develop shipping operations capable of meeting shipping requirements. Fednav has more than 50 years of experience shipping bulk commodities through ice in Canadian waters, and has provided ice breaking ore carrier services to most of the recent mining projects in the eastern Canadian Arctic, including the former Polaris and Nanisivik mines, the historic Bent Horn Project, and currently the Raglan and Voisey's Bay mines. The Company's engineering and environmental teams have a wealth of Arctic development experience. Additional key partners will be identified in the future to continue to build a world-class team to advance the Project.

ArcelorMittal

ArcelorMittal is the leader in all major global steel markets, including automotive, construction, household appliances and packaging, with leading R&D and technology, as well as sizeable captive supplies of raw materials and outstanding distribution networks.

With an industrial presence in over 20 countries spanning four continents, the Company covers all of the key steel markets, from emerging to mature. Figure 2-1.1 shows ArcelorMittal's key assets and projects worldwide. Through its core values of Sustainability, Quality and Leadership, ArcelorMittal commits to operating in a responsible way with respect to the health, safety and wellbeing of its employees, contractors and the communities in which it operates. It is also committed to the sustainable management of the environment and of finite resources.

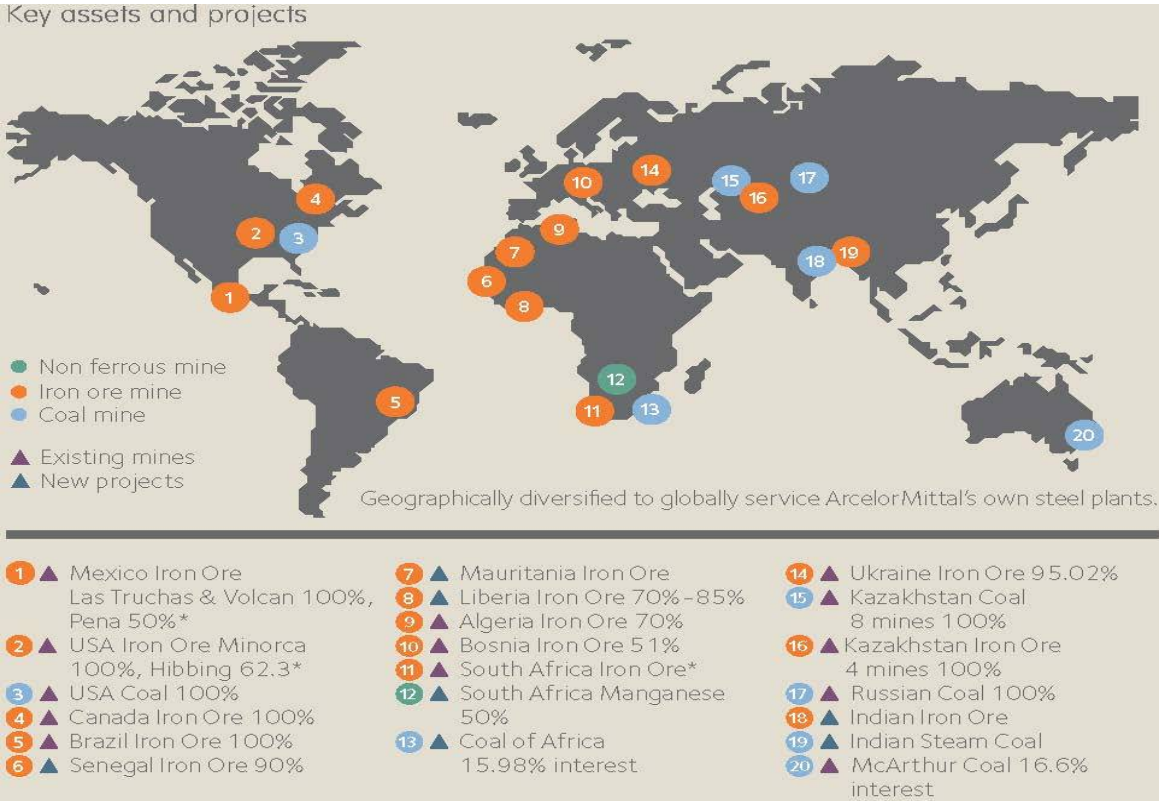

Figure 2-1.1 ArcelorMittal's Key Operations

In 2010, ArcelorMittal had revenues of $78.0 billion and crude steel production of 90.6 million tonnes, representing approximately eight per cent of world steel output.

ArcelorMittal is a publicly-traded company, listed on the stock exchanges of New York (MT), Amsterdam (MT), Paris (MT), Brussels (MT), Luxembourg (MT) and on the Spanish stock exchanges of Barcelona, Bilbao, Madrid and Valencia (MTS). Baffinland's (70 % owned by ArcelorMittal) 2009 and 2010 financial statements are presented in support of Type A water licence (Attachment 2 of Appendix 3B).

ArcelorMittal Mines Canada is one of Canada's leading suppliers of iron ore to steel markets around the world, generating some 40 per cent of Canada's total production. As a mining and primary processing company, it operates extensive facilities in the province of Quebec.

ArcelorMittal Mines Canada operates two large open-pit mines: one at Mont-Wright, the largest of its kind in North America, and one at Fire Lake. Also at Mont-Wright, the ArcelorMittal Mines Canada mining complex includes a concentrator, workshops and an automated concentrate train loading system. The site is linked by Company rail to the Port-Cartier facility, which comprises the pellet plant, storage areas and port facilities for marine shipping.

ArcelorMittal Mine Canada produces approximately 15 million tonnes of iron ore concentrate and over nine million tonnes of iron oxide pellets annually and employs approximately 2,000 employees

Corporate Governance

The Company is committed to developing the Mary River Project in an environmentally and socially sustainable manner that will benefit both the Company and the people of Nunavut.

ArcelorMittal has an established Corporate Responsibility Program, available on its website, and issues annual Corporate Responsibility Reports that describe the efforts and performance in this area (http://www.arcelormittal.com/index.php?lang=en&page=672).

As part of its corporate governance, the Company has a workplace Health & Safety Policy and a Group-wide Environmental Policy and Energy Policy, and recently committed to the United Nations Global Compact "Care for Climate" Declaration.

Each subsidiary is asked to establish its own formal Corporate Responsibility governance structure, in adherence to the Group-level arrangement. The aim is to establish a participatory Corporate Responsibility governance structure locally that would support effective community relations and Corporate Responsibility management.

Baffinland's Sustainable Development Policy (Volume 10, Section 1.1) is a key pillar of company operations. It provides the basis for the company's sustainable development goals and outlines commitments regarding environmental protection and stakeholder engagement. Baffinland's Sustainable Development Policy aligns with its parent company's corporate governance structure described above, and applies to the Company, its staff, and its on-site contractors.

The following elements of the Sustainable Development Policy apply to Baffinland's engagement of its stakeholders:

- Contribute to the social, cultural and economic development of sustainable communities adjacent to our operations;
- Engage with governments, employees, local communities and the public to create a shared understanding of relevant social, economic, and environmental issues, and take their views into consideration in making decisions;
- Employ our shareholder's capital effectively and efficiently; and
- Demonstrate honesty and integrity by applying the highest standards of ethical conduct.

The Company embraces the principle of Social Responsibility as outlined by the emerging voluntary International Standard, ISO 26000:2010, *Guidance for Social Responsibility.* Moving forward, Baffinland is continuing to fully develop its Corporate Responsibility and other policies for its Mary River Project that is consistent with the Group-level Corporate Responsibility program.

1.4 POTENTIALLY AFFECTED COMMUNITIES

In the Guidelines, NIRB (2009) defines potentially affected communities as follows:

> *"A community or communities with the potential to be impacted, either positively or negatively, by a proposed project or development. Such communities may be defined physical entities or comprised of dispersed populations in the area of influence of a development or project."*

In this context, Baffinland views the communities of Baffin Island potentially affected by the Project in three categories:

- ***Category 1***: Communities of north Baffin Island in the immediate vicinity of the Project, which have existing and historical socio-economic and/or ecosystemic ties to the Project area, and for which the

Project has a direct effect on traditional land use. These communities include Arctic Bay, Clyde River, Hall Beach, Igloolik and Pond Inlet.

- ***Category 2***: Communities with a potential interest in the Project because of their location along the shipping lanes - Cape Dorset and Kimmirut.
- ***Category 3***: City of Iqaluit - will be affected because of its commercial and institutional importance in Nunavut.

The location of these communities relative to Project sites is shown on Figure 2-1.2.

Socio-economic studies and public consultation initially focused on the Category 1 communities and Iqaluit and more recently have focused on all communities as a result of the provisions stated in the Guidelines (NIRB, 2009). The ties of the individual communities to the Project are described in more detail in the following subsections. This information is based on historical land use patterns and discussions with elders from various communities.

Category 1 Communities

Arctic Bay is located on Northern Baffin Island, 280 km northwest of the Mary River site. Harvest and land use patterns indicate that the effect of Project activities on these current patterns is less than what it would have been historically. Arctic Bay residents might use the Milne Inlet, Eclipse Sound and Mary River areas for hunting on a sporadic or occasional basis, but other geographic areas are more important to this community's land use.

Clyde River is located in northeastern Baffin Island, 415 km from the Project area. Historical land use information and discussions with Elders from various communities suggest that the people of the area used to travel inland from Cambridge Fiord facing Baffin Bay, into the Ravn River area east of Angajurjualuk Lake and southeast of Mary River. Harvest patterns suggest that contemporary land use activities are now concentrated closer to the community; however, historical ties to the Mary River area resulted in the inclusion of this community in the study area.

Hall Beach is located on the Melville Peninsula mainland just south of Igloolik, 192 km from the Steensby Port site and 288 km southwest of the Mary River site. Hall Beach harvest patterns are distinct from those of Igloolik despite their proximity, with a concentration of marine harvesting centred on the Hall Beach area. Some hunting occurs on Baffin Island intermixed with Igloolingmiut hunting, including in and around Rowley and Koch islands and Steensby Inlet; thus, the Project shipping route through this area could have both land use and ecosystemic effects on the community.

Igloolik is located on the mainland but is the closest community to the Steensby Port site (155 km) and second-closest geographically to the Mary River Project site (230 km). Historically, Igloolingmiut spent the summer hunting caribou along the western side of North and Central Baffin Island. Current harvest patterns show that while Igloolingmiut use the Baffin coast and marine areas at the mouth of Steensby Inlet, their activities are heavily concentrated around the community on Melville Peninsula and the closest Baffin Island shoreline to the north. They still hunt around Rowley and Koch islands and even in Steensby Inlet; thus, the Project shipping route through this area could have both land use and ecosystemic effects on the community.

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POND INLET
(150 Km)

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MILNE PORT

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MINE SITE

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STEENSBY PORT

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IGLOOLIK
(220 Km)

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HALL BEACH
(290 Km)

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CAPE DORSET
(800 Km)

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IQALUIT
(950 Km)

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KIMMIRUT
(1025 Km)

LEGEND:

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- ᐅᓴᕆᓯᐅᔪᓐᓇᖅ / MINE SITE
- ᑐᓚᑦᑕᓚᒥᒃ / PORT SITE
- ᐅᒥᐊᓪᓚᑦ ᐊᖏᑎᓂᐊᑦᑕᕐᓚᓐ - ᓯᑯᓯᐅᑦᑎᓗᒍ / NOMINAL SHIPPING ROUTE - ICE BREAKERS
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- ᑭᒃᓚᐅᓂ ᐊᖏᔪᖅ ᐅᓯᖃᑦᑕᕐᓚᓐ / MILNE INLET TOTE ROAD
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NOTES:

1. ᐅᐅᕐᓂᐊᖏᐅᑦ ᓄᓇᕗᑦ 2009
1. BASE MAP: COPYRIGHT © 2009 ESRI. ALL RIGHTS RESERVED.

2. ᓄᓇᕗᑦ ᑎᑎᕋᒪᓂᖅ ᒪᓕᒐᓱ ᐅ+ᓯ ᖃᐃᔨᓴᐅ ᒪᓕᒐᕋ ᓴᓗ
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) AND IS IN METRES.

BAFFINLAND IRON MINES CORPORATION

ᓄᓕᒋᓂ ᐅᐸᕐᓂᐸᐅᕐᔪᑦ — MARY RIVER PRJECT

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COMMUNITIES IN THE VICINITY OF THE MARY RIVER PROJECT

Baffinland Iron Mines Corporation

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ᑎᑎᕋᐅᒃᑯᒪᔪᖅ FIGURE 2-1.2

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BL_Vol2_GIS_001 Communities in the Vicinity of The Mary River Project Figure 2-2.1.mxd

Pond Inlet is geographically the closest community to the Mary River mine site, located approximately 160 km northeast of Mary River. Pond Inlet relies on hunting in the marine environment of Eclipse Sound and Milne Inlet as well as caribou hunting through the Mary River area, and has the closest land use, historical, and ecosystemic ties to the Mary River area.

Category 2 Communities

Cape Dorset and Kimmirut are located on South Baffin Island. While Project ships pass near the communities through Hudson Strait, harvest data for Cape Dorset and Kimmirut suggest that hunting activities are very concentrated along the coast and do not extend far into Hudson Strait. There is potential for hunters in boats to interact with Project vessels during the open-water season, and the potential for these ships to interact with marine mammals harvested by these communities.

Category 3 Community

Iqaluit is both geographically and ecosystemically well removed from the Project area but is inherently tied to the Project in a socio-economic sense because of the presence of government/regulatory agencies with whom the Project must interact and the need to pass through Iqaluit to access other Nunavut communities from other parts of Canada. The size of the city and its developed commercial economy make Iqaluit a logical procurement centre and point-of-hire for the Project. It is conceivable that mine employees who were originally based in other Baffin communities might opt to move to Iqaluit because of its amenities and relative lower cost of living.

Other communities in the Qikiqtani Region were also considered in terms of potential Project interactions, but baseline investigations did not identify any current or historic socio-economic or ecosystemic ties to the Project area. Additionally, each of these communities is at least 500 km from the Project area. Although Baffinland intends to focus on the five Category 1 North Baffin communities as its direct points-of-hire, qualified workers from other Inuit communities will also be welcomed as members of the Project workforce.

The Nunavut Impact Review Board engaged early in the review process with Makavik Corporation and the communities in the Nunavik region of Quebec, carrying out scoping sessions in Nunavik communities along Hudson Strait in 2009. Also in 2009, Baffinland made project information presentations to Makivik Corporation. In February 2011 Baffinland presented to the *Nunavik Marine Region Planning Commission & Impact Review Board* an update on the Mary River Project including a summary of the DEIS.

1.5 CONSULTATION METHODS AND ACTIVITIES

Baffinland has endeavoured to engage potentially affected communities in four types of engagement (see Table 2-1.2).

Baffinland has focused stakeholder engagement efforts first and foremost with North Baffin communities identified as potentially affected by the Project, and secondarily with the South Baffin communities of Cape Dorset and Kimmirut, which are adjacent to the Project's primary shipping route through Hudson Strait, and Iqaluit as the main administrative centre. As described in Section 1.3, particular emphasis has been placed on recognition of the historic and contemporary land use ties to the area in which the Project is located. Information and stakeholder feedback obtained through consultation has been integrated in the Project design and planning process, as broad community support is critical to the ultimate success of the Project.

Table 2-1.2 Types of Community Engagement

Type of Engagement	Description	Example Engagement Activities Undertaken
Information	Flow from the company to stakeholder	Newsletters, community posters, Baffinland Liaison Officer offices, mining symposium, Project website, information booths in co-ops
Consultation	Information exchange	Formal and informal public meetings, hamlets, hunters and trappers association/organization (HTA/HTO), Municipal leaders, Community Land and Resource Committees (CLARC)
Participation	Active interaction and more intensive form of consultation	IQ study (2007-2010), IQ Working Group workshop (March 2008), Baffinland- Qikiqtani Inuit Association (QIA) thematic workshop (September 2010), QIA Executive site visits (September 2011)
Negotiation	Face-to-face discussions with the intent of reaching agreement	Baffinland and the QIA have been working on an Inuit Impact and Benefits Agreement (IIBA) since 2006, and signed a Memorandum of Understanding (MOU) on the economic provisions of a future IIBA on March 31, 2009. Included in the economic provisions are contracting, employment, capacity building, training and education, support for the communities, implementation and management (measurement, reporting, enforcement, mediation, and arbitration) of the future IIBA.

1.5.1 Baffinland Community Liaison Offices

In 2007, Baffinland initially established Baffinland Liaison Officer offices in the five Category 1 communities in North Baffin. Baffinland has continued to maintain liaison offices in two of the Category 1 communities - Pond Inlet and Igloolik - and recently reopened its liaison office in Iqaluit.

The Baffinland Liaison Officer offices are a first point of contact for communities in terms of obtaining or exchanging information on the Project and employment. The liaison offices have been instrumental in rolling out several initiatives, including the Inuit Qaujimajatuqangit (IQ - Inuit knowledge) and socio-economic studies. Baffinland Liaison Officers, as local hires, speak with community members in Inuktitut and English, facilitating the flow of project information between the company and communities. Establishment of liaison offices reflects Baffinland's larger commitment to community consultation, stakeholder engagement, and building community capacity.

1.5.2 Meetings with Community and Local Stakeholders

Consultation with local stakeholders was initiated in 2004 when exploration activities restarted, initially focused on Pond Inlet residents, the QIA and Aboriginal Affairs and Northern Development Canada, (AANDC) as landowner representatives, and the Nunavut Water Board (NWB). This initial consultation focused on obtaining and disseminating information regarding exploration efforts (2004 and 2005), and later regarding bulk sampling plans (2006). For a list of meetings Baffinland representatives have held with community groups, including hamlets, Elder committees, hunter and trapper organizations, and Inuit knowledge working groups, see Appendix 2A-1. The list is not exhaustive but gives insight into the nature of Baffinland's community consultation efforts.

Consultation efforts were broadened in scope and outreach in 2007 to include all six communities expected to be directly affected by Project implementation. The potentially affected communities (see Section 1.4), included Arctic Bay, Clyde River, Hall Beach, Igloolik, and Pond Inlet, and the Nunavut capital, Iqaluit. In September 2007, Baffinland undertook its first formal public consultation on the mine development plans being developed in the Definitive Feasibility Study (Aker Kvaerner, 2008), to inform stakeholders and solicit

public input. A second round of public meetings focused on Baffinland's mine development plans and were held in the same communities in late March 2008 following submission of Baffinland's Development Proposal (Baffinland, 2008) to regulatory agencies and other stakeholders. The objective of these meetings was to hold dialogue with the communities, provide them with information regarding the Project Development Proposal, identify any issues or concerns that might be associated with planned Project activities, and to integrate appropriate stakeholder feedback in Project decision-making. In April 2009, Baffinland attended NIRB scoping sessions in the potentially affected communities. Through 2010, Baffinland visited potentially affected communities (including Cape Dorset and Kimmirut) on several occasions to provide Project updates and to discuss preliminary findings of the environmental impact statement (EIS). Baffinland has visited the communities on two occasions since the release of its Draft Environmental Impact Statement (Baffinland, 2010) in January; a round of public open houses were held in April 2011, and open houses to introduce the new Baffinland executive team were held in August 2011.

PowerPoint presentations used in public meetings were in Inuktitut. Speeches delivered in English were translated simultaneously using local translators as much as possible to acknowledge local dialects. Typically, as Baffinland had at least two translators on hand at all meetings with community liaison officers attending meetings to provide backup translation. Headsets provided by Baffinland ensured that attendees could properly hear the translations.

Minutes from these meeting were recorded by Baffinland and incorporated in a central public consultation database. It was indicated at meetings that minutes were being taken for later consideration. Coding of the database by keyword/topic was completed using software that analyzes qualitative research data. For a summary of keywords used to code meeting minutes and the number of references (or "hits") associated with each keyword, see Table 2A-1.2 in Appendix 2A-1. The results of this analysis are presented in a Public Consultation Database sorted by keyword, located in Appendix 2A-2.

In partial fulfillment of the NIRB Guidelines whereby Baffinland is required throughout the review to engage residents and organizations in the potentially affected communities, Baffinland signed an agreement with QIA, the representatives of the Nunavut land claim beneficiaries of the Qikiqtaaluk region, whereby Baffinland provided an administrative support to engage residents in the environmental process and conduct a technical review of the DEIS. As part of the agreement the QIA conducted over 50 workshops in eight communities. The minutes of all the meetings prepared by the QIA, and presented as Appendix A of its technical review comments on the DEIS, were coded by keyword in the same manner by Baffinland and are presented in Appendix 2A-3. Similar to what was completed for Baffinland's own public consultation database, a summary of the number of hits for keywords is presented in a table, and Appendix 2A-3 is organized to present the key feedback received for each keyword.

1.5.3 Inuit Knowledge Working Groups

Inuit knowledge studies were initiated in Pond Inlet in 2006, expanded to Igloolik and Arctic Bay in early 2007 and to Hall Beach and Clyde River in 2008. Studies were initiated first in those communities with the closest ecosystemic and socio-economic ties to the Project and then to the other potentially affected communities, modifying the study methodology based on the experiences in the initial communities. The overall objective of the studies has been to obtain local knowledge of wildlife, land use, and areas of cultural value to support Project decision-making and the social and environmental assessment process. The research methods, interview questions, participants, and dates are described in a report summarizing the Project's community-based research in Appendix 2B.

Inuit knowledge discussions held to date have informed and influenced the Company's understanding of the natural environment, local land uses and social conditions, as well as guiding the Project research in ways that are acceptable to the community and culture. Information was collected through establishment of working groups in each community. Working groups were selected to represent a cross-section of people in the community with respect to gender, age, lifestyles, and occupation.

A research agreement was negotiated between Baffinland and each group to articulate the agreed-on study approach and intended use of the information. Knowledge was recorded through discussion in working group meetings, individual interviews, and in the conduct of focus sessions on particular themes (e.g., caribou, marine mammals and land use). In March 2008, Baffinland sponsored a five-day workshop in Arctic Bay that brought together the working groups from each of the five North Baffin communities to evaluate the significance of potential impacts, to discuss socio-economic issues, caribou, marine mammals, transportation, and the future of the working groups. Participants named the meeting Kajjuqtikkut, which means "the place where everyone comes to meet after travelling," in reference to a place where traditionally Inuit used to meet near Nuluujaak (Mary River).

While the focus of the Inuit knowledge studies has been to collect information, Baffinland has at the same time learned about perspectives and key issues related to the Project. Records of working group meetings have been reviewed to identify key issues or concerns raised by the meeting participants.

The working groups have provided valuable insights into community and cultural values, priorities, fears and hopes, and helped researchers prepare culturally sensitive and appropriate research methodologies and plans. Additionally, the presence of working groups facilitates information flow between the company and the communities.

Records from the working group meetings were incorporated in a central Inuit Knowledge or IQ database and coded to sort by topic. This database has been used to incorporate Inuit knowledge in the baseline reports for identified value ecosystem components (VECs). As with other meeting records, working group meeting minutes were coded using qualitative analysis software.

1.5.4 Individual Interviews with Elders

Knowledge of individual Inuit Elders was collected from documentary and primary oral historical research. As a starting point, the collections of the Igloolik Oral History Project were researched for information relevant to the study area regarding traditional land use, harvesting and cultural values of Igloolingmiut in the areas around the Project (see Volume 4, Appendix 4C). This research also contains information regarding traditional use by Igloolingmiut of the Steensby Inlet area and associated marine resources.

To round out the knowledge of the study area, and to extend forward the time depth provided by the Igloolik Oral History Project information, individual interviews were carried out in Pond Inlet, Igloolik and Arctic Bay, 2006 through early 2008, using a pre-established list of interview questions that were developed, edited, or adopted by the local Working Group. Informants were selected by the community Working Groups; selection was based on their life histories and knowledge of the study area. In each of the three communities, local Inuit were trained by an anthropologist over five days to interview, record and map Elders' information. Having local people involved in the data collection resulted in an increased sense of participation in the process, ownership and pride. Interviews were recorded on either recordable CD or by digital recorder and relevant information mapped at a 1:1,000,000 scale. The interviews were transcribed in Inuktitut and translated into English. The transcribed interviews were incorporated in a central Inuit knowledge database and coded to sort by topic.

1.5.5 Pre-DEIS Focus Sessions

With the support of Inuit knowledge working groups in each of the communities, focus sessions were conducted in the Category 1 and 2 communities on seven natural environment and socio-economic topics:

- Caribou
- Marine mammals
- Land use (including archaeology)
- Elders
- Youth
- Economic development
- Health and social services

To achieve maximum and meaningful participation in the focus sessions, several techniques were used to reach as many community members as possible. While a number of the focus sessions were restricted to invited persons, based on their particular community status (Elders and youth), knowledge (health and social services), or skill set in a particular field (economic development), other sessions were open to the general public. These sessions contributed to identifying VECs and VSECs.

A series of meetings were held in the Category 1 and 2 communities to collect additional detailed information on topics identified as of prime importance to the communities: caribou, marine mammals and land use. Researchers met with community working groups, Elders, hunter and trapper organizations, and members of the general public. In several communities, as the opportunity was available, consultants and working group members participated in call-in shows on local radio and set up display tables in the local co-op stores to increase exposure of the study to the broader community.

The Kajjuqtikkut workshop that brought together Inuit knowledge study working groups in March 2008 is described in Section 1.4.4. A thematic workshop was held at Baffinland's exploration camp at Mary River in September 2010 in which QIA-selected representatives spent several days with Baffinland and its consultants discussing key issues; the workshop presented baseline results and preliminary impact assessment conclusions to representatives of potentially affected communities and sought input on potential effects and their perceived significance. During the session, the Project description and road operation alternative were presented and discussed. The methodology used to collect baseline data and the selection of valued ecosystem components (VECs) was explained. As part of the terrestrial environment, the caribou baseline study was discussed. During the latter part of the session the discussion focused on the marine environment and the methodology for collecting marine mammal and biophysical data.

The minutes from these meetings were incorporated into either a central public consultation database or a central Inuit knowledge database and coded to sort by topic. Questions asked during the Inuit knowledge workshops were coded into the public consultation database, and information-type answers from workshop participants were coded as Inuit knowledge.

1.5.6 Site Visits

Baffinland has been proactive in bringing community and government representatives to visit the operations at Mary River. As indicated in Table 2A-1.3 (Appendix 2A-1), representatives of North Baffin hamlet leadership, Inuit knowledge study working groups, a number of government representatives, and local community members, including students, have visited the Mary River operations over the past several years. For many of the participants, it was their first opportunity to see mineral exploration and mining (bulk sample) operations, and feedback was that the opportunity to see such operations first-hand was of

immeasurable value, and participates were left with a greater level of understanding of how their communities might be involved in research and operations.

1.5.7 Radio Call-in Shows and Printed Media

One of the most effective and wide-reaching techniques for educating, engaging, and receiving information from the communities is the use of call-in radio shows. Local radio is a popular form of information sharing and entertainment, with virtually all levels of society listening to the local broadcast segments. The call-in programs provided outreach to members of the community who aren't normally engaged in the process. Feedback received during and after radio shows has been very positive, and indicates a strong desire by the community to continue communications via this format.

With an oral tradition, written materials are of secondary importance as a communication tool in the communities where many people have neither the ability nor the comprehension level to be comfortable with reading. However, a proportion of the community who are bilingual have expressed a desire for more written materials to be made available in both Inuktitut and English.

1.5.8 Participation in Environmental Studies

Local involvement in environmental studies is Baffinland's objective, as well as a desire expressed by the communities. With varying degrees of regularity, local participants from Pond Inlet and Igloolik have been involved in the following environmental studies:

- Mittimatalik Hunters and Trappers Organization (MHTO) representatives have regularly participated in caribou aerial surveys;
- Hunters from Igloolik provided boats and field assistance in the port site marine surveys at Steensby Port in 2007, 2008 and 2010;
- MHTO hunters from Pond Inlet participated in aerial marine surveys to monitor marine mammal (mainly narwhal) responses to sea-lift shipping traffic in Milne Inlet in 2007 and 2008, and provided boats and field assistance in marine surveys at Milne Port in 2008 and 2010;
- Three Elders with extensive IQ regarding plant use were chosen by the Pisiksik Working Group to participate in Inuit knowledge studies on vegetation in August 2007;
- Field assistants from Pond Inlet and Igloolik participated in archaeology surveys in 2006 through 2008, 2010 and 2011; and
- Numerous bear monitors were provided by the MHTO, on rotation throughout the field seasons.

Other Inuit site personnel, employed by Baffinland or its contractors, participated in the caribou and marine mammal surveys, as required.

1.5.9 Meetings with Government and Inuit Organizations

Baffinland has also been proactive in the early engagement of stakeholders outside the potentially affected communities. A Mineral Development Advisory Group (MDAG) meeting coordinated by AANDC was held in Iqaluit in June 2007. The meeting brought together a number of government agencies and Inuit organizations that could be responsible for issuing permits or approvals, and/or that will be involved in some capacity with the environmental review process.

Since 2007, Baffinland has a number of meetings with Inuit organizations, government agencies and Institutes of Public Government (IPGs), to provide the groups with an early overview of the Project, and to initiate dialogue regarding the applicable regulatory processes and information needs (see Table 2A-1.4, Appendix 2A-1). Meetings were also held with the mayor and council of each of the potentially affected communities (see Section 1.5.2).

1.5.10 Public and Other Stakeholders

Baffinland has also worked to engage the general public and other project stakeholders. For example, a website (www.baffinland.com) was established early in the development process to disseminate Project information to a wide audience. At various times the Development Proposal (Baffinland, 2008), relevant reports, presentations and (while operating as a publicly traded junior exploration company) financial information were some of the materials previously posted on the website. Company representatives have also made presentations at many conferences, engaged the popular press, and produced a DVD about the Project entitled *Breaking Ice*.

1.5.11 Post-DEIS Consultation with Inuit Organizations and Communities

Upon submission of the DEIS in January of 2011, Baffinland undertook two rounds of open houses in the Category 1 and 2 communities, as described in Section 1.5.2, and carried out a number of meetings and site visits, with a key focus being the alternatives to the port location at Steensby Inlet. The results of these meetings have been incorporated into the public consultation database that appears in Appendix 2A.

With guidance and assistance from the QIA, Baffinland undertook to develop a DEIS summary package consisting of 1 to 2 page summaries of the DEIS by valued component. The QIA organized the translation of the DEIS summary package and used this document as a primary tool for engaging its constituency in the technical review of the DEIS. The QIA can be credited for hosting a number of community sessions with local committees, facilitating committee site tours to Mary River, and for hosting its own 5-day workshop in Iqaluit to review the DEIS. As described in Section 1.5.2, this information has been coded by keyword and reviewed and is presented in Appendix 2A-3.

1.6 KEY OUTCOMES

The community meetings in the Baffin communities were well-attended and feedback on the proposed Project was balanced. Baffinland was encouraged by the level of engagement demonstrated by the communities and looks forward to continued dialogue. Table 2-1.3 summarizes the key issues and concerns identified through these meetings and how Baffinland has responded to these issues. These key issues were selected on the basis of the number of instances a topic was raised during public consultation (Appendix 2A-2).

The desire of the community of Igloolik (with support from the other communities) to have Steensby Port relocated to Nuvuit was a key issue raised during the review of the DEIS. Baffinland made best efforts to both further explore this option and to discuss the issue with the community of Igloolik facilitated through the QIA, and believes a key outcome of these efforts has been a recognition and acknowledgement that Steensby Port is the only viable port location to support the Project.

Table 2-1.3 Key Community Concerns and Baffinland Response

Key Concerns	How Baffinland Addressed the Concern
A desire to maintain the existing social fabric of the Inuit culture.	Baffinland recognizes and respects this strong desire, and is committed to developing a project that is consistent with this desire. The Human Resource Management Plan is a response to this.
Opportunities for training and employment	Baffinland assessed training and employment in the Valued Socio-economic Component Assessments, and has developed a Human Resource Management Plan aimed at maximizing training and employment opportunities on the Project.
Potential impacts on wildlife (with a focus on caribou migration patterns affected by the railway and marine mammals being disrupted by shipping), the potential to affect food security, and a desire to be compensated for impacts on wildlife.	Caribou and marine mammals were the focus of the IQ study. Effects assessments have been prepared for caribou, marine mammals and land use (including harvesting).
Opportunity for regional economic development and the need to make sure that the IIBA will benefit directly affected local communities.	Baffinland is committed to economic development and signed a memorandum of understanding (MOU) with the QIA on March 31, 2009, for the economic provisions of a future IIBA, of which regional economic development is one component.
The concern of environmental degradation due to spills, contamination and pollution and need for effective environmental controls and mine closure planning.	Baffinland has developed a comprehensive environmental management system (see Volume 10).
Desire to change shipping routes and port locations to reduce impacts on communities and marine mammals. Request to consider moving the location of the Steensby Port outside of the landfast ice.	Baffinland selected the easterly of two potential shipping routes through Foxe Basin due to public concerns and IQ study results. Alternate ports and railway alignments were evaluated at the request of local communities (Volume 3, Section 6) although none of these alternatives are viable. The railway to Steensby Port is preferred because of distance, terrain and relative ease of construction and operation.
Interest in a port at Nuvuit, as an alternative to Steensby Port (an extension of the above key concern)	Baffinland conducted multiple meetings with the community of Igloolik and QIA Executive on this subject since issuing the DEIS. The QIA Executive flew the two routes and port sites with Baffinland`s railway engineers and shipping experts, and contracted an independent railway engineer to review Baffinland's engineering work regarding Steensby and Nuvuit feasibility.
The potential to bring freight for communities by return shipping, and/or share shipping costs with local communities, thereby reducing the life expenditure of local communities.	There will be limited opportunity to support community re-supplies due to the distance of the port sites from communities.
A desire to understand the Project, its use of traditional knowledge, research, monitoring, regulatory processes, operation and mitigation.	Baffinland carried out an extensive Inuit knowledge study and has involved local communities in baseline studies. Moving forward, a stakeholder engagement plan (Appendix 10F-1) will guide the company's commitments to stakeholder engagement.

Table 2-1.3 Key Community Concerns and Baffinland Response (Cont'd)

Key Concerns	How Baffinland Addressed the Concern
Involvement in the development and implementation of monitoring and mitigation plans for the Project.	The Company scheduled a workshop in November 2011 to obtain input from the community of Igloolik and the QIA into its Shipping and Marine Mammals Management Plan; due to weather this workshop had been delayed and was held in January 2012. The Company hopes to discuss other key management plans (such as the terrestrial wildlife management plan) with the relevant communities.
The potential of shipping particularly during marine mammal calving and pupping seasons.	The Project by necessity requires year-round shipping, which is carried out elsewhere. The FEIS determined that the effects of the Project`s shipping activities on marine mammals will not be significant.
The disturbance and need for the protection of archaeological sites and the removal of artifacts.	The FEIS contains a preliminary mitigation plan addressing archaeological effects of the Project, and a Heritage Resources Protection Plan addresses ongoing protection of archaeological resources over the life of the project. Baffinland must adhere to the Nunavut Archaeological and Paleontological Regulations.
The extent of dusting from the operations may affect human health and terrestrial mammals.	Baffinland completed an assessment for the FEIS and determined that ore dust deposition presents minimal risk to humans and wildlife.

Public consultation and traditional knowledge carried out since 2005 influenced project planning and design. Community acceptance or preferences was one of the factors considered in the evaluation of alternatives (see Volume 3, Section 6). Five key aspects of project design were particularly influenced by public consultation and traditional knowledge:

- Initially, Milne Inlet was the proposed year-round port. However as further information became available it became apparent that the ore carriers were too large for a sustained operation. Inuit concerns related to the close proximity of the shipping route to Pond Inlet and winter shipping activity that could interrupt important flow edge activities. Therefore the current project proposal considers open-water shipping to Milne Inlet only.
- Two viable shipping routes through Foxe Basin were surveyed by Baffinland: one on either side (east and west) of Rowley and Koch Islands in Northern Fox Basin. Based on feedback expressed during public meetings in Igloolik and Hall Beach in 2007 and 2008, as well as mapped IQ information on marine mammals in Foxe Basin, the eastern route was selected by Baffinland as the preferred shipping route, because it is considered less intrusive to marine wildlife and land use.
- Communities requested that Baffinland to consider several alternative port sites, including Nanisivik Port, East Baffin Bay (between Pond Inlet and Clyde River) and Nuvuit Peninsula/Cape Jansen (at the southern mouth of Steensby Inlet). Baffinland reviewed these options (see Volume 3, Section 6), though none were found to be viable alternatives. In 2011, Baffinland through the QIA met with community representatives in Igloolik on several occasions, provided the QIA executive with a site visit of the railway and port alternatives, and funded an independent engineering study to review railway alternatives, and carried out bathymetric surveys at the Nuvuit port site as part of additional engineering evaluations of this important alternative to the communities.

- At a public meeting in Cape Dorset, the participants recommended that the Company consider altering the shipping route to travel south of Mill Island rather than to the north (see Volume 3, Figure 3-1.1). While ship safety takes precedent, the nominal shipping route has been modified to accommodate this request.
- During the community sessions, there was general consensus that the 2 week on/2 week off work schedule was preferred to other alternatives. Baffinland has committed to utilize the two-week rotation as much as practicable.

Baffinland is committed to ongoing consultation throughout the life of the Project with governments, employees, local communities and the public, through implementation of its Stakeholder Engagement Plan (Appendix 10F-1), which will remain a living document through the life of the Project. Provisions found in the Management Plans (Volume 10) also reflect public comments. Of note are the provisions incorporated in the Shipping and Marine Wildlife Management Plan (Appendix 10D-10).

SECTION 2.0 - REGULATORY FRAMEWORK

2.1 EXISTING MINERAL TITLES AND LAND ACCESS

Baffinland is the sole owner of the three mining leases at Mary River, the locations of which are shown on Figures 2-2.1 and 2-2.2. Lease 2484 covers the iron ore deposit referred to as Deposit No. 1, Lease 2485 covers Deposit Nos. 2, 3 and 3B, and Lease 2483 covers Deposit No. 4. Deposit 3A, referenced in some documents as part of Lease 2485, has been confirmed as a continuous extension of Deposit 3, and therefore is no longer referenced separately. Similarly, recent drilling identified an additional ore body now referred to as Deposit No. 3B. The leases cover a total area of 1,593 ha and are renewable beyond the current 21-year period expiring August 27, 2013.

The Nunavut Land Claims Agreement (NLCA) establishes the requirements and expectations for development activities occurring in Nunavut. The mining leases at Mary River predate the May 25, 1993, NLCA, but are surrounded by Inuit-owned surface and mineral (subsurface) rights. Inuit owned surface rights in the area are administered by the QIA, while Inuit-owned mineral rights are administered by the Inuit birthright corporation Nunavut Tunngavik Incorporated (NTI). The Mary River mineral leases are administered by AANDC under the Canadian Mining Regulations of the *Territorial Lands Act* on federal (Crown) land. Access to the surrounding surface lands is provided through land use permits and leases issued by QIA or AANDC (see Section 2.2.7).

In addition to the three original mining leases described above, Baffinland holds the following mineral exploration instruments:

- NTI Exploration Agreement - signed on May 1, 2008, identifies an NTI Exploration Area that includes an initial area of 16,695 ha in the vicinity of Deposit No. 1 and the original Lease 2484, and an additional area of 1,425 ha covering a portion of Deposit No. 5. The NTI Exploration Agreement will become a Joint Venture between Baffinland and NTI, only if and when a feasibility study is completed on the NTI Exploration Area.
- McOuat Lake Claim Block - 18 federal claims registered with AANDC covering lands covering and surrounding both Deposits No. 4 and 5;
- Glacier Lakes Claim Block - 20 federal claims surrounding Deposit No. 6;
- Turner River Claim Block - 9 federal claims covering Deposit No. 7;
- North Cockburn River Claim Block - 8 federal claims covering Deposit No. 8; and
- North Rowley River Claim Block - 4 federal claims covering Deposit No. 9.

Deposits No. 6 through 9 are all recent discoveries identified during Baffinland's 2010 regional exploration program.

Figure ID: BL_Vol2_CAD_001 Regional Land Ownership and Administrative Boundaries Figure 2-2-1.dwg

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COCKBURN RIVER
ᕆᐊᓕᔪᖅ ᐃᓂᒃ
ROWLEY RIVER
ᕿᐊᓕᔪᖅ
QUARTZ LAKE
ᓂᐅᓕᐃᓂᒃ
NINA BANG LAKE
ᓄᓇᕗᑦᑐᓂᒃ ᐊᖏᔪᓂᒃ ᓴᓇᔨᓂᒃ
PROPOSED RAILWAY
ᐃᓕᓴᕐᓂᐊᕆᔭᐃᓇᓕᔪᖅ
CONSTRUCTION ACCESS ROAD
ᐃᓕᓴᕐᓂᐊᖅ
RAVN RIVER
ᑕᕆᔨᐅᑕ
TARIUJAQ ARM
ᐃᓕᓐᓄᑦᑐᓂᒃ ᐊᑭᓐᓄᑦᑐᓂᒃ
STEENSBY PORT
ᑎᓴᓪᓗᐊᖅ
STEENSBY INLET

ᑐᑭᓯᓚᖅᑐᑦ

LEGEND:

- ᐃᒥᒃ — WATER
- ᐃᓄᐃᑦ ᓄᓇᕗᑦᑐᓂᓄᓂ - ᑲᓇᓂ ᓴᓚᐱᓚᐃᑦ ᐱᖃᓯᐅᑎᕐᓯᓪᓚᓂᑦ — INUIT OWNED LAND - SURFACE ONLY EXCLUDING MINERALS
- ᐃᓄᐃᑦ ᓄᓇᕗᑦᑐᓂᓄᓂ - ᑲᓇᓂ ᐊᑕᓪᓗ ᐱᖃᓯᐅᑎᓗᓂᑦ ᓴᓚᐱᓯᓄᕐᓂᑦ — INUIT OWNED LAND - SURFACE AND SUBSURFACE INCLUDING MINERALS
- ᓴᓚᐱᖃᓕᕐᓂᖓᑦ ᑭᓪᓕᓂᖓ ᓄᓇᕗᑦᑐᓂᓄᓂ ᐱᑉᐅᓯᒪᔪᖅ — MINERAL LEASE BOUNDARY
- ᓴᖅᑭᑐᖅᓯᑦ ᓄᓇᕗᑦᑐᓂᒃ — CROWN LAND
- ᓄᓇᕗᑦ ᑐᑦᓴᖃᓯᑦ ᑲᐅᔾᓇᓂᖅᓂᖓᓂᒃ NTI — EXPLORATION AREA
- ᓴᖅᑭᑐᖅᓯᑦ ᐱᓕᕐᓂᐊᕈᑎᑎᓯᒪᔪᖅᑐᑦ ᓄᓇᒧᑦ — CROWN MINERAL CLAIMS
- ᑯᑐᖏᑦ/ᑯᒪᓪᑐᖏᑦ/ᑯᐊᓚᐅᔾᔪᖅ — RIVER/STREAM/DRAINAGE
- ᖃᐅᔨᖃᓴᓂᖅ — CONTOUR
- ᓴᓇᐃᔨᖅ ᐊᖏᔪᓂᒃ ᐅᓂᒃᑳᓕᓴᐃ — MILNE INLET TOTE ROAD
- ᓄᓇᕗᑦᑐᓂᒃ ᐊᖏᔪᓂᒃ ᐅᑦᑭᑦᓂᖅᓴᑦ — PROPOSED RAIL ALIGNMENT
- ᐊᖏᔪᓕᓐᓄᑦᑐᓂᒃ ᐅᑦᑭᑦᓂᖅᓴᑦ — PROPOSED CONSTRUCTION ACCESS ROAD

NOTES:

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2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METRES.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL VARIES.
4. PROPOSED RAIL ALIGNMENT PROVIDED BY CANARAIL CONSULTANTS INC.

ᖃᐅᔨᓴᖅᑐᑦ:

1. ᓄᓇᕗᑦᓯᒪᔪᖅᑐᑦ: ძᐢ ᖃᓇᑕᒧᑦ
2. ᓄᓇᕗᑦ ᑎᑎᕈᒪᓂᖅ ᒪᓕᒐᓐᖓ UTM (NAD83) ZONE 17
3. ᑎᑎᕈᒪᓕᐅᑦ ᒥᑕ: ᐊᖏᓂᓂᑦ ᐅᖓᓕᓂᑎᑦᑐᓂᑦ ᐊᑦᑐᕈᓂᑦ
4. ᓄᓇᕗᑦᑐᓂᒃ ᐊᖏᔪᓂᒃ CANARAIL CONSULTANTS INC

ᐊᖏᓂᖅ 8 4 0 10 20 30 40 km
SCALE

BAFFINLAND IRON MINES CORPORATION

ᓄᓇᕗᑦ ᐅᕆᕈᕐᓂᑦ MARY RIVER PROJECT

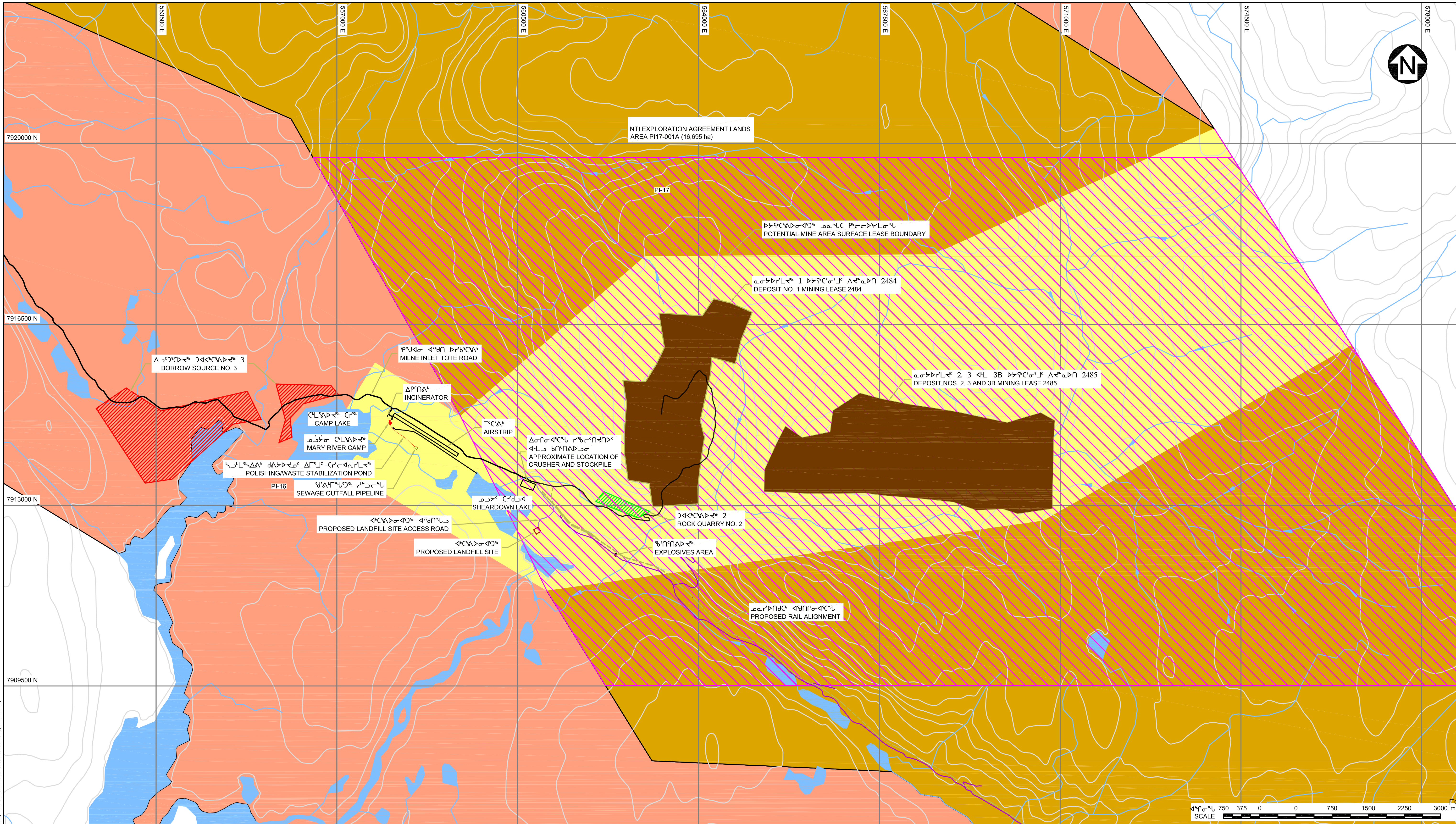
ᖃᐅᔨᒪᓂᖅ ᓄᓇᖃᖅᑎᐅᓕᑦ ᐊᒪᓗ ᐊᐅᓚᑎᓄᓂᖅ ᑭᒡᓕᖓ
REGIONAL LAND OWNERSHIP AND ADMINISTRATIVE BOUNDARIES

Baffinland Iron Mines Corporation

REF NO. BL_Vol2_CAD_001

ᑎᑎᕋᐅᕆᔨᒪᔪᖅ FIGURE 2-2.1

REV 0



LEGEND:

- WATER
- INUIT OWNED LAND - SURFACE ONLY EXCLUDING MINERALS
- INUIT OWNED LAND - SURFACE AND SUBSURFACE INCLUDING MINERALS
- MINING LEASE BOUNDARY
- CROWN LAND
- SURFACE RIGHTS AREA (IOL COMMERCIAL LEASE)
- BAFFINLAND - NTI EXPLORATION AGREEMENT LANDS
- EXISTING BORROW AREA (IOL COMMERCIAL LEASE)
- EXISTING ROCK QUARRY (IOL COMMERCIAL LEASE)
- RIVER/STREAM/DRAINAGE
- DIRECTION OF SURFACE WATER RUNOFF
- MILNE INLET TOTE ROAD
- PROPOSED RAIL ALIGNMENT
- CONTOUR

NOTES:

1. BASE MAP: © HER MAJESTY THE QUEEN IN RIGHTS OF CANADA, DEPARTMENT OF NATURAL RESOURCES (2004). ALL RIGHTS RESERVED.
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METRES.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL VARIES.
4. PROPOSED ACTIVITIES WILL BE FIELD FITTED AND FINAL BOUNDARIES TO BE BASED ON AS-BUILT SURVEYS.
5. PROPOSED RAIL ALIGNMENT PROVIDED BY CANARAIL CONSULTANTS INC.

BAFFINLAND IRON MINES CORPORATION

MARY RIVER PROJECT

CURRENT MARY RIVER SITE LAYOUT SHOWING LAND OWNERSHIP AND LEASE BOUNDARIES

REF NO. BL_Vol2_CAD_002

FIGURE 2-2.2 REV 0

Figure ID: BL_Vol2_CAD_002 Current Mary River Site Layout Showing Land Ownership and Lease Boundaries Figure 2-2-2.dwg

Table 2-2.1 Applicable Acts, Regulations and Guidelines

Act	Regulation	Responsible Agency	Guideline
FEDERAL			
Aeronautics Act, [R.S. 1985, c. A-2]	Canadian Aviation Regulations, [SOR/96-433]	TC-Civil Aviation	
Arctic Waters Pollution Prevention Act [R.S.C. 1985, c. A-12]	Arctic Waters Pollution Prevention Regulations [C.R.C., c.345]	TC-Marine Safety	Guidelines for the Operation of Tankers and Barges in Canadian Arctic Waters (Interim)
	Arctic Shipping Pollution Prevention Regulations		Arctic Ice Regime Shipping System Standards; Arctic Waters Oil Transfer Guidelines
Canada Shipping Act 2001 [2001, c.26]	Ballast Water Control and Management Regulations SOR/2006-129	TC-Marine Safety	A Guide to Canada's Ballast Water Control and Management Regulations
	Anchorage Regulations SOR/88-101		
	Oil Pollution Prevention Regulation		
	Response Organization and Oil Handling Facilities Regulation		
Canada Transportation Act [1996, c. 10]	Handling of Carloads of Explosives on Railway Trackage Regulations SOR/79-15	TC	
	Railway Employee Qualification Standards Regulations SOR/87-150		
	Railway Prevention of Electric Sparks Regulations SOR/82-1015		
	Railway Third Party Liability Insurance Coverage Regulations SOR/96-337		
	Railway Traffic Liability Regulations		
	Railway Service Equipment Cars Regulations SOR/86-922		
Canada Marine Act 1998, c. 10	Natural and Man-made Harbour Navigation and Use Regulations SOR/2005-73	TC	
	Port Authorities Management Regulations		
	Port Authorities Operations Regulations SOR/2000-55		
	Seaway Property Regulations SOR/2003-105		
Canada Water Act, [R.S.C. 1985, c. C-11]		EC	
Canada Wildlife Act (R.S., 1985, c. W-9)	Wildlife Area Regulations (C.R.C., c. 1609)	EC	
Canadian Environmental Protection Act 1999, [1999, c.33]	Environmental Emergency Regulations [SOR/2003-307]	EC	CCME Canada Wide Standards for Dioxins and Furans CCME Canada Wide Standards for Mercury Emissions Health Canada Federal Contaminated Sites Guidance on Human Health Risk Assessment in Canada
	Regulations Amending the Environmental Emergency Regulations (SOR/2011-294)		
	Fuels Information Regulations, No. 1 (SOR/C.R.C., c. 407)		
	Interprovincial Movement of Hazardous Waste Regulations (SOR/2002-301)		
	Sulphur in Diesel Fuel Regulations (SOR/2002-254)		
	Sulphur in Gasoline Regulations (SOR/99-236)		
	Proposed - Interprovincial Movement of Hazardous Waste and Hazardous Recyclable Material Regulations		
	Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations (SOR/SOR/2008-197)		
	Release and Environmental Emergency Notification Regulations (SOR/2011-90)		www.ec.gc.ca/CEPARegistry/guidelines
Explosives Act [R.S.C. 1985, c. E-17]	Ammonia Nitrate and Fuel Order, [C.R.C., c. 598]	NRCan	
	Explosives Regulations [C.R.C., c. 599]		

Table 2-2.1 Applicable Acts, Regulations and Guidelines (Cont'd)

Act	Regulation	Responsible Agency	Guideline
FEDERAL			
Fisheries Act [R.S.C. c. F-14]	Metal Mining Effluent Regulations, [SOR/ 2002-2222]	DFO/EC	DFO Policy for the Management of Fish Habitat; Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters; DFO - Freshwater Intake End-of-Pipe Fish Screen Guideline; DFO-Habitat Conservation and Protection Guidelines, 1998; Various DFO Operational Statements
Marine Transportation Security Act (R.S. 1994, c.40)	Marine Transportation Security Regulations (SOR/2004-144)	TC-Marine Safety	
Migratory Birds Convention Act 1994 [1994, c.22]	Migratory Bird Sanctuary Regulations, [C.R.C., c.1036]	EC	
	Migratory Birds Regulations, [C.R.C., c.1035]		
Navigable Waters Protection Act [R.S. 1985, c. N-22]	Navigable Waters Bridges Regulations (C.R.C., c. 1231)	TC - NWPP	
	Navigable Waters Works Regulations (C.R.C., c. 1232)		
Nunavut Act [1993, c. 28]	Nunavut Archaeological and Palaeontological Sites Regulations, [SOR/2001-220]	GN-CLEY	
Nunavut Land Claims Agreement		NTI	A Guide to Mineral Exploration and Development on Inuit Owned Lands in Nunavut
NLCA Article 12-Development Impact		NIRB	
NLCA Article 13-Water Management		NWB	
NLCA Article 26-Inuit Impact Benefit Agreement		DIO	
NLCA Article 6-Wildlife Compensation			
NLCA Article 20-Inuit Water Rights		NWB/DIO	
NLCA Article 21-Entry and Access Part 4			
Nunavut Waters and Nunavut Surface Rights Tribunal Act [2002, c.10]	Application of Regulations made under paragraph 33(1)(m) or (n) of the Northwest Territories Waters Act in Nunavut Order	AANDC	
Species At Risk Act [2002, c.29]		EC	Species at Risk Act: A Guide
Territorial Lands Act [R.S. 1985, c. T-7]	Canada Mining Regulations, [C.R.C., c. 1516]	AANDC	INAC Mine Site Reclamation Policy for Nunavut
	Territorial Land Use Regulations, [C.R.C., c. 1524]		
	Territorial Quarrying Operations, [C.R.C., c. 1527]		
	Northwest Territories Mining District and Nunavut Mining District Order		
Transportation of Dangerous Goods Act [1992, c.34]	Transportation of Dangerous Goods Regulations	TC	
TERRITORIAL			
Apprenticeship, Trade and Occupations Certification Act [R.S.N.W.T. 1988, c. A-4]	Apprenticeship, Trade and Occupations Certification Regulations, R.R.N.W.T. 1990 c. A-8	ED&T	
	Occupation Designation Order, N.W.T. Reg. 026-96		
	Trade Advisory Committees Order, R.R.N.W.T. 1990 c. A-9		
	Trade Designation Order, R.R.N.W.T. 1990 c. A-10		
Boilers and Pressure Vessels Act, [R.S.N.W.T. 1988, c. B-2]	Boilers and Pressure Vessels Regulations, N.W.T. Reg. 006-93	WSCC	
Child and Family Services Act[R.S.N.W.T. 1997, c. 13]	Child and Family Services Regulations, N.W.T. Reg. 142-98	HSS	

Table 2-2.1 Applicable Acts, Regulations and Guidelines (Cont'd)

Act	Regulation	Responsible Agency	Guideline
TERRITORIAL			
Commissioner's Land Act (Nunavut), [R.S.N.W.T. 1988, c C-11]	Commissioner's Airport Lands Regulations, N.W.T. Reg. 067-97	CG&S	
	Commissioner's Land Regulations, R.R.N.W.T. 1990 c. C-13		
Electrical Protection Act [R.S.N.W.T. 1988, c. E-3]	Electrical Protection Regulations, R.R.N.W.T. 1990 c. E-21	WSCC	
Environmental Protection Act (Nunavut), [R.S.N.W.T. 1988, c. E-7]	Spill Contingency Planning and Reporting Regulations, N.W.T. Reg. 068-93	DOE	Spill Contingency planning and reporting in Nunavut: A Guide to the new regulations
	Asphalt Paving Industry Emission Regulations, R.R.N.W.T. 1990 c. E-23	DOE	Government of Nunavut (GN) Environmental Guidelines for: Site Remediation; Management of Waste Lead and Lead Paint; Air Quality Sulphur Dioxide and Suspended Particulates; Dust Suppression; General Management of Hazardous Waste; Industrial Waste Discharges; Waste Antifreeze; Waste Asbestos; Waste Batteries; Waste Paints; Waste Solvents
Emergency Medical Aid Act, [R.S.N.W.T. 1988, c. E-4]		HSS	
Explosives Use Act, R.S.W.N.T. 1988, c.E-10	Explosives Regulations, R.R.N.W.T. 1990 c. E-27	WSCC	
Fire Prevention Act, R.S.N.W.T. 1988, c. F-6	Fire Prevention Regulations, R.R.N.W.T. 1990 c. F-12	CG&S	
	Propane Cylinder Storage Regulations, N.W.T. Reg. 094-91	WSCC	
Gas Protection Act, [R.S.N.W.T. 1988, c. G-2]	Gas Protection Regulations, R.R.N.W.T. 1990 c. G-1	CG&S	
Hospital Insurance and Health and Social Services Administration Act, [R.S.N.W.T. 1988, c. T-3]	Baffin Regional Health and Social Services Board Order, N.W.T. Reg. 059-98	HSS	
	Hospital Standards Regulations, R.R.N.W.T. 1990 c. T-6	HSS	
	Territorial Hospital Insurance Services Regulations, R.R.N.W.T. 1990 c. T-12	HSS	
Liquor Act, R.S.N.W.T. 1988, c. L-9	***Various general and community specific regulations and orders***	CG&S	
Mine Health and Safety Act, [S.N.W.T 1994, c.25]	Mine Health and Safety Regulations, [R-125-95]	WSCC	
	Mine Health and Safety Regulations, amendment, Nu. Reg. 016-2003	WSCC	
Public Health Act, R.S.N.W.T. 1988, c. P-12	Camp Sanitation Regulations, R.R.N.W.T. 1990 c. P-12	HSS	
	General Sanitation Regulations, R.R.N.W.T. 1990 c. P-16	HSS	
	Public Water Supply Regulations, R.R.N.W.T. 1990 c. P-23	HSS	
	Public Sewerage Systems Regulations, R.R.N.W.T. 1990 c. P-22	HSS	
Safety Act, R.S.N.W.T. 1988, c. S-1	Asbestos Safety Regulations, N.W.T. Reg. 016-92	WSCC	
	General Safety Regulations, R.R.N.W.T. 1990 c. S-1	WSCC	
	General Safety Regulations, amendment, Nu. Reg. 021-2000	WSCC	
	Safety Forms Regulations, N.W.T. Reg. 102-91	WSCC	
	Silica Sandblasting Safety Regulations, N.W.T. Reg. 015-92	WSCC	
	Work Site Hazardous Materials Information System Regulations, R.R.N.W.T. 1990 c. S-2	WSCC	
Scientists Act [R.S.N.W.T. 1988, c. S-4]	Scientists Act Administration Regulations, N.W.T. Reg. 174-96	Nunavut Arctic College	
Transportation of Dangerous Goods Act [R.S.N.W.T. 1988, c. 81 (Supp.)]	Transportation of Dangerous Goods Regulations, 1991, N.W.T. Reg. 095-91	DOE	

Table 2-2.1 Applicable Acts, Regulations and Guidelines (Cont'd)

Act	Regulation	Responsible Agency	Guideline
TERRITORIAL			
Wildlife Act, [R.S.N.W.T. 1988, c. W-4]	Wildlife General Regulations, N.W.T. Reg. 026-92	DOE	
	Critical Wildlife Areas Regulations, R.R.N.W.T. 1990 c. W-3	DOE	
	Polar Bear Defence Kill Regulations, N.W.T. Reg. 037-93	DOE	
	Wildlife Management Barren-Ground Caribou Areas Regulations, N.W.T. Reg. 099-98	DOE	
	Wildlife Management Grizzly Bear Areas Regulations, N.W.T. Reg. 155-96	DOE	
	Wildlife Management Muskox Areas Regulations, R.R.N.W.T. 1990 c. W-11	DOE	
	Wildlife Management Polar Bear Areas Regulations, R.R.N.W.T. 1990 c. W-13	DOE	
	Wildlife Sanctuaries Regulations, R.R.N.W.T. 1990 c. W-20	DOE	
	Wildlife Preserves Regulations, R.R.N.W.T. 1990 c. W-18	DOE	
Workers' Compensation Act, R.S.N.W.T. 1988, c. W-6	Workers' Compensation General Regulations, R.R.N.W.T. 1990 c. W-21	WSCC	

NOTES:
CG&S – Department of Community and Government Services
DOE – Department of Environment
ED&T – Department of Economic Development and Transportation
HSS – Department of Health and Social Services
WSCC – Worker's Safety & Compensation Commission

2.2 REGULATORY PROCESS OVERVIEW

The regulatory process in Nunavut is established primarily under the Nunavut Land Claims Agreement (NLCA). For additional federal and territorial legislation and guidelines applicable to the regulatory regime applicable to Project approval, construction, operations, monitoring and closure, see Table 2-2.1 and the sections following.

The following sections and the relevant sections of the FEIS explain how these requirements will be met. The specific governmental permits and approvals required for the Project are listed in Table 2-2.2.

A list of currently held permits and licences is shown in Table 2-2.3.

2.2.1 Conformance with Land Use Plans

The Nunavut Planning Commission (NPC) was established under Article 11 of the NLCA.

Under Article 11 of the NLCA, the NPC reviews development proposals to ensure conformity with approved land use plans, where they exist. On March 20, 2008, NIRB forwarded Baffinland's Development Proposal for the Mary River Project to NPC for a conformity determination.

Mary River Project components are located in two land use planning regions: the North Baffin Region and the Akunniq Region. Milne Port, the Mine Site, and about 34 km of the Railway will be located in the North Baffin Planning Region where an approved Land Use Plan is in place. The southern boundary of the North Baffin Planning Region is shown on Figure 2-2.1. Most of the Railway and Steensby Port will be located in the Akunniq Planning Region, which has no approved land use plan in place.

By a letter to NIRB and others dated April 30, 2008, the NPC determined that the project conformed to the NBRLUP and the NPC forwarded it to NIRB for screening. The NPC noted that Appendix C of the NBRLUP contemplates a joint process with NIRB to address an amendment to the NBRLUP for the transportation corridor for the 34 km of the railway located in the North Baffin Region.

The April 30, 2008 letter stated:

> "The NPC has completed its review of the above noted project proposal. The project conforms to the North Baffin Regional Land Use Plan (NBRLUP) and we are forwarding it to NIRB for screening. We draw your attention to the provisions of sections 3.5.11 and 3.5.12 of Appendix "C" of the NBRLUP, a copy of which is enclosed, and note that a joint process to address the prospective transportation corridor is contemplated by those provisions. NPC looks forward to working with NIRB in accordance with those provisions."

A summary of the coordination between the NIRB process and the NPC process is included below.

Table 2-2.2 Federal and Territorial Approvals

Permit / Approval Legislation	Administering Agency	Project Activity
FEDERAL		
Project Certificate Nunavut Land Claims Agreement (Article 12)	Nunavut Impact Review Board	Required to obtain the requisite permits and approvals to proceed with Project
Inuit Impact and Benefits Agreement *Nunavut Land Claims Agreement (Article 26)*	Qikiqtani Inuit Association	Required to proceed with Project
Mineral Lease Canadian Mining Regulations	Aboriginal Affairs and Northern Development Canada	Obtained for surface and subsurface rights to mineral deposit
Inuit Water Rights Compensation Agreement Nunavut Land Claims Agreement (Article 20)	Qikiqtani Inuit Association	May be required
Wildlife Compensation Agreement Nunavut Land Claims Agreement (Article 6)	Qikiqtani Inuit Association	May be required
Water Licence Nunavut Land Claims Agreement (Article 13) *Nunavut Waters and Nunavut Surface Rights Tribunal Act* Northwest Territories Water Regulations	Nunavut Water Board	Required for water use and waste disposal
Archaeology Permit *Nunavut Act*	Government of Nunavut - Department of Culture Language and Youth	Required to conduct archaeology research, and to mitigate archaeological sites to allow development to occur
Inuit Owned Land - Commercial Land Use Lease Nunavut Land Claims Agreement	Qikiqtani Inuit Association	Long term land tenure required for land use on Inuit Owned Land; land required for infrastructure and activities associated with construction, operations, and closure phases
Inuit Owned Land - Quarry Concession Permits Nunavut Land Claims Agreement	Qikiqtani Inuit Association	Required for quarrying of material during construction, operation and closure
Crown Land - Class A Land Use Permit(s) *Territorial Lands Act* Territorial Land Use Regulations	Aboriginal Affairs and Northern Development Canada	Required for construction related infrastructure and activities on Crown Land
Crown Land - Land Lease and Waterlot Lease *Territorial Lands Act* Territorial Land Use Regulations	Aboriginal Affairs and Northern Development Canada	Required for railway and port operation on Crown Land

Table 2-2.2 Federal and Territorial Approvals (Cont'd)

Crown Land - Quarry Lease/ Permit *Territorial Lands Act* Territorial Land Use Regulations Territorial Quarrying Regulations	Aboriginal Affairs and Northern Development Canada	Required for quarrying of material during construction, operation and closure on Crown Land
Approval and/or Exemption *Navigable Waters Protection Act* *Sections 5*	Transport Canada	Construction of works in navigable waters (e.g., port facilities, railway and road watercourse crossings)
Fisheries Authorization for Harmful Alteration Disruption or Destruction (HADD) of Fish or Fish Habitat *Fisheries Act*, Section 35(2)	Department of Fisheries and Oceans	Required if HADD cannot be avoided (e.g., port facilities, railway crossings). If HADD can be avoided, DFO may provide a letter of advice outlining best management practices.
License for a Factory and Magazine *Explosives Act* and Regulations	Natural Resources Canada	Required for construction of explosives factories and magazine(s) and storage of explosives
Certificate of Fitness **Section 98 Approval** *Canadian Transportation Act*	Canadian Transport Agency	Railway Operation
TERRITORIAL		
Permit to Store Detonators *Explosives Use Act* *Mine Health and Safety Act* and Regulations	Mine Health and Safety, Workers Compensation Board	Required to store detonators in a magazine
Explosive Use Permit *Explosives Use Act* *Mine Health and Safety Act and Regulations*	Mine Health and Safety, Workers Compensation Board	A permit is required to use explosives unless used in accordance with the regulations
Spill Contingency Plan Approval *Environmental Protection Act* *Spill Contingency Planning and Reporting Regulations*	Department of Environment	A Spill Contingency Plan must be filed with the Chief Environmental Protection Officer to store fuel in an aboveground facility with a 20,000 L capacity or greater

2.2.2 Nunavut Environmental Assessment

Under Article 12 of the NLCA, a Project Certificate issued by NIRB is required to allow the Project to proceed.

The Nunavut Impact Review Board (NIRB) was established under Article 12 of the NLCA with five primary functions:

- to screen project proposals to determine whether or not a review is required;
- to gauge and define the extent of the regional impacts of a project;
- to review the ecosystemic and socio-economic impacts of project proposals;
- to determine, on the basis of review, whether project proposals should proceed, and if so, under what terms and conditions, and then report its determination to the Minister of AANDC; and
- to monitor projects in accordance with Part 7 of Article 12 of the NLCA.

As described in Section 12.2.5 of the NLCA, NIRB's primary objectives are:

> *"At all times to protect and promote the existing and future well-being of the residents and communities of the Nunavut Settlement Area, and to protect the ecosystemic integrity of the Nunavut Settlement Area. NIRB shall take into account the well-being of residents of Canada outside the Nunavut Settlement Area."*

On March 20, 2008, Baffinland filed the Mary River Project Development Plan with NIRB. After completing a screening process, NIRB provided its screening decision and recommendations to the Minister of Indian Affairs and Northern Development on June 27, 2008. NIRB recommended that a Part 5 review be commenced under Article 12 of the NLCA. In that letter, NIRB referred to the NPC conformity decision and the joint process for considering an amendment application under the NBRLUP provisions, and sought the advice of the Minister on this process.

By a letter dated February 11, 2009, the Minister acknowledged receipt of the NIRB screening decision report and referred the project proposal to NIRB for a review under Part 5 of Article 12 of the NLCA. The Minister's letter referenced the outstanding issues relating to the land use planning process, and stated as follows:

> "In order to limit the delays to the overall review of the Proposal, I would encourage the Board and the Commission to develop an arrangement that will satisfy the outstanding requirements of the land use planning process, while not unduly encumbering the Board's Part 5 review process. Once finalized, I would encourage the Commission and Board to communicate the agreed upon processes to all parties involved in the review."

By a letter dated March 16, 2009, NIRB and the NPC outlined arrangements to jointly review the transportation corridor (railway) proposed by the Project.

The NIRB Guidelines for the Preparation of the EIS for the project proposal included, in part 1.4.1, the arrangements made between NIRB and NPC for the joint review of the transportation corridor. Specifically, the Guidelines specified:

> "In keeping with the Minister's direction and the provisions of the NBRLUP noted above, NIRB and the NPC have developed an arrangement to jointly review the transportation corridor (railway) proposed by the Project. The Proponent is required to include the project-specific information stipulated in Appendices J and K of the NBRLUP (see Appendix B), within its EIS. Given that much of the

> required information pertains directly to the impact assessment of the Project, the Proponent should cross reference where the required information can be found within the body of the EIS. It is recommended that an appendix be included in the EIS, with references to all the information required by Appendix B, which will then serve as the Proponent's formal application for an amendment to the NBRLUP. "

By a letter dated November 5, 2011 and its presentation at the Pre-Hearing Conference in Pond Inlet on November 10, 2011, the NPC confirmed its participation in the joint public review of the information to address the requirements of the NBRLUP Appendices J and K.

Volume 1, Appendix 1B-2 references the information required by Appendices J and K of the NBRLUP, and serves as Baffinland's formal application for an amendment to the NBRLUP.

2.2.3 Inuit Impact and Benefit Agreement

Article 26 of the NLCA requires the finalization of an Inuit Impact and Benefit Agreement (IIBA) before commencement of the Project.

Baffinland initiated negotiations with the QIA on an IIBA for the Project in 2006 and these discussions are ongoing. As mentioned in Section 1.4, Baffinland and the QIA have reached agreement-in-principle on the economic provisions of a future IIBA through the signing of an MOU on March 31, 2009. The IIBA must be consistent with the terms and conditions of Project approvals, including those established pursuant to the environmental review process. The EIS is expected to inform the IIBA negotiations. Consequently, the IIBA will not be finalized until completion of the environmental review process.

Once Baffinland and QIA finalize the IIBA, a copy will be sent to the AANDC Minister. The IIBA goes into effect 30 days following its receipt by the Minister unless the Minister determines, within that timeframe, that the IIBA does not conform to the provisions of the terms and conditions established in the social and environmental review process or the provisions set out in Article 26 of the NLCA.

2.2.4 Water Compensation Agreement

Article 20 of the NLCA assigns exclusive rights to the use of water on, in, or flowing through Inuit-owned land to the local Inuit organization (in this case the QIA). If it is determined through the environmental review process that Project activities are expected to substantially affect the quality, quantity, or flow of water on Inuit-owned lands, Baffinland would be required to enter into a compensation agreement with the QIA as a pre-requisite to the issuance of a water licence.

2.2.5 Permits, Approvals and Licences

After completion of the environmental review process and once NIRB has issued a Project Certificate (see Section 2.2.2) allowing the Project to proceed, all other authorizations can be issued.

Four core authorizations were identified through consultation with the applicable regulatory agencies to facilitate a conformity determination to the North Baffin Regional Land Use Plan by NPC and the environmental screening by NIRB:

- Water licence application to the Nunavut Water Board (NWB);
- Application for Use of Inuit-Owned Land;

- Application for Use of Crown Land; and
- Application for Fisheries Authorization for Harmful Alteration, Disruption, or Destruction (HADD) of Fish or Fish Habitat.

These agency-specific applications were included in the Mary River Project Development Proposal comprising the relevant Project information to support those applications. Each of the core applications were submitted to the appropriate jurisdictional agency along with the Mary River Project Development Proposal and are described in the sections following.

2.2.6 Water Licence Application

The Mary River Project will require a quantity of water greater than 100 m^3/day and will involve various water use activities, including obtaining water, crossing a watercourse, modifying the bed or bank of a watercourse, and diverting a watercourse. The Project will also involve some discharges of waste into water, including sewage and site runoff. To conduct these activities, a Type A water licence for mining and milling operations is required.

The water licensing process is under the jurisdiction of the NWB in accordance with Article 13 of the NLCA, the *Nunavut Water and Nunavut Surface Rights Tribunal Act*, and the Northwest Territories Water Regulations. Sections 13.5.2 and 13.6.1 of the NLCA, and Section 37 of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* both provide opportunities for coordinating the water licensing process with the environmental assessment process. In accordance with Section 1.4 of the EIS Guidelines, NIRB requires Baffinland to provide a stand-alone Water Licencing Application Package that meets the information specified in the NWB's Supplemental Information Guideline. The Water Licence Application is included as Volume 3, Appendix 3B.

Tied to the water licensing process is the approval of a mine closure plan (or Abandonment and Reclamation Plan), and the posting of financial assurance in the form of a bond, letter of credit or other instrument to cover the costs to close the mine.

2.2.7 Application for Use of Inuit-Owned Land

Milne Port, most of the Milne Inlet Tote Road and the Mine Site itself are located on Inuit-owned land administered by the QIA. Figure 2-1.1 shows the boundaries of the Inuit-owned land relative to the various Project components. A Land Lease authorizing construction of Project infrastructure and other activities (an amendment to Baffinland's existing Commercial Lease) and a Quarry Concession Permit for quarrying activities during construction, operations, closure and reclamation must be obtained from the QIA for those activities to proceed.

2.2.8 Application for Use of Crown Land

Most of the land south of the Mine Site is Crown land. Project components on Crown Land include the railway, the Steensby Port facilities, and a small portion (approximately 4.7 km) of the Milne Inlet Tote Road south of Katiktok Lake. Land use authorizations on Crown land are obtained from AANDC pursuant to the *Territorial Lands Act* and will include a Crown Land Lease for the Steensby Port (Appendix 2D), another Crown Land Lease for the Railway and associated infrastructure and activities, Quarry Leases to support operation and maintenance of the quarries, and a Water Lot Lease for project activities, docks and infrastructure in nearshore waters at Milne and Steensby Ports. Because the Project footprint on Crown land is greater than 640 acres, an Order-in-Council must be obtained from Cabinet before the Minister of AANDC can issue the leases.

2.2.9 Application for Fisheries Authorization for Harmful Alteration, Disruption, or Destruction (HADD) of Fish or Fish Habitat

Unavoidable impacts on fish and fish habitat resulting from the Project must be authorized by DFO under Section 35 of the *Fisheries Act*. Works for which a DFO-issued authorization might be required include water intake structures and sewage outfall structures at construction camps, the Mine Site and port sites, construction docks at Steensby Port, permanent dock structures at Milne Port and Steensby Port to support ore, freight and tug operations and numerous watercourse crossings, including access to the island at Steensby Inlet, as well as encroachment into lakes/ponds resulting from the railway, access roads and site infrastructure development and operations. The Project Description (see Volume 3) presents technical information such as bridge crossing designs, and a conceptual Fish Habitat Compensation document is included in Volume 10, Appendix 10D-7.

2.2.10 Other Authorizations

In addition to the core authorizations, a number of other authorizations will be required for activities such as explosives use, storage and manufacturing, archaeological work, construction in navigable waters and railway operation listed in Table 2-2.2.

Before Baffinland can proceed with railway construction, approval must be granted by the CTA under Section 98 of the *Canadian Transportation Act*. This process requires a social and environmental review to evaluate and conclude that the location of the railway line is reasonable, taking into consideration the requirements for railway operations and the competing interests of communities and ecological values that might be affected by installation of the line. CTA has indicated that it will participate in the NIRB review process to fulfill this requirement.

2.3 EXISTING AUTHORIZATIONS GOVERNING EXPLORATION

Baffinland's current exploration and project definition activities (i.e., exploration and geotechnical drilling) are being carried out under the authorizations summarized in Table 2-2.3.

Table 2-2.3 Current Authorizations Governing Exploration Activities

Type of Authorization	Permit No.	Authorizing Agency	Period Valid
Water Licence (Type B)	2BB-MRY1114	NWB	April 5, 2011, to April 5, 2014
Letter of Advice (July 25, 2007)	File No. NU-06-0084	DFO	N/A
Authorization under S.35(2) of *Fisheries Act*	File No. NU-06-0084	DFO	No expiry
Approvals under S.5(1) of *Navigable Waters Protection Act*	8200-09-10414	Transport Canada	June 22, 2009 to June 30, 2015
	8200-09-10415		
	8200-09-10424		
	8200-09-10425		
Inuit Land Use Lease and Aggregate Concession	Q10C3001	QIA	November 1, 2010, to December 31, 2012; renewable for 1 year
Land Use Permit (Crown Land)	N2007F0004	AANDC	July 4, 2011, to July 4, 2012
Land Use Permit (Crown Land)	N2006C0036	AANDC	April 3, 2011, to April 3, 2012
Quarry Permit (Crown Land)	2011QP0079	AANDC	June 28, 2011, to June 28, 2012

NOTE(S):
1. N/A: NOT APPLICABLE.

2.4 TAX OBLIGATIONS

Section 12.3 of Volume 4 to this FEIS discusses tax obligations (including fuel and payroll taxes) with the Government of Nunavut (GN).

SECTION 3.0 - ASSESSMENT METHODOLOGY

3.1 INTRODUCTION

The environmental effects assessment identifies potential effects of the Project on the biophysical and socio-economic environments. The objectives of the environmental effects assessment are:

- To identify and avoid or reduce potential adverse Project effects;
- To identify and promote potential positive Project effects;
- To engage Inuit, stakeholder, and government consultation; and
- To consider plausible alternatives to the Project and Project design.

Various methods were adopted for the assessment, including:

- Identification of potential environmental and socioeconomic concerns;
- Environmental and socio-economic baseline and Inuit knowledge studies;
- Consultation with local public, Inuit organizations and government agencies;
- Determination of valued components (VCs) to focus the environmental effects assessment;
- Identification of key potential Project interactions between VCs and environment or socio-economic receptors;
- Identification of mitigation measures and adaptive management plans;
- Evaluation of the significance of residual environmental and socio-economic effects; and
- Development of monitoring programs to distinguish Project-related effects from natural variability in the environment, to verify effects assessment predictions, and as a component of adaptive management.

For an overview of the environmental assessment process, see Figure 2-3.1.

The effects assessment methodology applied in the EIS was based on contemporary environmental assessment practices in Canada and is consistent with the requirements of Section 12.5.2 of the NLCA, NIRB guides, and the *Guidelines for the Preparation of an Environmental Impact Statement for Baffinland Iron Mines Corporation's Mary River Project* (the Guidelines) (NIRB, 2009).

With regard to terminology, Baffinland used definitions and concepts as identified in the Guidelines, in NIRB's (2007) terminology guide, and the *Canadian Environmental Assessment Act*.

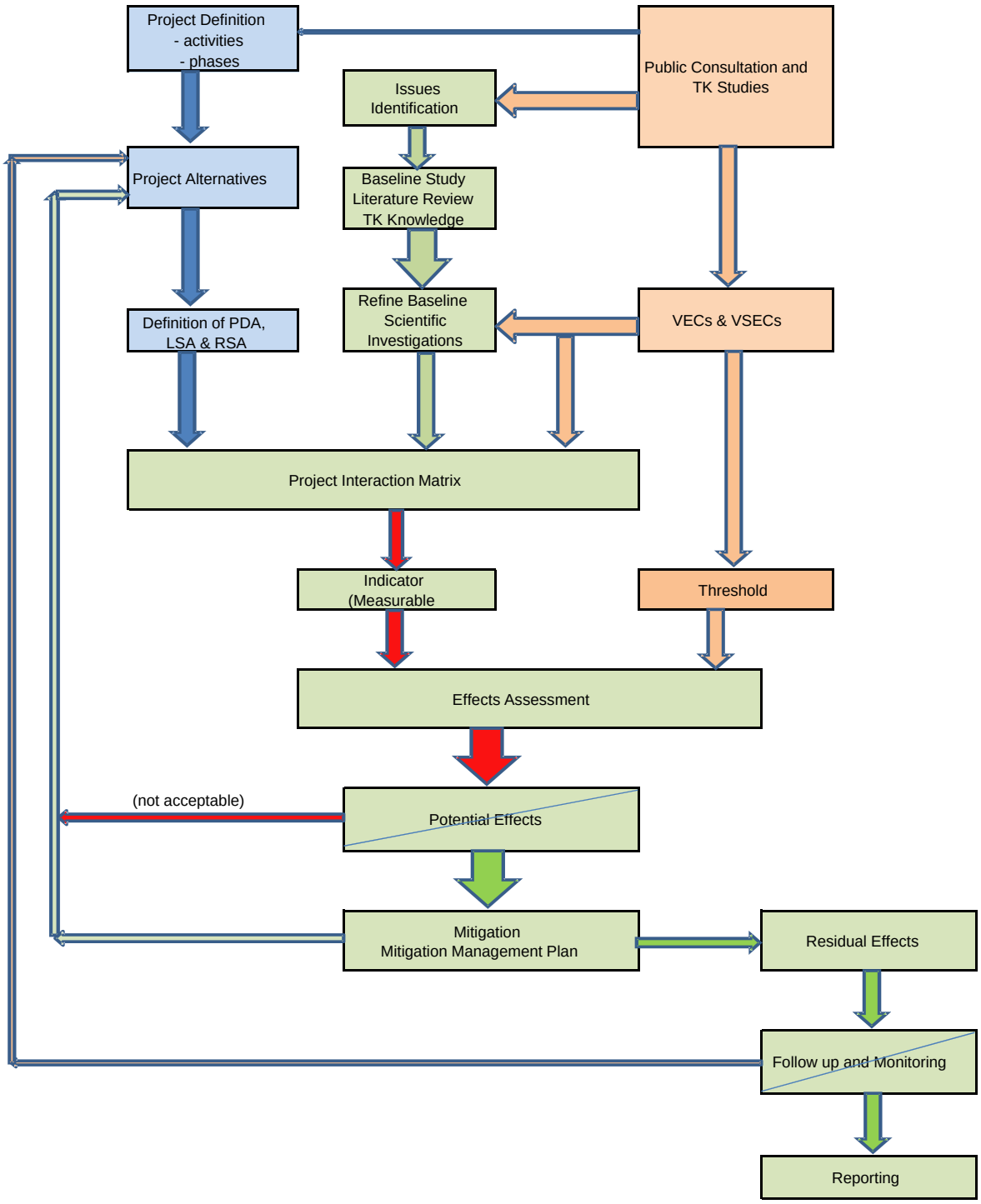
3.2 BOUNDARIES

Spatial and temporal boundaries were determined to set maximum limits within which the environmental assessment was conducted. Since the submission of the DEIS, some of the boundaries have been expanded (marine mammals, marine birds, etc.).

3.2.1 Spatial Boundaries

The starting point for defining study areas was the delineation of potential development areas (PDAs) at Project sites, including the mine site and port sites, based on the physical extent of Project activities. These areas conservatively define the Project footprint to account for the possibility of minor changes to the location of project infrastructure that might occur as the Project moves forward through detailed engineering and construction.

FIGURE ID: BL_Vol2_EXL_001 Environmental Assessment Process Figure 2-3-1



BAFFINLAND IRON MINES CORPORATION

MARY RIVER PROJECT

ENVIRONMENTAL ASSESSMENT PROCESS

Baffinland Iron Mines Corporation

REF NO.

BL_Vol2_EXL_001

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Spatial boundaries for the effects assessment were determined on a VEC and VSEC specific basis for biophysical effects, and are described in the applicable section. Spatial boundaries were defined by the anticipated zone of influence of project effects. As well, spatial boundaries can serve to prescribe both the extent to which traditional Inuit land use could be affected, as well as the set of past, present, and reasonably foreseeable future projects and activities that could interact with the Project. A nested approach was adopted as follows:

- Local study area (LSA) - Area where there exists reasonable potential for direct interaction due to project activities, ongoing normal activities, or possible abnormal operating conditions (i.e., accidents and malfunctions). The LSA includes all existing and proposed Project facilities (PDAs), and the nominal shipping route in the NSA. Individual LSAs were defined for each biophysical environmental component, and for land use and other socio-economic components.
- Regional study area (RSA) - Area within which there exists the potential for direct, indirect, and/or cumulative biophysical and socio-economic effects. This area includes lands, waters, and potentially affected communities within the NSA. Effects extending beyond the NSA were addressed in a separate transboundary effects assessment (see Volume 9). RSAs were defined for each of the major environmental components (human, atmospheric, terrestrial, freshwater and marine) and are defined in each respective volume. Confidence and accuracy of predicted effects was generally reduced at this scale, with qualitative analysis more common than quantitative analysis.

3.2.2 Temporal Boundaries

Temporal boundaries define the period analyzed within which the Project or Project activities interact with environmental or socioeconomic components. Temporal boundaries were defined by Project phase, as follows:

- Pre-development or Definition Phase (nine years - 2004 to 2012);
- Construction Phase (four years - 2013 to 2016);
- Operation Phase (21 years - 2017 to 2037); and
- Closure (three years - 2038 to 2040) and Post-Closure Phase (minimum five years - 2041 to 2045).

With respect to the above temporal boundaries, the following is noted:

- The Definition Phase is inclusive of all exploration and research programs, as well as the bulk sampling program carried out in 2007 and 2008; and
- The Closure and Post-Closure Phase considered the period required for decommissioning and/or removing Project infrastructure.

3.3 BASELINE STUDIES

3.3.1 Overview of Baseline Studies

Baseline study methodologies and a summary of results preface each effects assessment. Complete baseline study reports are appended, where applicable, to each effects assessment volume, providing more detailed information on the analysis.

Baseline studies, starting in 2005, were undertaken for socio-economics, physical environment, terrestrial ecology, and marine ecology (see Table 2-3.1).

Table 2-3.1 Baseline Study Components

Subject	Description
Socio-economics	Includes demographics, workforce experience, health, social services, youth, education, economic development, opinions, perceptions, and the spiritual aspects of archaeology.
Physical Environment	Includes climate, air, noise, water, waste rock characterization, soils, and the physical aspects of archaeology.
Terrestrial Ecology	Includes terrestrial wildlife and wildlife habitat (e.g., caribou and carnivores), birds (e.g., raptors, geese, loons, shorebirds and songbirds), freshwater fish and fish habitat, vegetation, habitats, and biodiversity.
Marine Ecology	Includes marine mammals, marine fish and lower trophic levels, physical and chemical oceanography, and marine and shoreline habitats.

Objectives of the baseline studies included:

- Defining existing social and environmental conditions (baseline studies were run concurrent to the bulk sampling program);
- Identifying potential social and environmental concerns and sensitivities; and
- Providing information for Project design.

Baseline studies were conducted using:

- Literature review;
- Site investigations;
- Stakeholder, Inuit, and government consultation; and
- Inuit knowledge studies.

3.3.2 Challenges and Gaps in Baseline Data Collection

Collection of baseline environmental data in the high arctic has challenges, with a period of 24-hour darkness between November and January, and long winters of extreme temperatures. As a result, only the largest of rivers do not freeze up, and ice cover on lakes reaches thicknesses of up to 10 feet. Further, the lack of basic infrastructure means an increased reliance on helicopters, adding cost and logistical challenges. This is a reality faced by any proponent working in Nunavut or other cold-climate regions. Consequently, baseline data collection is biased to three seasons (spring, summer and fall) for many aspects of the program. For most environmental components (air, noise, soils, geochemistry, archaeology, vegetation, migratory birds) this has not negatively affected the baseline dataset.

Winter work for fish was limited to late winter assessments on Sheardown Lake; however, this has not affected or biased the dataset since most streams are frozen and fishless in winter. Caribou aerial surveys were not possible during the deep winter; however, recent caribou collar data from the Government of Nunavut has helped with an understanding of year-round distribution of caribou.

Gaps in Baseline Data

The Project is located in an area that has been subject to relatively limited environmental studies in the past. Below are examples of the more prominent gaps in baseline data and how these gaps were addressed:

Environmental Component	Gap in Existing Data	How the Gap was Addressed
Climate	Long-term climate records are for areas distance from the Project site(s)	Climate stations were installed at the Mine site (2005), Milne Port (2006) and Steensby Port (2007)
Air quality	No existing baseline air quality data in the region	Baffinland commissioned its own air quality baseline data collection
Noise	No existing baseline noise data in the region	Baffinland collected baseline noise measurements
Hydrology	No existing hydrology data for northern Baffin Island	Baffinland operated 8 to 18 seasonal hydrology stations over the period of 2005 through 2011, and commissioned the Water Survey of Canada since 2007 to operate 4 year-round regional stations on large rivers.
Water Quality	No existing water quality data for northern Baffin Island	Baffinland initiated a comprehensive water quality sampling program in 2005 and carried out spring-summer-fall sampling over the years of 2005 to 2008 and in 2011.
Soil	Existing data limited to surficial and bedrock geology mapping	Baffinland carried out terrain mapping and extensive geotechnical investigations across the 260 km study area, focusing the most on the Railway.
Archaeology	Limited surveys were carried out previously within Milne Inlet, and other locations within northern Foxe Basin	Five years of archaeological surveys were carried out across the study area.
Vegetation	Limited vegetation data was available, and no Ecological Land Classification (ELC) existed for the area. Published books suggested a number of rare plants.	Baffinland carried out an extensive vegetation sampling program (nearly 700 vegetation plots) and developed its own ELC. Project surveys determined that “rare” plants were well represented and common throughout the area.
Migratory birds	Limited existing migratory bird information existed; most focused on identification of key bird habitat areas at a regional scale, and focused on the Bylot Island Bird Sanctuary.	Baffinland conducted three years of detailed surveys (2006 to 2008), and additional confirmation surveys for raptors in 2011 to address gaps and shortcomings in the earlier dataset.
Caribou	Very limited information existed for caribou.	Aerial surveys were conducted in 2006 and 2007, and Baffinland funded a GN-led caribou collaring program. The IQ study focused on caribou and became essential in understanding long-term trends in caribou abundance and distribution.

Physical Oceanography	Limited tide and current data existed, as well as missing hydrographic information	Baffinland carried out multiple years of detailed port surveys, including side-scan sonar, coastal habitat mapping, underwater videography, ship route bathymetric surveys, tide and current instrumentation.
Chemical Oceanography	No port site information existed	Baffinland carried out sampling programs to characterize the marine water and sediment quality around the port sites.
Marine Mammals	Limited information existed for the entire shipping route	Baffinland carried out aerial surveys of marine mammals and reliance on an IQ study to derive historical and habitat information. Baseline dataset is still limited, and the Company has committed to working with DFO and other stakeholders to carry out additional studies and project monitoring.

3.3.3 New Baseline Data Incorporated since the DEIS

Since the DEIS was issued in January 2011, the following additional work has been carried out and is presented in the FEIS:

- At the request of Environment Canada, additional water quality sampling was carried out in 2011 and was incorporated into an updated water and sediment quality baseline report.
- At the request of Environment Canada, additional bird surveys (raptors and shorebirds) have been conducted and are reported in an updated bird baseline report.
- Additional caribou collaring data recorded since the DEIS was prepared was obtained from the GN and was incorporated in an updated terrestrial wildlife report.

The above additional information has been incorporated into updates of the Bird Baseline Report (Appendix 6E),

3.4 INUIT KNOWLEDGE STUDIES

Section 7.5 of the Guidelines requires the proponent to present and justify its definition of Traditional Knowledge (TK). There are a number of different terms used by various parties regarding Inuit or traditional knowledge, or in Inuktitut, Inuit Qaujimajatuqangit, NIRB (2007) defines TK as:

> *"Cumulative body of knowledge, practice and belief, evolving by adaptive processes and handed down through generations by cultural transmission. Specific Inuit Traditional Knowledge is referred to as Inuit Qaujimajatuqangit."*

In the Glossary of the Guidelines, NIRB (2009) identified two definitions provided by the QIA in their review of a draft of the Guidelines, as follows:

> *Inuit Qaujimajatuqangit - traditional, current and evolving body of Inuit values, beliefs, experience, perceptions and knowledge regarding the environment, including land, water, wildlife and people, to the extent that people are part of the environment.*
>
> *Inuit Qaujimaningit - (a) Inuit traditional knowledge and variations of Inuit Traditional Knowledge; (b) Inuit epistemology relating to: Inuit Societal values (including the legal*

obligations set out in the NLCA regarding Inuit Participation, Inuit employment and training, etc.); and Inuit knowledge (both contemporary and traditional).

For the EIS, Baffinland adopted NIRB's definition of Inuit Qaujimajatuqangit for TK, and the term Inuit knowledge has been used interchangeably with Inuit Qaujimajatuqangit (IQ).

Inuit knowledge studies were carried out specific to the Mary River Project (2006 through 2010) with the sole focus of supporting project design and the environmental assessment process. IQ was explored through individual interviews with Inuit Elders (i.e., oriented to more historical-based perspective), and through workshops with current land users to obtain a contemporary perspective. For an overview of the working groups, individual interviews and focus sessions held in relation to the Project, see Section 1.5.3 through Section 1.5.5. For a description of the IQ research methodology, see Volume 4, Appendix 4C. IQ study findings were incorporated directly in environmental baseline study reports appended to the EIS, and in the individual effects assessments as appropriate. Figure 2-3.2 provides a graphical representation of the various ways that IQ was integrated into the data collection and environmental effects assessment process.

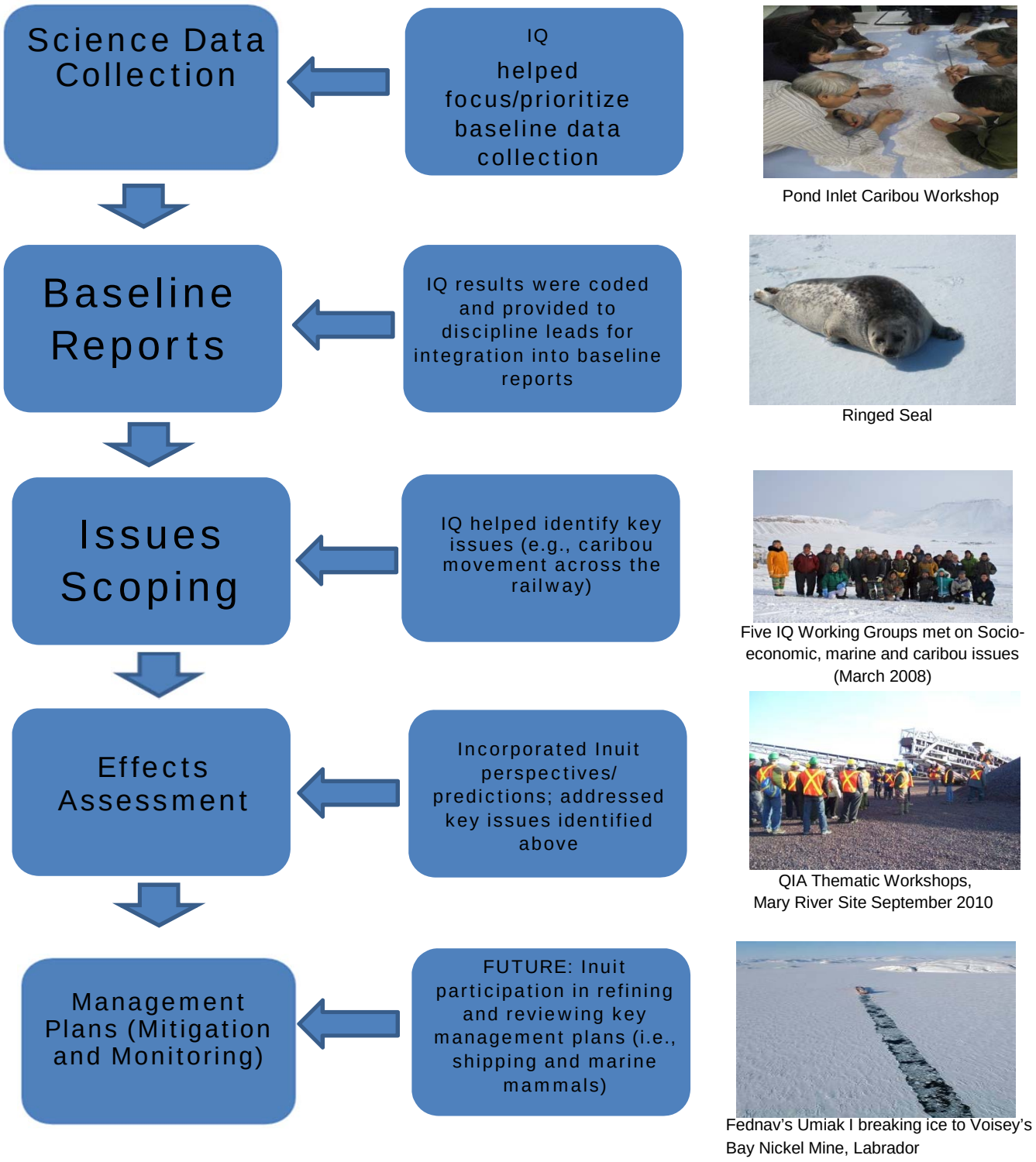
Overall, the IQ information was found to be complementary to scientific studies, and in some instances such as caribou, where limited historical scientific data were available before Project studies, IQ information played a central role in developing an understanding of baseline conditions and historical trends of caribou abundance, distribution and habitat. Pre-existing IQ studies by others, such as the Inuit Land Use and Occupancy Project (Milton Freeman Research Ltd., 1976) and the Nunavut Wildlife Harvest Study (Priest and Usher, 2004) were also incorporated in a land use baseline report (see Appendix 4C) and wildlife baselines and effects assessments. IQ was used to identify and substantiate VECs and VSECs, to help focus the effects assessments on the issues identified by local communities and knowledge-holders, and in identifying mitigation and monitoring plans. Local hunters, for example, suggested a wildlife harvest study as a means of monitoring Project effects, and a preliminary study plan for a harvest study has been noted in the Terrestrial Environmental Management Plan (see Appendix 10D-11), as one potential approach to monitor wildlife in the region as the Project moves forward.

3.5 ISSUES IDENTIFICATION

Environmental and socio-economic issues of concern were identified through the North Baffin Regional Land Use Plan (NPC, 2000) and through Inuit, stakeholder and government consultation (see Section 1) to focus the environmental effects assessment. Issues were identified through:

- Public meetings;
- Inuit knowledge and IQ working group meetings;
- Intervener comments during NIRB's screening of Baffinland's bulk sampling program;
- North Baffin Regional Land Use Plan; and
- Issues raised in NIRB reviews of other mining projects.

Issues of concern led to identification of VCs, described in the following section.



BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT
METHODS OF INCORPORATING IQ INTO THE EIS

Baffinland Iron Mines Corporation	REF NO. **BL_Vol2_EXL_002**	
	FIGURE 2-3.2	REV 0

3.5.1 Identification of Valued Components (VCs)

VCs identify key species or topics to focus the effects assessment. NIRB (2007) distinguishes between valued ecosystem components (VECs) as the VCs of the biophysical environment, and valued socio-economic components (VSECs) relating to the human, economic, and spiritual environment. VECs and VSECs are defined by NIRB:

- **VECs** include those aspects of the environment considered to be important to a particular region or community and might include:
  - Resources that are either legally, politically, publicly, or professionally recognized as important, such as parks, land selections, and historical sites;
  - Resources that have ecological importance, such as keystone species which, if affected, have a disproportionate effect on their surroundings relative to the types and numbers of other species in a community, and those species that are suitable ecological indicators; and
  - Resources identified for their importance to local communities because they are either harvested or of prominent spiritual importance.
- **VSECs** include those aspects of the social and economic environment that are identified to be important to a particular region or community, including components relating to the local economy, health, demographics, traditional way of life, cultural well-being, social life, archaeological resources, existing services and infrastructure, and community and local government organizations. VSECs were identified through focus sessions and individual and key person interviews (see Volume 4).

The effects assessment volumes (Volume 4 through Volume 8) are organized according to resource component themes (e.g., socio-economic environment, atmospheric environment, terrestrial environment, freshwater aquatic environment, marine environment). VECs and VSECs were identified within each of these themes based on the issues identified (Section 3.5). The Guidelines identify a minimum set of VECs and VSECs to be considered by the proponent in the environmental effects assessment.

Key indicators (KIs), or environmental indicators, are subsets of VECs or VSECs used to communicate information about the environmental effects of the Project. The use of indicators is a pragmatic approach to conducting environmental effects assessment, where evaluating every potential effects on the receiving environment is not practical. KIs have been identified under each VC. For a summary of Project VCs, KIs, and the rationale for selection, see Table 2-3.2.

The VCs and key indicators were confirmed with potentially affected communities during public meetings convened by Baffinland in April 2010. NIRB independently identified issues and identified the VCs adopted by Baffinland. NIRB included comments received from interveners during screening of the development proposal, and public meetings they convened in April and May 2010.

Table 2-3.2 Valued Components, Key Indicators, and Rationale for Selection

Themes	Guideline VCs	Key Indicators	Rationale
Atmospheric Environment	Climate change	Greenhouse gases	Required by the Guidelines
		Climate change	Required by the Guidelines
	Air quality	Particulate matter, SO2, NOX	Potential for consequent effects on other VCs, including vegetation, fish and wildlife
	Noise and vibration	Atmospheric noise levels, marine noise levels, vibration	Potential for consequent effects on other VCs, including fish and wildlife
Terrestrial Environment	Landforms, soil and permafrost	Sensitive landforms	Project is located in a permafrost region with thaw-sensitive soils
	Vegetation	Plant abundance and diversity Plants important to Inuit Plant health	Plants important to Inuit qualify as a VEC; plant abundance and health important to biodiversity
	Terrestrial wildlife and habitat	Caribou	Key terrestrial wildlife species of interest to Inuit
	Migratory birds and habitat	Peregrine Falcon, Snow Goose, Common and King Eider, Red-throated Loon, Lapland Longspur, Thick-billed Murre	Key species that are expected to interact with the Project which are also abundant in the region, used by Inuit, or are good environmental indicators. Potential shipping interaction with colonies and flightless migration
	Species at Risk	Short-eared Owl Harlequin Duck Red-Knot Ivory Gull Ross' Gull	Species at Risk Act (SARA) requirement
Freshwater Aquatic Environment	Surface water include freshwater quality and quantity	Water quantity Water and sediment quality	Substantial effects on water quantity and quality are subject to potential compensation in the NLCA
	Freshwater fish, fish habitat and other aquatic organisms	Arctic char	Indicator species, valued and used, life cycle encompasses aquatic organisms, available information
Marine Environment	Sea ice	Area of shore fast ice in Steensby Inlet	Sea ice is of cultural and subsistence importance to Inuit; of large ecological significance to Arctic marine environments (most Arctic marine systems are driven by the relative distributions of ice and open water)

Table 2-3.2 Valued Components, Key Indicators, and Rationale for Selection (Cont'd)

Themes	Guideline VCs	Key Indicators	Rationale
Marine Environment	Water and sediment quality	Water and sediment quality parameters with established guidelines	Water and sediment quality are important to marine aquatic life, including Arctic char
	Marine habitat and biota	Arctic char	Marine biota important to Inuit and to higher trophic levels (seabirds and marine mammals); habitat protected under Fisheries Act
	Marine mammals	Ringed seals, bearded seal, bowhead whale, walrus, beluga whale, narwhal, polar bear	Of large cultural and social significance to Inuit; many species are under consideration by SARA or are listed as Species of Concern or Threatened by COSEWIC
People	Population demographics	Demographic stability	Interactions in these areas have potential to affect the fabric of communities.
	Education and training	Life skills; education and skills	Of major interest to community residents, direct Project interactions.
	Human health and well-being	Well-being of children; substance abuse	Of major interest to community residents. Direct and indirect interactions.
Community	Community infrastructure and public service	Recruitment and retention of hamlet workers	Local concern and potential for interaction that might affect services.
	Governance and leadership		Guideline requirement
	Livelihood and employment	Wage employment; job progression and career advancement	Major local expectations and direct Project interactions
	Cultural resources	Archaeological sites	Cultural resources are of spiritual importance to Inuit
	Resources and land use	Wildlife harvesting by Inuit Travel and camps	The potential for the Project to affect land u se has been expressed, particularly related to harvesting
	Cultural well-being		Guideline requirement
Economy	Economic development and self-reliance	Economic development and self-reliance	Project has direct and indirect interactions
	Contracting and business opportunities	Business opportunities	Project has direct and indirect interactions
	Benefits, taxes and royalties	Territorial government own-source revenues	Project has direct and indirect interactions

3.5.2 Measurable Parameters and Thresholds

Measurable parameters are clearly defined aspects of an indicator (VEC/VSEC) that can be quantified and compared against a baseline value or condition. Each measurable parameter has an associated performance level or standard that can establish an effect magnitude or indicate compliance with formal standards.

Thresholds are limits of acceptable change determined from regulated guidelines or by professional opinion. For this assessment they were determined on a VC-specific basis. Wherever possible, quantitative thresholds, determined by relevant regulatory bodies, were adopted for biophysical VCs; however, where these did not exist, qualitative thresholds were considered based on professional judgement. Qualitative thresholds were commonly applied to VSECs for example, establishing thresholds for demonstrating broad community support.

3.5.3 Interactions, Key Issues, and Subjects of Note

Interaction matrices were developed as a starting point for the assessment, by relating key Project activities with VCs and KIs. For the predicted interactions between the Project and VCs/KIs at the major project components, Milne Port, Milne Inlet Tote Road, Mine Site, Railway, Steensby Port, and shipping, respectively, see Tables 2C-1 through 2C-6 in Appendix 2C. For the interactions between the Project and socio-economic components, see Table 2C-7.

Not all social or environmental effects or issues are equally significant to warrant the same level of consideration in the EIS presentation. To further focus the EIS analysis on those issues that are important to stakeholders and/or more likely to have the potential to cause a significant adverse environmental effect, a distinction between key issues and subjects of note has been made within each of the interaction matrices by assigning one of three levels to each potential interaction shown in Tables 2C-1 through 2C-7 in Appendix 2C, in accordance with the following definitions:

- Level 0 - Indicates no measurable (or detectable) interaction.
- Level 1 - Indicates Subjects of Note, i.e., interactions are those that are less likely to be of notable environmental importance or consequence. These result from Project-environment interactions that are well understood, are common to projects of this nature, and can be addressed through application of standard, proven mitigation or prevention approaches. While these subjects have been identified and analyzed to establish their level of significance as part of the effects assessment process, they are addressed with brevity in the EIS presentation to focus the assessment on the key issues.
- Level 2 - Indicates key issues, i.e., interactions that are of substantial public interest and/or of potentially high environmental importance or consequence, and consequently require rigorous investigation and analysis in the EIS. Key issues might warrant modelling combined with scientific and/or traditional expert evaluation to substantiate effects predictions. Key issues are those with potential to result in negative consequences to stakeholders, the environment, and/or the decision-making process.

3.6 EFFECTS ASSESSMENT

3.6.1 Assessment Methodology

Identification and assessment of environmental and social effects was based on the following steps:

- Identification of major Project activities during each phase of the Project, as defined in the Project Description (see Volume 3);
- Identification of project interactions that are likely to result in a change/effect to a VC or its indicator (see Section 3.4.1), and mapping the interactions and effects on linkage diagrams;
- Designation of Project interactions with VEC/VSEC or indicators as nil (no interaction), subjects of note (Level 1 interaction), or key issues (Level 2);
- Assessment of the magnitude of the effect of the Project's interaction with the VEC or VSECs depending on the relative importance (scale, frequency, duration, intensity) and certainty/uncertainty around the effects;
- Selection of appropriate measurable parameters and thresholds based on established performance criteria or professional judgment;
- Establishment of the framework for evaluating significance of residual impacts;
- Identification of mitigation measures to reduce or eliminate negative effects;
- Determination of the potential for a residual effect, and if anticipated, its significance; and
- Identification of monitoring plans and adaptive management objectives.

Baffinland has used best practice methods to predict the nature and extent of effects that might result from Project implementation. For each effects assessment volume, relevant references, analyses and explanations appropriate to the resource theme being analyzed are included, defining:

- How scientific, engineering, community and Inuit knowledge was used in the assessment;
- Which studies included assistance of communities and individuals, who was involved (if the information can be made public), and how participants were selected;
- Data collection methods and limitations;
- Model assumptions and study methodologies;
- Study and model outputs, calculations, support analyses, and explanation of results; and
- Reference literature or other information sources for any contributions, including Inuit knowledge.

Additional studies were carried out to support development of the effects assessments. Wherever possible these studies included statistical analysis or mathematical modelling to support effects predictions and included the following:

- **Air quality modelling** - To predict the potential fate and transport of Project-related air emissions at Milne Port (including ore haulage traffic), the Mine Site, and Steensby Port (including railway operations);
- **Noise modelling** - To predict the noise generated at the Mine Site and Steensby Port;
- **Pit water quality modelling** - To predict the long-term quality and ecological risk posed by the post-closure pit configuration;
- **Economic Impact modelling** - To estimate the monetary flows generated and induced by Project expenditures;
- **Permafrost depth modelling** - Extrapolation of deep thermistor data to establish a basement depth of permafrost;

- **Ecological land classification** - To predict the distribution and relative quality of terrestrial wildlife habitat and specific plant species;
- **Resource Selection Function** - To predict the probability of caribou occurrence throughout the RSA based on recent collar data;
- **Water quality modelling** - To estimate the quality of water that contacts and runs off waste rock and ore stockpiles;
- **Ballast water dispersion modelling** - To understand the physical aspects of ore carriers discharging large volumes of ballast water while at the ore dock; and
- **Marine spill modelling** - To estimate the potential trajectory of a catastrophic spill of diesel fuel in the marine environment.

These additional studies are reported in the appendices of the respective effects assessment volumes.

3.6.2 Effect Categories

NIRB defines an environmental effect as a positive or negative change in the biophysical and/or socioeconomic environment caused by or directly related to a proposed activity. Effects are defined as direct, indirect, and cumulative as follows (NIRB, 2007):

- **Direct Effects** - Refers to changes in the VC that result from direct interactions between Project activities and the environment.
- **Indirect Effects** - Refers to effects on the environment that are not a direct result of the Project. For example, fugitive dust fallout could have the potential direct effect of causing losses of local vegetation species. An indirect effect results when the availability of that vegetation as forage becomes limited and reduces the food supply for certain terrestrial mammals.
- **Cumulative Effects** - Refers to effects that result from incremental changes caused by interactions between the Project and other past, present, or reasonably foreseeable future projects or activities. Cumulative effects are addressed in Volume 9.

3.7 MITIGATION MEASURES

Mitigation measures are management actions or strategies applied to minimize or eliminate negative environmental effects. Mitigation of environmental effects can be achieved through project design and adaptive management. Project design considerations and alternatives used to minimize or eliminate the potential for residual effects are identified in the Project Description (see Volume 3). Mitigation measures are also used to reduce or eliminate the potential residual effects of the Project and are identified in each of the effects assessments, along with potential residual effects. Once the Project is underway, monitoring results will be used to verify effect predictions identified in the EIS. If required, further mitigation measures will be identified periodically; this is further described in the Environmental Effects Monitoring Framework (see Volume 10) and discipline-specific management plans.

3.8 DETERMINING SIGNIFICANCE OF RESIDUAL EFFECTS

Residual projects effects refer to the environmental effects identified for the Project, post-mitigation. The significance of residual environmental effects was determined from the following criteria (NIRB, 2009):

- Direction or nature of an effect (i.e., positive/beneficial versus negative/adverse);
- magnitude and complexity of an effect;
- Extent of the effect, including the geographical area that will be affected, the size of the affected human populations, and/ or the size of the affected wildlife populations and habitat;
- Frequency and duration of an effect;
- Reversibility or irreversibility of an effect;
- Probability of occurrence of the effect;
- Confidence in the effect prediction; and
- Context of the effect.

These criteria were adopted for this assessment, as specified in the Guidelines and because the criteria have precedence of use for other environmental assessments in the Canadian Arctic (NIRB, 2007, 2009; Lawrence Environmental 2000, 2004; Wolfden Resources Inc., 2006; De Beers Canada Inc., 2004). In addition to the above attributes, NIRB (2009) directed Baffinland to consider additional qualifiers in its significance evaluation. Definitions and assessment criteria for each are identified in Table 2-3.3, which lists the complete set of attributes (criteria and qualifiers), provides a definition and rationale as well as a summary of their relevance or context to the Mary River Project, and describes how the attribute was incorporated into the assessment.

Table 2-3.3 Attributes Used to Evaluate Significance of Residual Effects

Attribute	Definition and Rationale	Role in Significance Determination[2]
Direction and Nature[1]	The ultimate long-term trend of an environmental effect - positive, neutral, or negative.	**Qualifier** Only negative effects are assessed for significance
Magnitude[1]	The amount or degree of change in a measurable parameter or variable relative to existing conditions (the exposed population)[3]. This attribute can also consider complexity - the number of interactions (Project phases and activities) contributing to a specific effect.	**Primary Criterion** High magnitude= high significance **Secondary Criterion** If magnitude and geographic extent are related, the higher the potential significance
Extent[1]	The geographic area over which the interaction will occur.	**Secondary Criterion** The larger the zone of influence, the higher the potential significance
Frequency[1]	The number of times during a project or a project phase that an interaction or environmental effect can be expected to occur.	**Secondary Criterion** Greater the frequency of occurrence, the higher the potential significance
Timing	The Project Phase within which the environmental effect will occur.	**Qualifier** Provides context
Duration[1]	The period over which the environmental effect will occur.	**Secondary Criterion** The longer the duration of an interaction the higher the potential significance

Table 2-3.3 Attributes Used to Evaluate Significance of Residual Effects (Cont'd)

Attribute	Definition and Rationale	Role in Significance Determination[2]
Reversibility[1]	The likelihood that a VEC/VSEC or Indicator will recover from an environmental effect, including consideration of active management techniques. Reversibility is considered for biological VECs at the population level. Therefore, although an effect like mortality is irreversible, the effect at the population level might be reversible.	**Primary Criterion** The greater the potential to reverse an effect, the lower its potential significance
Probability[1]	The likelihood that an interaction and a consequent effect will, in fact occur.	**Qualifier** (considered only for potentially significant effects) The higher the probability of occurrence, the greater the significance
Certainty[1]	The level of confidence in the knowledge or analysis that supports the prediction, in particular with respect to limitations in overall understanding of the ecosystem, and limitations in the ability to foresee future events or conditions.	**Qualifier** (considered only for potentially significant effects) The lower the certainty of occurrence, the more conservative the approach to prediction of significance
Ecological/Socio-economic context/value1	The general characteristics of the area in which the Project is located, as indicated by existing levels of human activity and associated types of disturbance. Interpreted to mean the basis for assigning "value" to the particular VEC.	**Qualifier** **VECs/ VSECs and Indicators have been identified as "valued" as described in Section 3.5.1**
Environmental Sensitivity[1]	Environmental sensitivity of the area likely to be potentially affected. Refers to areas of heightened sensitivity that will be identified where applicable in relation to the Project (i.e., areas sensitive to spills; caribou calving areas).	**Qualifier** The Magnitude of an effect within an area of environmental sensitivity will be greater; therefore environmental sensitivity is considered in the discussion and rating of the Magnitude attribute.
Historical, cultural, archaeological significance[1]	To be considered within the geographic area to be potentially affected	**Qualifier** (see Extent - above) Historic, cultural and archaeological significance is evaluated within the archaeology effects assessment (Volume 4)
Human and wildlife populations, and the size of the affected wildlife populations and related habitat[1]	The size of the potentially affected human populations; and the size of the potentially affected wildlife populations and related habitat.	**Qualifier** (See Extent - above)
The extent of the effects of the project on other regional human populations and wildlife populations, including the extent of the effects on Inuit harvesting activities[1]	The Project might have the potential to affect other human and wildlife population, if there are residual effects to marine wildlife or socio-economic benefits that extend outside Nunavut.	**Qualifier** Consider within the Transboundary Effects Assessment (Volume 9, Section 4)

Table 2-3.3 Attributes Used to Evaluate Significance of Residual Effects (Cont'd)

Attribute	Definition and Rationale	Role in Significance Determination(2)
The potential for cumulative adverse effects given past, present and future relevant events[1]	The Project might have the potential for cumulative effects where residual effects from the Project are expected to occur.	**Qualifier** Consider in the Cumulative Effects Assessment (Volume 9, Section 1)
Ecosystem function and integrity[1]	Ecosystem function and integrity is important to identified VECs and humans.	**Qualifier** Outcome of the significance determination
The effect on the capacity of resources to meet present and future needs (sustainability)[1]	The sustainability of this Project, and any major industrial project, is an important element to assess.	**Qualifier** Outcome of the significance determination
Value[1]	The value attached to the affected VEC or VSEC by those who identified them. An environmental or socio-economic component was identified as "valued" and was addressed in the EIS if it was found to have a high value to communities.	**Qualifier** Addressed as part of Issues Scoping where the "value" of each component is considered. The value attached to a VEC or VSEC is more or less equivalent to "Sensitivity" described above.

NOTES:
1. SPECIFICALLY REQUIRED BY NIRB GUIDELINES.
2. **CRITERION** - DIRECTLY CONTRIBUTES TO THE DETERMINATION OF SIGNIFICANCE. **PRIMARY CRITERIA** ARE GIVEN GREATER WEIGHT THAN S**ECONDARY CRITERIA**. **QUALIFIER** - ACTS AS A MODIFIER TO BE CONSIDERED WHEN ASSIGNING VALUES/RANKINGS TO ASSESSMENT CRITERIA.
3. IN THE MAJORITY OF CASES THERE IS EITHER A POOR OR NO ESTIMATE AVAILABLE OF THE TOTAL POPULATION. HOWEVER FOR THE PURPOSE OF UNDERTAKING AN ENVIRONMENTAL ASSESSMENT, AN EFFECTS PREDICTION CAN BE MADE BY MAKING REASONABLE ASSUMPTIONS. THE MOST COMMON APPROACH IS TO TAKE AN AREA THAT IS LESS THAN THE FULL RANGE OF A POPULATION AND, OFTEN ON THE BASIS OF DENSITY ESTIMATES (OR BY USING HABITAT AS AN INDICATOR), A CONSERVATIVE PREDICTION IS POSSIBLE, I.E. IF THE EFFECT IS CALCULATED FOR A PORTION OF THE POPULATION AND IT RESULTS IN A MAGNITUDE OF EFFECT THAT IS BENEATH A DEFINED THRESHOLD, THEN IT IS REASONABLE TO PREDICT THE EFFECT ON THE ENTIRE POPULATION, EVEN IN THE ABSENCE OF A TOTAL POPULATION ESTIMATE. THIS APPROACH IS NOT GREATLY DIFFERENT FROM THAT USED BY RESOURCE MANAGERS THAT HAVE THE MANDATE TO MANAGE WILDLIFE POPULATIONS, WHO ARE CHALLENGED TO DEVELOP HARVEST QUOTAS, EVEN WHERE THEY DO NOT HAVE AN ACCURATE OR COMPLETE POPULATION ESTIMATE AVAILABLE TO SUPPORT THESE DECISIONS.

Volumes 4 through 8 present the effects predictions for individual resource-specific component themes presented in each volume. Volume 9 presents the cumulative environmental effects assessment.

3.8.1 Rating of Residual Biophysical Impacts

For the categories for criteria and qualifiers applied directly to the determination of significance for residual biophysical effects, with due consideration to the NIRB requirements cited above, see Table 2-3.4.

Table 2-3.4 Ratings for Evaluating Residual Biophysical Effects

Criteria	Classification	
Magnitude (Specific to the VEC and the impact)	Level I	An effect on the exposed indicator/VEC that results in a change that is not distinguishable from natural variation and is within regulated values
	Level II	An effect that results in some exceedance of regulated values and/or results in a change that is measurable but allows recovery within one to two generations

Table 2-3.4 Ratings for Evaluating Residual Biophysical Effects (Cont'd)

Criteria	Classification	
	Level III	An effect predicted to exceed regulated values and/or results in a reduced population size or other long-lasting effect on the subject of assessment
Extent The physical extent of the effect, relative to study area boundaries	Level I	Confined to the LSA
	Level II	Beyond the LSA and within the RSA
	Level III	Beyond the RSA
Frequency How often the effect occurs	Level I	Infrequent
	Level II	Intermittent
	Level III	Frequent or continuous
Duration The length of time over which a Project effect will occur	Level I	Short term (effect lasts up to four years)
	Level II	Medium term (up to 25 years, for the life of the Project)
	Level III	Long term (beyond the life of the Project) or permanent
Reversibility The likelihood of the VEC to recover from the effect	Level I	Fully reversible
	Level II	Reversible with cost/effort
	Level III	Irreversible
Qualifiers		
Certainty Limitations in the overall understanding of the ecosystem and ability to predict future conditions	High	Baseline data are comprehensive; predictions are based on quantitative data; effect relationship is well understood
	Medium	Intermediate degree of confidence between high and low
	Low	Baseline data are limited; predictions are based on qualitative data; effect relationship is not well understood
Probability The likelihood that the predicted impact/residual effect will occur	Unlikely	Less than 20% likelihood of occurrence
	Moderate	Between 20 and 60% likelihood of occurrence
	Likely	Over 60% likelihood of occurrence

Each of the five criteria contributes to the determination of significance. Criteria are categorized in three levels (Levels 1, 2, and 3), where Level I is indicative of a negligible or limited potential to contribute to an overall significant environmental effect, and Level III is indicative of a high potential. Level II represents the intermediate condition.

For the assessment table formats used to summarize the effects assessment of biophysical VECs, see Table 2-3.5 and Table 2-3.6. Note that adjustments and adaptations can be made to suit the individual analyses. These are noted in each VEC discussion.

Table 2-3.5 Effects Assessment Summary for Selected VEC/Key Indicator

Effect	Direction and Nature of Effect	Residual Effect Evaluation Criteria					Significance
		Magnitude	Extent	Frequency	Duration	Reversibility	Rated Significance of Residual Effect

Table 2-3.6 Significance of Potential Residual Biophysical Effects

Effect	Significance of Predicted Residual Environmental Effect		Likelihood (1)	
			Probability	Certainty
	Significance Rating	Level of Confidence		

Key
Significance Rating: S = Significant, N = not Significant, P = Positive
Level of Confidence[1]: 1 = Low; 2 = Medium; 3 = High
Likelihood - only applicable to significant effects
Probability: 1 = Unlikely; 2 = Moderate; 3 = Likely
Certainty[2]: 1 = Low; 2 = Medium; 3 = High

NOTE(S)

1. LEVEL OF CONFIDENCE IN THE ASSIGNMENT OF SIGNIFICANCE.
2. CERTAINTY AROUND THE ASSIGNMENT OF LIKELIHOOD.

Qualifier 1 - Level of Confidence

The level of confidence with predictions is an important qualifier in that a low level of confidence will require a conservative approach to each of the evaluation criteria. Level of confidence is related to limitations in the overall understanding of the ecosystem and limitations in accurately foreseeing future events or conditions. Uncertainties associated with each prediction are described in each effects assessment at a level of detail that corresponds to the relative uncertainty (i.e., where effects predictions have greater certainty, more emphasis was placed on articulating the uncertainties). A level of confidence is assigned to qualify significance rankings relative to the quality and confidence in the data used and the evaluation methodology.

"Low" is assigned where there is a high degree of confidence in the inputs, **"Medium"** when there is moderate confidence, and **"High"** when there is a low degree of confidence in the inputs. Where rigorous field baseline data were collected and scientific analysis performed, the degree of confidence will generally be high.

Qualifier 2 - Likelihood

The likelihood parameter is assigned a probability dimension as well as a level of certainty, to qualify significance rankings relative to the likelihood that the predicted effects will actually occur**. "Unlikely"** indicates a low probability of occurrence, **"Moderate"** a moderate probability, and **"Likely"** a high probability. For example, where effects are associated with unplanned accidental releases against which mitigation and emergency response protocols are in place, the probability is low. Certainty is assigned to indicate the relative level of confidence in the probability prediction. Collectively, the probability and certainty assignments indicate the overall likelihood of an effect.

3.8.2 Rating Criteria for Residual Socio-Economic Impacts

Similar criteria were applied to the socio-economic effects assessment with some modification and additional criteria in consideration of the nature, complexity, and multiple perspectives associated with socio-economic issues. For the attributes (criteria and qualifiers) identified as the determinants of significance of socio-economic effects, see Table 2-3.7.

Additional description of each criterion follows:

Direction

This criterion considers whether an effect is "positive" or "negative". The perceived direction of a given socio-economic effect is sometimes a subjective assessment that can vary across the population, so a "variable" option is also included in the classification. Determination of "direction" is based on values expressed during the community research and through existing documentation such as community economic development plans.

Geographical Extent

This attribute identifies whether the effect will be experienced in the smaller communities, in Iqaluit, or in both these areas. Some impacts might be relevant to specific communities, so a "community-specific" classification is included.

Social Extent

The "social extent" identifies the specific groups or social units most likely to experience an effect. These could include children, youth, women, family, or the entire community.

Equity

"Equity" considers whether those experiencing an effect have made a choice to engage in the project ("engaged individuals") or are simply bystanders who have not voluntarily associated with the project ("bystanders"). This criterion seeks to provide insight into how equitably the benefits and negative impacts are distributed.

Magnitude

"Magnitude" is the level of change relative to the appropriate baseline, rated as low, moderate, or high. These magnitude ratings are linked to measurable parameters where appropriate. Measurable parameters may be applied in a conceptual sense.

Frequency

The "frequency" of an effect provides an indication of how commonly the effect will occur during the Project, and is rated as low, intermittent, or continuous. Unless otherwise indicated the following definitions are associated with these levels:

- Infrequent - Occurring only occasionally.
- Intermittent - Occurring during periodic points in the project.
- Continuous - Occurring throughout the project life.

Table 2-3.7 Rating Criteria for Evaluating Residual Socio-Economic Impacts

Criteria	Classification
Direction	Positive
	Variable
	Negative
Geographic Extent	Description of the area and communities most affected
Social Extent	Demographic groups or social units identified as most affected
Equity	Engaged individuals
	Involuntary bystanders
Magnitude Intensity of the effect	Low
	Moderate
	High
Frequency How often the effect occurs	Infrequent
	Intermittent
	Continuous
Duration Length of time over which a Project effect will occur	Short term (less than four years)
	Medium term (up to 25 years, life of the Project)
	Long term (beyond the life of the Project)
Reversibility Likelihood of recovery from effect	Reversible
	Partly reversible with cost/effort
	Irreversible

Duration

"Duration" refers to how long an effect will continue to affect those who experience it. It is rated using the following definitions:

- Short term - Over a period of several years.
- Medium term - Within the life of the project life.
- Long term - Beyond the project life.

Reversibility

The "reversibility" criterion considers the likelihood of recovery from an effect, including consideration of the active management interventions that may be required to bring the residual effect to an acceptable level.

Three definitions are used in considering reversibility:

- Immediately Reversible - Effect reverses within an acceptable time frame with no intervention.
- Reversible with a cost/effect.
- Management required - Active intervention is required to bring the effect to an acceptable level.
- Irreversible - Effect will not be reversed.

3.8.3 Overall Evaluation of Significance

NIRB (2009) stated that impact significance is based on comparing the predicted state of the environment with and without the Project, and expressing a judgment as to the importance of the changes identified.

NIRB directed that the EIS shall present the residual effects assessment of the Project so that the reader can clearly understand the real consequences of the Project, the degree of mitigation of effects, and which effects cannot be mitigated or compensated for.

NIRB also directed Baffinland to consider the dynamic change of ecosystems and their components in determining significance.

The overall significance of an effect is derived from the experience and professional judgment of the environmental practitioners who prepared the assessment, considering the rankings of the contributing attributes of significance. While substantially based on professional judgment, the following are general rules of thumb applied in determining significance:

- If the magnitude of the effect is low, then the predicted effect is "not significant," recognizing that magnitude includes consideration of sensitive species, habitats or populations. If effects on measurable components such as air or water quality meet applicable performance criteria, standards or guidelines, then the magnitude of the effect is negligible to moderate, and therefore the prediction will be for an effect that is "not significant."
- If the geographic extent of the effect is confined to the PDA or LSA, then the predicted effect is likely to be "not significant."
- If the extent of a negative socio-economic effect is limited to individuals who also receive a corresponding positive benefit, then the predicted effect is likely to be "not significant."
- If the effect has a moderate to high reversibility, the predicted effect is likely to be "not significant."
- If the duration of the effect is short term (e.g., construction period only) then the effect prediction is also likely to be "not significant."

NIRB (2009) also directed Baffinland to communicate with potentially affected communities and organizations to solicit input on the values placed on VECs and VSECs as well as significance of impacts:

The Proponent shall describe how it will ascertain that significance that different parties assigned to each impact, and how it will proceed if different parties ascribe varying significance to VECs, VSECs or the associated impacts. If it is impossible to attain a consensus on the significance of certain impacts, the Proponent shall present the range of viewpoints expressed and shall present and justify its preference, if any. Finally, the Proponent shall describe the significance it ascribes to each effect, and justify how the significance of the effect was determined, taking into consideration and avoiding duplication of, the information provided above. (NIRB, 2009)

Finally, in its Pre-Hearing Conference Report, NIRB (2011) directed Baffinland to reconsider the significance of potential Project impacts where parties raised concerns with the significance determinations presented within the DEIS.

To this end, Baffinland has attempted to assemble, synthesize and present feedback from the following sources:

- Records of public meetings from 2006 through the first part of 2011;
- Records from Inuit knowledge studies held to date (individual interviews and workshops);

- Kajjuqtikkut - a five-day workshop held in Arctic Bay March 10-14, 2008, attended by members of the five Inuit Knowledge Study working groups. The key themes of transportation (marine and rail), caribou, marine mammals, and socio-economic issues were discussed and minutes recorded;
- A five-day workshop jointly held by Baffinland and the QIA at Mary River the week of September 12-18, 2010, with community representatives selected by the QIA. The workshop focused on community perspectives on the significance of predicted impacts on caribou, marine mammals and land use; and
- Feedback of concerns raised with the significance determinations presented in the DEIS.

Baffinland has integrated a summary of the significance determination within each of the individual effects assessments in Volume 4 through Volume 8 while Volume 9 presents the cumulative environmental effects assessment. The approach in this EIS has been to present the evidence clearly and in the manner requested in the Guidelines.

3.9 ENVIRONMENTAL HEALTH AND SAFETY MANAGEMENT SYSTEM

Mitigation measures are incorporated in the Project design to avoid, reduce or mitigate the severity of the expected adverse impacts of the project. Once these mitigation measures are implemented, it is necessary for Baffinland to monitor and report on their effectiveness and introduce corrective action as required. This process of monitoring, reporting, evaluating, reviewing, and continuous improvement is achieved with Baffinland's Environmental Health and Safety (EHS) Management System. The EHS Management System includes a number of specific Environmental Mitigation and Monitoring Plans (EMMP), which define the:

- processes by which the mitigation measures will be implemented;
- monitoring systems that will be put into place to document the adequacy of each mitigating action in reducing impacts to insignificant levels;
- roles and responsibilities of individuals responsible for implementation and follow-up;
- reporting and documentation requirements; and
- methods by which modifications to the impacts predictions and/or mitigating actions will be managed and improved in the event that those impacts and/or mitigation measures do not accurately reflect actual site conditions (review and continuous improvement).

Each EMMP focuses on a specific VEC or VSEC and outlines how monitoring results are used to refine or modify the design and implementation of mitigation measures and management activities (operating procedures). These plans also make it possible to ensure the proper operation of Project works, equipment and facilities. If necessary, the plans help reorient the work and make improvements at the time of construction and implementation of the various elements of the Project.

Each EMMP:

- Specifies criteria or thresholds to trigger corrective action based on its monitoring results;
- Identifies the position of the person responsible for the implementation of the corrective action; and
- Presents the system of accountability and the phase and component of the Project to which the mitigation measure would be applied.

Implementation of mitigation and monitoring measures will continue throughout all phases of the Project. For the general organization and content of the EMMPs, see Volume 10, and for detailed content of each EMMP, see Appendix 10D.

EMMPs vary in detail, reflecting the significance and complexity of the issues and information available relative to the current stage of Project development. Proposed mitigation could include additional baseline work, further research, and development of plans to provide an applicable framework and in some instances spell out the specific steps for implementing the impact-mitigating actions. They reflect current understanding of the local and regional environmental, social, and economic conditions. Each plan will be updated as the Project progresses to provide timely actions and responses to the issues they address, and task-specific procedures will be developed to define and detail each relevant job procedure.

The EMMP enables assessment of the effectiveness of the mitigation measures implemented. These monitoring requirements ensure that:

- The Project is conducted as proposed;
- The predicted adverse environmental effects are promptly mitigated at the earliest possible time; and
- The conditions set at the time of the Project's authorization and the requirements pertaining to the relevant laws and regulations are met.

3.10 CONCORDANCE WITH THE GUIDELINES

Baffinland has prepared a detailed concordance table containing information responding to each guideline requirement. The tables(contained in Appendices 1B-1 to 1B-7)), provides readers a reference to the volume or appendix, as well as a section reference (referring to the highest level section heading, when possible).

In certain instances, a guideline requirement is met by a number of individual sections, in some instances in multiple volumes or appendices. In other instances, concordance has been met with an entire document or level 1 section heading (e.g., Section 1).

SECTION 4.0 - LIST OF CONTRIBUTORS

This Final EIS was prepared for Baffinland by a large team of companies and consultants (see Table 2-4.1).

Engineering support was provided by Hatch Associates Ltd. and Canarail Consultants Inc., building on previous engineering work from Aker Kvaerner Canada Ltd. (now Aker Solutions), AMEC Americas Ltd., and Sandwell Engineering Inc. Shipping, ice and icebreaking related expertise was provided by Fednav Ltd. and their subsidiary, ENFOTEC Technical Services Inc.

Table 2-4.1 List of Contributors

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SECTION 5.0 - REFERENCES

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SECTION 6.0 - DEFINITIONS AND ABBREVIATIONS

6.1 DEFINITIONS

Adaptive Management Plans	A systematic, rigorous approach for deliberately learning from management actions with the intent to improve subsequent management policy or practice.
Agreement-in-Principle	A non-legally enforceable agreement, subject to final ratification or signing by parties to a future agreement.
Air Quality Modelling	To predict the potential fate and transport of Project-related air emissions at Milne Port (including ore haulage traffic), the Mine Site, and Steensby Port (including railway operations).
Ballast Water Dispersion Modelling	To understand the physical aspects of ore carriers discharging large volumes of ballast water while at dock at Milne and Steensby Ports.
Baseline	Environmental settings in the Project area as they exist naturally or pre-development, against which changes in the environment from a project can be assessed.
Best Practice Methods	A technique, method, process or activity that conventional wisdom regards as most effective at delivering a particular outcome.
Bulk Sample	A large ore sample extracted as a test for the purpose of demonstrating the quality of an ore and/or the economic viability of mining the ore.
Category 1 Community	Communities of North Baffin Island in the immediate vicinity of the Project that have existing and historical socio-economic and/or ecosystemic ties to the Project area, and for which the Project has a direct effect on the traditional land use of their residents. Listed in alphabetical order, these communities include Arctic Bay, Clyde River, Hall Beach, Igloolik, and Pond Inlet.
Category 2 Community	Communities with a potential interest in the Project because of their location along the shipping lanes: Cape Dorset and Kimmirut.
Category 3 Community	Communities that will be affected because of its commercial and institutional importance in Nunavut: City of Iqaluit.
Certainty	The level of confidence in the knowledge or analysis that supports the prediction, in particular with respect to limitations in overall understanding of the ecosystem, and limitations in the ability to foresee future events or conditions.

Closure and Post-Closure Phase	Considered the period required for decommissioning and/or removing Project infrastructure.
Baffinland Community Liaison Office	A first point of contact for communities in terms of obtaining or exchanging information on the Project and employment.
Construction Phase	Defined by the length of the construction phase of the railway.
Consultation	Information exchange, participation
Crown Land	Land owned by the federal government, administered by Indian and Northern Affairs Canada within Nunavut.
Cumulative Effects	Refers to effects that result from incremental changes caused by interactions between the Project and other past, present, or reasonably foreseeable future projects or activities.
Definition Phase	Inclusive of all exploration and research programs, as well as the bulk sampling program carried out in 2007 and 2008.
Direct Effects	Refers to changes in the VC that result from direct interactions between Project activities and the environment.
Direction and Nature (of an Effect)	The ultimate long-term trend of an environmental effect - positive, neutral or negative.
Duration	The period over which an effect will occur.
Ecological Land Classification	To predict the distribution and relative quality of terrestrial wildlife habitat and specific plant species.
Ecological/Socio-Economic Context/Value	The general characteristics of the area in which the Project is located, as indicated by existing levels of human activity and associated types of disturbance. Interpreted to mean the basis for assigning “value” to the particular VEC.
Economic Impact Modelling	To estimate the monetary flows generated and induced by Project expenditures.
Ecosystemic	Relating to the complex of a natural community of living organisms and its environment functioning as an ecological unit in nature.
Effects Assessment	An assessment of the environmental and socio-economic effects of a project, using accepted methodologies.
Environmental Components	Human, atmospheric, terrestrial, freshwater and marine.

Environmental Effect	A positive or negative change in the biophysical and/or socioeconomic environment caused by or directly related to a proposed activity.
Environmental Impact Statement	A statement of an evaluation of the predicted environmental and socio-economic effects of a proposed undertaking or project.
Environmental Sensitivity	Refers to areas of heightened sensitivity that will be identified where applicable in relation to the Project (i.e., areas sensitive to spills; caribou calving areas).
Equity	Considers whether those experiencing an effect have made a choice to engage in the Project.
Extent (of an Effect)	The geographic area over which the interaction will occur.
Federal Claims	Mining claims registered with the Federal Government Mining Recorders Office at Indian and Northern Affairs Canada.
Frequency (of an Effect)	The number of times during a project or a project phase that an interaction or environmental effect can be expected to occur.
Geographical Extent	Identifies whether the effect will be experienced in the smaller communities, in Iqaluit, or in both these areas.
Igloolingmiut	Residents of Igloolik.
Impact Significance	Based on comparing the predicted state of the environment with and without the Project, and expressing a judgment as to the importance of the changes identified.
Indirect Effects	Refers to effects on the environment that are not a direct result of the Project.
Information	Exchange of facts between the company and stakeholder.
Interaction	Relating key Project activities with valued components and key indicators.
Inuit Qaujimajatuqangit	Traditional, current and evolving body of Inuit values, beliefs, experience, perceptions and knowledge regarding the environment, including land, water, wildlife and people, to the extent that people are part of the environment.
Inuit Qaujimaningit	(a) Inuit traditional knowledge and variations of Inuit Traditional Knowledge; (b) Inuit epistemology relating to: Inuit Societal values (including the legal obligations set out in the NLCA regarding Inuit Participation, Inuit employment and training, etc.); and Inuit knowledge (both contemporary and traditional).

Inuit-Owned Land	Land identified in the Nunavut Land Claims Agreement (NLCA) as being held by a designated Inuit Organisation. May include ownership of surface rights only or both surface and sub-surface (i.e., mineral) rights.
Inuktitut	Dominant language in Nunavut.
Invited Persons	Individuals invited to participant in consultation based on their particular community status (Elders and youth), knowledge (health and social services), or skill set in a particular field (economic development).
Kajjuqtikkut Workshop	A five-day workshop held in Arctic Bay on March 10-14, 2008, attended by members of the five Inuit Knowledge Study working groups. The key themes of transportation (marine and rail), caribou, marine mammals, and socio-economic issues were discussed and minutes recorded.
Key Indicators or Environmental Indicators	Subsets of VECs or VSECs used to communicate information about the environmental effects of the Project. The use of indicators is a pragmatic approach to conducting environmental effects assessment, where evaluating every potential effects on the receiving environment is not practical.
Key Issues	Interactions that are of substantial public interest and/or of potentially high environmental importance or consequence and, consequently require rigorous investigation and analysis in the EIS.
Level of Confidence	Related to limitations in the overall understanding of the ecosystem and limitations in accurately foreseeing future events or conditions.
Likelihood	A parameter is assigned both a probability dimension as well as a level of certainty, to qualify significance rankings relative to the likelihood that the predicted effects will actually occur.
Local Study Area	The study area that describes areas within and directly adjacent to the Project footprint, and that may be subject to direct and indirect effects. See Regional Study Area.
Magnitude (of an Effect)	The amount or degree of change in a measurable parameter or variable relative to existing conditions (the exposed population).
Management Required	Active intervention is required to bring the effect to an acceptable level.

Marine Ecology	Includes marine mammals, marine fish and lower trophic levels, physical and chemical oceanography, and marine and shoreline habitats.
Marine Spill Modelling	To estimate the potential trajectory of a catastrophic spill of diesel fuel in the marine environment.
Mary River Project Components	The main project development areas including Milne Port, Milne Inlet Tote Road, Mine Site, Railway, and Steensby Port.
Measurable Parameters	Clearly defined aspects of an indicator (VEC/VSEC) that can be quantified and compared against a baseline value or condition; has an associated performance level or standard that can establish an effect magnitude or indicate compliance with formal standards.
Mitigation Measures	Management actions or strategies applied to minimize or eliminate negative environmental effects. They are also used to reduce or eliminate the potential residual effects of the Project and are identified in each of the effects assessments, along with potential residual effects of the Project.
Monitoring	Systems that will be put into place to document the adequacy of each mitigating action in reducing impacts to insignificant levels.
Negotiation	Face-to-face discussions with the intent of reaching agreement.
Noise Modelling	To predict the noise generated at Milne Port, the Mine Site, and Steensby Port.
Non-Reversible	Effect will not be reversed.
Operations Phase	Mining, 18 Mt/a railway operation and year-round shipping from Steensby Port.
Oral Tradition	Written materials are of secondary importance as a communication tool in the communities, as many people do not have the ability or the comprehension level with reading.
Overall Significance (of an Effect)	Derived from the experience and professional judgment of the environmental practitioners who prepared the assessment, considering the rankings of the contributing attributes of significance.
Participation	Active interaction and more intensive form of consultation.
Permafrost Depth Modelling	Extrapolation of deep thermistor data to establish a basement depth of permafrost.

Physical Environment	Includes climate, air, noise, water, waste rock characterization, soils, and the physical aspects of archaeology.
Pit Lake Quality Modelling	To predict the long-term quality and ecological risk posed by the post-closure pit configuration.
Point-of-Hire Locations	Communities where the company currently operates and plans to operate direct flights to and from the Project sites.
Potential Development Areas	A boundary established to encompass a Project component, where future development is expected to occur.
Potentially Affected Communities	A community or communities with the potential to be impacted, either positively or negatively, by a proposed project or development. Such communities may be defined physical entities or comprised of dispersed populations in the area of influence of a development or project.
Probability	The likelihood that an interaction and a consequent effect will, in fact occur.
Qualitative Analysis	A non-numerical estimation of the magnitude of an effect.
Quantitative Analysis	Use of numbers to estimate the magnitude of an effect.
Research Agreement	Agreement negotiated between Baffinland and each working group that articulates the agreed-on study approach and intended use of the information.
Residual Impacts	Impacts after mitigation have been applied.
Residual Projects Effects	Refer to the environmental effects identified for the Project, post-mitigation.
Resource Selection Function	To predict the probability of caribou occurrence throughout the RSA based on recent collar data.
Reversibility	The likelihood that a VEC/VSEC or Indicator will recover from an environmental effect, including consideration of active management techniques. Reversibility is considered for biological VECs at the population level; therefore, although an effect like mortality is irreversible, the effect at the population level might be reversible.
Significance Evaluation	An evaluation of the "significance" of environmental effects.
Social Extent	Identifies the specific groups or social units most likely to experience an effect.

Socio-Economics	Includes demographics, workforce experience, health, social services, youth, education, economic development, opinions, perceptions, and the spiritual aspects of archaeology.
Spatial Boundaries	The anticipated zone of influence of project effects.
Spontaneously Reversible	Effect reverses with no intervention within an acceptable time frame.
Stakeholder Engagement	Activities that engage stakeholders in the project, or in the review of the project.
Stakeholders	The Inuit communities proximate to the Project sites the public, local and regional Inuit organizations, the Government of Nunavut, and federal agencies with a mandate relevant to the Project.
Subjects of Note	Interactions are those that are less likely to be of notable environmental importance or consequence.
Temporal Boundaries	The period analyzed within which the Project or Project activities interact with environmental or socioeconomic components.
Terrestrial Ecology	Includes terrestrial wildlife and wildlife habitat (e.g., caribou and carnivores), birds (e.g., raptors, geese, loons, shorebirds and songbirds), freshwater fish and fish habitat, vegetation, habitats, and biodiversity.
Thresholds	Limits of acceptable change determined from regulated guidelines or by professional opinion.
Timing	The Project Phase within which the environmental effect will occur.
Value	The value attached to the affected VEC or VSEC by those who identified them. An environmental or socio-economic component was identified as “valued” and was addressed in the EIS if it was found to have a high value to communities.
Valued Components (VCs)	VCs identify key species or topics to focus the effects assessment. NIRB (2007) distinguishes between valued ecosystem components (VECs) as the VCs of the biophysical environment, and valued socio-economic components (VSECs) relating to the human, economic, and spiritual environment.
Valued Ecosystem Component (VECs)	Environmental attributes or components perceived to be locally important based on local ecological, social, cultural, and/or economic reasons.

Valued Socio-Economic Components (VSECs)	Environmental attributes or components perceived to be locally important based on local social, cultural, and/or economic reasons.
Water Quality Modelling	To estimate the quality of water that contacts and runs off waste rock and ore stockpiles.
Working Groups	The working groups have provided valuable insights into community and cultural values, priorities, fears, and hopes, and helped researchers prepare culturally sensitive and appropriate research methodologies and plans. Additionally, the presence of working groups facilitates information flow between the company and the communities.

6.2 ABBREVIATIONS

AANDC ..... Aboriginal Affairs and Northern Development Canada
Baffinland ..... Baffinland Iron Mines Corporation
CLARC ..... Community Land and Resource Committee
CLEY ..... Department of Culture, Language, Elders, and Youth
CTA ..... Canadian Transportation Agency
DFO ..... Fisheries and Oceans Canada
EHS ..... Environmental Health and Safety
EIS ..... Environmental impact statement
EMMP ..... Environmental Mitigation and Monitoring Plans
GN ..... Government of Nunavut
HADD ..... Harmful Alteration, Disruption, or Destruction
HTA/HTO ..... Hamlets, Hunters, and Trappers Association/Organization
IIBA ..... Inuit Impact and Benefits Agreement
IPG ..... Institute of Public Government
IQ ..... Inuit Qaujimajatuqangit (Inuit knowledge, or traditional knowledge)
KI ..... Key indicator
LSA ..... Local study area
Mary River ..... Nuluujaak
MDAG ..... Mineral Development Advisory Group
MHTO ..... Mittimatalik Hunters and Trappers Organization
MOU ..... Memorandum of Understanding
Mt/a ..... million tonne-per-annum
NBRLUP ..... North Baffin Regional Land Use Plan
NIRB ..... Nunavut Impact Review Board
NLCA ..... Nunavut Land Claims Agreement
NPC ..... Nunavut Planning Commission
NRCan ..... Natural Resources Canada
NSA ..... Nunavut Settlement Area
NTI ..... Nunavut Tunngavik Incorporated
NWB ..... Nunavut Water Board
PDA ..... Potential development area
QIA ..... Qikiqtani Inuit Association

RSA..... Regional study area
TC-NWPP .....Transport Canada Navigable Waters Protection Program
the Guidelines ..... Guidelines for the Preparation of an EIS
the Project.....Mary River Project
TK.....Traditional Knowledge
VC ..... Valued component
VEC.....Valued ecosystem component
VSEC ..... Valued socio-economic component