



2017-2018 Annual Monitoring Report for Baffinland Iron Mines Corp.'s Mary River Project



Nunavut Impact Review Board
File No. 08MN053
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Report title: The Nunavut Impact Review Board's 2017-2018 Annual Monitoring Report for the Mary River Project (NIRB File No. 08MN053)

Project: Mary River Project

Project location: Qikiqtani (North Baffin) Region, Nunavut

Land Tenure: Inuit Owned and Crown Land

Project Owner: Baffinland Iron Mines Corporation
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Monitoring Period: September 2017 – September 2018

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Cover photo: Deposit No. 1 Mine Pit Area

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1 INTRODUCTION

The Nunavut Impact Review Board (NIRB or Board) was established through Articles 10 and 12 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada (Nunavut Agreement)* and is responsible for the assessment of ecosystemic and socio-economic impacts of projects in the Nunavut Settlement Area pursuant to the *Nunavut Agreement*. The NIRB is responsible for post environmental assessment monitoring of projects in accordance with Part 7 of Article 12 of the *Nunavut Agreement* and s. 135 of the *Nunavut Planning and Project Assessment Act*, S.C. 2013, c. 14, s. 2 (NuPPAA).

The purpose of the NIRB's monitoring program as outlined in Section 12.7.2 of the *Nunavut Agreement* and s. 135(3) of the NuPPAA are:

- (a) *measure the impact of the project on the ecosystemic and socio-economic environments of the designated area;*
- (b) *determine whether the project is carried out in accordance with the terms and conditions imposed under subsection 152(6) or set out in the original or amended project certificate;*
- (c) *provide the information necessary for regulatory authorities to enforce the terms and conditions of licences, permits or other authorizations that they issue in relation to the project; and*
- (d) *assess the accuracy of the predictions contained in the project impact statement.*

As such, this report provides findings that resulted from the Board's monitoring programs for the Mary River Project from October 2017 to September 2018.

1.1 Project History and Current Status

NIRB Project Certificate No. 005 was issued to Baffinland Iron Mines Corporation (Baffinland or the Proponent) for the Mary River Project on December 28, 2012 following a thorough environmental review process, which included community consultations and a public hearing pursuant to Section 12.5.12 of the *Nunavut Agreement*. On January 13, 2013 Baffinland informed the NIRB that it was proposing an Early Revenue Phase (ERP) that would change the schedule and specific activities associated with the Project as initially approved. The Board determined that it was appropriate to assess the potential ecosystemic and socio-economic effects of the ERP and to consider modifications to the terms and conditions of the original Project Certificate under Article 12, Section 12.8.2 of the *Nunavut Agreement*.

Following a thorough reconsideration process, on March 17, 2014, the NIRB issued its public hearing report for the ERP Proposal to the then-Minister of Aboriginal Affairs and Northern Development Canada, indicating that the proposed works and activities could be permitted to proceed subject to new and amended project-specific terms and conditions. Following the acceptance of the NIRB's report by the Minister, which included revised terms and conditions, on May 28, 2014, pursuant to Sections 12.5.5 and 12.8.2 of the *Nunavut Agreement*, the NIRB issued an *Amended Project Certificate* for the Mary River Project. The amendment allowed the Project to proceed in accordance with Terms and Conditions as contained therein. The NIRB is responsible

for monitoring this Project as stipulated in Sections 12.7.1 and 12.7.2 of the *Nunavut Agreement* and as outlined within the Mary River Project Certificate.

For the 2017-18 monitoring period, Baffinland applied to the NIRB for the following Modification Request and Project Certificate Review and the details below constitute the Board's determination of the modification applications:

- Production Increase Proposal: Increase Milne Inlet Fuel Storage Capacity
- Milne Port Accommodation Camp Upgrade, Increased trucking and shipping of ore from Milne Inlet from 4.2 to 6 million tonnes: Board approved camp and fuel components, Minister varied term and condition 179 to allow for increased haulage up to December 31, 2019.
- Phase 2 Development: FEIS Addendum received by the NIRB, joint NIRB/NWB assessment underway.

1.2 Project Components

The Mary River Project involves exploration, construction, operation, closure and reclamation of an open pit iron ore mine at what is known as Deposit No.1 and includes mining at a rate of 18 million tonnes per year (Mt/a). There are three (3) main project locations – the Mine site, Milne Port located north of the Mine site, and Steensby Port located south of the Mine site. The Milne Port is connected to the Mine site by the Tote Road, approximately 100 kilometers (km) in length. The Project as originally proposed was to include the construction of a railway approximately 150 km in length to connect the Mine Site to Steensby Port. It was anticipated that facilities at Steensby Port and the railway would take up to four (4) years to construct.

As currently approved and in accordance with Baffinland's development plans, the extracted ore in the form of lump and fines would be transported by truck along the Milne Inlet Tote Road and shipped from Milne Port to European markets during the open water season using contracted vessels. There are no concentrators, tailings, or tailings ponds associated with the production of iron ore. The approved Project also includes additional facilities at Milne Port, including the construction of a fixed ore dock, 4.2 Mt ore stockpile and reclaim area, 3,500 tonnes per hour ship loaders, a camp to accommodate workers, and the extension or relocation of the airstrip to the west of the proposed ore stockpile. The ERP operations are expected to continue for the duration of the mine life (i.e., 21 years), and would continue in conjunction with the Mary River Project as originally proposed, once developed.

Baffinland reported in 2017 to the NIRB that mining and ore hauling activities from the Mine Site to Milne Port continued and that approximately 4.54 million tonnes of iron ore was mined and hauled on the Tote Road. The 4.54 million tonnes of iron ore is an exceedance of the approved limits for hauling ore on the Milne Tote Road as prescribed in Project Certificate Condition No. 179a/b by 7.5%. Baffinland clarified that the exceedance was due to higher levels of production than anticipated. While it indicated that no specific project activities were undertaken along the south railway alignment area or at the Steensby Port site in 2017, Baffinland reported to the NIRB that the scope of the construction and site activities it undertook in 2017 included:

- Development and operation of the mine, ore crushing and land transportation, stockpiling and marine shipment of ore.

- The continued development and construction of infrastructure required at Milne Port, the Mine Site, and along the Tote Road.
- Mobilization of additional 49-person camp at Milne Port and continued operation of Mine Site and Milne Port Camps to support ongoing operations and construction activities, which will include the use of water and deposition of waste as authorized under existing permits.
- Ongoing operation of permitted quarry and borrow sources.
- At Milne Port, vessels carrying fuel, equipment and supplies for use at the Mine Site and Milne Port arrived during open water. Material, fuel and supplies required for operational and construction activities were transported to the Mine Site year-round via the Tote Road.
- Use of ore carrier escorts during the end of the shipping season to maximize shipping during the open water season.
- Geotechnical drilling required to support engineering design and construction activities of the Project.
- Ongoing environmental effects studies and baseline data collection will continue to support the construction and operation of the Project as well as for future engineering requirements.
- Continued environmental monitoring in accordance with the approved Project Certificate, licences, authorizations, management plans and environmental effects monitoring programs.
- Ongoing regional exploration activities including mapping, prospecting, sampling, and geophysics.
- Execution of the Tote Road Execution Plan and Design Report.
- Replacement of accommodation camps and development of required support infrastructure for increased work force (e.g., fuel storage and water treatment).

2 MONITORING ACTIVITIES

2.1 *General Reporting Requirements*

2.1.1 **Mary River Project Certificate No. 005**

As per [Appendix I](#), Baffinland demonstrated a general compliance with reporting requirements imposed through commitments resulting from the NIRB's Review of the Mary River Project and the ERP, including those contained in related reports, plans, and the NIRB's Project Certificate No. 005 for the Mary River Project. The Proponent has provided the following updated items as required by the terms and conditions contained within the Mary River Project Certificate for the current monitoring period of October 2017 through September 2018.

- a. Status of Project Certificate Conditions in 2016 (Appendix A)
- b. 2017 Community Engagement Records (Appendix B)
- c. 2017 Working Group Meeting Notes (Appendix C)
- d. 2017 Photo Essays (Appendix D)
- e. Concordance to Recommendations (Appendix E)
- f. 2017 Socio-Economic Monitoring Report (Appendix F)

- g. 2017 Geotechnical Inspection Report (Appendix G)
- h. Status of Proponent Commitments in 2017 (Appendix H)

2.1.2 Compliance Monitoring

Compliance monitoring involves an assessment undertaken by regulators and other agencies to establish whether a project is being carried out within the legislation, regulations, instruments, commitments and agreements as such are applicable to certain project activities, and further, is a requirement of the NIRB's Post-Environmental Monitoring Program for each Project Certificate. [Appendix I](#) provide the terms and conditions and compliance achievements by Baffinland for the Mary River Project under Project Certificate No. 005.

2.1.2.1 Proponent

Operational Challenges and Non-compliance Issues

Baffinland included in the 2017 Annual Monitoring report some operational challenges that were faced. Baffinland stated it received corrective directives from Indigenous and Northern Affairs Canada (INAC) and Environment and Climate Change Canada (ECCC) respectively due to various non-compliance issues pertaining to the Fisheries Act Directive, which included a stop work order for the "Port Construction Camp" site lay-down pad and the waste rock facility. Table 1 below provides a summary of the main non-compliance issues noted by regulatory authorities during site inspection of the Mary River Project in 2017.

Table 1: List of non-compliances issues and follow-up actions

Directives	Context of non-compliance	Follow-up actions
Fisheries Act Directive (FAD)	<p>The FAD was a result of the release of sediment above applicable regulatory guidelines in run-off during freshet, as noted by INAC and ECCC during their joint site inspection on May 18 and 19, 2016.</p> <p>Baffinland completed several construction projects designed to reduce sediment release and prepared a completion report outlining the measures to be taken to address dust and sediment issues (Baffinland, 2016c), including a schedule of actions outlined in the Sediment and Dust Mitigation Action Plans, to reduce future impacts</p>	Throughout 2017, ongoing efforts have been underway at site to help plan for continued improvement and management of runoff during freshet in 2018.

<p>INAC Directive - Port Construction Camp Lay-Down Pad</p>	<p>INAC issued a Directive to Baffinland on June 9, 2017 which instructed the Proponent to stop all work at the “Port Construction Camp” site lay-down pad.</p> <p>It was noted by INAC that Baffinland had not received approval for this activity vis-à-vis Baffinland’s submission of the 2017 Amended Work Plan submitted to the NWB on May 26, 2017.</p> <p>The Directive was issued on the basis that the pad was built overtop a stream, and that rock fill had also subsequently been placed in the stream.</p>	<p>On July 19, 2017, Baffinland submitted to the Nunavut Water Board (NWB) a Request for Modification under the Type “A” Water Licence to construct a diversion system to redirect surface water from the impeded drainage path(s) around the pad.</p> <p>On September 8, 2017, the NWB issued to Baffinland an approval letter to construct the proposed diversion system around the camp pad. The diversion system around the pad was completed on October 26, 2017 and the Proponent has documented this action in the construction summary report titled ‘Construction Summary Report: Milne Port Camp Pad Natural Stream Diversion’ submitted to the NWB on January 24, 2018.</p>
<p>INAC Directive - Waste Rock Facility</p>	<p>During 2017, exceedances of the applicable water quality discharge criteria during controlled discharges from the WRF pond, consisted of two (2) minor exceedances of 15 mg/L TSS limit in early July followed by multiple exceedances of the applicable pH and TSS limits in August and September. Acute toxicity samples taken on August 8, 2017 and September 5, 2017 at the WRF pond failed for select organisms with mortality rates greater than 50% of test organisms.</p> <p>During August 2017, the pH of runoff collected in the WRF</p>	<p>An updated Phase 1 Waste Rock Management Plan (Rev. 1; Baffinland, 2018a) was submitted by Baffinland on January 15, 2018, and details the deposition and management of waste rock at the Project up until the end of 2018. Baffinland plans on submitting further revisions to the Phase 1 Waste Rock Management Plan and revisions to the Life-of-Mine Waste Rock Management Plan by the end of 2018.</p>

	pond dropped below the pH discharge limits outlined in the MMER.	
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Some of key actions taken to date by the Proponent to address the concerns at the Waste Rock Facility include the following:

- Batch treatment of the pond with sodium carbonate to raise the pH within applicable water quality discharge criteria, in consultation with the engineers from Wood Group PLC (formerly AMEC Foster Wheeler);
- Retained third party consultants (Hatch, Golder, Le Group Desfor) to assess the observed seepage and WRF pond design and make recommendations to Baffinland for the appropriate corrective actions;
- Constructed an emergency ditch network and containment sumps around the outer perimeter of the WRF pond in efforts to contain observed seepage;
- Injected rhodamine dye into the WRF pond to identify the potential source of observed seepage;
- Sourced a dedicated water treatment plant to manage effluent discharges from the WRF pond in 2018 (the water treatment plant is planned to be installed by May 1, 2018);
- Developed a MMER Emergency Response Plan to: clarify roles & responsibilities; clarify emergency spill response procedures; and outline the controls in place to ensure effluent discharges from Project infrastructure are compliant with the water quality discharge criteria;
- Developed Interim Waste Rock Deposition Plan detailing how waste rock would be managed in the short-term;
- Continue to engage with regulators, and provide updates and responses to information requests as required; and
- Continue to work with Golder on developing the appropriate corrective actions to address concerns identified in 2017 at the WRF.

Employment Status and Training Initiatives

The Proponent highlighted that in 2017 it saw an increase in the total number of hours worked by Inuit employees at the Project, and that overall, the participation of Inuit employees relative to non-Inuit employees decreased in 2017 from 2016 levels by 1.4%. It was reported that the retention of Inuit employees on the Project continued to be a challenge, with the Proponent being unable to meet its target goal of 25% Inuit employment in 2017; Baffinland reported that several training efforts were made during the year with the aim of improving the overall numbers of Inuit employed by the Project. Some of these training initiatives were undertaken in 2017, included the development of the Work Ready Program designed to address the barriers to Inuit employment and retention at Baffinland. It was also noted that Baffinland began accepting applications from Inuit candidates for a free, three-month training program for a Heavy Equipment Operator training program. Baffinland also indicated that in 2017, Inuit employees represented 11% of Project employees that participated in training courses.

Community Support Activities

Within its annual reporting to the NIRB, Baffinland indicated that in 2017 it undertook several community social initiatives, including:

- Hosting a procurement and contracting workshop in Pond Inlet
- Participating in a community career fair in Clyde River
- Drafting and submitting a Human Resource Strategy to the joint management committee for the Inuit Impact and Benefits Agreement (IIBA JMC)
- Drafting and presented an Inuit Procurement Contracting Strategy to the IIBA JMC
- Attending high school graduation ceremony in Arctic Bay
- Donating laptops to high school graduates in Hall Beach
- Co-hosting a career information tour in the five (5) North Baffin communities
- Ongoing implementation of Baffinland's Apprenticeship program
- North Baffin Community Tour to introduce Horizon (Baffinland sub-contractor) and to collect resumes from potential future Inuit employees - August 2017;
- Education and Training North Baffin Community Tour with Baffinland President and CEO - September 2017;
- Launching Community Literacy Initiative - September 2017;
- Developing Workplace Conditions Survey to be administered in Q1 of 2018 - throughout 2017.

Engagement with the Qikiqtani Inuit Association

Baffinland reported that it remained committed to establishing and maintaining a positive relationship with the QIA through ongoing engagement and collaboration, and that its engagement focused on the implementation of the Inuit Impact Benefit Agreement (IIBA) and related to the commercial Lease (Q13C301). Baffinland stated it met with all working groups on a regular basis in 2017, by phone and face-to-face to discuss and resolve issues related to IIBA implementation. The focus this year was the development of the Inuit Human Resources Strategy, Inuit Procurement and Contracting Strategy, cross-cultural awareness training and designated Inuit firm list. Regarding work with the QIA on the Commercial Lease, Baffinland and the QIA focused on discussions regarding the Annual Work Plan, Annual Securities Review, water management plans and snow management plans with a continued focus on Tote Road Management.

2.1.2.2 Compliance with NIRB Project Certificate No. 005

2.1.2.2.1 Proponent's responses to the Board's 2017 Recommendations

On November 27, 2017 as a result of the NIRB's 2016-2017 monitoring program, the Board made 34 recommendations to Baffinland to provide guidance on how to achieve compliance with the Mary River Project Certificate. These recommendations are outlined as [Appendix III](#), which also

includes updates from the Proponent regarding its direct follow-up on each of the Board's recommendations.

Of these 34 recommendations, Baffinland provided information within the first 30 days in response to 12 recommendations. Additionally, the Proponent provided general responses to the remaining 22 recommendations within the 2017 Annual Report to the NIRB, but requested updates for the following items remain outstanding:

- Updates regarding Climate Change Strategy for the ERP.
- Updates to Air Quality and Noise Management Plan and Roads Management Plans.
- Updates on the work of the MEWG in developing early warning indicators for the marine environment.
- Monitoring of arctic char health and consultation with the HTO with respect to monitoring program design and implementation.
- Inclusion of the positive and negative results associated with the community surveys in North Baffin communities.

2.1.2.3 Compliance Achievements

The NIRB notes that Baffinland has demonstrated general compliance with the reporting requirements imposed through the NIRB's Project Certificate No. 005 except for the outstanding items outlined above. While certain Terms and Conditions of the Project Certificate pertain to later phases in the Mary River project's development and are not applicable at this stage in the NIRB's monitoring program, Baffinland is still required to address all the information gaps and monitoring deficiencies noted by Regulatory Authorities by submitting the information required for the following items:

- a. Results of initiatives undertaken to validate and update climate change impacts of the project on the LSA and RSA, including evidence of engaging Inuit in climate change related research and studies (Conditions 2, 3 and 4)
- b. Results of ongoing noise and vibration monitoring at Project accommodations in summer and winter during all phases of the project (Condition 14)
- c. Evidence of developing and implementing measures to ensure that all effluent satisfies discharge criteria established by relevant regulatory authorities (Condition 17, 24 and 46)
- d. Evidence of developing and implementing Groundwater Monitoring and Management Plan (Condition 23)
- e. Evidence of monitoring project effects on permafrost and ensure its integrity (Condition 28)
- f. Evidence of maintaining a 30-m naturally vegetated buffer between the mining operation and adjacent water bodies (Condition 42)
- g. Evidence that all project infrastructure is designed and constructed so as they do not prevent or limit the movement of water in fish bearing streams (Condition 47)
- h. Evidence that aircraft maintain the altitudes outlined for the Project (Condition 59, 71 and 72)
- i. Evidence of conducting hydrodynamic modelling in the Milne Inlet Port area to determine the potential impacts arising from disturbance to sediments including re-suspension and subsequent transport and deposition of sediment (Condition 83a) including collecting

detailed bathymetry to model anticipated ballast water discharge from ore carrier (Condition 86)

- j. Details of how it has developed clear thresholds for determining if negative impacts as a result of vessel noise are occurring (Conditions 111 and 112).
- k. Evidence of conducting a Ship Board Observer Program or an alternative program that incorporate an accidental strike reporting protocol (Conditions 105, 121 and 123).
- l. Development of early warning indicators of negative impacts of vessel noise on marine mammals (Conditions 110 and 111).
- m. Evidence of implementing fouling monitoring on vessel hull (Condition 91).

2.2 Comment Requests on Baffinland's 2017 Annual Report

On April 6, 2018 the NIRB requested that authorizing agencies with a mandate or jurisdictional responsibility for the Mary River project provide comments and information with respect to compliance and effects monitoring. Specifically, comments were requested regarding the following as it pertains to compliance monitoring, and assessment undertaken by regulators and other authorizing agencies to establish whether or not the Project is being carried out within defined regulations, commitments and agreements:

- a. Provide a summary of any compliance monitoring and/or site inspections undertaken in association with the Project, including specifically:
 - i. Identify the terms and conditions from the Project Certificate which have been incorporated into any permits, certificates, licenses or other approvals issued for the Project, where applicable;
 - ii. A summary of any inspections conducted during the 2017 reporting period, and the results of these inspections; and
 - iii. A summary of Baffinland's compliance status with regard to authorizations that have been issued for the Project.

The NIRB also requested comments with respect to effects monitoring, including:

- a) Whether the conclusions reached by Baffinland in the *Mary River Project 2017 Annual Monitoring Report* are valid; and
- b) Any areas of significance requiring further supporting information.

The NIRB received comments from the following parties regarding Baffinland's 2017 Annual Monitoring Report:

- Qikiqtani Inuit Association (QIA)
- Government of Nunavut (GN)
- Environment and Climate Change Canada (ECCC)
- Fisheries and Oceans Canada (DFO)
- Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), formerly Indigenous and Northern Affairs Canada (INAC)
- Parks Canada (PC)
- World Wildlife Fund Canada (WWF)

Table 2 below lists some of the significant issues received from various authorizing agencies regarding compliance monitoring of the Mary River Project in the 2017 reporting period.

Baffinland provided written responses to address all the comments identified by parties, and where applicable the Proponent also provided additional action plans and commitments aimed to address all of the outstanding monitoring issues identified during site visits and inspections of the Mary River Project.

Table 2: Summary of comments received on 2017 Annual Monitoring Report

Party	Summaries of comments received
QIA	<ul style="list-style-type: none"> • Project activities exceeding predicted levels (fugitive dust) and lack of control of dust sources including Aquatic impacts of dustfall • Project related effects on caribou • Insufficient blast water monitoring • Lack of adequate monitoring of invasive species • Lack of climate change strategy • Absence of training information for employment benefits • Concerns about climate and emission monitoring • Sensitivity of arctic char eggs to the accumulation of sediments and thresholds for char egg survival • Effect of perched, obstructed and damaged culvert on fish passage along the Tote Road • Shipboard observers and marine mammal monitoring
GN	<ul style="list-style-type: none"> • Flight Compliance Reporting • Caribou Monitoring Methods - Height of Land Surveys/Snow Track Surveys • Snowbank Monitoring and Traffic Management • Dustfall Management • Vegetation Monitoring Methods/Metals Monitoring • Marine and Terrestrial Environment Working Groups • Impacts to Health Services • Food Security
CIRNAC	<ul style="list-style-type: none"> • Commented on the compliance status for five (5) conditions (11,17,23, 24, 46) and the list of unauthorized discharges in 2017 • Noted the lack of information regarding the units of salinity results pertaining to the 2017 Ship Ballast Water Salinity Test Results • Commented on the lack of updates in all FEIS predictions based on new baseline data collected as pertaining to mine waste rock geochemistry and waste rock drainage water quality • Discharge that did not comply with applicable discharge criteria • Address concerns regarding waste rock acid rock drainage and provide ground water data • Lack of information regarding the quantities or volumes of 5 unauthorized discharges of non-compliant contact water
ECCC	<ul style="list-style-type: none"> • Requested that the proponent provide data on air quality data • Requested that the Proponent ensure effluent is consistently fully characterized, with the full suite of total and dissolved metals analyzed, as

	<p>well as sulphate, for samples used for bioassay tests as well as periodically for routine sampling.</p> <ul style="list-style-type: none"> • Requested that the Proponent describe the proposed water treatment system, including the parameters and target effluent quality it is expected to treat to. • Recommended that the inspection of any construction incorporating the waste rock should be done to identify any detectable ARD onset. • Recommended the continuation of Sheardown Lake sedimentation monitoring study
DFO	<ul style="list-style-type: none"> • Commented on the suspension of the ship-board marine mammals observation and the lack of an alternative to this program • Expressed concerns regarding fish passage obstruction along the Tote road
PC	<ul style="list-style-type: none"> • Recommended that the tidal monitoring gauge be moved to a location away from the pier where ship ballast discharges will not impact the readings. • Recommended that Hydrophones be set up in the port and shipping lanes at increasing distance intervals to determine levels of noise pollution in the local marine environment. • Noted that vessel speed violations remain a high concern and recommended that proposed tracking measures be in place for this shipping season
WWF	<ul style="list-style-type: none"> • Noted the lack of adaptive management including development of indicators and thresholds for the marine environment • Lack of comprehensive science for marine mammals • Commented on the Marine Environment Working Group/Terrestrial Environment Working Group and NIRB's role • Requested for updated on the Monitoring Framework for the Mary River Project and the list of outstanding issues not addressed in Annual Reports

2.3 *Qikiqtani Inuit Association (QIA)*

▪ **Site Inspections**

The QIA confirmed it inspected the Mary River site on June 20-22 and Aug 1-3, 2017 but did not provide the NIRB with the inspection reports of the observations noted during both site visits.

Summary of Baffinland's Response to Comments Received from QIA:

- With respect to providing examples of how Inuit Traditional Knowledge is incorporated into these monitoring programs, Baffinland indicated that it collected Inuit traditional knowledge during the FEIS and ERP FEIS phase of the Project and that this data was used to support design of all VEC monitoring programs, including freshwater and terrestrial monitoring programs.
- Regarding the requests for the Proponent provide a detailed explanation of how IQ is being incorporated into climate-change related studies and research and the development of the Climate Change Strategy, Baffinland noted that a preliminary climate change strategy will

be included as part of the Phase 2 submission for discussion to the North Baffin communities.

- With respect to clarifying the sources of emissions and explain how the monitoring program can separate vessel-based emissions from other emissions sources, Baffinland indicated that the current monitoring program monitors ambient air concentrations of SO₂ and NO_x throughout the year and that the sources of SO₂ and NO_x emissions from Project operations include stationary power generation and ground transportation, as well as vessels (ore carriers and cargo vessels) during the shipping season. Baffinland also noted that the current monitoring program is not designed to distinguish the emissions generated from the individual sources.
- Regarding the recommendation that the Proponent measure underwater noise generated by truck traffic at representative culverts to determine whether noise levels might interfere with seasonal fish movements.

In response to the recommendation to continue to correct fish passage problems and take an increasingly proactive approach to preventing culvert damage, blockages, and undercutting that obstruct fish passage, Baffinland indicated that it will continue to address concerns identified during 2017 at fish bearing water crossings.

2.4 Government of Nunavut (GN)

The GN did not provide any information regarding any site inspections conducted at the Mary River Project site or report any concerns regarding compliance monitoring in its review of Baffinland's 2017 Annual Monitoring.

Summary of Baffinland's Response to Comments Received from GN:

- Regarding concerns that the current caribou study and level of survey efforts are failing to meet the objective of detecting project related effects on caribou, Baffinland responded that significantly increasing height of land surveys effort despite low regional caribou numbers would not be an efficient use of resources and would not necessarily allow for differentiation between lack of detectability due to low regional numbers versus behavioral avoidance.
- Regarding the request that the Proponent improve snowbank height management, particularly in areas known to be traditional movement corridors for caribou, Baffinland indicated that it has not specified areas for improved height management based on caribou movement corridors but has instead focused on improving snowbank height management throughout the length of the Tote Road, under the assumption that caribou could be present throughout the PDA and may attempt to cross at any point.
- In response to the request that the Proponent revise the dust isopleth model using data from dustfall collection and the level of Project activities projected for 2018, Baffinland indicated that the dust fall and vegetation monitoring program will be reviewed once the dust isopleth model is updated, however Baffinland notes that the current monitoring design is a scientifically robust and defensible method for understanding potential effects of dustfall on the environment.

2.5 *Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)*

▪ **Permitting and Socio-Economic Comments**

CIRNAC commented that in 2017, Baffinland's Mary River Project activities and monitoring were conducted pursuant to water licences (Type A Water Licence 2AM-MRY 1325 and Type B Water Licence 2BE-MRY1421). CIRNAC also noted that it's a member of the Socio-Economic Monitoring Committee for the Qikiqtaaluk Region (QSEMC) overseen by the Government of Nunavut and that meetings were held during the year to review socio-economic monitoring reports including that produced by Baffinland, which addresses (but is not limited to) Terms and Conditions 129, 131, 133, 145, 148, 154, 159 168, and 169. CIRNAC also indicated that the department is also a member of the Mary River Socio-economic Monitoring Working Group (SEWG) along with the Baffinland, the Qikiqtani Inuit Association, and the Government of Nunavut.

▪ **Water Quality Inspections**

CIRNAC indicated that three inspections were conducted in 2017: May 29 to June 1; August 22-24, and November 8-9. As a result of these inspections, the Water Resource Officers (WRO) issued two (2) Inspector's Directions, on June 9, 2017 and September 5, 2017, related to non-compliance issues associated with the construction of the Milne Port Camp Pad and the Waste Rock Facility, respectively. Specifically, it was noted that during the August 22-24 site visit, an annual geotechnical site inspection revealed no apparent geotechnical issues warranting immediate mitigation at the facilities inspected. Table 3 below provides a summary of the facilities inspected and the observation noted by the WROs during the 2017 inspections.

Table 3: Summary of Inspections/Sites visits Results

Dates	Facility inspected	Observations	Recommendations
May 29 to June 1, 2017	Ore stockpile Pad and associated water management structures	Significant water pooling and infiltration surrounding ditches not properly graded. No action taken on the status of the sedimentation ponds, based on 2016 Geotechnical Report.	
	Ore Crusher Pad and associated Sedimentation Ponds	Saturation of ore crusher pad with iron filled mud at the Mine Site, including water pooling in the unlined ditches surrounding the facility. No culvert in place to allow water from the North West unlined ditches to enter the sediment pond. The Ore Stockpile area is larger than what was indicated in the application to the NWB. Sedimentation pond might be under capacity.	

	Camp lay-down pad	The pad was constructed in contravention of the Water Licence 2AM-MRY1325.	An Inspector's Direction was issued to Baffinland on June 9, 2017 to stop all work on the lay-down pad until Part D, Item 2 of the Water Licence 2AM-MRY1325 has been complied with.
August 22-24, 2017			
	Waste Rock Containment Berm	Uncontrolled discrete seepages originating from the central toe of the waste rock containment berm. Field measurements taken during the inspection indicated that water quality of the seepages did not meet the effluent quality criteria required by Part F, Item 25 of the Water Licence 2AM-MRY1325.	<p>An Inspector's Direction was issued to:</p> <ul style="list-style-type: none"> - fix the facility to the specifications provided in the approved construction drawing -Prevent all uncontrolled discharges from leaving the facility amend its Waste Rock Management Plan with a plan for treating non-compliant water, including contingencies -Produce a report that re-assesses the hydrological data of the waste rock pile drainage -stop all other uses of water from this facility for any other purpose, including

			road watering and water for drill use.
	Annual Geotechnical site inspection	Overall condition of earthworks and ancillary structures good	No geotechnical issues warranting immediate mitigation. Four (4) recommendations were made for the Proponent to address issues pertaining to the waste rock sediment pond, crusher pad sediment pond perimeter ditch, and exposed geomembrane.
November 8-9, 2017			
	Ore Stockpile Pad and associated water management structures	Ore Stockpile Pad had not been graded properly. Evidence of low points were observed throughout the facility that affected the flow of surface water from the unlined facility to the lined sedimentation ponds. In addition, ore was used to level an area outside of the containment on the west side of the east sedimentation pond.	
	Ore Crusher Pad and associated water management structures	The diversion ditches did not fully surround the Ore Crusher Pad. In certain locations, crushed ore and a boulder were pushed into the ditches.	
	Waste Rock Stockpile and associated water management structures	Containment structure was observed to leaking into the surrounding environment.	Baffinland failed to comply with INAC's Inspector's Direction issued on September 5, 2017

	Geomembrane liners	Geomembranes throughout Mary River and Milne Port were observed to be not covered properly and therefore did not meet industry best standard.	
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CIRNAC indicated that although some non-compliances were identified in 2017, it was generally satisfied with Baffinland's response to the concerns raised by the WROs, and that CIRNAC will continue to work with Baffinland to ensure compliance with all Water License requirements associated with the Mary River Project. CIRNAC reported on 30 Project Certificate Terms and Conditions that were incorporated into its licensing for various aspects of the Mary River Project. The specific conditions and where it was incorporated in the INAC licence (N2014Q0016) or where the Terms or Conditions were incorporated into the Nunavut Water Board 2AM-MRY1325 Amendment #1 are included in [Appendix I](#).

Summary of Baffinland's Response to Comments Received from CIRNAC

- With respect to concerns that not all FEIS predictions have been updated in the 2017 Annual Report, Baffinland indicated that the intent of the monitoring data is to assess Project effects against the predictions included in the FEIS.
- In response to the non-compliant discharges from the Waste Rock Facility (WRF) Baffinland indicated that has taken multiple corrective actions to prevent non-compliant discharges from the WRF and that it has retained the service of a consultant to investigate the potential for ARD and develop mitigation measures, as required. The Proponent also clarified that it plans to further update the Waste Rock Management Plan in 2018, which will include waste rock drainage water quality predictions as well as waste rock management and monitoring strategies for operations up until 2022.

2.6 Environment and Climate Change Canada (ECCC)

ECCC reported that three (3) on-site inspections, one (1) site visit and five (5) off-site report verifications were completed in 2017:

- March 22, 2017: ECCC Environmental Enforcement participated in a site visit and Pre-Freshet meeting to discuss the Proponent's readiness and action plan to deal with upcoming spring freshet.
- May 30 to June 1, 2017: An onsite inspection of the Mary River Project to verify compliance under the Canadian Environmental Protection Act (CEPA) and the Fisheries Act. There were no compliance issues identified under CEPA during the on-site inspection.
- July 18-19, 2017: An onsite inspection was completed to verify compliance under CEPA and the Fisheries Act. There were no compliance issues identified under CEPA
- August 23-24, 2017: An onsite inspection of the Mary River project was completed to verify compliance under the Fisheries Act. The following contains highlights from the inspection:
- Waste Rock Sedimentation Pond (MS-08) discharge (pH & Total Suspended Solids [TSS]) from final discharge point not in compliance with the Metal Mining Effluent Regulations

(MMER) and possible Waste Rock Sedimentation Pond (MS-08) leaking. Investigation opened on the Proponent under subsection 36(3) of the Fisheries Act and under MMER.

- There was no sampling conducted from final discharge point MS-08 during the inspection as there was no ongoing discharge as it had been stopped.
- Sampling was conducted at locations around the Waste Rock Sedimentation Pond (MS-08) where it was believed to be leaking.
- Five (5) MMER off-site report verifications were conducted by ECCC Environmental Enforcement. ECCC reviewed the 2017 1st, 2nd, 3rd, 4th quarterly reports and one (1) annual report submitted on the Regulatory Information Submission System (RISS) for the final discharge. The following contains highlights from the report reviews:
 - The 3rd quarter report review determined that sampling required under MMER by the Proponent identified that discharge from the Waste Rock Sedimentation Pond (MS-08) final discharge point had a Bioassay failure, TSS limit exceedance, and pH level outside the acceptable pH range (6.0-9.5).

Summary of Baffinland's Response to Comments Received from ECCC:

- With respect to the recommendation that the Proponent ensure effluent is consistently fully characterized, with the full suite of total and dissolved metals analyzed, as well as sulphate, Baffinland indicated that it will continue to monitor required parameters at frequencies that are compliant with MMER and the terms and conditions of the Type A Water Licence.
- In response to the request that the Proponent describe the proposed water treatment system, including the parameters and target effluent quality it is expected to treat, Baffinland noted that the water treatment plant focuses on pH adjustment and solids removal, using a combination of buffering agents, flocculants, coagulants and geotubes and that effluent water quality will be routinely monitored and demonstrated to be compliant with Water Licence and MMER water quality criteria.
- Regarding the continuation of the Sheardown Lake sedimentation monitoring study, Baffinland indicated that it will continue to monitor sedimentation rates in Sheardown Lake NW under the Lake Sedimentation Monitoring Program, a targeted study of the Project's Aquatic Effects Monitoring Plan conducted on an annual basis and will continue to develop and implement effective mitigation measures to manage dust emissions generated by the Project.

2.7 Fisheries and Oceans Canada (DFO)

DFO indicated that the Proponent currently operates under two (2) *Fisheries Act Authorizations* (14-HCAA-00525 and 06-HCAA-CA7-00084) and that no site inspections were conducted by DFO during 2017. DFO stated that the following terms and conditions: 87, 105, 109, 110 and 121 from Project Certificate No. 005 for the Mary River Project have been incorporated into DFO's Fisheries Act Authorization for the Milne Inlet Ore Dock (DFO file no.: 14-HCAA-00525). DFO also outlined that additional terms and conditions from the NIRB's Project Certificate No.:005 for the Mary River Project, while not directly incorporated, fall under DFO's mandate and overlap with conditions in Baffinland's existing Fisheries Act Authorizations as follows:

- Milne Inlet Tote Road (DFO file no.: 06-HCAA-CA7-00084): Project Certificate 005, Terms and Conditions 19, 26, 45, 47, 48(a) and
- Milne Inlet Ore Dock (DFO file no.: 14-HCAA-00525): Project Certificate 005, Terms and Conditions 45, 76, 88, 99, 101, 106, 113, 115, 123.

DFO specifically acknowledged that the Proponent is currently in compliance with the Fisheries Act Authorizations that have been issued for the Project and for the terms and conditions under the NIRB Project Certificate No. 005.

Summary of Baffinland's Response to Comments Received from DFO:

- In response to the recommendation that all crossings with fish passage issues be targeted for repair in 2018, Baffinland responded that it will continue to address concerns identified during 2017 at fish bearing water crossings. With respect to concerns that the Proponent has discontinued its marine mammal observer program, Baffinland indicated that the marine mammal observer program would be re-initiated for the 2018 shipping season and that a preliminary discussion of the program would be held with MEWG members during meetings.

2.8 Parks Canada (PC)

PC did not provide any information regarding any site inspection conducted or report any observations from the Project site during the 2017 reporting period.

Summary of Baffinland's Response to Comments Received from PC:

- With respect to the recommendation that the tidal monitoring gauge be moved to a location away from the pier where ship ballast discharges may likely impact the readings, Baffinland indicated that it is in the process of determining the best location for the tidal monitoring gauge and that moving forward it will take into consideration
- In response to concerns regarding vessel speed violations, Baffinland noted that in 2018, all project vessels, including non-ore carriers, will be adhering to speeds dictated by the vessel traffic management system employed by Fednav Ltd.

2.9 World Wildlife Fund (WWF)

WWF provided comments regarding the 2017 Annual Report as indicated in [Table 3](#) and further expressed its concerns regarding the absence of an adaptive management framework to identify and appropriate mitigate impacts to the marine mammals and terrestrial wildlife. WWF also stressed the importance of having a Project Monitoring Framework in place for the Mary River Project to guide the development of indicators and thresholds for marine effects, which would in turn inform adaptive management of the project. WWF also expressed disappointment regarding Baffinland's lack of response to specific comments regarding the 2016 Annual Monitoring Report on issues related to terms and conditions of the Project Certificate (99, 101, 105, 109, 110, 111 and 112).

Summary of Baffinland's Response to Comments Received from WWF:

- With respect to the recommendation that the Proponent provide an update on if and how it has incorporated aspects of the draft framework in its ongoing project monitoring work and the mitigation of project related impacts, Baffinland indicated that it has not received any additional updates on NIRB draft monitoring framework but noted that it will continue to implement robust monitoring programs to assess and monitor any potential project-related effects.
- Regarding the 2016 request for confirmation on specific measures in place to reduce the potential for shipping interactions with marine mammals, Baffinland indicated that the shipboard observer program is being reinstated in 2018 and will be providing additional instructions to ship operators to ensure no disturbance of marine mammal sensitive areas.
- Regarding clarification on 2016 plans to improve monitoring program and to provide information on whether requirements for monitoring in Eclipse Sound and Pond Inlet are being met, Baffinland noted that the WWF has been invited to participate in two (2) MEWG meetings since January 18, which clearly provided an opportunity to discuss the three (3) marine mammal monitoring programs Baffinland will be implementing in 2018;
- In response to recommendations to develop thresholds and indicators to facilitate an assessment of the effect of vessel noise on marine mammals, Baffinland indicated that it held a discussion with the MEWG to address the development of framework for early warning indicators, of which WWF is an observer.

2.10 Effects Monitoring

Effects monitoring can be described as an assessment of the measurable change to a particular environmental or socio-economic component, as compared to the potential effects that were predicted to result from a proposed development. In the case of the Mary River Project, impact predictions and mitigation measures were outlined and developed throughout the environmental review of the Project and were recorded and presented through the Proponent's Final FEIS, ERP, and other related documents. Although the NIRB is currently in the process of developing a Post-Environmental Monitoring Framework for the Mary River Project that will address in greater details the expectation of the monitoring framework, the NIRB still expects that the Proponent will continue to invest effort on impact predictions and adequacy of monitoring/mitigation plans. Baffinland has not consistently provided reporting on how the information collected compares to the predictions in the FEIS and ERP.

2.10.1 NIRB's Review of Baffinland's 2017 Annual Report for the Mary River Project

Baffinland provided a summary of its compliance with terms and conditions pertaining to the Mary River Project Certificate, but in general the Proponent has not fully and consistently reported on how the current environmental and socio-economic effects of the Mary River Project compare to the impacts as predicted in the FEIS and ERP for most of the key ecosystemic and socio-economic parameters associated with the Project for the following:

- Aquatic/Freshwater Environment
- Marine Environment and Monitoring
- Terrestrial and Wildlife Monitoring
- Noise
- Air Quality and Climate Change
- Permafrost
- Socio-economic impacts

The NIRB has reviewed the 2017 Annual Monitoring Reports and finds that that Baffinland has done a satisfactory analysis of its results including reporting except for the items identified in [Section 2.1.2.2.1](#).

2.11 NIRB Site Visits- April and August 2018

As an integrated part of the NIRB's continuous monitoring program of the Project, the NIRB visited the Mary River site between April 17 to 20, 2018 (Winter Site Visit) and August 15 to 17, 2018 (Summer Site Visit). For a comprehensive review of the NIRB's 2018 site visits and observations, please refer to the NIRB's 2018 Mary River Site Visit Reports, included as [Appendix II](#) of this report. The NIRB further conducted information sessions in Pond Inlet prior to the April site visit and in Igloolik after the August site visit to provide updates to community members regarding the results of the Board's monitoring program for the Mary River Project. [Appendix IV](#) of this report contain detailed summaries of all the concerns and issues expressed by community members during the meetings. The table below presents information on the specific observations noted during the winter and summer site visits including recommended follow-up actions where necessary during 2018.

Location(s)	Project Infrastructure/facility	Winter observations	Summer observations	Follow-up actions
Mary River	Waste Rock Storage Area	Waste rock facility was snow covered and frozen with no signs of runoff or uncontrolled seepage of contact water from the rock piles. Proponent made repairs to the WRF pond to address overflow issues. Ground preparation work ongoing for the planned installation of a waste water treatment plant to manage effluent discharges from the waste rock facility.	Noted that structural deficiencies in the pond design may cause the pond to overflow. Emplacement of scarecrows was noted onsite to discourage birds from using the sedimentation pond.	
Mary River	Deposit No.1	Ongoing mining activities; observation of ore haulage and blasting preparation.	Ongoing mining activities; observation of ore haulage and blasting preparation/.	
Mary River/Milne Inlet	Incinerator	Water pooling/drainage issue noted within the facility. Oil leakage from a tank.	Open tire storage noted around the vicinity of the facility may increase the risk of a fire should tires ignite.	
Mary River	Sewage Outfall Area	Not visited during the winter	Visual investigation indicated that the slumping appeared to be natural and not associated with Baffinland's operations.	It was suggested that Baffinland monitor the progress of the slump to be warned if additional reparation is required.

Mary River	Landfill facility	Poor fencing structure, although with no evidence of windblown debris.	No improvement in the fencing.	
Milne Inlet	Landfarm	The laydown area near the landfarm area used for salt storage had not been addressed. Excess snow was trucked and placed on the hillside to allow for meltwater to move slowly down the hillside.	Water from recent rain had pooled within the landfarm berm.	
Mary River	Crusher plant	Significant dust emissions continue to be an issue of concern with very limited dust containment system in place.	Reduced dust emission and a water truck was observed to be used for dust control was also observed.	
Mary River/Milne Inlet	Mechanical shops/Tank farm	No major/minor spills observed at the facilities.	Not visited during the summer time.	
Milne Inlet	Ore dock and stockpile area	Ongoing ore stockpiling activities with minimal dust blowing from ore stockpiles.	Ditching around the stockpile area lacked protection against erosion.	It was suggested that Baffinland confirm that the ditch had a proper grade and consider some form of protection be applied to the sides of the ditch to prevent erosion which could dam water flow.

Mary River/Milne Inlet	Accommodation facilities	Indoor facilities are in good condition.		
Mary River/Tote Road	Quarry Area	Visit quarries D1Q2/QMR2 and other sites along the Tote road.		
Tote Road	General	Steaming and clearing snow from major culverts. Dust deposition noted on snow cover along the road	Baffinland staff were working to slightly adjust the road to reduce the number of blind curves and adjusting slope cuts to provide better sight lines for traffic for safety reasons. Reduced dust plumes due to wet conditions	
Mary River	Emulsion Plant	In good physical condition and operated according to existing best management practices	Not visited	
Milne Inlet	Docking Area	In good physical condition and operated according to existing best management practices	Not visited	

3 FINDINGS AND CONCLUSIONS

During the 2017–2018 monitoring period, Baffinland demonstrated compliance with most of the reporting requirements as contained in the Project Certificate, and as applicable to the current phase of the Mary River project; however, the Board notes several deficiencies with respect to some monitoring items as pertaining to terrestrial and marine environments including mitigation measures across the Project site. Pursuant to the NIRB's 2017 Recommendation to the Proponent, the Board has identified several outstanding items requiring follow-up action by Baffinland in order to ensure that Baffinland achieves full compliance with the Mary River Project Certificate. Where the NIRB recommended to the Proponent that it include additional reporting information within its 2017 Annual Report, Baffinland either submitted the required additional information, or provided its rationale for not reporting on the items, but in some instances additional reporting information were not provided by the Proponent.

During the site visits in April and August 2018 respectively, the NIRB staff observed several recurring issues of significant environmental concern related to the status of used tire storage, fencing around the waste landfill facility, conditions of sedimentation ponds, dust emission from the crusher facility, liner entrenchment in the landfarm, terrain stability at sewage outfall area, as well as the limited application of dust suppression measures at some facilities and throughout the site which has been discussed in more detail in the site visit reports ([Appendix II](#)).

The NIRB notes that on December 8, 2017, Baffinland sent a letter to the Board with an update on the levels of shipping and hauling of ore for 2017 specifically noting that it has achieved higher levels of production and that it anticipated by the end of December that road hauling would exceed the 4.2 Mtpa by 5-7%. Baffinland further noted that if it was to cease the road haulage operation in December, it would require shutting down the operations due to limited surge capacity. In response to the update, the NIRB reminded the Proponent of the requirement to operate within the terms and conditions outlined in the Project Certificate Condition 179b and further noted its expectation to receive an analysis of the potential effects. Baffinland reported within its 2017 Annual Reporting to the NIRB that it did not achieve compliance with permitted level of ore transported via the Tote Road and shipped through Milne Inlet as recommended under terms and conditions 179 b as it exceeded the approved limit of 4.2mt/a by 7%.

The NIRB also notes that Baffinland's 2017 Annual Report did not provide the required information pertaining to the analysis of potential effects associated with the increased ore transportation at the Mary River Project. The Board also reminds the Proponent that as a follow-up to the observations noted during the NIRB's monitoring of the Project and the comments received from authorizing agencies for the Mary River Project in 2018, the Board will be issuing recommendations to Baffinland to address the number of environmental issues on site appearing to result from consistent poor management practices.

4 SUMMARY

Baffinland commenced construction of the Mary River Project in May 2013, and to date the Project is being conducted as committed to in the Final Environmental Impact Statement and Early Revenue Phase Addendum submitted by Baffinland. Since issuance of the original NIRB Project Certificate in December 2012 and the amended certificate on May 28, 2014, Baffinland has continued to work towards compliance with the Terms and Conditions of the Project Certificate that apply to the current phase of the development of the Mary River project. However, several issues noted during the NIRB's site visits, and as discussed throughout this report remain outstanding, which require Baffinland's attention as well as corrective actions. These issues are further addressed in the Board's 2018 Recommendations issued to the Proponent. The Board expects that Baffinland devote sufficient time and attention to addressing the recommendations accompanying this monitoring report to ensure full compliance with Project Certificate No. 005 is achieved. Pursuant to *Nunavut Agreement* Sections 12.7.2 and 12.7.3, the NIRB will continue to work with Baffinland and other authorizing agencies to undertake the required evaluation of Project information, conduct and coordinate monitoring efforts, and to review results and Project compliance in accordance with the requirements set out in the Mary River Project Certificate No. 005.

Prepared by: Solomon Amuno, PhD.

Title: Technical Advisor II

Date: November 8, 2018

Signature:



Reviewed by: Kelli Gillard P.Ag.

Title: Manager, Project Monitoring

Date: November 8, 2018

Signature:



Appendix I: NIRB's Assessment of Baffinland's Compliance

Concordance Table for Status of PC Condition for the Mary River Project - NIRB File 08MN053					
PC Conditions	Summary of PC	NIRB Evaluation	Status of Compliance	Implemented in NWB water licence 2AM-MRY1325 Amendment #1	Implemented in CIRNAC land use permit
	Climate				
1	GPS/tidal gauge monitoring of sea levels and storm surges	Baffinland reported that the tidal gauge was re-installed at Milne Port and that it resumed tidal monitoring on-site during the 2017 open water season. Further, Baffinland indicated that during the measurement period, a total of 6 neap-spring tidal cycles were observed with observed fluctuations in temperature and salinity occurring out of phase with the tidal cycle. The Proponent indicated that the tide gauge system will be re-deployed at Milne Port in the summer of 2018, with the intention of continuing annual monitoring of relative sea levels and storm surges at the site, and that the measurement of sea level and storm surges at Steensby Port will be re-evaluated when activities are renewed at Steensby Port.	In compliance		
2	Validation and update of climate change impacts of the project on the LSA and RSA.	Baffinland indicated that this term and condition was not applicable in 2017 and also noted to the NIRB that it is currently developing a climate change strategy as part of the Proponent's submission for the Phase 2 Expansion Project. The NIRB notes that the Proponent has not provided any information to support the validation of climate change impacts of the project. The Board reiterates that an assessment to validate and update climate change impact predictions should be viewed by the Proponent as a priority for the approved Mary River project and not limited to the scope of the proposed Phase 2 expansion project.	Non-compliance		
3	Exploring and implementing steps to reduce GHGs.	Similar to 2016 and 2017, Baffinland only reported that it calculated the annual GHG emissions from the Project, but provided no evidence of the implementation of any specific initiatives within the context of its Climate Strategy aimed to reduce GHG in 2017. The NIRB notes that Baffinland has not fully complied with the term and condition of this Project Certificate.	Non-compliance		
4	Engage Inuit in climate change related research and studies.	No climate change related studies or research was conducted in 2017. Baffinland indicated that consultation with local Inuit communities will occur as part of the Phase 2 regulatory process, and this consultation will include a discussion of the results of Baffinland's forthcoming Climate Change Assessment and Climate Change Strategy for the Project.	Non-compliance		
5	Reasonable measures to ensure that Project-site weather related information is publicly available.	Baffinland indicated that weather related information for Mine site and Milne Port are posted on Baffinland's website. The NIRB noted that this information was available on Baffinland corporate website.	In compliance		
6	Provide results of SO ₂ , NO _x , and GHG emissions calculations using fuel consumption or other relevant criteria.	Baffinland has met the requirement of this term and condition through submission of the data in the Annual Report submitted to the NIRB.	In compliance		
	Air Quality				
7	Update Air Quality and noise abatement plan to include continuous SO ₂ and NO ₂ monitoring at port sites to capture operations phase ship-generated emissions for several seasons.	Baffinland completed the required ambient air quality monitoring and reported data collected during 2017.	In compliance		
8	Demonstrate through SO ₂ and NO ₂ monitoring at the mine site and ports that emissions remain within predicted levels. Provide rationale and mitigation measures for exceedances.	Air quality monitoring resumed at Milne Port in March 2017 and at the Mine Site in November 2017, and is currently ongoing. Baffinland indicated that Air quality monitoring at Steensby Port will be implemented when the Port is developed and shipping activities commence.	In progress		
9	Provide calculations of GHG emissions at the port sites and other Project sources including Project associated aircraft.	Baffinland has reported this information under PC #6.	In compliance		
10	Update to dust management plan to include monitoring and management plans	Baffinland reported that Dust Management and Monitoring was incorporated into the Air Quality and Noise Management Plan and the Road Management Plan prior to the start of construction. In addition, a Dust Mitigation Plan was implemented in 2017 and included the installation of shrouding on Project ore crushers, installation of snow fences downwind of the crusher ore stockpiles located at the Mine Site and the continued use of water and calcium chloride as dust suppressants on Project roadways and pads. CIRNAC already incorporated this term and condition into	In compliance		Incorporated into Land Use Permit N2014Q0016 Part 31 (1) (m), 48
11	Develop and implement Incineration Management Plan.	Baffinland noted that an Incineration Management Plan was already in place for the Project and that no update was available for 2017.	In compliance	Incorporated into Part F, Item 7 (requirement to test and dispose bottom ash and record analysis results and volumes of ash)	

12	Conduct at least one stack test immediately following commissioning new incinerators.	Baffinland noted that no new temporary nor permanent incinerators were commissioned in 2017. Baffinland indicated that stack testing was conducted on the incinerators when commissioned in 2013 and that it will continue to document and monitor the incinerator operational and residual bottom ash data to identify changes in operational effectiveness from original commissioning.	In compliance		
Noise and Vibration					
13	Work with Fisheries and Oceans Canada to select overpressure threshold applied to explosives for the protection of fish and aquatic life.	Not applicable as no blasting occurred in 2017 within the required setback distances detailed in the DFO guidance document.	Not applicable		
14	Conduct noise and vibration monitoring at Project accommodations in summer and winter during all phases of the project.	Baffinland indicated that it in 2017 adaptive management was employed to reduce noise and vibration near accommodation complexes and that in June 2017, one room at the Mine Site and one room at the Port site were tested for noise and vibration. The Proponent further noted that noise and vibration monitoring was conducted during the summer, and that due to equipment failure and availability of replacements winter testing was not done. Average noise levels at the Mine Site in 2017 were reported to be lower than the two previous years.	In partial compliance		Incorporated into Part 31 (1) (m) 49 of Land Use Permit N2014Q0016
14a	Demonstrate appropriate adaptive management practices during construction for activities with the potential to disrupt marine mammals.	Not applicable in 2017 as there was no active construction in the marine environment.	Not applicable		
14b	Demonstrate appropriate adaptive management practices for project activities with the potential to disrupt terrestrial wildlife and Project site users.	Baffinland indicated that noise levels are monitored in relation to worker health and safety, therefore mitigation measures to reduce noise and sensory disturbance are implemented with respect to human safety. Monitoring and adaptive management measures for Project activities to reduce noise and sensory disturbance to wildlife has also been discussed with the TEWG for further feedback and recommendations.	In compliance		
15	Collaborate with the QIA and local Hamlets when undertaking consultation with communities regarding railway, tote road and marine shipping operations. Provide visuals and discuss safety considerations.	Proponent conducted tour of five North Baffin communities in 2017 to discuss its Phase 2 Expansion proposal and noted that it continues to provide information related to the Project on Baffinland corporate website for video of operations and ship tracks.	In compliance		
Hydrology or Hydrogeology					
16	Ensure that water related infrastructure is consistent with FEIS and FEIS addendum.	Regulatory approval received before construction of infrastructure. Water related infrastructure and facilities constructed to date are consistent with those proposed in the FEIS and FEIS Addendum for the ERP in terms of type, location, and scope.	In compliance	Incorporated into Part D, which require that engineering drawings be provided upon request.	
17	Develop and implement measures to ensure that all effluent satisfies discharge criteria established by relevant regulatory authorities.	Discharges at the Project in 2017 that did not comply with the applicable discharge criteria outlined in the Type A Water Licence and the MMER mainly involved elevated TSS concentrations in surface water flows during freshet and pH and TSS exceedances at the WRF surface water management pond (WRF pond) in August and September 2017. Exceedances for Type A Water Licence monitoring locations were reported to the NWB, CIRNAC and the QIA during 2017 in the monthly monitoring reports required by the Type A Water Licence. Water sampling reported 3 minor incidents of exceeding effluent limits, and 2 incidents of MMER-mandated sampling not carried out due to samples being held for too long because of weather-related delays.	Non-compliant	Incorporated into Parts F and I	
18	Confirm and update, as needed, the approximate fill time of the mine lake pit identified in the FEIS.	Current mining activity has not yet created a pit at Deposit No. 1 so there is no additional information available to update the estimated fill time.	Not applicable	Incorporated into Part F, Item 3	
19	Develop and implement adequate water infrastructure monitoring to ensure that natural water flow is not significantly hindered. Monitor and report water withdrawal rates and water use for domestic and industrial purposes.	During 2017, water withdrawal rates from approved water sources did not exceed the limits stipulated in Baffinland's Type A and B Water Licences	In compliance	Incorporated into Parts B, D item 23, E item 23, and I	
Groundwater and surface waters					
20	Monitor the effects of explosive residue and by-products from Project related blasting. Implement measures to ensure explosives do not negatively effect the surrounding area.	Elevated ammonia and nitrate levels observed downstream of active areas, almost all below CCME guidelines, all acutely non-lethal. Overall, 2017 monitoring results of surface water runoff and aquatic environments downstream of Project mining areas and quarries were generally consistent with monitoring results observed in 2016.	In compliance	Incorporated into Part E, item 24, Part I, item 23 as well as Part D, item 18, g	
21	Ensure that the scope of the Aquatic Effects Monitoring Program (AEMP) is consistent with the requirements in the condition.	Evidence of potential Project-related influences in water quality and sediment deposition were observed in the Camp Lake and Sheardown Lake systems, but prominent mine-related effects to biota were restricted to a single tributary within the Sheardown Lake system. Each of these waterbodies showed changes in AEMP monitoring parameters and metrics in 2017	In compliance	Incorporated into Parts I, D, E, and F	
22	Develop a Sediment and Erosion Management Plan.	Incorporated into Surface Water and Aquatic Ecosystems Management Plan (SWAEMP), which was completed prior to construction. Any future revisions of the aforementioned plan would be expected to be submitted to the NIRB.	In compliance	Incorporated into Parts I, D, E, and F	
23	Develop and implement Groundwater Monitoring and Management Plan.	During the 2017 pilot program near the Landfill, groundwater was detected and sampled at three (3) monitoring wells down-gradient and one (1) monitoring well located up-gradient of the Landfill Facility. Due to the limited data set collected to date for groundwater chemistry, further groundwater monitoring is required to gain a better understanding of natural groundwater chemistry at Project sites.	Partially compliant	Incorporated into Part I, Item 14 (requirement to conduct opportunistic monitoring on any observed seepage).	
24	Ensure that effluent discharge conditions are met all times	See results of #17	Non-compliant	Incorporated into Parts I, D, E, and F	

25	Identify sensitive landforms and develop and implement measures to minimize Project impacts on identified landforms.	Results from the geotechnical inspections at the Mine Site indicate there has been little to no erosion from wind or rain and the dykes constructed of the sand/gravel soil for fuel and waste storage facilities have remained stable at slopes of 3:1 and 4:1. As noted in previous years, there are minor signs of settlement appearing at PSWPs 1, 2 and 3. The settlements are not differential settlements of the dykes but are minor overall settlements of the total structures with respect to the surrounding area. These settlements appear within the one (1) metre (+/-) active layer above the permafrost and are of little concern as the PWSPs are temporary structures and the settlements have no effect on the dyke stability.	In compliance	Incorporated into Part D, Item 19 and Part I, Item 12 (for water infrastructure).	
26	Develop and Implement Erosion Management Plan.	A comprehensive erosion management plan is included in the Surface Water and Aquatic Ecosystem Management Plan, which is approved by the NWB under the Type A Water Licence.	In compliance	Incorporated into Parts D, E, F (requirement to prevent or minimize erosion)	Incorporated into N2014Q0016, part 31 (1) (m) 50
27	Record notes on impacts to the aesthetic value of the Project area heard in public consultations.	Public consultation did not reveal any significant concerns from affected communities about the impacts that changes to the topography and landscape have had on the aesthetic value of the Project area. Other comments about changes to the land and sea were focused on ensuring the effects of the Project were being monitored and mitigated, and concerns with potential Project related effects on land use (hunting and harvesting).	In compliance		
28	Monitor Project effects on permafrost and ensure its integrity.	See results of #25. The biannual geotechnical inspections indicated that the Mary River Polishing/Waste Stabilization Ponds (PWSPs) 1, 2 and 3 were noted to be experiencing minor overall settlements of the structures with respect to the surrounding area. The minor settlement is restricted to the berms.	Partially compliant	Incorporated into Part D, Item 10 (requirement to minimize disturbance to permafrost around the site, including railway corridor)	
29	Provide construction design and drawings for review and acceptance by relevant authorities. Provide as-built drawings to authorities following construction.	several engineering submissions were provided to regulatory agencies and stakeholders throughout 2017, including Issued-for-Construction (IFC) and As-Built Drawings as well as Construction Summary Reports.	In compliance	Incorporated into Part D, Item 2 and Part E, Item 23	
30	Develop site-specific quarry operation and management plans before the development of any potential quarry site or borrow pit.	During 2017, revised quarry management plans for the Q1 Quarry at Milne Port and QMR2 Quarry at the Mine Site were submitted by Baffinland and approved by the QIA. Revisions made to the quarry management plans during 2017 focused on updating each quarry's proposed quarry design and development footprint.	In compliance	Incorporated into Part D, Item 5	Incorporated into N2014Q0016, 31 (1) (m) 51
Vegetation					
31	Ensure that Project activities are planned and conducted to minimize the Project footprint.	All work carried out within the Potential Development Area, current footprint below FEIS.	In compliance	A general requirement	
32	Ensure that all supplies brought to site are clean of soil that could contain plant seeds not naturally occurring in the area. Inspect vehicle tires prior to initial use in Project area.	Inspections of vehicles carried out prior to offload. No exotic plants identified in survey in 2017.	In compliance		
33	Include relevant monitoring and management plans within the TEMMP.	TEMMP included required plans. Any revisions to the plan would be expected to be submitted to the NIRB.	In compliance	Incorporated into Part J, Item 2	
34	Conduct soil sampling to determine levels of metals in soils where berry producing plants are, near any potential development area prior to commencing operations.	Metal concentrations in soil and lichen samples at sites L-71 and L-91 were below CCME and relevant thresholds provided in the literature, suggesting that 2016 sample analysis may have been elevated due to either analytical or field collection outliers. Baseline metal concentrations across all 2012 to 2016 vegetation and soil base metals monitoring sites are below Project-specific thresholds.	In compliance		
35	Monitor baseline metal levels in organ tissue of caribou harvested within the local study area, prior to commencing operations.	Not applicable in the reporting period as no caribou were being harvested within the local study area.	Not applicable		
36	Establish an on-going monitoring program of vegetation used as caribou forage near project development areas, prior to commencing operations.	There is no evidence of changes in vegetation abundance in the Project area from 2014 to 2017 as a result of the Project.	In compliance		
37	Incorporate methods to evaluate the potential introduction of invasive plant species into the Terrestrial Environment and Monitoring Plan. Report non-indigenous plant species to the Government of Nunavut.	No surveys conducted were conducted in 2017.	Not applicable		
38	Review and adjust all monitoring information and management plans annually and adjust as needed to prevent/reduce adverse project effects on vegetation.	There is annual variation in vegetation abundance in the Project area, but there is no evidence of changes in vegetation abundance as a result of the Project. Differences in total ground cover, total canopy cover, and cover between open and closed plots among years were small in magnitude and showed no consistent pattern in relation to distance from Project infrastructure; therefore, differences are attributed to natural variation among years rather than a Project-related effect.	In compliance		
39	Develop a progressive revegetation program for disturbed areas no longer in use.	Disturbed areas associated with Project development are still utilised to date with the exception of a few containment berms and infrastructure pads that have been decommissioned and repurposed for other Project activities.	In compliance	Incorporated into Part J, Item 10 and 11 (requirement to implement progressive reclamation including revegetation)	
40	Include revegetation plans in the Site Reclamation Plan that promotes progressive reclamation compatible with the surrounding environment.	Not applicable for 2017.	Not applicable	Incorporated into Part J, Item 10 and 11 (requirement to implement progressive reclamation including revegetation)	

41	Maintain a 100-m naturally vegetated buffer between the high water mark of any fish-bearing water bodies and permanent quarries with the potential for acid rock drainage, unless otherwise approved.	No new quarries were developed in 2017. Existing quarries maintained the 100 metre buffer from the high water mark to any fish bearing water bodies. Construction activities increased in 2017, resulting in the requirement to expand certain existing quarries at the Project.	In compliance	Incorporated into Part D (Item 13 and 14 and as Part E, F and H)	
42	Maintain a 30-m naturally vegetated buffer between the mining operation and adjacent water bodies.	With the exception of the non-compliance pad in Milne Port, Project operations have maintained the 30-m buffer between water bodies in previous years and the condition continues to be enforced.	non compliant	Incorporated into Part D (Item 13 and 14 and as Part E, F and H)	
43	Submission of a Site Drainage and Silt Control Plan to the relevant authorities prior to the start of construction.	Not applicable , but the SWAEMP will continue to be followed and enforced at the Project.	In compliance	Incorporated into Part D. Item 2.	
44	Meet or exceed guidelines for blasting thresholds set by Fisheries and Oceans Canada for the protection of fish and fish habitat.	No blasting near water in 2017.	Not applicable	Incorporated into Part E, Item 24 (requirement to submit Blasting Management Plans).	
45	Adherence to the No-Net-Loss principle at all phases of the Project.	Habitat compensation works completed along the Tote Road to date remain successful. Submerged substrate associated with the Milne Port Ore Dock continues to be colonized by marine biota, including vegetation, benthic invertebrates and fish.	In compliance		
46	Ensure runoff from fuel storage and maintenance facility areas, sewage and wastewater other facilities generating liquid effluent and runoff meet discharge requirements.	See #17	Partially compliant	Incorporated into Part F	
47	Design and construct all Project infrastructure so as they do not prevent or limit the movement of water in fish bearing streams.	Issues with fish passage and/or habitat were observed at 12 crossings at the time of the survey in early July 2017. Three (3) of these involved some form of physical obstruction to fish passage (e.g. instream silt fence, cobble piles at the upstream and/or downstream end of culverts) that was removed during, or shortly after, completion of the July survey.	Partial compliance	Incorporated into Part E, Item 23	Incorporated into N2014Q0016: Part 31 (1)(f) 16.
48	Engage with Fisheries and Oceans Canada and the QIA to explore Project specific thresholds for blasting that would exceed guidelines.	No blasting in or near water in 2017.	In compliance	Incorporated into Part E, Item 24 (requirement to submit Blasting Management Plans).	
48(a)	Conduct additional surveys for the presence of arctic char in freshwater bodies and ongoing monitoring of arctic char health where applicable, within watersheds proximal to the mine, tote road and Milne Inlet Port project development areas, including but not limited to, Phillips Creek, Tugast and Qurluktuk. Consult with MHTO re: the design, timing, and location of proposed surveys and ongoing monitoring.	No adverse mine-related effects on Arctic char populations within monitored lakes under the CREMP have been observed to date.	In compliance		
Terrestrial Environment					
49	Establish a Terrestrial Environment Working group to serve as an advisory body.	The TEWG has successfully developed a robust terrestrial monitoring program that is reviewed and adjusted on an annual basis.	In compliance		
50	Develop and implement a Project specific terrestrial monitoring plan.	Terrestrial Environment Mitigation and Monitoring Plan (TEMMP) in place.	In compliance		
51	Consider and, where appropriate, cooperate with relevant regional and/or community-based monitoring initiatives that raise issues or produce information pertinent to mitigating project-induced impacts. Give special consideration for supporting regional studies of population health and harvest programs for North Baffin caribou.	In 2017, Baffinland provided support for the North Baffin Island spring and fall caribou population surveys, in the form of supplying the field team with helicopter access, fuel and accommodations.	In compliance		
52	Initiate and develop a timeline to test and implement deterrence mechanisms for caribou near hazardous areas, within 3 months of issuances of the project certificate. Report information back to the Terrestrial working group.	Currently, caribou populations are low and no sightings of caribou have been made at the Project sites	In compliance		
53	Proponent shall demonstrate all measures outlined in the condition to mitigate impacts to caribou.	Measures in place and carried out, but no caribou detected in 2017.	In compliance		Incorporated into N2014Q0016, Parts 31 (1) (b) 36-38, and 31 (1) (m) 52
54	Provide an updated Terrestrial Environment Monitoring Plan which includes all aspects included in the condition.	Terrestrial Environment Monitoring Plan in place, reviewed and updated annually In regards to 54c, the programs are revised based on statistical analyses of annual data, as reported in the annual reports.	In compliance		
55	Develop an adaptive management plan applicable to wolves and wolf habitats in collaboration with the Government of Nunavut.	As a result of low caribou numbers, wolf numbers in the region have also declined. Wolf monitoring programs will be re-initiated when wolves and/or caribou are observed near site on a consistent and regular basis	Not applicable		
56	Develop a progressive strategy for the recovery of terrestrial wildlife habitat that is consistent with the Nunavut Wildlife Act. To ensure progressive reclamation of disturbed wildlife habitat.	No results provided, although Baffinland indicated that an Interim Mine Closure and Reclamation Plan was in place to support the rehabilitation of affected areas to viable and self-sustaining ecosystems/habitat that are functional.	In compliance		

57	Report annually on terrestrial environment monitoring efforts including information included in the condition.	Reported. No trends reported except in increase in vehicle traffic due to production increase. No monitoring of timing of snowmelt and green-up; Baffinland is not clear as why this information is necessary or how to qualify the timing.	In compliance		
58	Incorporate a review section in the NIRB annual report including the information outlined in the condition.	Done.	In compliance		
59	Ensure that aircraft maintain, whenever possible altitudes outlined in the condition. Develop measures to ensure all employees and subcontractors providing aircraft services are respectful of wildlife and Inuit harvesting that may occur in the Project development area.	Helicopter flight height compliance inside the goose area during moulting period was considerably higher in 2017 (95%) than in 2015 (55%) and 2016 (10%)	Partially compliant		
60	Develop a blasting program to minimize the effects of blasting on terrestrial wildlife, prior to construction.	No wildlife has been knowingly harmed or disturbed by blasting activities during construction.	Complete		
61	Implement a stop work policy when wildlife in the area may be endangered by Project work, whenever practical and not causing human safety concerns.	The Environmental Protection Plan outlines the 'stop work' when wildlife is in the area policy.	Complete		
62	Prohibit Project employees from transporting firearms to site and from operating firearms in the Project area for the purpose of wildlife harvest.	No incidences of Project personnel hunting or fishing within lands leased to Baffinland occurred in 2017, while 24 visitors were logged in the visitor's log (human use log).	Complete		
63	Liaise with local Hunters and Trappers Organizations in advance of carrying out terrestrial wildlife surveys. Meet with the organizations annually to discuss wildlife monitoring.	Wildlife monitoring and mitigation programs and wildlife surveys are reviewed at the TEWG meetings. In addition, draft annual monitoring reports are provided to TEWG members for review and comment prior to finalization and for input into the following years monitoring programs.	In compliance		
64	Ensure the environment protection plan incorporates waste management provisions to ensure carnivores are not attracted to Project site(s).	Both the Environmental Protection Plan and Waste Management Plan incorporate carnivore interaction and attractant mitigation measures and policies, which continued to be implemented in 2017	Complete	Incorporated into Part F, Item 7	Incorporated into N2014Q00016, Part 31 (1) (g) 27
Birds					
65	Ensure all employees at site receive bird awareness training (avoidance of nests and large concentrations of foraging and moulting birds).	In 2017, Baffinland continued to monitor all new construction activities around the new camp and laydown areas. A total of 10 47 hectares were surveyed between June 2 and August 23, 2017. No disturbance or destruction of migratory bird nests or their young were recorded.	In compliance		
66	Avoid bird Species at Risk and their nests; establish avoidance zones as per TEMMP.	No species at risk nests or eggs have been encountered during Project activities.	In compliance		
67	Ensure mitigation and monitoring strategies for bird Species at Risk are updated for consistency with applicable status reports, recovery strategies, action plans and management plans.	ECCC provides Baffinland with updates through participation in TEWG.	In compliance		
68	Install flashing red, red strobe or white strobe lights and guy-wire deterrents on communications towers. Consider reducing lighting when possible in areas where it may serve as an attractant to birds or other wildlife.	Strobe lighting deemed irrelevant by the Proponent as the majority of birds are in the area during the period of 24 hour daylight. Reflectors placed on guy wires of communication towers.	Complete		
69	Prior to bird migrations and nesting, identify and install nesting deterrents (e.g. flagging) to discourage birds from nesting that will be disturbed by construction/clearing activities.	No deterrents used. No apparent nesting attempts by birds in cleared areas.	In compliance		
70	Protect any nests found (or indicated nests) with a buffer zone as per setback distances outlined in the TEMMP.	No bird nests were located in 2017.	In compliance		
71	Subject to safety requirements, the Proponent shall require all project related aircraft to maintain a cruising altitude of at least:	There were no identified "observed concentrations of migratory birds", nor areas specifically prescribed by the TEWG to avoid for migratory birds excluding the snow goose area in 2017. For transects flown within the snow goose area during the moulting season, compliance was 95%, and compliance within and outside the snow goose area in all months (2017) was 76%.	In progress		
	a. 650 m during point to point travel when in areas likely to have migratory birds				
	b. 1100 m vertical and 1500 m horizontal distance from observed concentrations of migratory birds				
	c. 1100 m over the area identified as a key site for moulting snow geese during the moulting period (July-August), and if maintaining this altitude is not possible, maintain a lateral distance of at least at least 1500 m from the boundary of this site				
72	Ensure that pilots are informed of minimum cruising altitude guidelines and that a daily log or record of flight paths is maintained and available for regulatory authorities.	Between the beginning of June and end of September 2017, a compliance rate of 73% was achieved. Non-compliance events were primarily due to weather conditions, movement of equipment and personnel, or safety concerns of the pilots during flight.	Partially compliant		
73	Develop detailed and robust mitigation and monitoring plans for migratory birds taking into consideration input from relevant organizations.	No bird nests were located during any active migratory bird nest surveys in 2017.	Complete		
74	Develop and update relevant monitoring plans for migratory birds prior to construction including the key indicators included in the condition.	Complete, existing monitoring programs continued in 2017.	Complete		

75	Report annually on terrestrial habitat loss due to the Project to verify impact predictions and project footprint.	During 2017, an additional 162,915 m2 was disturbed within the PDA.	In compliance		
Marine Environment					
76	Develop a comprehensive environmental effect monitoring program to address concerns and identify potential impacts on the marine environment.	No species recorded during AIS sampling were identified as invasive to the Arctic region. Once species of benthic invertebrate collected in infuna samples in Milne Port in both 2017 and 2013, a tube-dwelling amphipod, <i>Monocorophium insidiosum</i> , is listed as "invasive" in the global database of invasive species.	Complete		
77	Establish a Marine Environment Working Group.	MEWG established, revisions to terms of reference began 2016, similar changes as to TEWG.	Complete		
78	Update baseline information for landfast ice using a long term data-set and with inter-annual variation.	Updated as new information is available, last update 2015.	In compliance		
79	Provide the Canadian Hydrographic Services with bathymetric data and other information in support of Project shipping where possible.	CHS collected bathymetry around the ore dock in 2016.	In compliance		
80	Prior to commercial shipping of iron ore, a detailed risk assessment is to be conducted for Project related shipping accidents.	Not applicable	Not applicable		
81	Reassess the potential for ship wake impacts to cause coastal change following changes to the proposed shipping route.	No changes in shipping routes.	Not applicable		
82	Encourage to have ore carriers to subjected to sea trials to measure wake characteristics at various speeds.	Buffinland believes this concerns the southern shipping route, which is not being used.	Not applicable		
83	Install tidal gauges at Steensby and Milne Ports to monitor sea levels and storm surges.	Milne Port: A continuous time-series of water level, temperature, and conductivity data was collected from 20 July to 17 October 2017.	Compliance		
83 (a)	Identify potential for and conduct monitoring to identify effects of sediment redistribution associated with construction and operation at Milne Port	All water quality samples collected in 2017 were below CCME Water Quality Guidelines (WQG) for all sampling parameters.	Partial compliance		
84	Update sediment redistribution modelling once ship design has been completed and sampling should be undertaken to validate the model and inform sampling sites and the monitoring plan.	Not applicable	Not applicable		
85	Develop a monitoring plan to verify Project impact predictions associated with sediment redistribution resulting from propeller wash in shallow water locations along the shipping route. Additional mitigation measures are required if monitoring detects negative impacts.	Buffinland believes this concerns the southern shipping route, which is not being used, and ore carriers which have not yet been commissioned.	Not applicable		
86	Prior to commercial shipping of iron ore, use more detailed bathymetry collected from Steensby and Milne Inlets to model anticipated ballast water discharges from ore carriers. This information should be used to update ballast water discharge impact predictions and sampling should be conducted to validate the model.	Canadian Hydrographic Service collected bathymetry around the ore dock in 2016. Updated ballast water model to be used to develop an updated water dispersion model based on shipping operations proposed as part of the Phase 2 Development proposal.	Partial compliance		
87	Develop a detailed monitoring program at a number of sites over the long term to evaluate changes to marine habitat and organisms and to monitor for non-native introductions resulting from Project-related shipping. Initiate program several years prior to any ballast water discharge at Steensby or Milne Inlets.	A total of 44 zooplankton taxa were identified in AIS sampling conducted in 2017 at Milne Port and Ragged Island, of which 13 were not observed during previous AIS monitoring or baseline surveys. None of the 44 zooplankton taxa were identified as invasive to the Arctic region.	In compliance		
88	Prior to commercial shipping of iron ore, provide update risk analysis regarding ballast water discharge to assess the adequacy of treatment and implications on the receiving environment.	The risk assessment undertaken in support of the ERP (SEM, 2013) determined that shipping operations under the ERP of the Project was unlikely to significantly increase the potential for species introduction as a consequence of ballast water discharges or ship hull fouling at Milne Port.	Complete		
89	Develop and implement a ballast water management program that may include the treatment and monitoring of ballast water discharges in a manner consistent with or exceeds applicable regulations. The management program should reflect all inclusions outlined in the condition.	Ballast water salinity was measured in all ore carriers (n=56) that called on Milne Port in 2017.	Partial compliance		
90	Incorporate into the Project Shipping and Marine Wildlife Management Plan provisions to achieve compliance with the requirements under the International Convention for the Control and Management of Ships Ballast Water and Sediment (2004) or its replacement regulation as amended.	Incorporated into Shipping and Marine Wildlife Management Plan (SMWMP)	Complete		
91	Develop a detailed monitoring plan for Steensby and Milne Inlets for fouling that complies with all applicable regulatory requirements and guidelines issued by Transport Canada.	No trends identified based on 2014-2015 data. No sampling to monitor hull fouling. No TC regulations or guidelines issued. SCUBA monitoring of hulls at Milne was carried out in 2017 and did not identify any invasive species.	In progress		

92	Ensure that the Proponent maintains the necessary equipment and trained personnel to respond to all sizes of potential spills in a self sufficient manner.	In place. Spill response exercises carried out annually during fuel transfer at Milne Port.	In compliance	Incorporated into Part H, Item 5	Incorporated into N2014Q00016, Part 31 (1) (g) 30 and 31
93	Prior to construction, based on vessel selection, reassess the risk analysis of using vessel -based fuel storage with the inclusions outlined in the condition.	Not applicable as the use of vessel-based fuel storage is not currently proposed.	Not applicable		
94	Consult directly with affected communities regarding its plans for over-wintering of fuel in Steensby Inlet.	Baffinland indicated that it would re-visit this condition if overwintering of fuel at Steensby Inlet is proposed.	Deferred		
95	Meet or exceed all regulatory regulations and requirements to the practice of overwintering of a fuel vessel at Steensby Inlet with reporting to NIRB and Transport Canada.	Baffinland indicated that it would re-visit this condition if overwintering of fuel at Steensby Inlet is proposed.	Deferred		
96	Update the NIRB on the results of all compliance monitoring and site inspections undertaken by government agencies for the overwintering of a fuel vessel at Steensby Inlet.	Overwintering of fuel in Steensby Inlet is not currently proposed.	Deferred		
97	Prior to commercial shipping of iron ore, conduct fuel spill dispersion modelling that minimally includes those items outlined in the condition.	Baffinland indicated that there have been no changes to the shipping practices since the revised oil spill modelling was conducted, therefore no updates are required.	Complete		
98	Incorporate the results of revised fuel dispersion modelling into its impact predictions for the marine environment and the spill response and emergency preparedness plans.	The revised fuel spill modelling completed in 2015 was used to revise Baffinland's spill response and emergency preparedness plans, including the development of a Spill at Sea Response Plan.	Complete		
Marine Wildlife					
99	With the Marine Environment Working Group, consider and identify priorities for conducting supplemental baseline assessments for the items outlined in the condition.	In compliance. Monitoring activities in Steensby Inlet are inactive	Not applicable		
100	Update the Project Shipping and Marine Wildlife Management plan to include avoidance of polynas and mitigation measures designed for potential fuel spills along the shipping lane during the winter months.	Baffinland indicated that there is currently no winter shipping or ice breaking occurring as part of the Mary River Project so there is no need to address fuel spills during winter months in the SMWMP.	Not applicable		
101	Incorporate all items outlined in the condition into the appropriate monitoring plans.	Several items were not applicable in 2017 (a, f and h) but in general Baffinland achieved compliance with the expectations of the terms and conditions of the Project Certificate.	Applicable items are complete for 2016. Some items are Not applicable in 2016.		
102	Ensure that routing of project vessels is tracked and recorded for both the southern and northern shipping routes, with data made real-time available to communities in Nunavut and Nunavik.	Baffinland has contracted exactAIS, a global vessel monitoring and tracking service based on AIS (Automatic Identification System) data from polar orbiting satellites to track and report on vessel movements. Baffinland has made vessel routing accessible to the public. However, comments from Pond Inlet indicate residents do not believe this is sufficient.	In compliance		
103	Report annually to the NIRB regarding project related ship track and sea-ice information including all items outlined in the condition.	No significant deviations from the nominal shipping route have occurred in 2017 for iron ore shipping, and Baffinland will continue to monitor ship tracks with the use of the exactAIS service.	In compliance		
104	Plan shipping routes to Steensby Port in accordance with the items outlined in the condition. Summarize all incidences of significant deviations from the nominal shipping route presented in the FEIS to/from Milne and Steensby Ports.	Shipping to/from the Steensby Port is not a currently active part of the project, therefore 104a is not currently applicable. No significant deviations from nominal shipping routes to/from Milne Port were made in 2017.	Not applicable		
105	Ensure that measures to reduce the potential for interaction with marine mammals particularly in Hudson Strait and Milne Inlet area identified and implemented prior to commencement of shipping operations.	No activity took place at Steensby Port in 2017. In Milne Inlet, ship-mammal interactions are monitored by the shore-based marine mammal monitoring program at Bruce Head. Baffinland's SMWMP identifies that "Project vessels will travel at a speed of 7-10 knots when transiting through Eclipse Sound and Milne Inlet".	In progress		
106	Ensure that shipboard observers are employed during seasons where shipping occurs and provided with the means to effectively carry out the duties. The role of shipboard observers should be taken into consideration in the design of any Project purpose built ships.	The Ship-based Observer program was put on hold in 2016 due to safety concerns about the on-boarding of the observers. No vessel collisions with marine mammals were recorded over the 3 years of monitoring. Very few sightings of marine mammals were observed over the 3-year period (65 marine mammals in 2013, 12 in 2014, and 16 in 2015).	Non-compliant		
107	Revise the proposed 'surveillance monitoring' to improve the likelihood of detecting strong marine mammal, seabird or seabird responses occurring too far ahead of the ship to be detectable by observers aboard the ore carriers.	Ship-based surveillance monitoring was conducted in 2013, 2014, and 2015, but was discontinued in 2016. It was found that very few marine mammals were visible to observers on board the vessels, and there were safety concerns about having observers board the vessels at sea, which was accomplished by transferring the observers onto the ship from a smaller vessel based in Pond Inlet.	Non-compliant		
108	Ensure that data produced by the surveillance monitoring program is analysed by experienced analysts (in addition to being discussed as proposed in the FEIS) to maximize effectiveness in providing baseline information and/or detecting potential effects. Data from the long term monitoring should be treated with the same rigor.	The ship-based surveillance monitoring program was discontinued after three years because neither observers nor UAV technology were demonstrated to be effective in detecting marine mammal, seabird or seabirds ahead of the ship, and there were safety issues for transfer of observers to the ship.	Non-compliant		
109	Conduct a monitoring program to confirm the predictions in the FEIS with respect to disturbance effects from ships noise on the distribution and occurrence of marine mammals.	A narwhal monitoring tagging program was carried out in 2017.	Partial compliance		

110	Immediately develop a monitoring protocol that includes acoustical monitoring to assess short, long term and cumulative effects of vessel noise on marine mammals. Work with the MEWG to identify appropriate early warning indicators that will ensure rapid identification of negative impacts along southern and northern shipping routes.	Passive acoustic monitoring carried out in 2017 as part of the Narwhal tagging program. No early warning indicators of negative impacts of vessel noise have been developed.	Partial compliance		
111	Develop clear thresholds for determining if negative impacts as a result of vessel noise is occurring.	Baffinland indicated it did not comply with this condition.	Non-compliant		
112	Prior to commercial shipping of iron ore, in conjunction with the MEWG, develop a monitoring protocol that includes acoustical monitoring that provides an assessment of the negative effects of vessel noise on marine mammals. Consideration of early warning indicators and thresholds of impacts should be included.	No early warning indicators of negative impacts of vessel noise have been developed. Passive underwater acoustic monitoring was conducted by Greeneridge on behalf of Baffinland at sites adjacent to Bruce Head and the mouth of Koluktoo Bay during ice-free periods of 2014 and 2015 (Early Revenue Phase of the project). The two acoustic sites quantified vessel noise and detected the acoustic presence of marine mammal calls. Passive acoustic monitoring carried out in 2017 as part of the Narwhal tagging program.	Partial compliance		
113	Conduct monitoring of marine fish and fish habitat including monitoring for Arctic Char stock size and health condition in Steensby and Milne Inlets, as recommended by the MEWG.	Fish have been monitored each year from 2013 to 2017 by gill netting and Fukui trapping, and in 2017 additionally by angling, and minnow traps in Milne Inlet.	In compliance		
114	In the event of the development of a commercial fishery in Steensby Inlet or Milne Inlet areas, in conjunction with the MEWG, shall update the monitoring program for fish and fish habitat to ensure that the ability to identify Arctic Char stock(s) and any changes in stock size and structure of affected stocks and fish health is maintained to address any monitoring issues relating to the commercial stock fishery.	No commercial fishery was developed in the vicinity of the two port areas in 2017.	Not applicable		
115	Continue to explore off-setting options in both the freshwater and marine environment to offset serious harm to fish which will result from the construction and infrastructure associated with the project.	The ore dock was constructed in 2014, and the offsetting plan was implemented. The 2017 Milne Ore Dock Fish Offset Monitoring Annual Report was submitted to the DFO on December 31, 2017. The annual report demonstrates that the off-setting plan has been supporting biological activity at all trophic levels as expected.	In compliance		
116	Prior to construction, develop mitigation measures to minimize the effects of blasting on marine fish and fish habitat, marine water quality and wildlife that includes compliance with the Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters.	Blasting in the marine environment has not occurred on site to date.	Not applicable		
117	Ensure that blasting in, and near, marine water shall only occur during periods of open water. Blasting in, and near, fish-bearing freshwater should occur to the greatest degree possible in open water. Blasting during ice-covered periods must meet requirements established by Fisheries and Oceans Canada.	Not applicable as blasting in the marine environment has not occurred on site to date.	Not applicable		
118	Prior to construction, incorporate into the appropriate mitigation plan, thresholds for the use of specific mitigation measures meant to prevent or limit marine wildlife disturbance.	A detailed mitigation plan was developed for dredging and vibratory pile driving that was undertaken during construction of the ore dock (Ruskin Construction, 2014). Monitoring was undertaken during dock construction to confirm the effectiveness of the mitigation measures (ERM, 2015).	In Compliance		
119	In conjunction with the MEWG, monitor ringed seal birth/lair abundance and distribution for at least two years prior to the start of ice-breaking to develop a baseline, with continue monitoring over the life-time of the project.	Not applicable. Ice breaking has not been required in the Early Revenue Phase of the project.	Not applicable		
120	Ensure, subject to vessel and human safety, that all Project shipping adhere to mitigation measures outlined in the condition for the protection of marine wildlife.	The SMWMP provide guidance on ship speeds and ship tracks that should be followed. Baffinland indicated that while most ore vessels travelled at a maximum speed of under 10 knots which is within the required 7-10 knots, it was exceeded at times by specific vessels. The maximum speed for a fuel/cargo vessel was 16.1 knots. In 2018, all vessels will be instructed to approach Milne Inlet with speeds limited to 7-10 knots.	Non-compliant		
121	Immediately report any accidental contact by Project vessels with marine mammals or seabird colonies to Fisheries and Oceans Canada and Environment Canada, respectively.	There were no observations of accidental contact between project vessels and marine mammals or seabird colonies during the three years that the ship board observer program was run. No notifications of accidental contact were reported by Baffinland in 2017 from vessel operators, observers at the Bruce Head Shore Based Observer station or local hunters.	Partially compliant		
122	Summarize and report annually to the NIRB regarding accidental contact by Project vessels with marine mammals or seabird colonies through the applicable monitoring report.	No contacts reported.	In compliance		
123	Provide sufficient marine mammal observer coverage on Project vessels to ensure that collisions with marine mammals and seabird colonies are observed and reported throughout the lifecycle of the Project. The marine wildlife observer protocol should include those items outlined in the condition.	Ship-based surveillance monitoring was conducted in 2013, 2014, and 2015, but was discontinued in 2016. It was found that very few marine mammals were visible to observers on board the vessels, and there were safety concerns about having observers board the vessels at sea, which was accomplished by transferring the observers onto the ship from a smaller vessel based in Pond Inlet.	Non-compliant		

124	Prohibit all Project employees from recreational boating, fishing and harvesting of marine wildlife in Project areas, including Steensby and Milne Inlets.	No incidences of project personnel hunting or fishing within lands leased to Baffinland occurred in 2017.	In compliance		
125	Prior to the use of acoustic deterrent devices, carry out consultations with communities along the shipping routes and nearest to Steensby and Milne Inlet Ports to assess acceptability of the devices. Feedback from consultation should be incorporated into the mitigation plan.	No acoustic deterrents have been considered for use on the Project to date.	Not applicable		
125(a)	Consult with potentially affected communities and groups, particularly the Hunters and Trappers Organizations regarding the identification of Project vessel anchor sites and potential areas of temporary refuge for Project vessels along the shipping routes within the Nunavut Settlement Area. Feedback from the consultation should be incorporated.	The Qikiqtaaluk Inuit Association (QIA) and the Mittimatalik Hunters and Trappers Organization (HTO) were consulted during emergency response planning for the northern shipping route, which included the establishment of anchor sites and potential temporary refuge areas. In 2017, water quality and AIS monitoring was extended to Ragged Island (north of the LSA boundary) in response to concerns that ships were potentially discharging ballast water while occupying anchorage sites in this area (based on feedback provided during community workshops and annual MEWG meetings in 2016).	In compliance		
126	Design monitoring programs to ensure that local users of the marine area in communities along the shipping route have opportunity to be engaged throughout the life of the Project in assisting with monitoring and evaluating potential Project-induced impacts and changes in marine mammal distributions.	The Mittimatalik Hunters and Trappers Organization (MHTO) sits on the MEWG. In 2017, Baffinland hired 12 Inuit to participate in the marine mammal and environment monitoring programs. At the end of the field season, Baffinland held meetings with Inuit that participated in the program to share and obtain feedback on the preliminary results from monitoring in 2017.	In compliance		
127	Ensure that communities and groups in Nunavik are kept informed of Project shipping activities and are provided with opportunity to participate in the continued development and refinement of shipping related monitoring and mitigation plans.	Baffinland has made vessel routing accessible to the public. Comments received by the NIRB from Pond Inlet indicate this is currently considered insufficient.	In compliance		
128	Consult with local communities as fish habitat off-setting options are being considered and demonstrate incorporation of this input in the design of the Fish Habitat Off-Setting Plan.	Baffinland and the Department of Fisheries and Oceans Canada (DFO) consulted the community of Pond Inlet in 2013 and 2014 regarding the development of off-setting measures for the ore dock.	Complete		
Population Demographics					
129	Encouraged to engage in the work of the Qikiqtaaluk Socio-Economic Monitoring Committee along with other agencies and affected communities, endeavoring to identify areas of mutual interest into a collaborative monitoring framework that includes socio-economic priorities related to the Project, communities and the North Baffin region as a whole.	Socio-economic performance of the Project in 2017 was assessed using socio-economic indicators for a number of Valued Socio-Economic Components (VSECs) included in the Final Environmental Impact Statement (FEIS; Baffinland, 2012). The information presented in the 2017 Socio-Economic Monitoring Report supports many of the FEIS predictions for these VSECs and identifies a number of positive effects the Project has had.	In compliance		
130	Consider establishing and coordinating with smaller socio-economic working groups to meet Project specific monitoring requirements throughout the life of the Project.	Baffinland continues to engage with the QSEMC and participates in the Mary River SEMWG, a sub-set of the QSEMC whose members include Baffinland, the Government of Nunavut, the Government of Canada, and the QIA. A Terms of Reference for the SEMWG (which identifies socio-economic monitoring priorities and objectives for the Project) has been finalized.	In compliance		
131	The Qikiqtaaluk Socio-Economic Monitoring committee is encouraged to engage in monitoring of demographic changes including the movement of people into and out of the North Baffin communities and the territory as a whole.	Baffinland has provided demographic change information in the 2017 Socio-Economic Monitoring Report.	In compliance		
132	Encouraged to partner with other agencies in the North Baffin region, the Municipal Training Organization and the Government of Nunavut in developing/implementing programs which encourage Inuit to remain living in their home communities while seeking ongoing and progressive training and development.	Between 2014 and 2017, the Work Ready Program was delivered to new hires only. In 2017, Baffinland worked with Hamlet Governments from the five (5) North Baffin communities (Arctic Bay, Clyde River, Hall Beach, Igloolik, and Pond Inlet), the QIA, and Arctic College to develop a revised Work Ready Program that is scheduled to commence in the first quarter of 2018. Baffinland and the Qikiqtaaluk Inuit Association (QIA) have partnered in the \$19 million Qikiqtaaluk Skills and Training for Employment Partnership (Q-STEP) training program.	In compliance		
133	Encouraged to work with the Qikiqtaaluk Socio-Economic Monitoring committee and with the Government of Nunavut and other relevant stakeholders to design and implement a voluntary survey to be completed by its employees on an annual basis in order to track housing status and migration intentions. Non-confidential findings are to be reported to the Government of Nunavut and the NIRB.	In January 2018, Baffinland implemented a revised voluntary Employee Information Survey, which collected information related to employee changes of address, housing status, and migration intentions (amongst other topics). The revised survey also addressed several other topics related to Project Certificate terms and conditions, and IIRBA requirements. Baffinland and the QIA worked together on developing this new survey and jointly administered it on-site. This survey was offered to Inuit employees and contractors at the Mary River Project. Baffinland continues to discuss the content and results of the workplace survey with members of the Mary River SEMWG (including GN, QIA, and INAC representatives) and will continue to solicit feedback on potential improvements to the survey.	In compliance		
134	Provide in the annual report to the NIRB a summary of employee origin information including information outlined in the condition.	Data on the origin, number, and ethnicity of Project employees and contractors in 2017 are presented in the 2017 Socio-Economic Monitoring Report. This information was obtained from internal Baffinland Human Resources records.	In compliance		
Training and Education					

135	Encouraged to consider offering additional options for work/study programs available to Project employees.	<p>Baffinland and the Qikiqtani Inuit Association (QIA) have partnered in the \$19 million Qikiqtani Skills and Training for Employment Partnership (Q-STEP) training program. As this program was not commenced until late in 2017, the number of apprentices employed by Baffinland during the year was limited. In 2017, Baffinland employed one Inuit apprentice. In partnership with the Operating Engineers Training Institute of Ontario (OETIO), Baffinland will offer local Inuit opportunities to participate in the Heavy Equipment Operating Training delivered by the OETIO in Morrisburg, Ontario. This training is set to begin in early 2018 with the first class of 12 Inuit and a second class of 12 Inuit to follow. Plans are also under way to offer advanced training for four existing Baffinland Inuit employees to upgrade their heavy equipment skills.</p> <p>Additional programs, including financial literacy, General Education Development (GED) upgrading and other initiatives are currently under consideration by Baffinland for implementation in 2018 or 2019.</p>	In compliance		
136	Encouraged to work with training organizations and/or government departments offering mine-related or other training in order to provide additional training opportunities for employees which are transferable and meaningful.	See note above for T&C 135.	In compliance		
137	Prior to construction, develop an easy referenced listing of formal certificates and licences that may be acquired via on-site training or training during employment at Mary River. Listing to be updated on an annual basis, provided to the NIRB upon completion and whenever it is revised.	A total of 43,397 hours of training were delivered in 2016, including 4,024 hours to Inuit workers.	In compliance		
138	Encouraged to work with the Qikiqtani Inuit Association to ensure timely development of effective Inuit training and work-ready programs.	Baffinland and the QIA work closely through the IIBA Joint Management Committee and Joint Executive Committee to address Inuit training needs, including programs directed at work readiness. The Q-STEP program has been announced and is being implemented. This program is partially supporting Baffinland's Work Ready, Apprenticeship, and Heavy Equipment Operator training programs.	In compliance		
139	Prior to construction, undertake and provide results of a detailed labour market analysis which provides quantitative predictions on the number of employees to be sourced from southern Canada and foreign markets. Within 90 days of receipt of the Project Certificate, submission of an updated labour market analysis must be submitted.	A revised labour market analysis was presented in the 2014 Annual Report to the NIRB (Baffinland, 2015b). A revised labour market analysis was undertaken in 2017 and will be submitted as part of the assessment for the Phase 2 proposal.	In compliance		
140	Encouraged to survey Nunavummiut employees as they are hired and specifically note the level of education obtained and whether the incoming employee resigned or left an educational institute to take up employment with the Project.	In January 2018, Baffinland implemented a revised voluntary Employee Information Survey, which collected information related to employee changes of address, housing status, and migration intentions (amongst other topics). The revised survey also addressed several other topics related to Project Certificate terms and conditions, and IIBA requirements. Baffinland and the QIA worked together on developing this new survey and jointly administered it on-site. This survey was offered to Inuit employees and contractors at the Mary River Project. Baffinland continues to discuss the content and results of the workplace survey with members of the Mary River SEMWG (including GN, QIA, and INAC representatives) and will continue to solicit feedback on potential improvements to the survey.	In compliance		
141	Prior to construction, encouraged to work with the Qikiqtani Inuit Association in order to prioritize the provision of training of Inuit to serve as employees in monitoring or other such capacities.	Baffinland and the Qikiqtani Inuit Association (QIA) have partnered in the \$19 million Qikiqtani Skills and Training for Employment Partnership (Q-STEP) training program.	In compliance		
Livelihood and Employment					
142	Encouraged to address the potential direct and indirect effects that may result from Project employees on-site use of various Inuktitut dialects as well as other spoken languages.	Ongoing. Baffinland's Inuktitut in the Workplace Policy outlines the corporate position respecting support for the use of Inuktitut at all sites in Nunavut and ensures that, while the working language of the mine and port sites is English, a lack of proficiency in English will not be a barrier to Inuit employment, subject to considerations of health and safety. The Inuktitut in the Workplace Policy has been shared with the QIA at both the Executive and Management Committees and was updated in 2017.	In compliance		
143	Encouraged to consider the use of both existing and innovative technologies as a way to ensure Project employees are able to contact their family and friends.	Internet and telephone access is available free of charge to employees in the bunkhouse rooms at site, and in some common areas. Bandwidth and utilization levels may limit the use of some applications.	In compliance		
144	Encouraged to make requirements for employment clear in its work-readiness and other programs and documentation.	Ongoing. From April 3-7, 2017, Baffinland hosted a Career and Training Information Tour in the five (5) North Baffin communities.	In compliance		
145	Encouraged to work with the Government of Nunavut and the Qikiqtaaluk Socio-Economic Monitoring committee to monitor the barriers to employment for women.	Ongoing. Baffinland has provided information on potential barriers to employment for women in the 2017 Socio-Economic Monitoring Report. This includes indicator data on hours worked by female employees and contractors, and information on childcare availability and costs.	In compliance		

146	The Government of Nunavut and the Qikiqtaaluk Inuit Association are encouraged to investigate the possibility for Project revenue streams to support initiatives or programs which offset or subsidize child care for Project employees.	Not directly applicable to Baffinland	Not applicable		
147	Encouraged to work with the Government of Nunavut and the Nunavut Housing Corporation to investigate options and incentives which might enable and provide incentive for employees living in social housing to maintain employment as well as to negotiate for an obtain manageable rental rates.	At the July 5 and 6, 2017 QSEMC meeting, concerns related to public housing were discussed by the participants.	In compliance		
Economic Development					
148	Encouraged to undertake collaborative monitoring in conjunction with the Qikiqtaaluk Socio-economic Monitoring committee's monitoring program which addresses Project harvesting interactions and food security and broad indicators of dietary habits.	Baffinland has provided information on potential Project harvesting interactions and food security in the 2017 Socio-Economic Monitoring Report.	In compliance		
149	Prior to operations, required to undertake an analysis of the risk of temporary mine closure giving consideration to the affects of such to the North Baffin region.	The Potential Effects of a Mine Closure study was completed in 2014.	Complete		
150	Ensure that specific conditions are met in regard to Sirmilik National Park, as outlined in the condition.	No flights over Sirmilik Park occurred in 2017 and therefore no noise implications are possible.	In compliance		
151	Encouraged to investigate measures and programs designed to assist Project employees with home ownership or access to affordable housing options.	Baffinland indicated that currently, there is not a clear and direct relationship between Project employment and any measures or programs undertaken by Baffinland or others, and home ownership. Baffinland implemented a revised Inuit Employee Survey in January 2018, which collected data on employee housing status and other topics.	In compliance		
152	The Qikiqtaaluk Inuit Association is encouraged to provide the Board and the Qikiqtaaluk Socio-Economic Monitoring committee which information regarding the effectiveness of any provisions within the Inuit Impact Benefit Agreement which may require that larger contracts are broken into smaller contracts.	This PC Condition is primarily directed at the QIA. In 2017, as part of IIBA implementation Baffinland developed an Inuit Procurement and Contracting Strategy (IPCS).	Not a Baffinland condition		
Human Health and Wellbeing					
153	Encouraged to employ a mental health professional to provide counselling to Inuit and non-Inuit employees in order to positively contribute toward employee health and well-being.	Baffinland's benefit plan includes an Employee and Family Assistance Program (EFAP), which offers all permanent employees and their dependents professional short-term counselling on an as-needed basis. In 2017 there were a total of 38 EFAP cases.	In compliance		
154	Work with the Government of Nunavut and the Qikiqtaaluk Socio-Economic committee to monitor potential indirect effects of the projects.	Baffinland has provided information on potential indirect effects of the Project in the 2017 Socio-Economic Monitoring Report. This includes indicator data on the prevalence of substance abuse, gambling issues, family violence, marital problems, rates of sexually transmitted infections and other communicable diseases, rates of teenage pregnancy, high school completion rates, and other topics (e.g., crime rates).	In compliance		
155	Encouraged to provide the NIRB with an updated report on its development of mitigation measures and plans to deal with potential cultural conflicts which may occur at site.	Baffinland is committed to promoting employee cohesion through cultural awareness and social programs. In 2017, Baffinland continued to provide cultural recognition programs such as cultural awareness, promotion of Inuktitut in the workplace and Elder support for Inuit employees. Baffinland President and Chief Executive Officer Brian Penney was joined by Mr. Levi Barnabas of the QIA to preside over a Nunavut Day Celebration at the Mary River Project July 9-10, 2017. Activities included traditional Inuit games hosted by Baffinland Elders, a video screening of Inuit focused films, as well as the serving of country food.	In compliance		
156	Encouraged to assist with the provision and/or support of recreation programs and opportunities within the potentially affected communities in order to mitigate potential impacts of employees' absence from home and community life.	An Ilagikunut Nunaliimullu Pivalliajutsuit Kinnauiat fund has been established under Article 12 of the IIBA. Baffinland and QIA each contribute \$375,000 annually to the fund which is administered by QIA. Baffinland also supported numerous community centered events and activities in 2017. This includes, but is not limited to, community snowmobile races, fishing derbies, square dances, as well as various sports team travel and sponsorship.	In compliance		
157	Consider providing counselling and access to treatment programs for addictions, domestic parenting, and marital issues that affect employees and/or their families.	Baffinland's employee benefit plan includes an Employee and Family Assistance Program (EFAP), which offers all permanent employees and their dependents access to professional short term counselling on an as-needed basis.	In compliance		
Community Infrastructure					
158	Encouraged to work with the Government of Nunavut and other relevant parties to develop a Human Health Working Group.	Baffinland continues to work with the QSEMC and the Mary River SEMWG on socio-economic monitoring initiatives; the Government of Nunavut (GN) actively participates in both these groups. A Memorandum of Understanding was also signed with the GN Department of Health in November 2013 and updated in 2017 regarding site health services.	In compliance		

159	Encouraged to work with the Government of Nunavut to develop an effects monitoring program that captures increases to community based and airport infrastructure in the local study area and Iqaluit.	Baffinland continues to work with the QSEMC and the Mary River SEMWG on socio-economic monitoring initiatives; the GN actively participates in both these groups.	In compliance		
160	The Government of Nunavut and the Qikiqtaaluk Inuit Association are encouraged to cooperate to ensure that benefits are in a broad sense distributed across impacted communities and demographic groups that best offsets Project related impacts to infrastructure or services.	Baffinland produces an annual socio-economic monitoring report and regularly engages the Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and Mary River Socio Economic Monitoring Working Group (SEMWG) to discuss socioeconomic impacts and benefits of the Project. GN and QIA representatives are active members of both the QSEMC and Mary River SEMWG.	Not a Baffinland condition		
161	The Government of Nunavut should be prepared for the potential need for increased policing to handle on-going Project related demographic changes in subsequent crime prevention.	While Baffinland cannot influence how the Government of Nunavut (GN) and Royal Canadian Mounted Police (RCMP) interact with one another, the Company regularly cooperates with the GN with regards to Project-related socio-economic monitoring.	Not a Baffinland condition		
Cultural Resources and Land Use					
162	Make all reasonable efforts to engage Elders and community members of the North Baffin communities for input into monitoring programs and mitigative measures to ensure that they are informed by traditional activities, cultural resources and land-use.	The groups Baffinland engaged with during 2017 includes the Iqaluit Business Community, the Pond Inlet Business Community, Community HTOs and other community residents and groups (i.e., business community or those interested in career and training opportunities).	In compliance		
163	Continue to engage and consult with the communities of the North Baffin region to ensure that Nunavummit are kept informed about Project activities.	In 2017, Baffinland held public meetings whose purpose were to share project related information and gather feedback. In addition, Baffinland carried out a community survey within the five North Baffin communities that are the most likely to be affected by the Mary River Project.	Partial compliance		
164	Provide notification to communities regarding scheduled ship transits throughout the Regional Study Area including Eclipse Sound and Milne Inlet. Real-time data should be made available. Changes to proposed shipping routes should be provided to the MEWG, the community of Pond Inlet and communities in the region.	Baffinland has enlisted exactAIS ®, a global vessel monitoring and tracking service based on AIS (Automatic Identification System) data from polar orbiting satellites to track and report on vessel movements. Baffinland has made vessel routing accessible to the public. There were no changes to the shipping route in 2017. However, comments from Pond Inlet indicate residents do not believe this is sufficient.	In compliance		
165	Encouraged to provide buildings along the rail line and Tote Road for emergency shelter purposes to be made available for employees and land users of the area.	Baffinland has constructed 3 refuge stations at Km 33, 40, and 69 along the Tote Road. Each station is heated with beds and bedding, water, an automatic external defibrillator (AED), food and a digital radio that will contact security or dispatch and that is always monitored.	In compliance		
166	Ensure through consultation efforts and public awareness campaigns that the public has access to shipping operations personnel for transits into and out of Steensby and Milne ports via telephone or internet contact to ensure information regarding ice conditions and ship movements can be shared.	Vessel transit information is publicly available on the Baffinland website. The webpage displaying ship transit information also posts an email address (contact@baffinland.com) to contact regarding any shipping updates or information. The public have access to shipping operations personnel via telephone and internet contact.	In compliance		
Benefits, Royalties and Taxation					
167	Encouraged to enter into negotiations for a Development Partnership Agreement with the Government of Nunavut.	Baffinland issued an invitation letter to the Government of Nunavut in September 2013 regarding the negotiation of a Development Partnership Agreement (DPA). It has come to Baffinland's attention that the DPA program for new mines is currently on hold, while the GN's Department of Economic Development and Transportation and Department of Finance work to develop a replacement. Baffinland will consider re-engaging with the GN on this topic once a replacement policy has been developed by the GN.	Not applicable		
Governance and Leadership					
168	Include the aspects outlined in the condition into the monitoring program adopted by the Qikiqtaaluk Socio-Economic Monitoring committee.	Data collection and analysis methods are presented in the annual report.	In compliance		
169	Provide an annual monitoring summary to the NIRB on the monitoring data collected related to the regional and cumulative economic effects associated with the Project and any proposed mitigation measures.	Baffinland has provided a summary of monitoring data related to regional and cumulative economic effects (positive and negative) associated with the Project in its annual socio-economic monitoring report.	In compliance		
Incidents and Malfunctions					
170	Include an updated Terrestrial Wildlife Management and Monitoring Plan plans for increased caribou monitoring efforts including weekly winter track surveys and bi-monthly surveys in the summer and fall.	The railway has not been built, and these monitoring activities have not been triggered.	Deferred		
171	Include within the updated Terrestrial Wildlife Management and Monitoring Plan, a commitment to establish deterrents along the railway and Tote road embankments at any areas where the movement of caribou presents a likelihood of mortality to occur.	To date, no areas have been identified along the road where there is a likelihood of caribou mortality to occur. Because of these observations, no deterrents have been necessary along the Tote Road.	In compliance		

172	Encouraged to provide the Government of Nunavut with evidence that the vessel intended for use for the overwintering of fuel has been designed and certified for use under the operational conditions. Proof of vessel owners insurance policies are required.	Baffinland did not require the overwintering of fuel in 2017.	Not applicable		
173	Employ best practices and meet all regulatory requirements during ship to shore and other marine based fuel transfer events.	Baffinland maintains a Transport Canada approved OPEP for ship to shore fuel transfers at Milne Port. No updates to the Plan were made in 2016. Training of Baffinland staff on the Milne Inlet OPEP was conducted by a qualified marine spill response contractor between August 5-8, 2017.	In compliance		
174	Provide, as well as the Canadian Coast Guard, spill response equipment and annual training to Nunavut communities along the shipping route.	Spill training exercises took place at Milne Port August 5-8, 2017.	In compliance		
175	In coordination with the Qikiqtani Inuit Association and the Hunters and Trappers Organizations of the North Baffin communities and Coral Harbour, provide updates to the Shipping and Marine Wildlife Management Plan to include adaptive management measures to take should the placement of route markers along the ships track during ice breaking not prove to be feasible for marking the route.	Baffinland is conducting all of its shipping during open water and there is currently no winter shipping or ice-breaking being conducted. Action on this PC Condition is deferred until the Steensby Port is developed and transits through ice are scheduled.	Deferred		
176	Required to revise its spill planning to include additional trajectory modelling for Hudson Strait, where walrus concentrate, as well as Milne Inlet, Eclipse Sound and Pond Inlet during winter conditions.	Baffinland indicated that there have been no changes to the shipping practices since the spill modelling was conducted; therefore, no updates are required.	Deferred		
177	Enroll any foreign flagged vessels commissioned for Project-related shipping within Canadian waters into the relevant foreign program, equivalent to Transport Canada's Marine Safety Delegated Statutory Inspection Program.	Shipowners / operators are responsible for enrolling their foreign flagged vessel with the appropriate program. Baffinland incorporates this requirement into contract terms and conditions with all vessels contracted directly by Baffinland.	Complete		
Alternative Analysis					
178	Subject to safety requirements, require all Project vessels to maintain a route to the south of Mill Island to prevent disturbances to walrus and walrus habitat.	The condition is not currently applicable to project operations, which do not involve shipping through Steensby Inlet. Baffinland will consider this condition when shipping through Steensby Inlet becomes active.	Deferred		
Operational Variability					
179	Not to exceed 20 ore carrier transits to Steensby Port per month during the open water season (242 transits per year).	The condition is not currently applicable to project operations, which does not involve shipping through Steensby Inlet. Baffinland will consider this condition when shipping through Steensby Inlet becomes active.	Deferred		
179a	The total volume of ore shipped via Milne Inlet shall not exceed 4.2 million tonnes.	Baffinland shipped 4.05 million tonnes of ore in 2017.	In compliance		
179b	The total volume of ore transported by truck on the Tote road shall not exceed 4.2 million tonnes per year.	The total volume of ore transported by truck on the Milne Inlet Tote Road in 2017 was approximately 4.54 million tonnes.	Non-compliant		
Transboundary Effects					
180	The Marine Environment Working Group shall invite a representative from Makivik Corporation to be a member of the group.	Makivik is a member of the MEWG established in 2013. Meeting minutes of working group meetings are distributed to all parties. Makivik has received MEWG meeting minutes and other technical information in 2017.	Complete		
181	Regardless of whether Makivik Corporation participates as a member of the Marine Environment Working Group, the group will provide Makivik with regular updates throughout the life cycle of the project.	Makivik is a member of the MEWG established in 2013. Meeting minutes of working group meetings are distributed to all parties. Makivik has received MEWG meeting minutes and other technical information in 2017.	Complete		
182	Make available any ship route deviation routes provided to the NIRB to Makivik Corporation.	Vessel transit information is publicly available on the Baffinland website. Baffinland will provide ship route deviation reports to Makivik when required. There were no changes to the ship route in 2017.	Complete		

Appendix II: April and August 2018 Site Visit Report



2018 Winter Site Visit Report

for the NIRB's Monitoring of
Baffinland Iron Mines Corp.'s Mary River Project



Nunavut Impact Review Board

April 2018

Report title: 2018 Winter Site Visit Report for the Nunavut Impact Review Board's Monitoring of Baffinland Iron Mines Corp.'s Mary River Project (NIRB File No. 08MN053)

Project: Mary River Project

Project Location: Qikiqtani (North Baffin) Region, Nunavut

Land Tenure: Inuit Owned and Crown Land

Project Owner: Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, ON
L6H 0C3

Proponent Contact: Megan Lord-Hoyle, Director Corporate Sustainability
Telephone: (416) 364 8820

Visit conducted by: Solomon Amuno, Monitoring Officer
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Telephone: (867) 983-4603; email samuno@nirb.ca

Site visit dates: April 17-20, 2018

Last Site Visit: August 25-27, 2017

Report prepared by: Jaida Ohokannoak, Technical Advisor II

Pictures by: Solomon Amuno and Jaida Ohokannoak

Cover picture: View of Mine Pit at Deposit No.1 Mary River

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1 INTRODUCTION

The Nunavut Impact Review Board (NIRB or Board) was established through Articles 10 and 12 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada* (Nunavut Agreement) and is responsible for post environmental assessment monitoring of a Project in accordance with Part 7 of Article 12 of the *Nunavut Agreement*.

This report provides the findings that resulted from the NIRB's winter site visit to the Mary River Project site on April 17 to 20, 2018 as part of the NIRB's ongoing monitoring program.

1.1 Objectives & Purpose of Site Visit

The objective of the NIRB's site visit was to determine whether, and to what extent, the land or resource use in question is being carried out within the predetermined Terms and Conditions of NIRB Project Certificate No. 005 issued for the Mary River Project (the Project), in accordance with Section 12.7.2(b) of the Nunavut Agreement.

The observations resulting from this site visit shall, wherever possible, be incorporated into the measurement of the relevant effects of the Project according to Section 12.7.2(a), as well provide the information necessary for agencies to enforce terms and conditions of land or resource use approvals as required under Section 12.7.2(c). Site-specific observations will also be used to assess the accuracy of the predictions contained in the Project impact statements according to Section 12.7.2(d) of the *Nunavut Agreement*.

1.2 Introduction of the Mary River Project

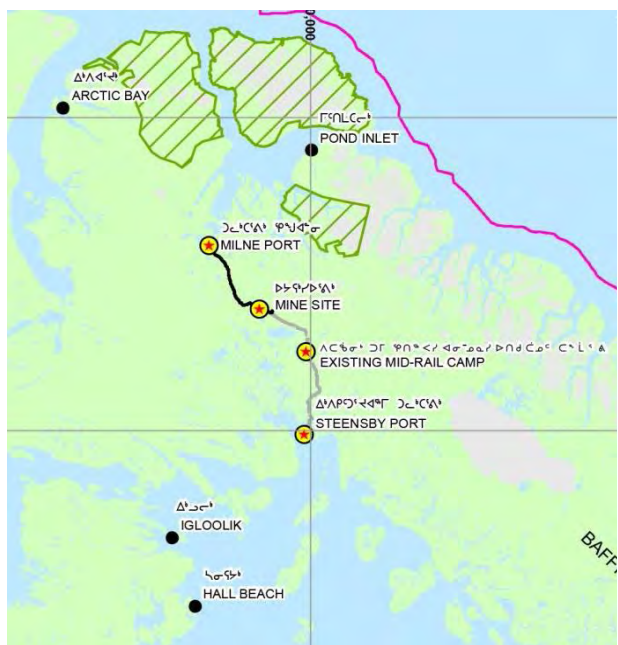


Figure 1: Project Location Map

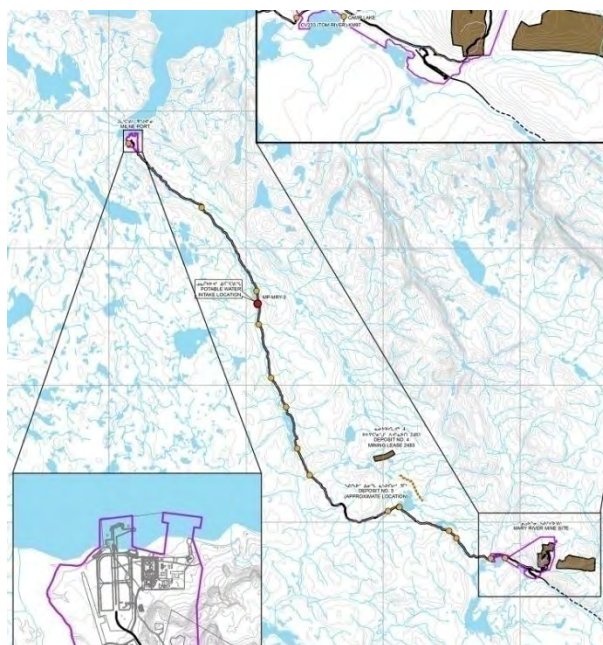


Figure 2: Tote Road

The Mary River Project involves the exploration, construction, operation, as well as the closure and reclamation of an open pit iron ore mine at what is known as Deposit No.1, and includes mining at a rate of 18 Million tons per year (Mt/a). There are three (3) main project locations – the Mary River Mine (the Mine) site, Milne Port located north of the Mine site, and Steensby Port located south of the Mine site. Milne Port is connected to the Mine site by the Milne Inlet Tote Road, which is approximately 100 kilometers (km) in length. The Project as originally proposed was to include construction of a railway approximately 150 km in length to connect the Mine site to Steensby Port. It was anticipated that facilities at Steensby Port and the railway would take up to four (4) years to construct. On December 28, 2018 the NIRB issued Project Certificate No. 005 for the Mary River Project following a thorough environmental review process, which included community consultations and a public hearing.

On January 13, 2013 Baffinland Iron Mines Corporation (Baffinland or the Proponent) informed the NIRB that it was proposing an Early Revenue Phase (ERP) that would change the schedule and specific activities associated with the Project as initially approved. The ERP was an amendment to the Mary River Project, which included the extraction of up to an additional 4.2 Mt/a of iron ore from the Mary River Mine site, with ore to be transported via the Milne Inlet Tote Road and Port at Milne Inlet during the open water season only. As the ERP outlined significant modifications to the activities previously approved under NIRB Project Certificate No. 005 for the Mary River Project, the Board determined that it was appropriate to assess the potential ecosystemic and socio-economic effects of the ERP and to consider modifications to the terms and conditions of the original Project Certificate under Article 12, Section 12.8.2 of the *Nunavut Agreement*. On May 28, 2014 pursuant to Article 12, Sections 12.5.5 and 12.8.2 of the *Nunavut Agreement*, the NIRB issued an *Amended* Project Certificate No. 005, allowing the Project to proceed in accordance with the Terms and Conditions issued therein. The Board is responsible for monitoring this Project as stipulated in Sections 12.7.1 and 12.7.2 of the *Nunavut Agreement*.

As currently approved, and in accordance with Baffinland's development plans, extracted ore is transported by truck along the Milne Inlet Tote Road and shipped by contracted vessels from Milne Port to European markets during the open water season. The approved Project also involves additional facilities at Milne Port, including the construction of a fixed ore dock, 4.2 Mt ore stockpile and reclaim area, 3,500 tonnes per hour ship loaders, a camp to accommodate workers, and the extension or relocation of the airstrip west of the proposed ore stockpile. The ERP operations are expected to continue for the duration of the mine life (i.e., 21 years), and continue in conjunction with the Mary River Project as originally proposed, once developed.

1.3 Preparations for the Site Visit

In preparation for the site visit, the Monitoring Officer reviewed the following items: Mary River Project Certificate; previous NIRB site visit reports, the NIRB's 2017 Recommendations to Baffinland, and additional follow-up correspondence regarding review of Annual Reports and monitoring of the Mary River Project.

2 SITE VISIT

The site visit was conducted on April 17 to 20, 2018 by Solomon Amuno, the NIRB's Monitoring Officer for Project Certificate No. 005 (Monitoring Officer) and Jaida Ohokannoak, Technical

Advisor II. On Tuesday, April 17, 2018, NIRB Staff flew from Pond Inlet to the Mary River site via Baffinland's regularly scheduled aircraft charter, accompanied by Baffinland's Director, Corporate Sustainability Ms. Megan Lord-Hoyle and on site we were met by Mr. Bill Bowden and other Environmental Staff who provided mine site area tours.

Once at the Mary River site, NIRB Staff were transported to the Mary River accommodation facility and received a brief health and safety orientation before undertaking a tour of the mine site, which included observational visits to the following locations: waste rock storage area, waste rock water treatment pad, and Deposit No. 1 pit. On April 18, 2018, NIRB Staff travelled by truck to Milne Inlet along the Tote Road, and observational visits were made to the following locations around Milne Inlet: the landfarm, incinerator, Membrane Biological Reactor Facility (MBR), ore pad, ore pad drainage ditches, ore settling ponds, docking area, laydown areas and accommodations facility. Upon return to the Mary River camp the landfill and sewage outfall area were observed for improvements and changes based on the 2017 NIRB recommendations to Baffinland. On April 19, 2018 observational visits included the incinerator, emulsion plant, new accommodations complex, as well as the crusher plant and associated sedimentation pond. There was no observational trip to the Steensby Inlet area during this site visit.

Upon completion of the tour, the Monitoring Officer and NIRB staff discussed several outstanding items and observations noted during the site visit, with Baffinland staff. The winter site visit provided the Monitoring Officer with an opportunity to comparatively assess on a spatial scale the environmental changes taking place in the surrounding environment of the Project development area, as well as to identify specific areas needing improvement with regards to environmental impacts and mitigation measures.



Photo 1: Deposit No.1 Mary River



Photo 2: Milne Inlet ore stockpile and port site

2.1 General Observations based on Progress from Previous Site Visit

The following sections briefly describe the major facilities visited during the tour around the project development area (PDA), as well as observations of the overall progress of the site compared to the previous site visit(s). Where applicable, the Monitoring Officer noted compliance with specific terms and conditions of the Project Certificate and followed up on items where Baffinland made commitment to mitigate the potential ecosystemic impacts of the Mary River Project.

2.1.1 Mary River Mine Site

Waste Rock Dump, Waste Rock Settling Pond

The waste rock facility is an area designated for the disposal of potentially acid generating (PAG) rocks. During the site visit, it was noted that the waste rock facility (WRF) area was snow covered and frozen and there was no observations of any signs of runoff or uncontrolled seepage of potentially contaminated contact water from the piles of PAG waste rocks into the adjacent tundra. Baffinland staff indicated that during 2017, exceedances of the applicable water quality discharge criteria during controlled discharges from the WRF pond consisted of two (2) minor exceedances for total suspended solids (TSS) limit in early July followed by multiple exceedances of the applicable pH and TSS limits in August and September respectively. Baffinland staff also noted that during on-site inspections by Indigenous and Northern Affairs Canada (INAC) and Environment and Climate Change Canada (ECCC) staff in late August, there were observations and concerns regarding the uncontrolled seepages of runoff from the toe of the pond's berm.¹ During the site visit, NIRB staff generally observed that Baffinland has taken key actions to address these environmental concerns by undertaking repairs of the WRF pond to address overflow issues as well as the planned installation of a waste water treatment plant to manage all the effluent discharges from the waste rock facility pond prior to discharge into the receiving environment. The Monitoring Officer also noted site preparation works were being undertaken in preparation for the installation of a new water treatment plant near the WRF to be completed by May 2018 (Photo 3 and Photo 4).



Photo 3: Waste Rock Storage Area Pond



Photo 4: Waste Water Treatment Plant Pad

Deposit No. 1 Reserve

After leaving the waste rock storage area the NIRB staff visited Deposit No.1 reserve pit. Ore extraction and mining activities within the mine pit has progressed since the last site visit in August 2017 with ore being extracted in successive layers or “benches” across the pit (Photo 5 and Photo 6). Two (2) drills were located on an upper bench with a blast scheduled for the following day (Photo 6 and Photo 8), and a loader was observed filling haul trucks with ore within the pit area (Photo 7) to be transported to the crusher facility where it is crushed and further sorted into lump or fines. Baffinland staff indicated that they plan to continue a pushback of the upper benches to access the iron ore on the benches below.

¹ Public Registry ID: 316609 - Baffinland Iron Mines 2017 Annual Report to the Nunavut Impact Review Board



Photo 5: Deposit No.1 Pit Benches



Photo 6: Deposit No.1 Pit



Photo 7: Filling an Ore Haul Truck

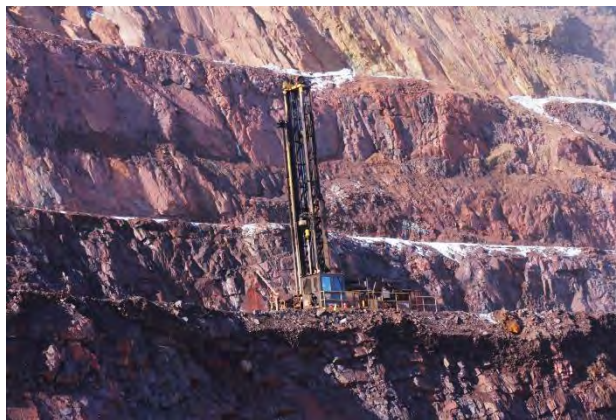


Photo 8: Drill Rig on Bench

Crusher and Screening Plant

NIRB staff also took a tour around the crusher area and while at the facility observed dust emissions including large visible dust plumes from the crusher plant due to ongoing ore crushing, stacking, and loading activities (Photo 9, Photo 10). Although shrouds had been installed (Photo 11) which improved dust emissions from the plant slightly, there is still large amounts of visible dust at the transfer points along the belts. The Monitoring Officer noted that the crusher plant was generally still lacking proper dust containment controls along the conveyor belt and end of the feeder (Photo 12). In addition, dust plumes were also observed when the haul trucks dump the iron ore into the crusher plant. Overall, the dust emissions observed from the crusher plant during the current site visit do not appear to have significantly improved compared to previous site visit observations. Dust accumulation was also noted in the surface soils and snow cover adjacent to the facility and up to a minimum of one (1) km away. Baffinland staff indicated that there are plans to come up with better engineering solutions, such as ensuring the covers are re-installed along the conveyor belt and at the end of the ore feed to reduce dust emissions. However, Baffinland staff also indicated that there are no current solutions for the shaker in the crusher facility as the movement of the equipment would not support a cover and may require increased maintenance on the screens (Photo 13).



Photo 9: Crusher Plant Area



Photo 10: Loader Working in Crusher Plant



Photo 11: Shroud

Baffinland staff noted that the Workers' Safety and Compensation Commission (WSCC) had previously expressed concerns regarding the increased dust generation from the crusher plant and noted the potential for dust exposure to affect the occupational health of the workers onsite.

At the time of the current site visit, the Monitoring Officer noted there are no effective dust control measures at the crusher and screening plant in order to prevent dust dispersion to the surrounding environment, as such dust management continues to be an issue from the crusher plant.



Photo 12: Missing cover from end of conveyor



Photo 13: Dust from shaker and transfer points

NIRB staff observed that the trenches constructed around the crusher pad to direct snowmelt and water runoff from the crusher pad to the sedimentation pond (Photo 14) were filled with snow, although Baffinland indicated that some improvements were made to the trenches to ensure that deposition of material carried off from the crusher pad due to erosion activities has been cleaned out and are hoping the issue will not re-occur this year. Additional trenching around the crusher

pad is expected to be completed prior to freshet. Baffinland staff indicated that the sedimentation pond is designed for a 1-10 year flood event and that there are plans to raise the level of the sedimentation pond a further 18 inches but that engineering designs would have to be completed prior to undertaking such activity. This will be confirmed with the NIRB's summer site visit.



Photo 14: Sedimentation Pond at crusher pad

Landfill Area

NIRB staff also visited the landfill site in order to follow-up on the NIRB's previous observations that most of the protective mesh around the landfill footprint was completely removed from the supporting poles and that the fencing issue has still not been fully rectified. Although wooden fences (Photo 15) are being utilized for fencing at the site, the Monitoring Officer noted that the current fencing does not fully enclose the landfill footprint and increase the risk for offsite waste dispersion. Baffinland has stated that they will be installing a wire mesh fence around the landfill using waste tires to support the posts this summer. This will be confirmed with the NIRB's summer site visit.



Photo 15: Fencing at landfill

Incinerator Area

The Monitoring Officer noted that the incinerator in use at the Mary River mine site continue to remain well maintained except for presence of oily water from a tank on the floor drainage system (Photo 16). Within the incineration building, NIRB staff noted that waste materials are segregated into labelled bins for incineration (i.e., food and paper waste) or disposal off site (i.e., batteries, paint, oily rags, kitchen grease etc.) (Photo 17). NIRB staff however, observed that some of the bags containing items for incineration contained recyclable waste such as aluminum cans, aerosols, and plastics (Photo 18) and recommended that Baffinland make improvements to its waste management and waste segregation practices site wide. NIRB staff also noted that throughout the site and especially within the accommodations complex there are few bins with poor labeling to enable proper segregation of wastes, and that all staff and visitors should be provided training during their orientation on how to segregate waste, including personal waste into the appropriate bins. During this site visit, the Monitoring Officer observed the ongoing effort of Baffinland staff in relocating most of the historical tires and other used items into sea cans which were properly stacked and prepared for offsite disposal (Photo 19). Baffinland staff also noted that used tires from the maintenance shops are now automatically being put into sea cans for disposal.



Photo 16: Tank with oil at Incinerator Building



Photo 17: Waste segregation in Incinerator Facility



Photo 18: Bagged wastes to be incinerated



Photo 19: Waste separation for disposal offsite

Effluent Discharge Area and Emulsion Plant

No environmental issue was identified at the effluent discharge location during the current site visit. NIRB staff also visited the emulsion plant and no issues were identified with this facility as it was very well maintained, organized and safe (Photo 20).



Photo 20: Emulsion Plant

2.1.2 Tote Road

During 2018 winter site visit, the Monitoring Officer did not observe any major environmental issues along the Tote Road; the road was well maintained. Baffinland was also preparing for spring freshet by having its staff undertake steaming and clearing snow from major culverts along the Tote Road (Photo 21). Dust plumes from vehicular and B-train truck traffic was observed and dust remained air borne for long periods of time travelling away from the road and deposited on the snow cover (Photo 22 and Photo 23). Several dust fall monitoring stations at kilometre (km) 33, 34, and 69 were observed along the Tote Road. NIRB staff noted the challenges of dust control due to vehicle traffic and further discussed alternative dust suppressants options to reduce dust along the Tote Road.



Photo 21: Excavator opening culverts preparing for freshet



Photo 22: Dust from B-Trains



Photo 23: Dust on Snow along haul road

2.1.3 Milne Inlet

Landfarm Area

The Monitoring Officer visited the landfarm facility and followed up on progress of the facility with respect to management of contaminated snow, synthetic liners, and used tires. While the Monitoring Officer generally indicated there has been an overall improvement in the operations of the facility, there were still outstanding concerns regarding presence of several waste material items such as plastics and wood materials (Photo 24 and Photo 25). The Monitoring Officer also noted that the laydown area near the landfarm area used for salt storage had not been addressed as previously recommended during NIRB's 2017 summer site visit as many salt bags were still there and deteriorating which could increase the risk of localized salt contamination into the environment. An addition to the landfarm area was a designated area for excess snow removed from around site. Excess snow was trucked and placed on the hillside to allow for meltwater to move slowly down the hillside and remove any sediment through natural filtration before reaching Milne Inlet, or any surrounding waterbodies.

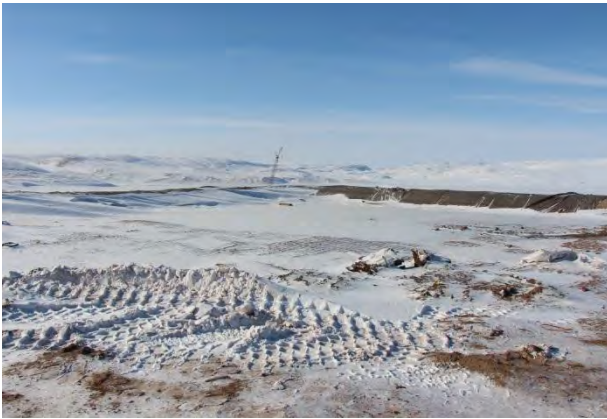


Photo 24: Landfarm



Photo 25: Plastics at landfarm area

Incinerator

The Monitoring Officer noted that the incinerator in use at the Milne Inlet site is well maintained. Within the incineration building waste is segregated into labelled bins for disposal off site (i.e., batteries, paint, aerosols, oily rags, etc.) (Photo 26 and Photo 27); however, NIRB staff observed some areas for improvements could be made to waste management and segregation site wide.



Photo 26: Incinerator



Photo 27: Segregating waste in Incinerator Building

Membrane Biological Reactor Facility (MBR)

NIRB staff also took a tour of the Membrane Biological Reactor Facility (MBR) at the Milne Inlet Site. The MBR is a sewage waste treatment facility that removes the liquid component leaving dry, burnable waste. The observed facility was functional clean and generally well maintained.

Ore Dock and Stockpile Area

NIRB staff also took a tour to the Milne Inlet stockpile area and the ore dock and did not observe any major activities with the exception of ore stockpiling activities (Photo 28 and Photo 29). The Monitoring Officer observed that during ore stockpiling the ore transfer heights were minimized and there was minimal dust blowing from the stockpile, however, ore dust was observed on the snow and ice in Milne Inlet originating from the stockpile (Photo 30 and Photo 31). As dust fall and its potential impacts to the aquatic environment in Milne Inlet continues to be a key community concern, NIRB staff undertook discussions with Baffinland environmental staff and recommended adding additional snow and sediment studies to their monitoring program.



Photo 28: Conveyor system at Milne Inlet



Photo 29: Ore Stockpiles at Milne Inlet



Photo 30: Iron ore dust on Milne Inlet



Photo 31: Dustfall on snow at Milne Inlet

The Monitoring Officer observed that the two (2) sedimentation ponds on the east and west side of the ore stockpile pad were completed (Photo 32). The trenches to these ponds along the ore pad were filled with snow (Photo 33) which was to be removed prior to spring freshet.



Photo 32: Ore sedimentation pond Milne Inlet



Photo 33: Trenches along ore pad Milne Inlet

The Monitoring Officer noted that many of the designated laydown areas around Milne port contained tires piles and various scrap materials and affect the aesthetics of the area. Baffinland staff informed the Monitoring Officer that the tire stockpiles would be removed to sealift containers and that the entire clean-up of the area will be completed prior to summer sealift season (Photo 34 and Photo 35).



Photo 34: Tires stockpiled at Milne Inlet



Photo 35: Tires containerized for shipping offsite

Visual Environment and Aesthetic Quality of Mine Site, Tote Road, and Milne Port

The Monitoring Officer observed that while there have been significant improvements, many areas within and surrounding the PDA, including the Mine site and Milne Inlet, require additional waste management actions of scrap materials and unused items such as tires. (Photo 36, Photo 37, and Photo 38). Baffinland has indicated it will do a site wide clean-up during and after freshet. This will be confirmed with the NIRB's summer site visit. The NIRB staff also observed that generally there was a lack of signage though out the site to indicate specific use of designated areas; however, Baffinland staff noted that there were plans to install more signage across the site to provide direction to personnel.



Photo 36: Scrap materials at crusher pad Mary River



Photo 37: Waste tires at Mary River



Photo 38: Pile of waste tires around ore stockpiles in Milne Inlet

2.2 Observations Based on NIRB Project Certificate No. 005

The following are the observations made during the site visit that pertain specifically to terms and conditions of Project Certificate No. 005:

2.2.1 Meteorology and Climate – Weather Monitoring Data

Condition 5

The Proponent shall endeavour to explore and implement reasonable measures to ensure that weather-related information for the various Project sites is readily accessible to the public on a continual basis throughout the life of the Project

The Monitoring Officer visited the weather station in the Mary River site. **(Error! Reference source not found.)** and observed that current weather-related information is displayed on the monitors located within the main accommodation building and is available on the internet.

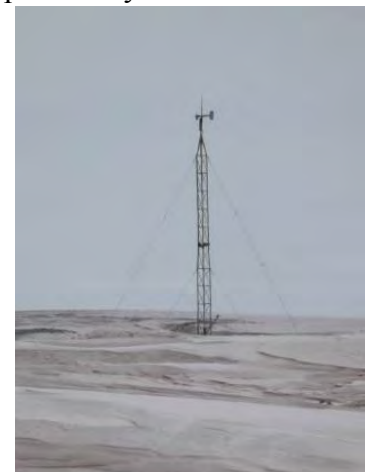


Photo 39: Weather monitoring station at Mary River

2.2.2 Air Quality –Dust Management and Monitoring Plan

Condition 10

The Proponent shall update its Dust Management and Monitoring Plan to address and/or include the following additional items:

- a. Outline the specific plans for monitoring dust along the first few kilometres of the rail corridor leaving the Mary River mine site.*
- b. Identify the specific adaptive management measures to be considered should monitoring indicate that dust deposition from trains transporting along the rail route is greater than initially predicted.*
- c. Outline specific plans for monitoring dustfall at intervals along and in the vicinity of the Milne Inlet Tote Road to determine the amount and extent of dustfall.*
- d. Identify the specific adaptive management measures to be considered if monitoring indicates that dust deposition from traffic on the Milne Inlet Tote Road is greater than initially predicted.*

Condition 58c

Within its annual report to the NIRB, the Proponent shall incorporate a review section which includes:

- c) A description of the extent of dust fall based on measured levels of dust fall (fugitive and finer particles such as TSP) on lichens and blueberries, and ash content of caribou fecal pellets;*

During the drive along the Tote Road, the Monitoring Officer observed the increased generation of dust plumes and widespread discolouration of snow areas adjacent to the road (Photo 22 and Photo 23). Managing dust in winter is difficult as freezing conditions after application of a dust suppressant may create associated safety concerns. NIRB staff inquired about any research being done into winter dust control. None are currently being considered. Dust fall stations were observed along the Tote Road, which can be noted as being in compliance to part c of Condition 10 (Photo 40).



Photo 40: Dustfall Monitoring Station

While at Milne Inlet, the Monitoring Officer followed up the community concerns regarding dust accumulation on sea ice and the potential effects to the aquatic environment. During the current site visit, there was clear evidence of dust deposition and accumulation on sea ice around Milne Inlet due to blowing dust from the ore stock pile (Photo 30 and Photo 31). Recommendations were made to Baffinland staff about adding additional snow and sediment studies to their monitoring program.

2.2.3 Terrestrial Wildlife and Habitat

Condition 53

The Proponent shall demonstrate consideration for the following:

- a. Steps taken to prevent caribou mortality and injury as a result of train and vehicular traffic, including operational measures meant to maximize the potential for safe traffic relative to operations on the railway, Milne Inlet tote road and associated access roads.*
- b. Monitoring and mitigation measures at points where the railway, roads, trails and flight paths pass through caribou calving areas, particularly during caribou calving times....*

Condition 61

Whenever practical and not causing a human safety issue, a stop work policy shall be implemented when wildlife in the area may be endangered by the work being carried out. An operational definition of 'endangered' shall be provided by the Terrestrial Environment Working Group.

During the current site visit, the Monitoring Officer did not observe caribou around the Project area; however, many fox tracks were observed around the site (Photo 41). Metallic skirtings were observed around the base of all accommodations buildings to deter foxes from entry into the building. Baffinland staff indicated that no caribou has been sighted around the PDA in over 5 years and that in the event that any caribou or other wildlife are encountered on site, a right of way policy is in place that requires vehicles stop to allow wildlife pass safely. In addition, the Monitoring Officer noted that wildlife logs continue to be posted at the main camp building for staff to report on wildlife encounters or observations around Mary River, Milne Port, and along the Tote Road.



Photo 41: Fox Tracks

3 FINDINGS AND SUMMARY

Due to the ongoing development of the Mary River Project, and the timing of the current site visit, it was noted that many biophysical components of the Project site could not be fully monitored due to ice conditions and extensive snow cover across Project locations. In addition, several terms and conditions as contained within the NIRB Project Certificate No. 005 may not be applicable for this monitoring period and/or have not yet been thoroughly implemented at this time by Baffinland. Based on the observations made during this current site visit, all Mary River Project facilities in operation appear to be generally well maintained with adequate environmental protection measures and procedures in place. In order to fully meet the requirements of the Project Certificate terms and conditions, and to ensure that potential adverse impacts to the environment are adequately mitigated, the NIRB Monitoring Officer has identified several issues that require follow-up and corrective action:

3.1 Dust Suppression Measures and Crusher Area

Condition 10 requires the implementation of a dust management and monitoring plan at site to prevent impacts to air quality from dust dispersion. At the time of the current site visit, it was noted that dust emissions, including visible dust plumes generated from the crusher plant, continue to be an ongoing issue. Specific parts of the crusher and screening plant were also noted to lack appropriate sealing or dust containment system, resulting in the release and dispersion of fugitive dust to the surrounding environment as was observed during previous site visits. Proper engineering designs and controls may be required to address the increased dust emissions from the crusher plant. In addition, there was dust deposition on sea ice from the blowing of dust from the ore stockpile.

3.2 Waste management

Within the incineration building, waste is generally segregated into labelled bins for incineration (i.e., food and paper waste) or disposal off site (i.e., batteries, paint, oily rags, kitchen grease etc.), but improvements could be made on how waste is segregated site wide. Throughout the site there are only a few posters on how to segregate wastes as such many Baffinland employees may not be fully aware on proper waste management practices. It is recommended that Baffinland improve the waste segregation part of their Waste Management Plan and that the waste management training program be part of site orientation and ongoing site-wide training.

Used tires continue to be a significant waste stream generated across the Project sites and continue to be an issue around the Mile Port. As the amended Project Certificate does not have any specific terms and conditions to address this particular waste stream, the Monitoring Officer recommended that Baffinland staff continue to develop a consistent approach for managing unused tires onsite. Baffinland is implementing the procedures outlined within its tire management plan, by placing them in sealift containers however more work is still required to be able to fully repurpose or dispose of the tires.

3.3 Waste Landfill

During the NIRB's current site visit, the Monitoring Officer observed that solid waste materials were properly contained within the landfill, although incomplete fencing of the landfill footprint continues to be a recurring issue. The Monitoring Officer noted that the condition of the landfill fencing has not improved compared to previous year's observations, as Baffinland has yet to fully install a more durable fencing material to prevent offsite dispersal of waste materials to the adjacent tundra. Baffinland is requested to develop a long-term solution for addressing the recurring fencing issue of the landfill.

3.4 Milne Inlet Salt Laydown

The salt laydown area at Milne port represents a potential issue as the bags are deteriorating and ripping, increasing the probability of content spillage and uncontrolled release into the environment, as well as the negative visual impact due to the untidiness. During the previous August 2017 site visit it was recommended to Baffinland that measures would be necessary to improve the storage area and implement plans to store and access the salt in an organized manner, this has still not been completed.

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Title: Technical Advisor II
Date: October 5, 2018
Signature:



Prepared by: Solomon Amuno, Ph.D.
Title: Monitoring Officer
Date: October 5, 2018
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Date: October 5, 2018
Signature:





2018 Summer Site Visit Report

for the NIRB's Monitoring of
Baffinland Iron Mines Corp.'s Mary River Project



Nunavut Impact Review Board

August 2018

Report title: 2018 Summer Site Visit Report for the Nunavut Impact Review Board's Monitoring of Baffinland Iron Mines Corp.'s Mary River Project (NIRB File No. 08MN053)

Project: Mary River Project
Project Location: Qikiqtani (North Baffin) Region, Nunavut

Project Owner: Baffinland Iron Mines Corporation
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Site visit dates: August 16, 2018

Last Site Visit: April 17-20, 2018

Report prepared by: Keith Morrison

Pictures by: Keith Morrison and Baffinland Iron Mines Corporation

Figures: Baffinland Iron Mines Corporation

Cover picture: Mining Face at Deposit #1

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1 INTRODUCTION

The Nunavut Impact Review Board (NIRB or Board) was established through Articles 10 and 12 of the *Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada (Nunavut Agreement)* and is responsible for post environmental assessment monitoring of a Project in accordance with Part 7 of Article 12 of the *Nunavut Agreement*.

This report provides the findings that resulted from the NIRB's summer site visit to the Mary River Project site on August 16, 2018 as part of the NIRB's ongoing monitoring program.

1.1 Objectives & Purpose of Site Visit

The objective of the NIRB's site visit was to determine whether, and to what extent, the land or resource use in question is being carried out within the predetermined Terms and Conditions of NIRB Project Certificate No. 005 issued for the Mary River Project (the Project), in accordance with Section 12.7.2(b) of the *Nunavut Agreement*.

The observations resulting from this site visit shall, wherever possible, be incorporated into the measurement of the relevant effects of the Project according to Section 12.7.2(a), as well provide the information necessary for agencies to enforce terms and conditions of land or resource use approvals as required under Section 12.7.2(c). Site-specific observations will also be used to assess the accuracy of the predictions contained in the Project impact statements according to Section 12.7.2(d) of the *Nunavut Agreement*.

1.2 Introduction of the Mary River Project



Figure 1 and 2

The Mary River Project involves the exploration, construction, operation, as well as the closure and reclamation of an open pit iron ore mine at what is known as Deposit No. 1 and includes mining at a rate of 18 Million tons per year (Mt/a). There are three (3) main project locations –the Mary River Mine (the Mine) site, Milne Port located north of the Mine site, and Steensby Port located south of the Mine site ([Figure 1](#)).

Milne Port is connected to the Mine site by the Milne Inlet Tote Road, which is approximately 100 kilometers (km) in length ([Figure 2](#)). The Project as originally proposed was to include construction of a railway approximately 150 km in length to connect the Mine site to Steensby Port. It was anticipated that facilities at Steensby Port and the railway would take up to four (4) years to construct. The NIRB Project Certificate No. 005 was issued for the Mary River Project on December 28, 2012 following a thorough environmental review process, which included community consultations and a public hearing.



Picture 1: Mary River Mine Site (2017)

On January 13, 2013 Baffinland Iron Mines Corporation (Baffinland or the Proponent) informed the NIRB that it was proposing an Early Revenue Phase (ERP) that would change the schedule and specific activities associated with the Project as initially approved. The ERP involved an amendment to the Mary River Project, which included the extraction of up to an additional 4.2 Mt/a of iron ore from the Mary River Mine site, with ore to be transported via the Milne Inlet Tote Road and Port at Milne Inlet during the open water season only. As the ERP outlined significant modifications to the activities previously approved under NIRB Project Certificate No. 005 for the Mary River Project, the Board determined that it was appropriate to assess the potential

ecosystemic and socio-economic effects of the ERP and to consider modifications to the terms and conditions of the original Project Certificate under Article 12, Section 12.8.2 of the *Nunavut Agreement*. On May 28, 2014 pursuant to Article 12, Sections 12.5.5 and 12.8.2 of the *Nunavut Agreement*, the NIRB issued an *Amended* Project Certificate No. 005, allowing the Project to proceed in accordance with the Terms and Conditions issued therein. The Board is responsible for monitoring this Project as stipulated in Sections 12.7.1 and 12.7.2 of the *Nunavut Agreement*.



Picture 2: Milne Port (2017)

As currently approved and in accordance with Baffinland's development plans, extracted ore is transported by truck along the Milne Inlet Tote Road and shipped by contracted vessels from Milne Port to European markets during the open water season. The approved Project also involves additional facilities at Milne Port, including the construction of a fixed ore dock, 4.2 Mt ore stockpile and reclaim area, 3,500 tonnes per hour ship loaders, a camp to accommodate workers, and the extension or relocation of the airstrip west of the proposed ore stockpile. The ERP operations are expected to continue for the duration of the mine life (i.e., 21 years), and continue in conjunction with the Mary River Project as originally proposed, once developed.

1.3 Preparations for the Site Visit

In preparation for the site visit, the Monitoring Officer reviewed the following items: Mary River Project Certificate; previous NIRB site visit reports, including the NIRB's 2016 and 2017 Recommendations to Baffinland, as well as additional follow-up correspondence regarding review of Annual Reports and monitoring of the Mary River Project.

2 SITE VISIT

The site visit was conducted on August 16, 2018 by Keith Morrison, Technical Advisor II (Technical Advisor). On Wednesday, August 15, 2018, Mr. Morrison flew from Montreal to the Mary River site via Baffinland's regularly scheduled aircraft charter, accompanied by Baffinland's Permitting Specialist, Mr. Steve Borcsok.



Picture 3: Mary River Airstrip (2017)

Once at the Mary River site, the Technical Advisor was accommodated at the Mine Site Complex. On Thursday, August 16, 2018 the inspection began with observational visits to the following locations: deposit No. 1, waste rock storage area, crusher pad, sewage outfall area, landfill, and incinerator. In the afternoon of August 16, Milne Inlet was visited by truck along the Tote Road during transit, and observational visits made to the following locations around Milne Inlet incinerator, tank farm, ore pad settling ponds, and the landfarm.

The site visit provided the Technical Advisor with an opportunity to comparatively assess the changes taking place in the surrounding environment of project development areas (PDA), as well as to identify specific areas needing improvement with regards to environmental impacts and mitigation measures. Upon completion of the tour, the Technical Advisor discussed several outstanding items and observations noted during the site visit.

2.1 General Observations based on Progress from Previous Site Visit

The following sections briefly describe the major facilities visited during the tour around the PDA, as well as observations of the overall progress of the site compared to the previous site visit(s).

2.1.1 Mary River Mine Site

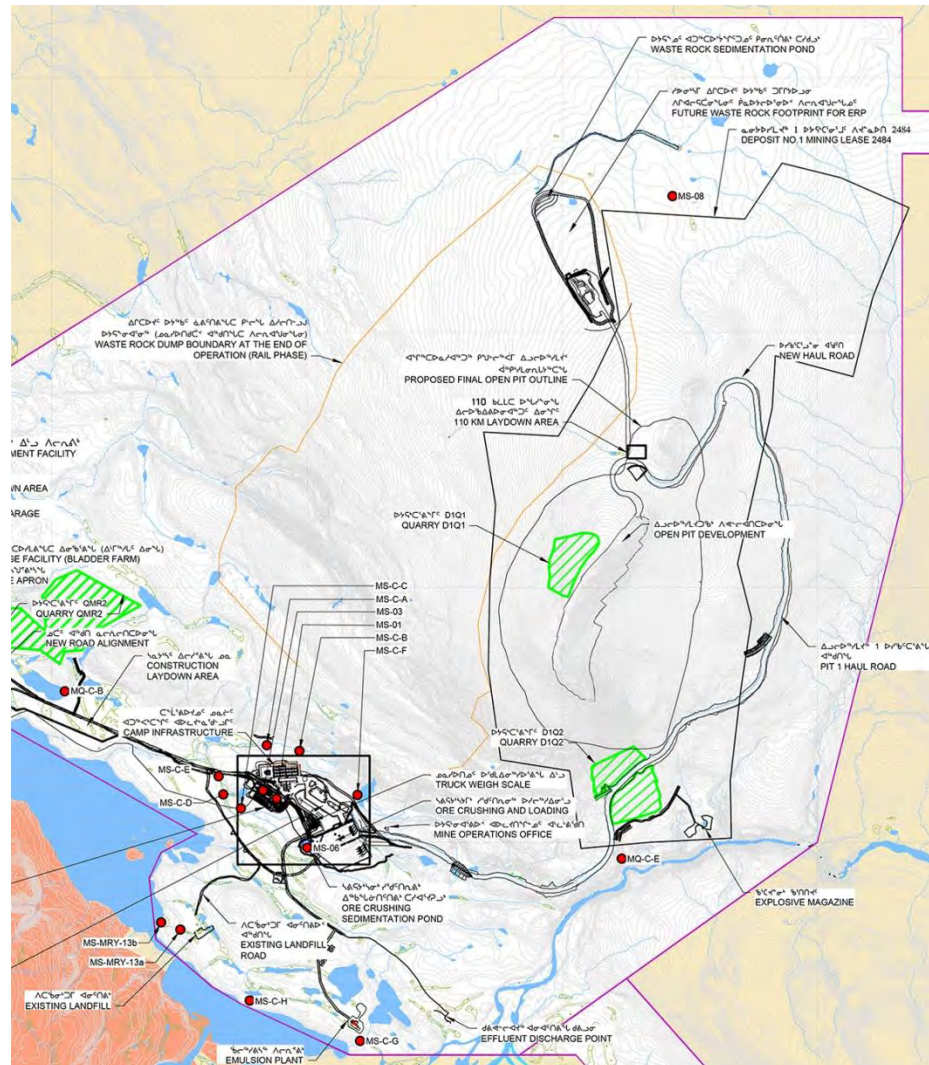
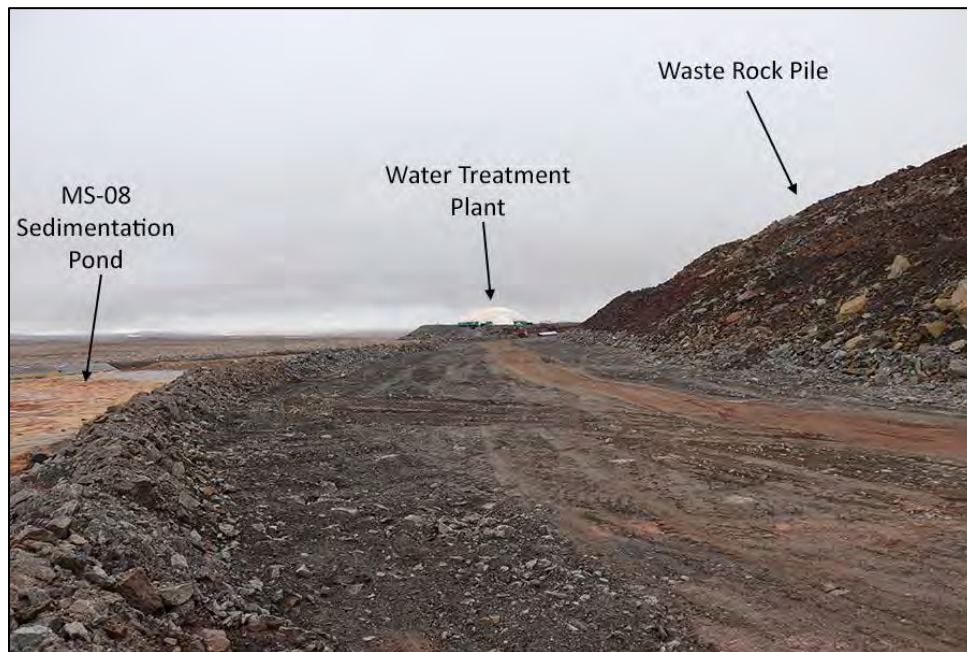


Figure 3: Mary River Mine Site Layout

Waste Rock Dump

In 2017 the NIRB visited MS-08, a ditch and sedimentation pond at the Waste Rock Pile, as it was a subject of concern by the Qikiqtani Inuit Association and Environment and Climate Change Canada as inspections noted that the area was not adequate to contain contact water. Baffinland had identified a leak in the MS-08 liner but the location was unknown. Therefore, Baffinland constructed emergency ditches and lined sumps were added to contain the seepage/overflow and intercept water not being diverted into MS-08 that were observed in the August 2017 site visit.

Since the winter inspection in April 2018, Baffinland has constructed and commissioned a water treatment facility at MS-08 ([Picture 4](#)) through which all contact water from the waste rock pile is processed. Contact water pumped through geotubes and into a bladder type structure ([Picture 5](#)) in which sediments and suspended solids are captured by settlement and filtration then the water is released through holes in the bladder into a bermed area. Prior to discharge, the water is assessed to ensure it meets all parameters and Baffinland stated that it had been in operation since July and the system was working as designed.



Picture 4: MS-08 Water treatment

The water in the sedimentation pond MS-08 was removed during the summer ([Picture 6](#)) in preparation for locating and repairing the tear in the liner. Baffinland noted the engineering consultants contracted to repair the liner would be arriving to work on the repairs.



Picture 5: MS-08 Geotubes



Picture 6: MS-08 Pond

Viewing the area around MS-08 area, the Technical Advisor observed liners on the tundra that had been used in the emergency ditches and sumps constructed in 2017 ([Picture 7](#)) that were no longer needed due to the new water treatment system. In discussions with Baffinland staff on site, debris would be removed and disposed of in appropriate facilities.



Picture 7: MS-08 Debris

Crusher and Screening Plant Area

During the 2018 August site visit the Technical Advisor observed that the crushing operations generated minimal to no dust ([Picture 8](#) and [Picture 9](#)); however, materials were water saturated given the recent rain at site. The Technical Advisor noted that the shrouds were still in place on the crusher plant, but no other dust control was being used at the crusher site.



Picture 8: Crusher Plant Area Location



Picture 9: Crusher Pad Operations

Crusher Pad Sedimentation Pond (MS-06)

The MS-06 sedimentation pond ([Picture 10](#)) was approved for expansion and modification prior to the 2018 August Site visit; however, construction had not started and therefore looked the same as the 2017 summer site visit. Baffinland stated that final approvals for the modifications had recently been received and modifications would begin soon.



Picture 10: MS-06 Sedimentation Pond (2017)

Landfill Area



Picture 11: Landfill and Effluent Discharge Locations

In previous visits, the landfill site ([Picture 11](#)) has had issues pertaining to the fencing around the landfill. During the 2016 and March 2017 site visits, it was noted that fencing mesh was removed from the supporting poles and that Baffinland had not replaced and maintained the fencing surrounding the landfill to retain wind-blown debris. Since 2017, the landfill was lacking fencing with only a small section of wooden fencing providing any means of containing wind-blown debris ([Picture 12](#)). No improvement in the fencing in comparison to the April 2018 site visit was observed, but Baffinland indicated mesh fencing was due on sealift and would be installed once it was on site; however, Baffinland staff indicated the fencing would be limited to the north and west sides of the landfill.



Picture 12: Landfill Fence

Effluent Discharge

In comparison to the August 2017 visit, Baffinland added additional rock armor to ensure the stability of the effluent discharge area. No other significant difference was noted.

Incinerator Area

Based on the previous 2017 site observations and the most recent 2018 site visit, the incinerator at the Mine site continues to be well maintained ([Picture 13](#) and [Picture 14](#)). Baffinland has been able to remove unused scrap materials, tires and synthetic materials currently stored temporarily at various Project locations, including around the immediate vicinity of the incinerator facility to improve the visual quality of the site.



Picture 13: Location of Mary River Incinerator



Picture 14: Mary River Incinerator Interior

During the August 2017 visit, it was noted that while the area around the incinerator showed improvement in the cleanup of scrap and synthetic materials, the large pile of scrap tires remained next to the incinerator. (Picture 15). During the August 2018 visit it was observed that the number of tires had been significantly reduced (Picture 16) and Baffinland indicated it continued its plan to place scrap tires in seacans for shipment south whenever personnel were available (e.g., such as the truck drivers during road closures)



Picture 15: Scrap tire pile at Mary River Incinerator (composite image), 2017



Picture 16: Scrap tire pile, August 2018

New Camp

In 2017, Baffinland began construction of a new camp facility at the mine site able to accommodate 800+ people ([Picture 17](#)). As of the August 2018 visit the first wing of six (6) was in use and Baffinland continued work on completing the facility.



Picture 17: New Camp Facility

2.1.2 Tote Road

For 2018 summer site visit no major environmental issues were observed along the Tote Road. and dust plumes due to vehicle traffic were minimal due to standing water at the surface. It was noted that the scrap materials from culvert replacement along the road and the scrap seacans at the KM 80 Bridge which had been observed during the Summer 2017 visit was removed.

Road maintenance and construction was ongoing during the visit, with Baffinland continuing to adjust the road to reduce the number of blind curves and adjusting slope cuts to provide better sight lines for traffic for safety reasons. Overall, the Tote Road showed significant improvement compared to the Summer 2017 visit.

2.1.3 Milne Port



Picture 18: Milne Port (2017)

Landfarm Area

Since 2014, site visit reports had reported on the deteriorating condition of the landfarm facility and raised concerns about the disposal of synthetic liners and that contaminated snow and soils had not been managed following industry best practices. At the time of this visit the landfarm showed significant improvement compared to the August 2017 visit with most debris removed. Although scraps of liner material and some debris remained ([Picture 19](#)), Baffinland staff indicated that workers would be removing scraps as they moved the soil within the landfarm to prepare for tilling the material.

At the time of the August 2018 visit, water from recent rain had pooled within the landfarm berm ([Picture 20](#)). Baffinland staff indicated that the water was being tested to decide if it needed treatment before being released into the environment. Once the determination was made, the water was to be removed from the landfarm and preparations for tilling the soil would begin.



Picture 19: Debris in Landfarm



Picture 20: Poned Water in landfarm

Salt Laydown

In the August 2017 and April 2018 site visit, the laydown area at Milne Inlet used for storage of salt used as a dust suppressant ([Picture 21](#)) was noted as having poor organization and a generally untidy appearance.

In the August 2018 visit, the site had been reorganized and cleaned up, with most of the salt no longer present ([Picture 22](#)). Baffinland personnel indicated the majority of the salt had been used for exploration drilling and the remaining salt was stored appropriately.



Picture 21: Salt Laydown location



Picture 22: Salt Laydown

Ore Stockpile and Sedimentation Ponds

There was no dust observed by the Technical Advisor at site; however, several puddles/wet conditions were noted at the ore stockpile ([Picture 23](#)).

It was noted in the August 2017 site visit that the drainage ditches surrounding the stockpile were unlined and that NIRB staff had recommended that armoring be incorporated to prevent slumping of the ditch sides. Although Baffinland did not armor the ditches, they appeared to be functioning with no significant erosion of the sides. The east and west sedimentation ponds ([Picture 24](#) and [Picture 25](#)) also appeared to be in good operating condition with no issues.



Picture 23: Ore Stockpile



Picture 24: West Sedimentation Pond



Picture 25: East Sedimentation Pond

Incinerator

The incinerator at Milne Port was visited and continues to be well-maintained with no issues noted.

2.2 Observations Based on NIRB Project Certificate No. 005

The following are the observations made during the site visit that pertain specifically to terms and conditions of Project Certificate No. 005:

2.2.1 Air Quality –Dust Management and Monitoring Plan

Condition 10

“The Proponent shall update its Dust Management and Monitoring Plan to address and/or include the following additional items:

- a) Outline the specific plans for monitoring dust along the first few kilometres of the rail corridor leaving the Mary River mine site.*
- b) Identify the specific adaptive management measures to be considered should monitoring indicate that dust deposition from trains transporting along the rail route is greater than initially predicted.*
- c) Outline specific plans for monitoring dustfall at intervals along and in the vicinity of the Milne Inlet Tote Road to determine the amount and extent of dustfall.*
- d) Identify the specific adaptive management measures to be considered if monitoring indicates that dust deposition from traffic on the Milne Inlet Tote Road is greater than initially predicted.”*

Condition 58c

“Within its annual report to the NIRB, the Proponent shall incorporate a review section which includes:

- c. A description of the extent of dust fall based on measured levels of dust fall (fugitive and finer particles such as TSP) on lichens and blueberries, and ash content of caribou fecal pellets;”*

Due to the wet conditions dust conditions were limited at the mine, port, or along the Tote Road. Baffinland has put in place additional shrouds and other covers to reduce dust generation at the crusher pad but, as noted, due to the conditions the effectiveness could not be evaluated or compared to previous site visits.

2.2.2 Terrestrial Wildlife and Habitat

Condition 53

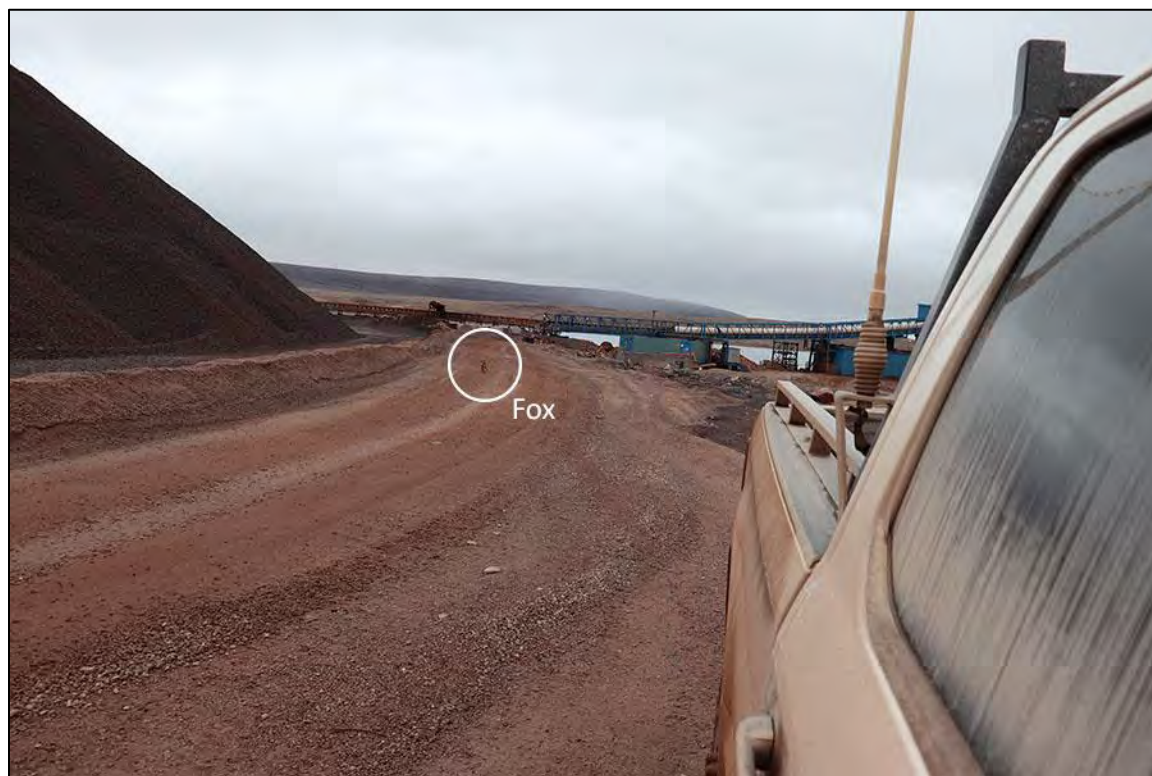
“The Proponent shall demonstrate consideration for the following:

- a. Steps taken to prevent caribou mortality and injury as a result of train and vehicular traffic, including operational measures meant to maximize the potential for safe traffic relative to operations on the railway, Milne Inlet tote road and associated access roads.*
- b. Monitoring and mitigation measures at points where the railway, roads, trails and flight paths pass through caribou calving areas, particularly during caribou calving times....”*

Condition 61

“Whenever practical and not causing a human safety issue, a stop work policy shall be implemented when wildlife in the area may be endangered by the work being carried out. An operational definition of ‘endangered’ shall be provided by the Terrestrial Environment Working Group.”

At the time of the current site visit, three (3) foxes were seen within the project area, two (2) at Milne Inlet—one near the PSC, the other near the ore stockpile (Picture 26) and one (1) at Mary River near the MSC. On the morning of the departure from Mary River, Baffinland staff had received a report of a Polar Bear near the KM 60 Bridge approximately one (1) kilometer from the Tote Road, apparently fishing in the river.



Picture 26: Fox at Port

3 FINDINGS AND SUMMARY

Based on the observations made during this current site visit, the Mary River Project facilities in operation appear to be well managed, and generally are maintained with adequate environmental protection measures and procedures in place.

In order to fully meet the requirements of the Project Certificate terms and conditions, and to ensure that potential adverse impacts to the environment are adequately mitigated, the NIRB Technical Advisor has identified several issues that require follow-up and corrective action:

3.1 Milne Inlet Landfarm:

As noted in sections [2.1.3](#), the land farm, while significantly improved over previous site visits by the removal of synthetic liners entrenched within the landfarm previously noted in the 2015, 2016, and 2017 site visits, continues to have an issue with material (primarily scraps of synthetic liner and some other debris) intermixed with the soil. Baffinland staff indicated that earthmoving and tillering operations would begin within the landfarm to properly treat contaminated soil, with the work crew pulling the debris from the soil as they were moving it. It is recommended that Baffinland ensure this is carried out.

3.2 Tire management

Used tires continue to be a significant waste stream generated across the Project sites, particularly around the Mine site and Mile Port. At the time of the August 2018 visit, the waste tires at Milne Port was removed and the tire pile at Mary River significantly reduced in size. It was recommended that Baffinland continue to work on completing the removal of the waste tires.

3.3 Waste Landfill

During the NIRB's current site visit, it was again noted that solid waste materials were generally properly contained within the landfill, although the incomplete fencing of the landfill footprint continue to be a recurring issue. The condition of the landfill fencing has not improved compared to previous observations. Baffinland staff indicated that chain-link fencing was being shipped to arrive during the 2018 sealift to be installed around the landfill, however fencing would only be used on the north and west sides of the landfill given the prevailing wind conditions.

3.4 Sedimentation Ponds at Mary River

The sedimentation ponds and associated feeder ditches at the Mary River crusher pad (MS-06) is of insufficient size to contain the runoff water from the ore pad. After the Summer 2017 site visit, Baffinland had applied for and received permission from the Nunavut Water Board to expand the sedimentation pond to increase its capacity, with construction to be completed prior to the 2018 freshet. However, the work had not yet been started prior to the Summer 2018 site visit due to, according to Baffinland staff, waiting for required permissions which had been received just prior to the site visit. Work was scheduled to commence following the site visit.

The construction of an emergency ditch to prevent untreated runoff from reaching the tundra was required in 2017 at the MS-08 facility (Waste Rock Pile) as noted in the 2017 site visit report. Construction of a new water treatment facility was completed and began operation in July 2018. Debris used for the construction of the emergency ditch and sumps in 2017 was not yet removed during the 2018 visit. The leak in the liner of the MS-08 sedimentation pond has yet to be located and repaired, although Baffinland indicated engineering consultants were due to begin work after the Summer 2018 site visit.

Prepared by: Keith Morrison
Title: Technical Advisor II
Date: October 5, 2018
Signature:

A handwritten signature in black ink, appearing to be 'K. Morrison', followed by a long horizontal line.

Reviewed by: Kelli Gillard PAg
Title: Manager, Project Monitoring
Date: October 5, 2017
Signature:

A handwritten signature in blue ink, reading 'Kelli Gillard'.

Appendix III: Baffinland's Follow-Up To 2017 Board Recommendations

Baffinland's Follow-up to 2017 NIRB Recommendations

No.	NIRB Recommendation	Baffinland Response to 2017 Recommendation	Status of compliance in 2017 Annual Report
1	The Board requests that Baffinland recommence the monitoring of sea levels and storm surges at Milne Inlet to support trend analysis and that it identifies any site-specific conditions that continue to limit its efforts to retrieve data from the tidal gauge installed at Milne Inlet. It is requested that confirmation of resumption of monitoring is provided to the NIRB following re-installation of the tidal gauges, and that associated monitoring data be submitted to the Nunavut Impact Review Board in the 2017 Annual Monitoring Report.	Baffinland confirmed that the tidal gauge was installed at Milne Port during the 2017 open water season and provided results and data for tidal monitoring in the 2017 annual report as requested.	Information provided in the 2017 Annual Monitoring Report
2	The Board requests that Baffinland provide the Nunavut Impact Review Board with updates regarding its climate change strategy, noting any specific activities it has undertaken or anticipated initiatives to be implemented to specifically reduce greenhouse gas emissions from the Project sites. It is requested that Baffinland provide an update on this within its 2017 Annual Report.	Baffinland provided an update regarding its Climate Change Strategy and noted that it was developed as part of the FEIS Addendum for the Phase 2 Proposal with no details on its applicability for the existing/approved project	Information provided in the 2017 Annual Monitoring Report but for the Phase 2 proposal.
3	The Board requests that Baffinland recommence the monitoring of SO2 and NO2 emissions across the project site and develop an alternative strategy for monitoring such emissions in the event of instrumentation malfunction or failure. The Nunavut Impact Review Board also requests that Baffinland provide information on the ambient concentration of SO2 and NO2 from different project sites, including a time-series analysis of emission variations across Project sites and that this update be provided within the Proponent's 2017 Annual Report to the Nunavut Impact Review Board.	Baffinland provided evidence of recommending SO2 and NO2 monitoring in March 2017 at the Port Site, and November 2017 at the Mine Site and monthly calibrations have been completed at both sites since the monitoring resumed. An audit of the Port Site air quality monitoring station was completed in November, and it was determined that the equipment was being calibrated properly and operating well.	Information provided in the 2017 Annual Monitoring Report.
4	The Board requests that Baffinland substantiate its efforts of undertaking dust management and monitoring activities by submitting the referenced documents (the Air Quality and Noise Management Plan and the Road Management Plan), and provide details of the specific changes or updates made to its existing Dust Monitoring and Mitigation Plan in response to excessive dust emissions generated from the site, with details of how it intends to incorporate adaptive management strategies for increased dust deposition from its operations. It is requested that Baffinland provide updates on its efforts for dust management and monitoring, and also submit all the referenced documentation within the next 30 days to the Nunavut Impact Review Board.	Baffinland indicated that it continues to investigate how to better mitigate dust on site and plans to update the Air Quality and Noise Management Plan in 2018.	The Air Quality and Noise Management and the Roads Management were not updated in 2017.
5	The Board requests that Baffinland improve its ongoing noise/vibration monitoring program by increasing the overall sample size and frequency of monitoring of noise and vibration levels at the Mine site and Milne Port accommodation facilities, and where possible provide details of the specific time and work shifts when such testing are done, including an analysis of any observed seasonal variation of noise and vibration levels and a discussion of the implication for workers' health and safety onsite. Further, it is requested that Baffinland provide information on how it intends to address future equipment malfunction issues to ensure that noise and vibration levels continue to be adequately monitored across the Project site. It is requested that this be provided within 30 days receipt of the Board's recommendations.	Baffinland indicated that e testing has occurred on an ad hoc basis given the relative distance of the accommodation complexes from blasting activities at the Mine, and that while testing did continue in 2017, Baffinland experienced technical issues with monitoring equipment which prevented the regular testing of noise and vibration at the accomations complexes.	Baffinland committed to undertaking further testing, which will include 5 samples at the Mine site and 5 samples at Port site, twice per year during 2018.
6	The Board requests that Baffinland to develop an action plan to mitigate aircraft disturbance to migratory birds, and address the consistent non- conformance with the flight altitude guidelines. It is requested that Baffinland provide information on how it will work with the helicopter contractor on revised protocols, pilot training and monitoring of flight logs to improve performance and compliance with the required flight altitude guidelines. It is also requested that Baffinland provide an update on its conformance within the 2017 Annual Report to the Nunavut Impact Review Board.	Baffinland committed to provide an update on compliance with Conditions 59, 71 and 72 in the 2017 Annual Report.	Information provided in the 2017 Annual Monitoring Report on PC Condition Nos. 59, 71, and 72.

7	The Board requests that Baffinland develop an alternative strategy for monitoring vessel interactions with marine mammals, including seabirds should the ship-board observer program continue to be unfeasible due to safety concerns. It is also requested that Baffinland should notify the Nunavut Impact Review Board of any updates on this condition as pertaining to the design of any alternative programs, including evidence of Marine Environmental Working Group consensus on the agreed alternatives before the implementation of such programs. It is requested that this update be included within the 2017 Annual Report to the Nunavut Impact Review Board.	Baffinland committed to providing an update on the current status of the ship-based surveillance program in the 2017 Annual Report.	Information provided in the 2017 Annual Monitoring Report on PC Condition Nos. 106, 121 and 123.
8	The Board requests that Baffinland provide information on how it intends to work with the Marine Environmental Working Groups in developing its early warning indicators of negative impacts of vessel noise on marine mammals pursuant to Condition 110 of the Project Certificate. It is also requested that the Proponent report on the specific indicators being developed noting how the Marine Environmental Working Group has been involved in identifying such indicators for use, including a description of how the indicators are to be used to inform marine mammal-vessel interactions. It is requested that this update be included within the 2017 Annual Report to the Nunavut Impact Review Board.	Baffinland committed to provide an update on compliance with Conditions 110 and 111, including any updates from the Marine Environmental Working Group in the 2017 Annual Report.	Information provided in the 2017 Annual Monitoring Report on PC Condition Nos. 110 and 111; Appendix C1.
9	The Board request that Baffinland demonstrate how it has complied with the requirement of Conditions 17 and 46 of the Project Certificate, and implemented the protocols for managing sedimentation events during freshet onsite. It is requested that this information be incorporated in the 2017 Annual Monitoring Report to the Nunavut Impact Review Board.	Baffinland committed to addressing this recommendation in the 2017 Annual Report.	Information provided in the 2017 Annual Monitoring Report on PC Condition 17 and 46.
10	The Board requests that Baffinland develop an action plan to address the hanging culverts around fish bearing streams, particularly for the crossing at BG-50. It is requested that Baffinland clarify how it has consulted Fisheries and Oceans Canada and modified its fish habitat monitoring program, and that it demonstrate how the Tote Road Earthworks Execution Plan has included an assessment of improvements to fish passage and upgrades to culverts along the Tote Road. It is requested that this update be included within the 2017 Annual Report to the Nunavut Impact Review Board.	Baffinland committed to addressing this recommendation in the 2017 Annual Report.	Information provided in the 2017 Annual Monitoring Report on PC Condition 45.
11	The Board request that Baffinland provide information on how it is meeting Condition 48(a) and implementing monitoring of arctic char health in areas affected by the Project, including a discussion of how this monitoring would be informed through consultation with the Mittimatalik Hunters and Trappers Organization. It is also requested that the status of arctic char health sampled from the vicinity of the mine area and reference locations be provided and included within the 2017 Annual Report to the Nunavut Impact Review Board.	Baffinland committed to addressing this recommendation in the 2017 Annual Report.	PC Condition 48(a); Consultation has not been specifically conducted on the monitoring of arctic char health, with respect to monitoring program design and implementation, however consultation related to all of Baffinland's monitoring programs was noted to have occurred at public meetings and during community meetings with the HTO.
12	The Board directs Baffinland to implement fouling monitoring on vessel hulls, as required by Condition 91. It is also requested that Baffinland provide the results of its settlement basket monitoring and underwater video surveys, including the proposed SCUBA-based monitoring program for detection of fouling on vessel hulls moored at Milne Port. It is requested that this update be included within the 2017 Annual Report to the Nunavut Impact Review Board.	Baffinland committed to address this recommendation in the 2017 Annual Report.	Updates was provided in the 2017 Annual Report; however the requested results or update regarding fouling monitoring on vessel hull has yet to be implemented.
13	The Board requests that Baffinland clarify how its engagement with communities for its Phase 2 Development proposal addressed issues from the monitoring of the approved Mary River project as required by Condition 162. It is requested that this update be included be provided within 30 days to the Nunavut Impact Review Board.	Baffinland provided its update within 30 days to the NIRB noting its continued engagegemt with community members to obtain input into its monitoring programs and mitigative measures.	

14	The Board requests that Baffinland, in consultation with the Qikiqtaaluk Socio-Economic Monitoring Committee, develop robust indicators to measure and survey the in-migration and out-migration of Inuit and non- Inuit residents in the North Baffin LSA and discuss how this may affect local housing opportunities within the LSA. It is requested that Baffinland conduct a survey of the Inuit employee turnover rate on an annual basis and that the results of the survey be included within the 2017 Annual Report to the Nunavut Impact Review Board.	Baffinland committed to address this recommendation in the 2017 Annual Report.	Information provided in the 2017 Annual Monitoring Report on PC Condition No. 131, 133, and 140.
15	The Board requests that Baffinland consult with the Qikiqtani Inuit Association in discussing priorities regarding monitoring of non-Inuit residents and contractor employees in the local study area, and where applicable, provide information regarding Baffinland's Inuit employee payroll, in order to provide an understanding of the expansion of the local market for consumer goods and services within the local study area. It is requested that this data be included within the 2017 Annual Report to the Nunavut Impact Review Board.	Baffinland committed to address this recommendation in the 2017 Annual Report.	Information provided in the 2017 Annual Monitoring Report on PC Condition No. 131, 133, and 140.
16	The Board request that Baffinland submit the results of the Marine Environmental Effects Monitoring Program within 30 days receipt of these recommendations.	Baffinland provided the requested document within 30 days to the NIRB on December 22, 2018.	
17	The Board request that Baffinland provide the current version of the Aquatic Effect Monitoring Program for inclusion with the 2016 Annual Report on the Nunavut Impact Review Board registry within 30 days receipt of these recommendations. It is also recommended that the next update of the Aquatics Effects Monitoring Plan include maps and figures that are legible and that this information be included within the 2017 Annual Report to the Nunavut Impact Review Board.	Baffinland confirmed it has revised the AEMP, which is now available on the Baffinland Document Portal.	
18	The Board requests that Baffinland provide the missing sections of the Dustfall Monitoring Program report as well as a discussion of the information as relevant to dustfall monitoring. It is requested that this information be provided within 30 days receipt of these recommendations.	Baffinland provided its responses noting that it was unclear which report was being referred to and that all dust fall reporting is in the 2016 Terrestrial Monitoring Report.	
19	The Board requests that Baffinland monitor groundwater drainage around the mine waste piles and in other Project locations pursuant to Condition 23 of the Project Certificate or clarify/justify why groundwater is not currently being monitored. It is requested that data regarding groundwater monitoring be included within the 2017 Annual Report to the Nunavut Impact Review Board.	Baffinland committed to providing an update on ground water monitoring in the 2017 Annual Report.	Information provided in the 2017 Annual Monitoring Report on PC Condition No. 23.
20	The Board requests that Baffinland perform stack testing of incinerators at regular three (3) year intervals, and to report the results of such testing in future Annual Reports to the Nunavut Impact Review Board.	Baffinland noted its compliance and indicated that it was reviewing industry standards and best practices, and will develop a more detailed response to be included in the 2017 Annual Report.	Information provided in the 2017 Annual Monitoring Report on PC Condition No. 12.
21	The Board requests that Baffinland include detailed data of water volume and analytical data associated with the surface water runoff from active mining/quarries areas and effluent discharges from the Crusher Pad Sedimentation Pond (MS-06) and Waste Rock Sedimentation Pond (MS-08) and other project facilities in order to verify its compliance with terms and conditions 17 and 24 of the Project Certificate. It is requested that this update be included within the 2017 Annual Report to the Nunavut Impact Review Board.	Baffinland committed to providing an update on ground water monitoring in the 2017 Annual Report.	Information provided in the 2017 Annual Monitoring Report on PC Conditions 17 and 24.
22	The Board requests that Baffinland improve upon its reporting of results associated with the hydrodynamic modeling program by incorporating both descriptive and quantitative data of all relevant parameters in future annual reports. It is requested that this update be included within the 2017 Annual Report to the Nunavut Impact Review Board.	Baffinland committed to address this recommendation in the 2017 Annual Report.	Information provided in the 2017 Annual Monitoring Report on PC 83(a), but the Proponent is not fully compliant.

23	The Board requests that Baffinland improve Quality Assurance and Quality Control protocols for its ballast water sampling program in order to prevent erroneous data and to ensure that ballast water meet the salinity requirements of the applicable regulations prior to discharge at the Milne Port. It is also requested that the Proponent provide corrected results of its ballast water sampling, including details of how Quality Assurance/Quality Control methods would be improved upon and validated for subsequent sampling within 30 days receipt of the Board's recommendations.	The Proponent provided its response to the request within 30 days of the NIRB's recommendation	
24	The Board requests that Baffinland assess Project-related influences on housing in the north Baffin local study area, as well as to continue developing employee surveys to properly address all socio-economic indicators likely to arise due to migration. It is requested that the results of the survey be provided and incorporated within the 2017 Annual Report to the Nunavut Impact Review Board.	Baffinland committed to address this recommendation in the 2017 Annual Report.	Information provided in the 2017 Annual Monitoring Report on PC Condition No. 133; Section 3 and Section 8 Appendix G of the 2017 Annual Report.
25	The Board requests that Baffinland adhere to the recommendation of the Government of Nunavut to provide examples of negative changes or concerns reported in the community surveys and a description of how Baffinland intends to address these impacts and confirm that proper mitigation measures have been implemented. The positive and negative results associated with the community surveys should be provided and included within the 2017 Annual Report to the NIRB.	Baffinland committed to address this recommendation in the 2017 Annual Report.	A community survey was not conducted in 2017.
26	The Board requests that Baffinland follow the recommendation of the Government of Nunavut to address the increase in Inuit turnover rates at the Project by exploring the feasibility of using the Ilagiiktunut Nunalinnullu Pivalliajutsait Kiinaujat fund to provide additional supports to community daycares or child care services over and above what is available through the Government of Nunavut's Start-up Contribution program. It is requested that updates with respect to providing additional supports to community daycares or child care services for employees or through Ilagiiktunut Nunalinnullu Pivalliajutsait Kiinaujat fund be included within the 2017 Annual Report to the Nunavut Impact Review Board.	Baffinland committed to address this recommendation in the 2017 Annual Report.	Information provided in the 2017 Annual Monitoring Report on PC Condition No. 145.
27	The Board requests that Baffinland consider working with appropriate stakeholders to develop a measurement tool/indicator for food security and provide information on the impact of the Project on food security, including access to hunting grounds. It is requested that this update be included within the 2017 Annual Report to the Nunavut Impact Review Board.	Baffinland committed to address this recommendation in the 2017 Annual Report.	Information provided in the 2017 Annual Monitoring PC Condition Nos. 148 and 168.
28	The Board requests that Baffinland engage with the Government of Nunavut to discuss possible Project implications on existing health and social services, including strategies for tracking health and social service requests. The Proponent should also consider providing information regarding outbreak investigations of communicable diseases, medical assessment or return to work as a requirement of insurance or workplace policies, and treatment of workplace injuries upon returning to the community. It is requested that an update on this engagement and related outcomes be included within the 2017 Annual Report to the Nunavut Impact Review Board.	Baffinland committed to address this recommendation in the 2017 Annual Report.	Baffinland has additionally provided information on potential socio-economic effects of the Project in its 2017 Socio-Economic Monitoring Report. This includes indicator data related to pressures on existing health and social services provided by the GN that may be impacted by Project-related in-migration of employees (i.e. total and per capita number of health centre visits in the Local Study Area (LSA), number of visits to Project site medic).
29	The Board requests that Baffinland strengthen its marine monitoring program by including data from acoustic monitoring and aerial surveying, and where possible integrate results from Fisheries and Oceans Canada led surveys, prior to the interpretation of results and provision of conclusions within its annual reporting. It is further recommended that Baffinland comment on its ability to undertake more direct studies on disturbance, including for instance, acoustic monitoring before, during, and after ship transits, drone monitoring before, during, and after ship transits and possibly photo surveys before, during and after transits. In addition, it is also requested that Baffinland submit documentation of the results of the shore-based observations of narwhal behavior that took place in 2016 within 30 days' receipt of the Board's recommendations.	The Proponent provided its response to the request within 30 days of the NIRB's recommendation	Ongoing with consultation with the Marine Environment Working Group.

30	The Board requests that Baffinland provide an update regarding how it has implemented measures within its Tire Management Plan for re-treading, reuse, or offsite disposal of tires generated from the site. It is further recommended that a more organized method of storing the tires be implemented. It is requested that a response to this recommendation be provided within 30 days' receipt of these recommendations.	The Proponent provided its response to the request within 30 days of the NIRB's recommendation	Ongoing monitoring by the NIRB
31	The Board directs Baffinland to adhere to industry best practices for landfill operations, including through the installation and continued maintenance of landfill litter fences to ensure waste materials are not dispersed offsite. It is requested that an update regarding this recommendation be provided within the next 30 days to the Nunavut Impact Review Board.	The Proponent provided its response to the request within 30 days of the NIRB's recommendation	Ongoing monitoring by the NIRB
32	The Board requests that Baffinland provide an action plan showing how the MS-08 facility will be improved to ensure that site contact water is properly managed around the waste rock piles, and that discharge from the waste rock dump meets criteria and is properly contained and channeled, and not allowed to flow into the adjacent tundra. It is requested that this information be provided within 30 days receipt of these recommendations.	The Proponent provided its response to the request within 30 days of the NIRB's recommendation	Further updates provided in Section 3.2.2.3 of the 2017 Annual Report
33	The Board requests that Baffinland adhere to industry best practices for landfarm operations, including for management of contaminated snow and waste synthetic liners. It is requested that an update regarding this recommendation be provided within the next Annual Report to the Nunavut Impact Review Board.	Baffinland committed to address this recommendation in the 2017 Annual Report.	During July 2017 Baffinland personnel conducted a cleanup effort removing debris from the contaminated soil in the landfarm that had been deposited over the winter months, this effort will continue in 2018. A tilling program is currently being researched to increase evaporative processes, this program would expose additional debris currently covered by soil and will be removed while this tilling operation occurs. Materials used to temporarily store hydrocarbon contaminated soil are removed on an ongoing basis throughout the summer months when contents have thawed.

Appendix IV: Pond Inlet and Igloolik Consultation Report

A group of people are seated in a room, facing a large screen displaying a presentation. Two men are standing near the screen, one holding a microphone. The room has wooden walls and a large window.

Report Title: Public Information Meeting Summary Report April 16, 2018 for the NIRB's Monitoring of Baffinland Iron Mines Corp's Mary River Project (NIRB File No. 08MN053)

Report prepared by: Jaida Ohokannoak, Technical Advisor II and Solomon Amuno, Monitoring Officer

Photos by: Jaida Ohokannoak, Technical Advisor II and Solomon Amuno, Technical Advisor II

Cover photo: Community Information session in Pond Inlet, April 16, 2018

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1.0 NIRB PUBLIC INFORMATION SESSION

Pursuant to Section 12.7.2 of the Nunavut Land Claims Agreement, and the Mary River Project Certificate 005, the Nunavut Impact Review Board's (NIRB or Board) monitoring responsibilities include providing periodic updates regarding its Monitoring Program for the communities most affected by Baffinland Iron Mine Corporation's (Baffinland) Mary River Project (the Project). To further ensure ongoing awareness of Project-specific terms and conditions, and encourage effective participation throughout the Board's monitoring process, the NIRB scheduled a Project update meeting for the community of Pond Inlet on April 16, 2018 and set up a general information booth at the local Tununiq Sauniq Co-op from 1:30-4:00pm.

The information session took place during the evening from 7:00 pm to 10:30 pm at the Atakaalik Community Hall, with a recorded attendance of 22 people ([Appendix A: Sign-in Sheets](#)). The NIRB Staff in attendance included Solomon Amuno, Monitoring Officer and Jaida Ohokannoak, Technical Advisor II. In addition to the NIRB staff, representatives from the following agencies were also in attendance at the meeting:

- Baffinland Iron Mine Corporation: Megan Lord-Hoyle, Director Corporate Sustainability
- Qikiqtani Inuit Association: Fai Ndofor, Regulatory Manager

The information session provided a general update of the NIRB's monitoring programs for the Project and specifically outlined the ways in which the public can participate in the Board's monitoring process and consecutive translation was provided in Inuktitut. Through the public information session, the NIRB collected and categorized additional comments, concerns, and traditional and local knowledge related to the ongoing development of the Mary River Project. A summary of the comments and concerns related to the Project received from community members can be found in [Section 2](#) of this report.

1.1 Setup of NIRB Public Information Meetings

To encourage attendance at the community information session, a general information booth was setup in the front entrance of the Tununiq Sauniq Co-op in the afternoon to listen to community concerns. The evening community information session was open to all members of the public. Refreshments and snacks were provided and door prizes raffled at the end of the meeting. All in attendance, including government, industry representatives and media, were asked to sign in and identify the community or organization they represented. The NIRB began the meeting with a PowerPoint presentation that included a discussion of the NIRB's Monitoring Process, with a focus on update on the Mary River Iron Mine project, including an overview of project activities and key components, and issues identified through the project specific monitoring program.

The presentation concluded with a discussion as to how interested parties and community members could participate in the NIRB's monitoring process. The public was encouraged to comment and ask questions relating to the NIRB's process, activities undertaken, project effects, and any concerns related to the Project. Both written ([Appendix B – Comment Forms](#)) and verbal comments were accepted at the public information meeting, and verbal comments were recorded by the NIRB staff members, representatives from other agencies, and the Proponent.

1.2 Meeting Materials

At the public meeting, the following materials were provided by the NIRB:

- The NIRB's PowerPoint presentation (in English and Inuktitut)
- *The Nunavut Land Claims Agreement* (in English and Inuktitut)
- *Nunavut Planning and Project Assessment Act* (in English)
- The NIRB's Environmental Assessment Brochures (in English and Inuktitut)
- The NIRB's 2016-2017 Annual Monitoring Report for Baffinland's Mary River Iron project (in English)
- The NIRB's 2017 Winter Site Visit Report (English)
- The NIRB's 2017 Summer Site Visit Report (in English)
- Baffinland's Mary River Project Certificate (in English)
- Comment Forms (in English and Inuktitut)
- Maps of Project Areas

Copies of consultation materials, including the presentation, advertisements and sign-in sheet, can be obtained from the NIRB's online public registry at www.nirb.ca by using any of the following search criteria:

- Project Name: Mary River Project
- NIRB File No.: 08MN053
- Application No.: 123910

1.3 1.3 Advertisements

The following public notification methods were used to advertise the NIRB's public information meeting:

Radio

A public service announcement in English and Inuktitut was distributed to the radio station in Pond Inlet with instructions to air twice a day from March 16, 2018 to April 16, 2018.

Posters

Prior to the NIRB visiting Pond Inlet, community members and local organizations including the Hamlet office were requested to assist with placement of posters (in English and Inuktitut) around Pond Inlet, which outlined the dates, times, and purpose of the NIRB meeting.

2.0 MEETING NOTES FROM THE NIRB'S PUBLIC INFORMATION MEETING

Comments, Concerns, and Questions

The following sections summarize the comments and concerns that were raised both verbally and in writing at the community information sessions with respect to the monitoring of the Mary River project. These comments helped the Board identify items that need to be addressed or considered throughout the NIRB's monitoring program for the Mary River Project.

Please note that all comments have been grouped under general headings that reflect the main issues discussed during information session and Project update meeting.

2.2 Issues regarding Shipping

- Questions and concerns regarding icebreaking and if it was still going to occur
- Concerns that Baffinland is not following their agreement with Inuit, that Milne Inlet was only to be used for re-supply ships and then the Port would move to Steensby.
- Shipping is occurring on hunting grounds and are too many ships are disturbing hunting grounds
- Monitoring of the ships that transport the iron ore more closely, it appears that Milne Inlet ships are waiting to be loaded are not anchored properly and are drifting away.
- Need to hire monitors who can work on board the ships and on-shore as well.

2.3 Issues regarding Dust

- Community is concerned about the discolouration in spring on the ice from the stockpile at the port.
- “Baffinland says that they won’t effect us but it is effecting hunters who used to go to fishing sites in Milne Inlet. Now there are no fish. The dust is affecting the fish. Have to go close to Clyde River to fish now. Will there be any compensation to hunters from Baffinland for what they have done to the fish?”

2.4 Issues regarding Landfill

- Pond Inlet airport fence can withstand winds, why can’t Baffinland create a wire mesh fence around their landfill?

2.5 Issues regarding employment

- Local Inuit interested in jobs on the ships.
- Inuit in Pond Inlet are looking for jobs at the mine and Baffinland is not hiring.
- Hear many Inuit are being fired from Baffinland.
- Why are the number of training hours down and why are their such a wide range in hours for Inuit employment (less) vs non-Inuit (more)?
- Inuit employment numbers have come down over the years. Baffinland needs to look for more ways to employ Inuit. “Is this goal achievable?”
- Hire Inuit to the full extent and ensure that Inuit are given equality and the same rights as those hired from southern Canada
- Train Inuit to work at mine site. Respect and listen to community Inuit, not unilingual if possible.
- Percentage of Inuit employment is not at target. IIBA 25% are to be Inuit.
- 14 Inuit promoted to higher positions. How many non-Inuit over same period?
- Inuit are very skilled and employer will see that they are very capable of doing the job without training, just by watching. Southern way is to hire only those that have been trained or educated in those crafts.
- Arctic Bay, Pond Inlet, Hall Beach, and Igloolik all looking for help from the NIRB to ensure Baffinland provides jobs to Inuit. Lots are looking for work.
- Baffinland head office should be located in Pond Inlet not down south to provide more employment for Inuit.

2.6 Other Issues

- Would like NIRB to use drones to take aerial photos so that inspection/monitoring pictures can have an aerial view to better understand site. Suggested an Iqaluit company.
- What can NIRB do to support the community?
- NIRB has not discussed Pond Inlet concerns that we have expressed in the past.
- Pond Inlet voices are not being heard and taken into consideration.
- Nunavut Quest dog team race stops in Milne Inlet, it is a true cultural activity. Have been invited into site for supper but also accused of stealing food.
- Believe best option is to shut down Baffinland
- Baffinland wanted to increase dock to increase shipping and to use larger haul trucks since they have not been approved for railway. Will Baffinland be getting bigger haul trucks?
- Concerns over racism against Inuit at Baffinland and concerned that there is a double standard in how they are treated.

3.0 SUMMARY AND CONCLUSION

Community members from Pond Inlet who attended the evening information session raised questions, provided concerns and comments, and had general discussions regarding shipping, dust, landfill and employment rates as was related to the Mary River Iron Mine project. The comments and concerns raised during the public information meetings were replied to by the NIRB and clarification was given by Baffinland and/ or QIA staff when required. The comments and concerns raised will aid in the identification of items that need to be addressed or considered throughout the Mary River Iron Mine project monitoring program and through the NIRB's impact assessment of similar projects in Nunavut.

APPENDIX A – SIGN IN SHEETS

**Nunavut Impact Review Board
Baffinland Iron Mines Corp. – Mary River
Community Information Sessions**

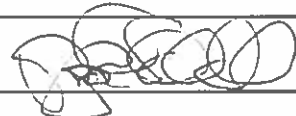








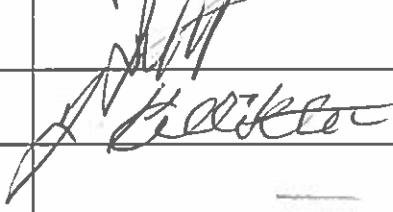



SIGN-IN SHEETS

Location: POND INLET.

Date: April 16, 2018

Time: 7:00pm

Page No: 1

Name (Please Print)	Organization or Community	Signature
Morgan Arnakalik	Pond Inlet (Translator)	
MARY AMAGOALK		
Hosia Kadloo	Pond Inlet	
Megan Lord-Hayle	Baffinland	
Fai Nlotor	QIA Igloodit	
Joapie Ootova	QIA CLO	
Peter Amualik &	PI	
Gina Komangapik	Pond Inlet	
Andy Wagg	PI	
AK & d	FMCC	
Joshua Katsak	HAMLET OF POND INLET	
YBL & SPIN	POND INLET HTO	
Rebecca Ethuk	P.I.	
Elijah Paniksoocho	Pond Inlet	
Dennis Nitarak	POND INLET	
Ragily SINGORIE	Pond Inlet	
HAM, KADLOO		
Lamedh Kadloo	Pond Inlet	
Simeonie OOTOVA		

SIGN-IN SHEETS

Page No: 2

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APPENDIX B - COMMENT FORMS

GENERAL COMMENTS FORM FOR PUBLIC MEETING
NIRB Monitoring of Baffinland Iron Mine Corp.'s Mary River Mine

Indicate your concerns about the project proposal:

no concerns	traditional uses of land
water quality ✓	Inuit harvesting activities ✓
terrain disturbance	community involvement and consultation ✓
air quality ✓	local development in the area ✓
terrestrial wildlife and their habitat ✓	tourism in the area ✓
marine mammals and their habitat ✓	human health issues ✓
birds and their habitat ✓	Transboundary effects
fish and their habitat ✓	
heritage resources in the area	other: _____

Please indicate if there are any additional concerns with this project:

Train more Inuit to monitor the mine site by

Do you have any specific questions or comments with respect to this project or the Nunavut Impact Review Board?

Respect and listen to community Inuit, not UNILINGUAL
if possible,

Your Name David Organization: NUN
Signature: David Natchik Date: April 16, 2012

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 $\Delta ABC \sim \Delta DEF$
 $\Delta ABC \sim \Delta A'B'C'$
 $\Delta A'B'C' \sim \Delta DEF$

අත්සන: J. Tillikete

ፅሑፍ ቁጥር: HTO
 ቀን: 16-04-2018



Report Title: Public Information Meeting Summary Report August 17, 2018 for the NIRB's Monitoring of Baffinland Iron Mines Corp's Mary River Project (NIRB File No. 08MN053)

Report prepared by: Keith Morrison, Technical Advisor II

Photos by: Kelli Gillard

Cover photo: Igloolik Radio Station, 2012

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1.0 NIRB PUBLIC INFORMATION SESSION

Pursuant to Section 12.7.2 of the Nunavut Land Claims Agreement, and the Mary River Project Certificate 005, the Nunavut Impact Review Board's (NIRB or Board) monitoring responsibilities include providing periodic updates regarding its Monitoring Program for the communities most affected by Baffinland Iron Mine Corporation's (Baffinland) Mary River Project (the Project). To further ensure ongoing awareness of Project-specific terms and conditions, and encourage effective participation throughout the Board's monitoring process, the NIRB scheduled a Project update meeting and a community information session in Igloolik on August 17, 2018.

The information session took place during the evening from 7:00 pm to 9:00pm at the Igloolik Community Hall, with a recorded attendance of sixteen (16) people ([Appendix A: Sign-in Sheets](#)). The NIRB Staff in attendance was Keith Morrison, Technical Advisor II. In addition to the NIRB staff, representatives from the following agencies were also in attendance at the meeting:

- Baffinland Iron Mine Corporation: Steve Borcsok, Permitting Specialist

The information session provided a general update of the NIRB's monitoring programs for the Project and specifically outlined the ways in which the public can participate in the Board's monitoring process. Due to unforeseen circumstances the local translator was not available and thus simultaneous translation into Inuktitut was not available at the meeting; however, the presentation slides were translated into Inuktitut ([Appendix B – NIRB Presentation](#)). Through the public information session, the NIRB collected and categorized additional comments, concerns, and traditional and local knowledge related to the ongoing development of the Mary River Project. A summary of the comments and concerns related to the Project received from community members can be found in [Section 2](#) of this report.

1.1 Setup of NIRB Public Information Meetings

The community information session was open to all members of the public. Refreshments and snacks were provided. All in attendance, including government, industry representatives and media, were asked to sign in and identify the community or organization they represented. The NIRB began the meeting with a PowerPoint presentation that included a discussion of the NIRB's Monitoring Process, with a focus on update on the Mary River Iron Mine project, including an overview of project activities and key components, and issues identified through the project specific monitoring program.

The presentation concluded with a discussion as to how interested parties and community members could participate in the NIRB's monitoring process. The public was encouraged to comment and ask questions relating to the NIRB's process, activities undertaken, project effects, and any concerns related to the Project. Both written ([Appendix C – Comment Forms](#)) and verbal comments were accepted at the public information meeting, and verbal comments were recorded by the NIRB staff members, representatives from other agencies, and the Proponent.

1.2 Meeting Materials

At the public meeting, the following materials were provided by the NIRB:

- The NIRB's PowerPoint presentation (in English and Inuktitut)
- Comment Forms (in English and Inuktitut)
- Maps of Project Areas

Copies of consultation materials, including the presentation, advertisements and sign-in sheet, can be obtained from the NIRB's online public registry at www.nirb.ca by using any of the following search criteria:

- Project Name: Mary River Project
- NIRB File No.: 08MN053
- Application No.: 123910

1.3 Advertisements

The following public notification methods were used to advertise the NIRB's public information meeting in the month leading to the meeting:

<i>Radio</i>	A public service announcement in English and Inuktitut was distributed to the radio station in Igloolik with instructions to air twice a day.
<i>Posters</i>	A translated poster with the date, location and time was sent to community members, local organizations, and the Hamlet office for placement around Igloolik.
<i>Online</i>	The translated poster was placed online on the local Igloolik community news Facebook page.

2.0 MEETING NOTES FROM THE NIRB'S PUBLIC INFORMATION MEETING

Comments, Concerns and Questions

The following sections summarize the comments and concerns that were raised both verbally and in writing at the community information sessions with respect to the monitoring of the Mary River project. These comments helped the Board identify items that need to be addressed or considered throughout the NIRB's monitoring program for the Mary River Project.

Please note that all comments have been grouped under general headings that reflect the main issues discussed during information session and Project update meeting.

2.1 Issues regarding Shipping

- Question regarding how many ships are used at present.
- Concern over potential contamination of marine wildlife from shipping.

2.2 Issues regarding Dust

- Concern regarding dust control and that dust must be uncomfortable for animals.

2.3 Socioeconomic/Cultural Issues

- Concern that the lack of Inuit supervisors make it more difficult for Inuit employees due to language differences.
- Concern that the cultural orientation given to southern employees isn't taken seriously.
- Concerns over racism against Inuit at Baffinland and concerned that there is a double standard in how they are treated.
- Concern managers were not given training in Inuit culture.
- Concern that young people are eager to work at the mine but after a few months want to quit, and there is no examination as to why: is it the 2 week in/out work schedule and being away from home, not knowing how to handle the money? Current and former employees should be surveyed to determine causes.
- Suggestion opinion polling should take place as part of social monitoring.
- Concern that spouses in Igloolik are not being asked about effects of having their spouse away from home on shiftwork and potential problems this is causing.

2.4 Issues regarding employment

- Questions regarding who is paying for training.

2.5 Other Issues

- Concerns expressed at lack of an interpreter for the Community information session.
- Question asking if royalties will change due to ore being sold to different markets.
- Concern from a former employee about lack of spill kits at 110 laydown area.

3.0 SUMMARY AND CONCLUSION

Community members from Igloolik who attended the evening information session raised questions, provided concerns and comments, and had general discussions regarding shipping, dust, employment rates, and other socioeconomic factors as was related to the Mary River Iron Mine project. The comments and concerns raised during the public information meetings were replied to by the NIRB and clarification was given by Baffinland staff when required. The comments and concerns raised will aid in the identification of items that need to be addressed or considered throughout the Mary River Iron Mine project monitoring program and through the NIRB's impact assessment of similar projects in Nunavut.

APPENDIX A – SIGN IN SHEETS

Nunavut Impact Review Board Baffinland Iron Mines Corp. – August 2018 Monitoring Igloolik Community Information Sessions


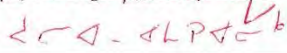
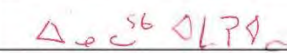
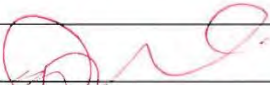
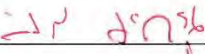

SIGN-IN SHEETS

Location: Igloolik Community Hall

Date: Aug 17, 2018

Time: Evening

Page No:

Name (Please Print)	Organization or Community	Signature
Celestino Uyarak	Mayor of Igloolik	Celestino Uyarak
Mary Kuruk	Teacher	Mary Kuruk
JERRY ITTIRIK	Hunter	Jerry Ittirik
		
Eulalie		
RICHARD ANAGUALIK	HAMLET OF IGLOOLIK	Richard Anagualik
Alex Chaitine	GN	Alex Chaitine
DEGA CHAITINE	GN	Dega Chaitine
PETER KUNUK	CO-OP EMPLOYEE	Peter Kunuk
Rolanda Hannilay	Igloolik	Rolanda Hannilay
		
	Igloolik	
		Moshi Kakerik
Joseph Kikutay	" "	Joseph Kikutay
Lazarus Inupssuk	Igloolik	Lazarus Inupssuk
Dennis Jr Tagosook	Igloolik	Dennis Jr Tagosook

APPENDIX B – NIRB PRESENTATION

<p>NUNAVUT IMPACT REVIEW BOARD UPDATE ON THE MARY RIVER IRON MINE PROJECT MONITORING PROGRAM</p> <p>መጻዕፉ ላይ በሰርቲፊኬት ይጠቀሳል ኃይለማርያም አብነት ማህበረ ባለሙያዎች የተቀረቡት መሆናቸውን ያሳያል</p> <hr/> <p>Community Information Session Igloodlik, NU August 17, 2018</p> <p>መረጃ ስልክ ላይ በሰርቲፊኬት ይጠቀሳል ሰኔ 17, 2018</p> 	<p>Outline ልማት</p> <ul style="list-style-type: none"> What is NIRB? Why are we here today? The Mary River Project NIRB Monitoring Program Site visits observations (2017/2018) Public Participation in the NIRB Process Updates on modification/amendments Questions and Feedback
<p>WHAT IS THE NUNAVUT IMPACT REVIEW BOARD? የሚጠቅም የአስተዳደር ምክር ቤት የአስተዳደር ምክር ቤት</p> <ul style="list-style-type: none"> An institution of public government created under the Nunavut Agreement. The NIRB's mission is to protect and promote the well-being of the Environment and Nunavummiut through the impact assessment process. 	<p>WHAT DOES THE NIRB DO? የሚጠቅም የአስተዳደር ምክር ቤት የአስተዳደር ምክር ቤት</p> 
<p>WHY ARE WE HERE? ለምን እንዴት እንደሚሰራ</p> <ul style="list-style-type: none"> Present: NIRB's update on the monitoring of the Mary River Project Explain: NIRB's monitoring process for this project. Ask: What are your concerns about the project? Listen: Your questions, comments, and concerns Assess: Using the information you share 	 <p>MARY RIVER PROJECT PROJECT CERTIFICATE NO. 005 NIRB FILE NO. 08MN053</p>

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Project Development Status

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- > 2017 marked the third season of open water shipping of iron ore
- > 4.04 million tonnes of Iron ore shipped between August 2 and October 17, 2017.
- > 4.54 million tonnes mined and hauled using the Tote Road (exceedance of the approved limits by 7.5%).

Key Project Activities

- Expansion of the crusher pad storage area
- Expansion of the ore stockpile storage area
- Construction of an additional truck wash building
- Replacement of accommodation camps.

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- የብረት ማቆራረጫ ስፋት ማስፋት
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Operational Challenges

1. Stable iron ore price in 2017 (\$72/t)
2. Expanded market to ore buyers in U.K and Japan etc.
3. Some instances of non-compliance with authorizations:
 - (a) Port construction Camp site lay-down pad: INAC issued a "Stop work order" for the pad that was built overtop a stream.
 - (b) Waste Rock Facility (WRF): Minor water quality parameters exceedances was noted from discharges from WRF pond



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Hours of Training Completed					
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Employee Ethnicity ሰራተኛው ሰው ባሉበት ስራ	2013	2014	2015 (Q4)	2016	2017
Inuit ሰራተኛ	174,365	379,606	75,526	277,454	321,026
Non-Inuit ሌሎች	688,698	1,488,276	354,718	1,604,052	2,059,964
Total ጠቅላላ	863,177	1,867,882	430,244	1,881,506	2,380,990

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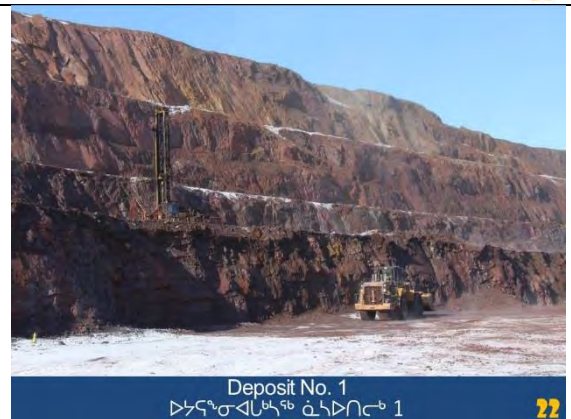
- [illegible]



OBSERVATIONS BASED
ON
NIRB SITE VISIT

ኖቬምበር 17-20, 2018 (Winter visit)
ጥቅምት 24-28, 2017 (Summer visit)

ጥቅምት 17-20, 2018 (ፕላንቲንግ ፕላንቲንግ)
ጥቅምት 24-28, 2017 (ፕላንቲንግ ፕላንቲንግ)



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- Baffinland notified NIRB that its 2017 road haulage would exceed (by 5-7%) the 4.2Mt/a limit established by the Mary River Project Certificate.

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- Baffinland shall not exceed 20 ore carrier transits to Steensby Port per month during the open water season and 242 transits per year in total.

- In any given calendar year, the total volume of ore shipped via Milne Inlet, shall not exceed 4.2 million tonnes.

- In any given calendar year, the total volume of ore transported by truck on the Milne Inlet Tote Road shall not exceed 4.2 million tonnes

4. የግብርና ሚኒስቴር የግብርና ሚኒስቴር የግብርና ሚኒስቴር የግብርና ሚኒስቴር
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BAFFINLAND'S PHASED DEVELOPMENT APPROACH

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- The Phase 2 Proposal
 - *Assessment Paused*
- The Production Increase Proposal
 - *Assessment Underway*

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- The Production Increase Proposal
 - *Assessment Underway*

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- $\sigma^b \sigma^a \sigma^b \sigma^a \sigma^b \sigma^a$
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NIRB WANTS TO HEAR FROM YOU!

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- What do you think about the Project?
- Comments, questions or concerns
- What environmental components are important to you?
- What potential effects do you think this Project might have on the land, animals, and people?

- ንጹህ ልማተን ለማስፈጸም
- የኮንስትራክሽንና ልማት ሰራተኞች
- ልማት ሲያከናውኑ ሊፈጠሩ ይችላሉ
- ንጹህ አካባቢና ሕይወት
- ሰላም
- ሕይወትና ሰነድ ላይ ያልተገለጹ ምንም ዓይነት ለውጦች ሊኖሩ ይችላሉ።

Fill out a NIRB
comment form!

የፍርድ ቤት ማስቀመጫ
ፎርም በዚሁ ሂደት ይገኛል።

- Comments, questions or concerns

- What environmental components are important to you?

- What potential effects do you think this Project might have on the land, animals, and people?

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Fill out a NIRB comment form

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How can you get involved?

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<ul style="list-style-type: none">• Provide feedback this evening• Review Baffinland's 2017 Annual Report: www.nirb.ca/project/123910• Submit written comments and questions: info@nirb.ca• Phone the NIRB's office toll-free: 1-866-233-3033	<ul style="list-style-type: none">• ይህንን ሪፖርት በይፋ ማጥናትና ምላሽ መስጠት• የ2017 ዓ.ም. የባፕቢን አመተ ሪፖርት በድህረ ገጽ www.nirb.ca/project/123910 ላይ ማጥናት• ምላሽ እና ጥያቄዎችዎን በጽሑፍ ማስተካከል ወይንም ኢሜል info@nirb.ca ላይ መውሰድ• የባፕቢን ኃላፊነት ማጥናትና ምላሽ ማስተካከል በጽሑፍ ወይንም በስልክ በጽሑፍ ቁጥር 1-866-233-3033
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- Review Baffinland's 2017 Annual Report: www.nirb.ca/project/123910

- የዋጋ ጋብሮ ረጅሞች 2017 ልዩ ጋብሮ ስምምነት ሰነድ:
www.nirb.ca/project/123910

- 2019-2020 ሰብአዊ ምርጫ
ፈረደውም ስለሚገኝ ምርጫ ምክር ቤቱ
ፈረደውም: info@nirb.ca

- Եթե ձեր խոսքը չի փոխվում, ինչպես
որոշեցիք, ձեր խոսքը չի փոխվում
ձեր խոսքի մասին 1-866-233-3033

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THANK YOU
ኃይለማርያም
QUESTIONS & ANSWERS
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APPENDIX C – WRITTEN COMMENTS

GENERAL COMMENTS FORM FOR PUBLIC MEETING NIRB Monitoring of Baffinland Iron Mine Corp.'s Mary River Mine

Indicate your concerns about the project proposal:

- | | |
|--|---|
| <input type="checkbox"/> no concerns | <input checked="" type="checkbox"/> traditional uses of land |
| <input type="checkbox"/> water quality | <input type="checkbox"/> Inuit harvesting activities |
| <input type="checkbox"/> terrain disturbance | <input type="checkbox"/> community involvement and consultation |
| <input checked="" type="checkbox"/> air quality | <input type="checkbox"/> local development in the area |
| <input checked="" type="checkbox"/> terrestrial wildlife and their habitat | <input type="checkbox"/> tourism in the area |
| <input checked="" type="checkbox"/> marine mammals and their habitat | <input checked="" type="checkbox"/> human health issues |
| <input checked="" type="checkbox"/> birds and their habitat | <input type="checkbox"/> Transboundary effects |
| <input checked="" type="checkbox"/> fish and their habitat | |
| <input type="checkbox"/> heritage resources in the area | other: _____ |

Please indicate if there are any additional concerns with this project:

Marine animals in and around
Stens Bay Inlet, Fishes around areas

Do you have any specific questions or comments with respect to this project or the Nunavut Impact Review Board?

Would the shipping go all year?
Does other Southern Baffin communities
has concerns? Kimmirut, Cape Dorset and
Coral Harbour

Your Name: Celestina Uggak Organization: Mayor
Signature: Celestina Uggak Date: Aug 17, 2018

GENERAL COMMENTS FORM FOR PUBLIC MEETING
NIRB Monitoring of Baffinland Iron Mine Corp.'s Mary River Mine

Indicate your concerns about the project proposal:

- | | |
|--|--|
| no concerns | traditional uses of land |
| water quality | Inuit harvesting activities |
| terrain disturbance | community involvement and consultation |
| air quality | local development in the area |
| terrestrial wildlife and their habitat | tourism in the area |
| marine mammals and their habitat | human health issues |
| birds and their habitat | Transboundary effects |
| fish and their habitat | |
| heritage resources in the area | other: _____ |

Please indicate if there are any additional concerns with this project:

Dust seems to be going everywhere to the water, animals and plants. It concerns me if it is healthy for animals on the land or in the water. If there is a dust control, it would help to save some animals. Breathing the dust is very unhealthy.

Do you have any specific questions or comments with respect to this project or the Nunavut Impact Review Board?

Your Name: May Organization: teacher
 Signature: [Signature] Date: Aug 17/18

GENERAL COMMENTS FORM FOR PUBLIC MEETING
NIRB Monitoring of Baffinland Iron Mine Corp.'s Mary River Mine

Indicate your concerns about the project proposal:

no concerns	traditional uses of land
water quality	Inuit harvesting activities
terrain disturbance	<input checked="" type="checkbox"/> community involvement and consultation
air quality	local development in the area
terrestrial wildlife and their habitat	tourism in the area
marine mammals and their habitat	human health issues
birds and their habitat	Transboundary effects
fish and their habitat	
heritage resources in the area	other: _____

Please indicate if there are any additional concerns with this project:

Do you have any specific questions or comments with respect to this project or the Nunavut Impact Review Board?

TO BE MORE ORGANIZED, BY HAVING A TRANSLATOR
FOR THE UNILINGUAL PEOPLE

Your Name _____ **Organization:** _____
Signature: _____ **Date:** _____