2014-2015 Annual Monitoring Report
for
Baffinland Iron Mines Corp.'s Mary River Project

Nunavut Impact Review Board
File No. 08MN053
October 2015

Report title:	The Nunavut Impact Review Board's 2014-2015 Annual Monitoring Report for the Mary River Project (NIRB File No. 08MN053)
Project:	Mary River Project
Project location:	Qikiqtani Region, Nunavut
Project owner:	Baffinland Iron Mines Corporation 2275 Upper Middle Road East, Suite 300 Oakville, ON L6H 0C3
Monitoring Officer:	Solomon Amuno
Monitoring period:	September 2014 – September 2015
Date issued:	October, 2015
Cover photo:	View of ore stockpiles, Milne Inlet dock area and aerial view of site

TABLE OF CONTENTS

1 INTRODUCTION

The Nunavut Impact Review Board (NIRB or Board) Project Certificate [005] was issued for the Mary River Project on December 28, 2012 following an extensive public review of the ecosystemic and socio-economic effects of the proposed project, and pursuant to Section 12.5.12 of the Nunavut Land Claims Agreement (NLCA).

On January 13, 2013 Baffinland Iron Mines Corporation (Baffinland or the Proponent) applied to the NIRB to for the Early Revenue Phase (ERP) proposal, which included amendments to its project development activities and schedule. The Board determined that it was appropriate to assess the potential ecosystemic and socio-economic effects of the ERP and to reconsider, under Section 12.8.2 of Article 12 of the NLCA, modifications to the terms and conditions of the original Project Certificate to reflect the potential effects of the ERP proposal.

Following a thorough reconsideration process, on March 17, 2014 the NIRB issued its public hearing report to the Minister of Aboriginal Affairs and Northern Development for the ERP proposal. The report indicated 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 Article 12 of the NLCA, 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 required to monitor the Mary River Project in accordance with Section 12.7.1 and 12.7.2 of the NLCA and as outlined within the Mary River Project Certificate. As a result, this report has been prepared to provide findings for the 2014-2015 monitoring period with respect to Baffinland's compliance with the terms and conditions of the Mary River Project Certificate, and the adequacy of the monitoring program to mitigate the potential ecosystemic and socio-economic impacts of the Project.

1.1 Project description

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 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 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. 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 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.

1.2 Project Development Status

Baffinland reported[1] that its operational activities for 2014 focused on construction of project infrastructures approved under the original Project Certificate and that specific to the ERP following amendment of the Project Certificate. During the first half of 2014, Baffinland reported that it procured equipment and materials, which were delivered to Milne Port during the open water shipping season to allow for ERP construction.

In the second half of the year, Baffinland reported that construction of infrastructure specific to the ERP, such as the ore dock at Milne Port continued, and that in September, mining activities commenced at Deposit No. 1, with trucks hauling ore along the Tote Road and stockpiling ore at Milne Port. Baffinland reported that it continued with implementation of its construction-phase environmental monitoring programs, and that by the end of 2014 the following activities were completed at various Project locations as indicated below: [2]

Activities at Mine site

- Construction and installation of the waste rock haul road, waste rock pad, drainage ditches, crusher pad, ore stockpile pad area and settling pond;
- Receipt of mobile equipment for materials handling, maintenance and site services;
- Installation and commissioning of an explosives emulsion plant;
- Construction of the haul road to the open pit as well as development of the preliminary Deposit No. 1 pit benches, continued extraction from quarry QMR2 and development of quarries D1Q1 and D1Q2;
- Set up crushing and screening mobile equipment and installation of a concrete batch plant;
- Airstrip upgrades, including extension of the airstrip and installation of an aerodrome office, field electrical center, airfield lighting, power generation and fuel supply systems;
- Installation and commissioning of services buildings, including maintenance shop, warehouse, welding shop, workshop and washer buildings;
- Installation of power generation systems; and
- Construction and commissioning of a steel tank bulk fuel storage facility at the Mine site and fuel transfer from Milne to the new fuel storage facility at the Mine site.

Activities along Tote Road

- Continued upgrade and maintenance of road to improve safety and reduce environmental risk, including:
    - Alignment corrections to improve sight distances and to reduce the potential road/vehicle departures, and grade reductions at steep hills to accommodate heavily loaded trucks; and
    - Installation of four (4) new single span bridges;
- Drainage improvements, including culvert installations, ditch construction and installation of sediment and erosion control measures;

[1] Pages 4 through 9 of 2014 Annual Report to the NIRB (March 2015)
[2] Refer to Executive Summary of 2014 Annual Report to the NIRB (March 2015)

- Development of Quarries Q7, Q11, Q19 and borrow pits P1, Km 97, Km 98, Km 1/2 and Km 103/104 to provide aggregate for upgrades;
- Crushing of aggregate, haul and placement on the roadbed as required; and
- Transport of fuel and supplies stored at Milne Port to the Mine Site.

Activities at Milne Port

- Placement of remaining earth/rock fill for laydown areas, the concrete batch plant pad, and local site roads;
- Installation of buildings, including emergency services, concrete batch plant building, a maintenance building, workshop office, welding shop and workshop office;
- Installation of power generation systems and completion of project-wide communication and information technology infrastructure;
- Construction and commissioning of one 12 million litres (ML) P-50 diesel fuel steel storage tank and one 750,000ML Jet-A fuel storage tank;
- Construction of hazardous waste containment area for storage of hazardous wastes, waste disposal landfarm, contaminated snow dump and containment pad;
- Unloading of equipment and materials from seven (7) sealift vessels during the open water season;
- Three tanker deliveries of fuel in August-September in which approximately 25 ML of P-50 diesel fuel and 1.7 ML of Jet-A fuel was transferred to the Milne Port fuel steel tank bulk fuel storage facility;
- Waste material transport to southern Canada for disposal in licensed waste disposal facilities, and discharge of treated sewage effluent stored in the PWSP at the Milne Port Camp into Milne Inlet;
- Decommissioning of the bladder fuel storage facility at Milne Port and backhauling the remaining bladder along with other hazardous waste to a licensed disposal facility in Southern Canada; and
- Geotechnical drill program to support the construction of the ore dock at Milne Port and construction of the ore dock commenced in the summer of 2014.

Baffinland reported that no development activities were undertaken along the proposed railway area or at Steensby Port in 2014, and that operations of the approved project would remain subject to various permits, licences, and authorizations for implementation of the ERP.

1.3 Current Regulatory Instruments for the Approved Project

Baffinland reported that the following regulatory instruments and authorizations were applicable to various project activities undertaken in 2014 for the Mary River Project:

Qikiqtani Inuit Association

- Inuit Owned Land Commercial Lease Q13C301

Baffinland obtained a 30-year Commercial Lease from QIA on September 6, 2013 to allow for the construction and operation of the Project on Inuit Owned Land (IOL), including a Quarry Concession Agreement for the development of rock quarries and borrow areas on IOL until December 31, 2043.

Nunavut Water Board

- Type "A" Water Licence (No. 2AM-MRY1325) for Mine Development:

Baffinland noted that its Type A Water Licence No. 2AM-MRY1325 was issued by the Nunavut Water Board (NWB) in June 2013 and is current until June 2025. An application to amend the Type A Water Licence to account for activities approved for the ERP was submitted to the NWB on July 16, 2014; on July 31, 2015 the NWB issued an Amended Water licence (2AM-MRY 1325/Amendment No. 1) to Baffinland.

Type B Water Licences

- Type B Water Licence 8BC-MRY1314: was issued for a term of one year from May 2013 to May 2014 in order to allow for early construction works to commence on the Project prior to issuance of the Type A Water Licence, and that this licence is now expired.
- Type B Water Licence 2BB-MRY1114: authorized Baffinland to conduct operations within its existing exploration facilities until its expiration, and replacement by 2BE-MRY1421.
- Type B Water Licence 2BE-MRY1421: was issued in April 2014 and covers exploration facilities and other activities not covered under the Type A Water Licence and remains valid until 2021.
- Type B Water Licence 8BC-MRY1416: was issued in August 2014 as a temporary licence in order to allow for ERP related activities pending an amendment to Baffinland's Type A Water Licence.

Aboriginal Affairs and Northern Development Canada

- Lease 47H16-1-2 Foreshore Area for Milne Port Ore Dock

Baffinland reported that a Crown Land Lease (47H16-1-2) was obtained for the area of the Milne Port and ore dock in order to allow for the construction, operation, maintenance and reclamation of an ore dock for 21 years. The subsequent land use permit N2014X0012 also covers operations of the dock.

- Land Use Permit N2014Q0016 Tote Road and Borrow Area 1

Land use permit N2014Q0016 was issued by AANDC, and covers approximately five km section of the Tote Road over crown land, as well as one of the borrow areas on crown land.

- Land Use Permits for Steensby Camp and Bruce Head

Baffinland indicated that Land Use Permit N2014C0013 was renewed covering the Steensby camp area, and that a new land use permit (N2014J0011) was issued in 2014 for the monitoring camp at Bruce Head in Milne Inlet.

Department of Fisheries and Oceans

- Authorization 06-HCAA-CA7-0084 for Crossings along the Tote Road

In 2007, Baffinland obtained authorization 06-HCAA-CA7-0084 under the *Fisheries Act*, to allow for the installation of watercourse crossings in fish bearing waters along the Milne Inlet Tote Road. Baffinland indicated that the authorization is valid and amended to include monitoring and reporting to DFO annually.

- Letter of Advice NU-07-0050 for Upgrades to the Tote Road Crossings

DFO issued a letter of advice to Baffinland, which included mitigation measures to be applied to avoid serious harm to fish and fish habitat regarding the culvert and bridge construction along the Milne Inlet Tote Road in 2014.

- Ore dock Construction Authorization 14-HCAA-00525

Authorization 14-HCAA-00525 was issued by DFO to Baffinland in order to allow for the construction of the ore dock under the new *Fisheries Act* legislation for serious harm, and prescribed offset measures for the replacement of fish habitat lost due to the dock construction.

Transport Canada

- Approvals under the *Navigable Waters Protection Act*

TC issued approvals under the *Navigable Waters Protection Act* for construction of watercourse crossings within four watercourses along the Milne Inlet Tote Road (BG50, CV128, CV217, and CV223), as well as for new bridge crossings and culverts on the Tote Road constructed in 2014.

Natural Resource Canada

- Licence under the *Explosive Act*

Natural Resource Canada issued Baffinland's explosive contractor a Division 1 Factory Licence to allow for the construction of the emulsion plant at the Mine site.

Workers' Safety and Compensation Commission

- Approvals under *Nunavut Mine Health and Safety Act*

Baffinland reported that its construction contractors have obtained all necessary permits and authorization for health and safety administered by Workers' Safety and Compensation Commission.

2 MONITORING ACTIVITIES

The NIRB's monitoring program is focused on compliance and effects monitoring in order to determine the extent that the land or resource use in question is carried out within the predetermined terms and condition as stipulated pursuant to section 12.7 of the NLCA and within the Mary River Project Certificate. The monitoring program may also contribute the information base necessary for agencies to enforce terms and conditions of land or resource use approvals.

2.1 Compliance with Reporting Requirements

During the 2014–2015 monitoring period, Baffinland demonstrated compliance with most of the reporting requirements in accordance with the Project Certificate. As part of Baffinland's commitment towards mitigating the potential ecosystemic impact of the Mary River Project, the following materials were submitted to the NIRB for the current monitoring period:

a. Air Quality and Noise Abatement Management Plan
b. Cultural Heritage Resource Protection Plan
c. 2014 Annual Terrestrial Monitoring Report
d. Health and Safety Management Plan
e. Human Resource Management Plan
f. Terrestrial Environment Management and Monitoring Plan
g. Stakeholder Engagement Plan

h. Road Management Plan
i. Shipping and Marine Wildlife Management Plan
j. Blasting Management Plan
k. Borrow Pit and Quarry Management Plan
l. Borrow Source Management Plan
m. Quarry Management Plan
n. Emergency Response Plan
o. Spill Contingency Plan
p. Environmental Protection Plan
q. Fresh Water Sewage Wastewater Management Plan
r. Hazardous Material Management Plan
s. Surface Water Management Plan
t. Aquatic Effects Monitoring Plan
u. Waste Management Plan
v. Life of Mine Waste Rock Management Plan
w. Exploration Spill Contingency Plan
x. Polar Bear Safety Plan
y. Gaseous Emissions Monitoring Report
z. 2014 Water and Sediment Quality CREMP Monitoring Report
aa. Stream Diversion Barrier Monitoring Report
bb. 2014 Marine Environmental Baseline Studies in Milne Inlet
cc. Bruce Head Shore Based Monitoring Report
dd. Labour Market Report
ee. Socio-economic Effects of Mine Closure Report
ff. East Bay Island 2014 Field Season Report
gg. Hudson Strait Survey 2014 Field Season Report
hh. Thick Billed Murre 2014 Field Season Report
ii. Construction Summary Reports
jj. Issued for Construction Drawings (IFC)
kk. Spill Exercise Training and Deployment Report
ll. Weapons at Site Policy and Harvesting at Site Policy
mm. Working Groups Meeting Notes
nn. Site Inspection Reports and Correspondence

However, the following information or updates have not been forwarded to the NIRB as part of the monitoring for the current reporting period:

oo. Results of ash contents for the caribou pellets collected for the monitoring period (Condition 58 c). Further details regarding Baffinland's rationale for not submitting this information is discussed in other parts of this report.
pp. Information regarding disturbance effects from ship noise on marine wildlife, with specific notes on underwater sound monitoring pursuant to condition 109 of the Project Certificate.
qq. Public consultation report detailing concerns and comments from affected communities regarding natural aesthetics of the area pursuant to condition 27 of the Project Certificate.

2.2 Comment Requests on Baffinland's 2014 Annual Report

On March 31, 2015 the NIRB received Baffinland's 2014 Annual Monitoring Report for the Mary River Project. The NIRB circulated the report to its distribution list and requested that interested parties provide comments within their areas of expertise or jurisdiction as related to both effects and compliance monitoring. The NIRB received comments from the following parties regarding Baffinland's 2014 Annual Monitoring Report:

- Qikiqtani Inuit Association
- Government of Nunavut
- Aboriginal Affairs and Northern Development Canada
- Environment Canada
- Department of Fisheries and Oceans
- Transport Canada

The comments received identified specific areas that may require further attention or discussion in addressing environmental and socio-economic concerns resulting from the development of the Mary River Project. In addition, the NIRB requested that Baffinland provide a response to a number of the comments received; the comments and Baffinland's responses have been considered throughout the remainder of this report. Refer to Section 2.4 of this Report for further details regarding authorizing agencies comments on effects and compliance monitoring of the Mary River Project for 2014.

2.3 Compliance with the NIRB Project Certificate

During the 2014-2015 reporting period, Baffinland complied with most of the requirements of the Project Certificate which were relevant and applicable to the current phase of the Mary River Project. The following section summarizes Baffinland's compliance status with respect to term and conditions of Project Certificate 005.

2.3.1 **Meteorology and Climate (including Climate Change)**

Condition 1

"The Proponent shall use GPS monitoring or a similar means of monitoring at both Steensby Port and Milne Port, with tidal gauges to monitor the relative sea levels and storm surges at these sites."

Condition 83

"The Proponent shall install tidal gauges at the Steensby Inlet Port and Milne Inlet Port sites to monitor relative sea level and storm surges."

The Proponent is required to annually report monitoring results of sea levels and storm surges at both Steensby Port and Milne Port. Within its 2014 Annual Report[3] to the NIRB, Baffinland reported that a tidal gauge was installed in Milne Port as of August 2014, and that data retrieval from the gauge was not possible due to ice conditions. Baffinland also reported that tides at Steensby were not specifically monitored in 2014 due to the lack of an established presence and

[3] Refer to page 41 of 105 of the 2014 Annual Report Submitted to the NIRB (March 2015)

activities at Steensby Port, and that data retrieval from the Milne Port gauge was anticipated in July or August 2015.

Condition 2

> *"The Proponent shall provide the results of any new or revised assessments and studies done to validate and update climate change impact predictions for the Project and the effects of the Project on climate change in the Local Study Area and Regional Study Area as defined in the Proponent's Final Environmental Impact Statement."*

Condition 3

> *"The Proponent shall provide interested parties with evidence of continued initiatives undertaken to reduce greenhouse gas emissions."*

Pursuant to condition 2 of the Project Certificate, the Proponent is required to provide new or revised assessments and studies on information regarding climate change impact predictions, and effect of the project on climate change. Baffinland reported[4] on the submission of its 2014 greenhouse gas (GHG) emissions, noting no studies or results are currently available to validate climate change impact prediction for the Project area. However, with respect to initiatives to reduce GHG emissions pursuant to condition 3, Baffinland noted[5] that this was ongoing, and that initiatives would be developed as the project progresses. Baffinland also reported it would ensure that the mobile and power generation equipment procured for its operations meets current standards and regulatory requirements for minimizing GHG emissions.

Condition 4

> *"The Proponent shall endeavour to include the participation of Inuit from affected communities and other communities in Nunavut when undertaking climate-change related studies and research."*

Within its 2014 Annual Report to the NIRB, Baffinland indicated it will endeavor to involve Inuit at all levels of research and monitoring;[6] however for the 2014 monitoring period Baffinland indicated no climate change related studies or research were undertaken.

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"*

Baffinland is required to implement 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. Within its 2014 annual report to the NIRB,[7] Baffinland noted that weather related information as pertaining to the Project site is being displayed for public access on the Company's website.

[4] Refer to Section 7.2.1.2 of the 2014 Annual Report Submitted to the NIRB (March 2015)
[5] Refer to Section 7.2.1.1 of the 2014 Annual Report Submitted to the NIRB (March 2015)
[6] Refer Section 7.2.1.1 of the 2014 Annual Report Submitted to the NIRB (March 2015)
[7] Refer to Section 7.2.1.1 of the 2014 Annual Report Submitted to the NIRB (March 2015)

2.3.2 **Atmospheric Environment**

Condition 6

> *"The Proponent shall provide the results of any emissions calculations conducted to determine the level of sulphur dioxide (SO2) emissions, nitrogen oxide (NOX) emissions and greenhouse gases generated by the Project using fuel consumption or other relevant criteria as a basis".*

Pursuant to condition 6 of the Project Certificate, Baffinland is required to provide results of emissions, particularly for sulphur dioxide (SO_2), nitrogen oxide (NO_x) and greenhouse gases generated from the Project areas. Baffinland reported that the emissions generated from the Project varied between equipment types used onsite, and that it conservatively estimated emissions based on fuel consumption by equipment with the highest emission factors, such as front-loaders. Baffinland reported[8] that emission estimates for SO_2 and NO_x were 1.6 tonnes and 147.4 tonnes respectively, and that in 2014 the Mary River Project consumed about 22,875,335 litres (L) of diesel fuel and 1,731,895 L of Jet A fuel.[9]

Condition 7

> *"The Proponent shall update its Air Quality and Noise Abatement Management Plan to provide for continuous monitoring at land-based monitoring stations designed to capture operations phase ship-generated SO2 and NO2 emissions at Steensby Port and Milne Port. Continuous monitoring is to be carried out through several shipping seasons at each port as required to determine that emissions are at acceptable levels."*

Baffinand reported that it implemented land based emission (SO_2 and NO_x) monitoring at the Mine site and Milne Port site, and that no emission monitoring was been undertaken along the proposed railway area and at Steensby Port.[10] Baffinland also noted that its Air Quality and Noise Abatement Management Plan was revised within the annual review of update of all project plans.

Condition 8

> *"The Proponent shall demonstrate through monitoring of air quality at the mine site and at the Steensby Inlet and Milne Inlet port sites that SO2 and NO2 emissions remain within predicted levels and, where applicable, within limits established by all applicable guidelines and regulations. In cases where exceedances are manifested, the Proponent shall provide an explanation for the exceedance, a description of planned mitigation, and shall conduct additional monitoring to evaluate the effectiveness of mitigative measures."*

The Proponent is required to ensure that emissions remain within predicted levels at the Mine site, Milne Port, and at Steensby Port, and where applicable, within limits established by all applicable guidelines and regulations. Baffinland's 2014 Annual Report indicated that emission monitoring for SO_2 and NO_2 were undertaken at Milne Port and Mine site respectively, but not at the Steensby Port

[8] Table 7.1 of the 2014 Annual Report submitted to the NIRB (March 2015)
[9] Section 7.2.1.2 of the 2014 Annual Report Submitted to the NIRB (March 2015)
[10] Section 7.2.1.2 of the 2014 Annual Report Submitted to the NIRB (March 2015)

area. Baffinland reported that its 2014 gaseous emission monitoring at both the Mine site and Milne Port generated the following results and conclusions:[11]

- SO_2 levels were below Nunavut ambient air quality standard;
- NO_2 levels at Milne Inlet were within the standard; and
- NO_2 levels at the Mine site have been relatively high, however within the standards for the 1-hr and 24-hr averaging periods, but trending toward exceeding the annual average standard.

Additionally, Baffinland reported that the Mine site had an average NO_2 concentration of 40.1 parts per billion (ppb) for three-month monitoring period (November 10, 2014 to February 25, 2015) which exceeded the annual standard of 32ppb, and that there is plan to undertake another three-month monitoring period during the summer (June-August) to allow for compassion of results between winter and summer.

Condition 9

> *"The Proponent shall provide calculations of greenhouse gas emissions generated by activities at the Steensby Inlet and Milne Inlet port sites and other Project sources including aircraft associated with the Project. Calculations shall take into consideration, fuel consumption as measured by Baffinland's purchase and use as well as the fuel use of its contractors and sub-contractors."*

Baffinland reported[12] that the estimated total annual emissions of SO_2, and NO_x generated by the Mary River Project in 2014 were 1.6 tonnes and 147.4 tonnes respectively, and that the estimated[13]total emission of GHG generated from different Project sources in 2014 was 100.7 Carbon dioxide equivalent kilotonne (CO_2-eq kilotonnes) for the year.

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."

A dust monitoring program was included within the Air and Noise Abatement Management Plan[14] submitted by Baffinland, which include a plan for measuring dust fall at 34 locations on a monthly

[11] Section 7.2.1.2 of the 2014 Annual Report Submitted to the NIRB (March 2015)
[12] Section 7.2.1.3 of the 2014 Annual Report Submitted to the NIRB (March 2015)
[13] Table 7.2 of the 2014 Annual Report submitted to the NIRB (March 2015)
[14] Refer to Attachments 6 and 7 of Appendix J1-Air Quality and Noise Abatement Management Plan

basis throughout the year at each the Mine site, along the Tote road and at Milne Port. Baffinland reported that 26 dust fall monitoring stations were established in 2013, and that one year of monitoring has been completed at the 26 original stations, with future monitoring planned to investigate dust fall at all 34 sites. Pursuant to condition 10d, Baffinland submitted results[15] of its 2014 dust fall monitoring program noting the following:

Mine Site
Dustfall at stations located within the zone predicted in the FEIS/FEIS Addendum to receive a high threshold level of deposition received deposition levels within the moderate threshold range. However, it was noted that no seasonal differences in dust fall levels were observed.

Tote Road
Dustfall at stations within one (1) km of the road and within the zone predicted to receive a moderate threshold range of deposition received a moderate level of dustfall as predicted. However, it was indicated that dustfall levels were higher in the summer than winter seasons.

Milne Port
Dustfall at Milne Port stations within the zone predicted to receive a moderate threshold range of deposition received a high threshold level of deposition, exceeding the FEIS/FEIS Addendum with no seasonal differences observed. Higher dust fall levels noted was as a result of the increased level of construction activities undertaken at Milne Port in 2014.

Condition 11

"The Proponent shall develop and implement an Incineration Management Plan that takes into consideration the recommendations provided in Environment Canada's Technical Document for Batch Waste Incineration (2010)."

Condition 12

"Prior to commencing any incineration of on-site Project wastes, the Proponent shall conduct at least one stack test immediately following the commissioning of each temporary and permanent incinerator."

Baffinland reported that no additional stack testing was conducted since no new incinerators were commissioned in 2014, and that an updated Incineration Management Plan was included within the Air Quality and Noise Abatement Management Plan,[16], and submitted within the 2014 Annual Report to the NIRB.

2.3.3 Noise and Vibration Monitoring

Condition 13

"The Proponent is encouraged to work with Fisheries and Oceans Canada at the regulatory phase and to take a precautionary approach when selecting the overpressure threshold to be applied to explosives use for the protection of fish and aquatic life."

[15] Appendix L2-2014 Annual Terrestrial Monitoring Report
[16] Appendix J1-Air Quality and Noise Abatement Management Plan

A blasting management plan[17] was submitted, which included the Proponent's commitments[18] that all quarries blasting within the Project area would adhere to the Fisheries and Oceans Canada "Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters".[19] Baffinland reported that no blasting activities occurred in the marine environment in 2014, and that in consultation with the Marine Environment Working Group (MEWG) it was working to ensure compliance with this condition.

Condition 14

> *"The Proponent shall conduct noise and vibration monitoring at Project accommodations sites located at the Mary River mine site, Steensby Inlet Port site, and Milne Inlet Port site. Sampling shall be undertaken during the summer and winter months during all phases of Project development"*

Baffinland reported that it conducted noise and vibration monitoring[20] at the Mine site and Milne Inlet Port accommodations in September 2014 and in February 2015 respectively, and that occasional short-term noise level exceedances of up to 52.2 decibels (dBA) were noted at the Mine site, and 64.7 dBA at Milne Port. While the Proponent did not specify which mitigation measures[21] within its existing Air Quality and Noise Abatement Management Plan would be implemented to address Project related noise exceedances, it did report that noise levels are anticipated to be within normal range threshold once construction activities conclude at site and Project moves into the operations phase.

Condition 14a

> *"The Proponent, through coordination with the MEWG as may be appropriate, shall demonstrate appropriate adaptive management for construction activities at Milne Inlet that have the potential to disrupt marine mammal species, including pile driving and ore dock construction, are undertaken."*

Condition 14b

> *"The Proponent, through coordination with the TEWG as may be appropriate, shall demonstrate appropriate adaptive management for project activities during operations which have the potential to produce noise and sensory disturbance to wildlife and other users of project areas"*

Pursuant to conditions 14(a) and 14(b) of the Project Certificate, the Proponent is required through coordination with the MEWG and Terrestrial Environment Working Group (TEWG) to implement adaptive management strategies to mitigate potential impacts of noise to marine and terrestrial wildlife, including people during project activities. Baffinland reported[22] that noise and vibration monitoring occurred in Milne Inlet in 2014, and that it would report on the adaptive management measures being implemented for construction activities likely to cause disturbances to marine

[17] Refer to Appendix J11- Blasting Management Plan
[18] Refer to Section 2.1.0 of Appendix J11- Blasting Management Plan
[19] Wright and Hopky (1998). Guidelines for the Use of Explosives in or near Canadian Fisheries Waters
[20] Section 7.2.1.6 of 2014 Annual Report to NIRB (March 2015)
[21] Refer to Section 3 of the Air Quality and Noise Abatement Management Plan
[22] Section 7.5.6.3 of the 2014 Annual Report submitted to the NIRB (March 2015)

species during pile driving and dock construction.[23] Baffinland reported that threshold limits were placed on permissible noise levels on the marine environment under the *Fisheries Act* Authorization during the construction of the Milne ore dock. With respect to condition 14(b), Baffinland reported that compliance with this condition was in progress in consultation with the TEWG.

Condition 15

> *"The Proponent shall collaborate to the extent possible with the Qikiqtani Inuit Association and local Hamlet organizations when undertaking consultation with all affected communities regarding railway, tote road and marine shipping operations. During these consultations, it is recommended that the Proponent provide information including video, audio, and photographic representation as well as any other aids (i.e. models) that may enhance the general public's understanding of railway, tote road and marine shipping operations, as well as all safety considerations for members of the public who may be travelling around the project area."*

Baffinland noted within its submission to the NIRB[24] that it would continue to accommodate safety considerations for local residents travelling around the project area through the establishment of the Pond Inlet Interim Community Advisory Group, which includes the Hunters and Trappers Organization (HTO) and Hamlet representations. Baffinland reported that it would engage with the Marine and Terrestrial working groups in addressing this condition.

2.3.4 Hydrogeology and Hydrology Monitoring

Condition 16

> *"The Proponent shall ensure that the water related infrastructure or facilities that are designed and constructed, including the modification of culverts, diversion of watercourses, and diversion of runoff into watercourses along the railway, access roads, port sites, the Milne Tote Road, and other areas of the Project site, are consistent with those proposed in the FEIS and FEIS Addendum in terms of type, location, and scope and that the requirements of all relevant regulatory authorities are satisfied advance of constructing those facilities"*

Condition 29

> *"The Proponent shall provide to the respective regulatory authorities, for review and acceptance, for construction engineering design and drawings, specifications and engineering analysis to support design in advance for constructing those facilities. Once project facilities are constructed, the Proponent shall provide copies of the as-built drawings and design to the appropriate regulatory authorities."*

The Proponent is to ensure that all Project water related infrastructures or facilities are designed and constructed in such a manner that is consistent with those proposed in the FEIS. Baffinland noted it had submitted construction drawings[25] and summary reports[26] regarding water related infrastructures and facilities for different Project locations in accordance with the requirement of its Water Licence

[23] Section 7.5.6.3 of the 2014 Annual Report submitted to the NIRB (March 2015)
[24] Appendix E1-Concordance to PC Conditions (Page 8)
[25] Appendix B1.1 to B1.5
[26] Appendix B2.1 to B.2.11

(No. 2AM-MRY1325). Baffinland also reported that construction summary reports were submitted for different facilities such as waste management system, tank farm and dispensing package, with IFC drawings[27] completed for the two new polishing waste stabilization ponds. In addition, construction summary reports were also submitted for the Milne waste management system, tank farm, landfarm and ore stockpile pond, with Issued For Construction (IFC) drawings completed for the Milne port hazardous waste containment cell and redesign to the Milne Inlet landfarm and contaminated snow containment facility. Baffinland further reported that construction summary reports and IFCs[28] for four single lane modular bridge crossings were submitted for part of the Tote Road upgrade program to replace the pre-existing side-by-side sea-can style bridge crossings.

Condition 17

> *"The Proponent shall develop and implement effectives measures to ensure that effluent from project-related facilities and/or activities, including sewage treatment plants, ore stockpiles, and mine pit, satisfies all discharge criteria requirement established by the relevant regulatory agencies prior to being discharged into the receiving environment."*

Baffinland reported it implemented a water quality monitoring program for collection and treatment of contact water generated from mining activities, and further noted that monitoring stations for site contact water were around different facilities such as the bulk storage facility stormwater, land farm, bulk sample stockpile area, surface runoff or discharge quarries. Baffinland reported that monitoring activities for surface discharge downstream of construction area were inactive in 2014.

Condition 18

> *"The Proponent shall carry out continued analyses over time to confirm and update, accordingly, the approximate fill time for the mine pit lake identified in the FEIS."*

An Interim Closure and Reclamation Plan (ICRP)[29] was submitted by Baffinland, which indicated that an open pit is not expected to occur onsite until years 10 to 12 of operations at full production volume. Baffinland indicated that the existing mining plan and waste characterization plan (2012-2014) would inform prediction modeling of the mine pit water quality at the end of the mine life. Baffinland further indicated that it anticipated that the open pit would take an estimated 85 to 150 years to passively fill, and could be accelerated via pumping water from a nearby water source, [30], with an open pit monitoring conducted throughout the life of the Project in accordance to all Metal Mining Effluent requirements. Baffinland also noted that predictions of pit water quality would be updated throughout the life of the Project as more information becomes available on the geochemistry of the waste rock and pit wall.

Condition 19

> *"The Proponent shall ensure that it develops and implements adequate monitoring and maintenance procedures to ensure that the culverts and other conduits that may be prone to blockage do not significantly hinder or alter the natural flow of water from areas associated*

[27] Appendix B1.1 to B1.5
[28] Appendix C of Appendix B2.3-CSR-Tote Road Bridges-1 of 4
[29] Appendix J19-Interim Closure and Reclamation Plan
[30] Baffinland has identified potential water sources from Sheardown Lake, Camp Lake, Mary Lake and Mary River for Pit Fill.

with the proposed mine. In addition, the Proponent shall monitor, document and report the withdrawal rates for water removed and utilized for all domestic and industrial purposes."

Condition 47

"The Proponent shall ensure that all Project infrastructure in watercourses are designed and constructed in such a manner that they do not unduly prevent and limit the movement of water in fish bearing streams and rivers"

Baffinland indicated within its annual reporting[31] that all project infrastructure and activities that have the potential to influence any watercourse were designed and constructed in a manner that is consistent in terms of type, location, and scope with those proposed in the FEIS and as reflected in existing permits. Baffinland indicated that all construction activities are prohibited from preventing and/or restricting the movement of water in identified fish bearing streams and rivers, and that prior to the development of any new related infrastructure and facilities, geotechnical investigation would be conducted to ensure that sensitive landforms are not negatively impacted (i.e., ice-rich soils or easily erodible soil). Baffinland also reported that in 2014, bridges were installed at each of the four existing seacan crossings (CV-128, BG-50, CV-217, and CV-223) and that fish presence was yet to be confirmed at the crossings near Milne Inlet.

2.3.5 Groundwater/Surface Waters

Condition 20

"The Proponent shall monitor the effects of explosives residue and related by-products from project-related blasting activities as well as develop and implement effective preventative and/or mitigation measures, including treatment, if necessary, to ensure that the effects associated with the manufacturing, storage, transportation and use of explosives do not negatively impact the Project and surrounding areas."

Pursuant to condition 20, Baffinland noted that the effects of explosive residues and related by-products were being monitored through the Surveillance Network Program and Aquatic Effects Monitoring Program; and that in 2014, water quality monitoring was undertaken during construction, and prior to ore production, in order to assess water chemistry changes due to nitrogen compounds and ammonia at Camp Lake and tributary, as well as in the Sheardown Lake. Within its annual reporting to the NIRB, Baffinland reported[32] a slight elevation in nitrogen and ammonia concentration in each of the water bodies, noting that levels of these compounds were still below the benchmarks, except for exceedances of nitrates, aluminum and iron at Camp Lake Tributary due to quarry activities.

Baffinland also submitted quarry management plan and associated blasting management plans for Q7, Q11, Q19, P1 (borrow pit), D1Q1, D1Q2, Q1 and QMR2, which further notes the Proponent's commitment to contain sources of contamination from operations that could affect water quality, including blasting residues and spills from refueling of equipment. Additionally, a QMR2 Quarry Management Plan[33] was submitted by Baffinland, which includes commitment that blasting residue from explosive would be managed by following best practices.

[31] Section of 4.1 of Appendix J20-Surface Water Management Plan
[32] Page 65 of 105 of Section 7.4.3 of 2014 Annual Report to the NIRB (March 2015)
[33] Appendix J13.10-QMR2 Quarry Management Plan

Condition 21

"*The Proponent shall ensure that the scope of the Aquatic Effects Monitoring Plan (AEMP) includes, at a minimum:*

a. monitoring of non-point sources of discharge, selection of appropriate reference sites, measures to ensure the collection of adequate baseline data and the mechanisms proposed to monitor and treat runoff, and sample sediments; and

b. measures for dustfall monitoring designed as follows:

i. To establish a pre-trucking baseline and collect data during Project operation for comparison;

ii. To facilitate comparison with existing guidelines and potentially with thresholds to be established using studies of Arctic char egg survival and/or other studies recommended by the Terrestrial Environment Working Group (TEWG); and,

iii. To assess the seasonal deposition (rates, quantities) and chemical composition of dust entering aquatic systems along representative distance transects at right angles to the Tote Road and radiating outward from Milne Port and the Mine Site."

Baffinland reported that the scope of the Aquatic Effects Monitoring Plan[34] included plans to collect runoff from stockpiles and the open pit at the Mine site, including mine effluent discharge at two watercourses, namely Mary River and Camp Lake Tributary 1. Baffinland noted that items under part b of Condition 21 were implemented through the ongoing dustfall monitoring program described within the Terrestrial Environment Management and Monitoring Plan.[35] A summary of projects effects in 2014[36] was included within the Annual Report, which indicated that monitoring of water and sediment quality were undertaken in order to assess the influence of airborne emissions (especially ore dust), and from other site activities. Baffinland reported that in general the discharge criteria were met with the exception of occasional short-term exceedances of total suspended solids.

Condition 22

"The Proponent shall develop a detailed Sediment and Erosion Management Plan to prevent and/or mitigate sediment loading into surface water within the Project area."

Condition 26

"The Proponent shall develop and implement a comprehensive erosion management plan to prevent or minimize the effects of destabilization and erosion that may occur due to the Project's construction and operation".

Pursuant to conditions 22 and 26, Baffinland noted its submission of the Surface Water and Aquatic Ecosystem Management Plan[37], which included mitigation measures for addressing sedimentation and erosion. The Plan indicates that the Proponent would utilize flocculants such as soil conditioners and erosion control polymers and/or sediment and turbidity control applicator logs for sediment and erosion control at non-fish bearing watercourses impacted by project construction activities.

[34] Appendix J22-Aquatic Effects Monitoring Plan
[35] Appendix J7-Terrestrial Environment Management and Monitoring Plan
[36] Page 1V of XX of 2014 Annual Report
[37] Appendix J20-Surface Water Management Plan

Condition 23

"The Proponent shall develop and implement a Groundwater Monitoring and Management Plan to monitor, prevent and/or mitigate the potential effects of the Project on groundwater within the Project area."

Baffinland reported on its submission of the Surface Water and Aquatic Ecosystem Management Plan[38], which included details of its ground water monitoring program. The Plan specifically indicated that shallow groundwater monitoring stations will be installed downstream of different Project infrastructures, such as landfill, landfarm, and in other project locations where environmental risks have been identified. Baffinland also noted that the groundwater monitoring network will be established, and monitors installed in late August of 2015.

Condition 24

"The Proponent shall monitor as required the relevant parameters of the effluent generated from Project activities and facilities and shall carry out treatment if necessary to ensure that discharge conditions are met at all times"

Condition 46

"The Proponent shall ensure that runoff from fuel storage and maintenance facility areas, sewage and wastewater other facilities responsible for generating liquid effluent and runoff meet discharge requirements."

Baffinland reported[39] it had implemented a fresh water environment monitoring program, which consist of the Aquatic Effects Monitoring Program, Surveillance Network Program (SNP) and Fish Habitat Monitoring so as to address effluent parameters and discharge criteria. Baffinland specifically reported that its 2014 SNP focused on monitoring the sewage treatment plants at Milne Port and the Mine Site, including runoff from different project locations and active quarries. Baffinland also noted that a total of 31 spills were reported to the Nunavut Spill Line, including two instances of total suspended solids exceedances at two SNP stations (MS-C-E and MS-C-A) on May 31, 2014 and July 7, 2014 respectively.

2.3.6 Geomorphology and Geotechnical Investigations

Condition 25

"The Proponent shall undertake the additional geotechnical investigations to identify sensitive landforms, modify engineering design for Project infrastructure, develop and implement preventative and/or mitigation and monitoring measures to minimize the impacts of the Project's activities and infrastructure on sensitive landforms."

Within its 2014 Annual Report to the NIRB, Baffinland indicated[40] that an expert was brought on site to inspect permafrost conditions along the Tote Road and borrow source area, and that additional geotechnical investigations were undertaken to identify sensitive landforms around the future waste rock stockpile area. While Issued For Construction drawings were submitted to the Nunavut Water Board in accordance with water licence (2AM-MRY 1325) for various project

[38] Section 9.2.3 of Appendix J20-Surface Water Management Plan
[39] Section 7.4 of 2014 Annual Report to the NIRB (March 2015)
[40] Section 7.3.1.1 of 2014 Annual Report to the NIRB (March 2015)

infrastructures, the resulting geotechnical report did not confirm any occurrences of seepages, cracks or subsidence around sensitive land forms as a result of installation and operations of Project infrastructures.

Condition 28

The Proponent shall monitor the effects of the Project on the permafrost along the railway and all other Project affected areas and must implement effective preventative measures to ensure that the integrity of the permafrost is maintained.

Baffinland indicated no work occurred on the railway, noting[41] specifically that in September 2014, the Tote Road and borrow sources were subject to a geotechnical inspections. While the purpose of the inspection was to assess the condition of the road and roadside borrow pits initially excavated in 2007 and 2008 as part of the bulk sample program, Baffinland reported that several of the borrow pits had been excavated into thaw-sensitive or ice-rich soils, with a total of 101 locations along the road identified, and seven (7) % ranked as requiring a higher priority for stabilization.

2.3.7 Erosion Management, Quarry Operations and Silt Control Plans

Condition 30

"The Proponent shall develop site-specific quarry operation and management plans in advance of the development of any potential quarry site or borrow pit."

Condition 43

"Prior to the start of construction, the Proponent must submit a Site Drainage and Silt Control Plan to the appropriate regulatory authorities for approval.

The Proponent is required to develop a site-specific quarry operations and management plan and site drainage/silt control plan.[42] Baffinland noted within its submission that quarry management plans (D1Q1, D1Q2, Q1, Q11, Q19, Q7 and QMR2) and borrow source management plans (KM 2[43], 97[44], 104[45]) and Quarry Management Plan (D1Q1[46], D1Q2[47], Q1[48], Q11[49], Q19[50], Q7[51] and QMR2[52]) have been included in the annual update for water licence 2AM-MRY1325, and also submitted within the 2014 Annual Report to the NIRB. These plans address issues related to site management measures, and encompass assessment of acid rock drainage, blasting operation management, drainage management, dust, and noise as well as closure and reclamation activities. Baffinland also reported that details regarding site drainage and silt control have been included within the Surface Water Management Plan.

[41] Section 7.3.1.1 of 2014 Annual Report submitted to the NIRB (March 2015)
[42] Appendix J13 – Supplemental to 2014 Annual Report submitted to the NIRB (March 2015)
[43] Appendix J13.1-KM2 Borrow Source Management Plan
[44] Appendix J13.2-KM 97 Borrow Source Management Plan
[45] Appendix J13.3-KM 104 Borrow Source Management Plan
[46] Appendix J13.4-D1Q1 Quarry Management Plan
[47] Appendix J13.5-D1Q2 Quarry Management Plan
[48] Appendix J13.6-Q1 Quarry Management Plan
[49] Appendix J13.7-Q11 Quarry Management Plan
[50] Appendix J13.8-Q19 Quarry Management Plan
[51] Appendix J13.9-Q7 Quarry Management Plan
[52] Appendix J13.10-QMR2 Quarry Management Plan

2.3.8 **Vegetation Construction, Operations and Monitoring**

Condition 31

"The Proponent shall ensure that Project activities are planned and conducted in such a way as to minimize the Project footprint."

Condition 32

"The Proponent shall ensure that equipment and supplies brought to the Project sites are clean and free of soils that could contain plant seeds not naturally occurring in the area. Vehicle tires and treads in particular must be inspected prior to initial use in Project areas."

Condition 33

"The Proponent shall include relevant Monitoring and Management Plans within its Environmental Management System, Terrestrial Environment Management and Monitoring Plan (TEMMP)."

Baffinland reported that all project activities undertaken in 2014 occurred within the approved footprint for development,[53] and that exotic local monitoring surveillance[54] was in place to quantify direct habitat loss as well as measure area of Project disturbance. In addressing the potential for the introduction of invasive species to the Project area, Baffinland reported that all equipment to be used on site are washed and inspected prior to sealift. Pursuant to condition 33, Baffinland noted its submission of the Terrestrial Environmental Management and Monitoring Plan[55], which included relevant monitoring and mitigation measures for vegetation, birds and terrestrial wildlife (caribou and wolf), as well as adaptive strategies.

Condition 34

"The Proponent shall conduct soil sampling to determine metal levels of soils in areas with berry-producing plants near any of the potential development areas, prior to commencing operations."

Condition 35

"The Proponent shall undertake monitoring of baseline metal levels in organ tissue from caribou harvested within the local study area, prior to commencing operations. The Proponent is strongly encouraged to coordinate with local Hunters and Trappers Organizations regarding procurement of harvested caribou organs."

Pursuant to conditions 34 and 35, the Proponent is required to conduct soil sampling in areas with berry producing plants near Project development areas prior to commencing operations, as well as undertake monitoring of baseline metal levels in organ tissue from caribou harvested within the local study area, prior to commencing operations. Baffinland submitted its 2014 Terrestrial Annual Report to the NIRB, which included the results of its trace metals monitoring in soils and vegetation (lichens, willows and blue berries) and specifically with reference to distance from the Project Development Area. Baffinland also referenced the submission of its November 26, 2014 meeting notes[56] for Terrestrial Environment Working Group, where it noted that monitoring of metals in organ tissue of caribou was not a priority at this time as a result of caribou hunting ban in the North

[53] Section 7.3.1.2 of 2014 Annual Report submitted to the NIRB (March 2015)
[54] Appendix J7-TEMMP-Supplemental to 2014 Annual Report
[55] Appendix J7-TEMMP-Supplemental to 2014 Annual Report
[56] Appendix D1-TEWG 2014 Meeting Notes

Baffin region. However, a representative from the QIA indicated that hair could be useful for metal analysis and collected incidentally despite the ban on hunting.

Condition 36

"The Proponent shall establish an on-going monitoring program for vegetation species used as caribou forage (such as lichens) near Project development areas, prior to commencing operations."

Condition 37

The Proponent shall incorporate protocols for monitoring for the potential introduction of invasive vegetation species (e.g. surveys of plant populations in previously disturbed areas) into its Terrestrial Environment and Monitoring Plan. Any introductions of non-indigenous plant species must be promptly reported to the Government of Nunavut Department of Environment.

Condition 38

"The Proponent shall review, on an annual basis, all monitoring information and the vegetation mitigation and management plans developed under its Environmental Management System, Terrestrial Environment and Monitoring Plan (TEMMP) and adjust such plans as may be required to effectively prevent or reduce the potential for significant adverse project effects on vegetation abundance, diversity and health.

Condition 39

The Proponent shall develop a progressive revegetation program for disturbed areas that are no longer required for operations, such program to incorporate measures for the use of test plots, reseeding and replanting of native plants as necessary. It is further recommended that this program be directly associated with the management plans for erosion control established for the Project.

Condition 40

The Proponent shall include revegetation strategies in its Site Reclamation Plan that support progressive reclamation and that promote natural revegetation and recovery of disturbed areas compatible with the surrounding natural environment.

Baffinland reported it had implemented a long term monitoring program to assess potential changes in vegetation abundance used as caribou forage within the regional study area, and noted that the average percent plant cover of caribou forage did not differ between plots at varying distances from the development area. Regarding exotic invasive plant species monitoring, Baffinland reported within its Terrestrial Environment and Monitoring Plan [57] that its monitoring plan would focus on surveys of the Project footprint and adjacent areas every 3 to 5 years or as triggered by observations of exotic invasive plant species. Baffinland also reported[58] that adaptive strategies will be implemented when unexpected impacts are observed, and that revegetation plans, where applicable, will be included in the future site reclamation plan in concert with the Terrestrial Environment Working Group.

2.3.9 Freshwater Aquatic Environment (including Biota and Habitat)

Condition 41

[57] Table 4-2 Appendix J7-TEMMP
[58] Section 6 of Appendix J7-TEMMP

"Unless otherwise approved by regulatory authorities, the Proponent shall maintain a minimum 100-metre naturally-vegetated buffer between the high-water mark of any fish-bearing water bodies and any permanent quarries with potential for acid rock drainage or metal leaching. "

Condition 42

"The Proponent shall maintain minimum a 30-metre naturally-vegetated buffer between the mining operation and adjacent water bodies."

Pursuant to conditions 41 and 42, Baffinland is required to maintain a minimum of 100 metres (m) vegetated buffer between the high-water mark of any fish-bearing water bodies, as well as a 30m buffer between the mining operation and adjacent water bodies. Baffinland within its submitted Surface Water and Aquatic Ecosystem Management Plan, indicated that its mitigation measures will include maintaining a minimum of 100 m naturally-vegetated buffer between the high-water mark of any fish-bearing water body and all permanent quarries along the Tote Road in order to eliminate the risks of potential for acid rock drainage or metal leaching. Baffinland indicated that its mitigation measures for sedimentation and erosion[59] included measures that will ensure that disposal of debris is at least 31m away from the ordinary high-water mark to prevent sediments from entering water body.

Condition 45

"The Proponent shall adhere to the No-Net-Loss principle at all phases of the project to prevent or mitigate direct or indirect fish and fish habitat losses."

Baffinland indicated[60] that in 2014 it received approval from DFO to construct the ore dock under the new Fisheries Act legislation for Serious Harm determination, and that the associated authorization had prescribed offset measures for the replacement of fish habitat lost due to ore dock construction.

Condition 48

"The Proponent shall engage with Fisheries and Oceans Canada and the Qikiqtani Inuit Association in exploring possible Project specific thresholds for blasting that would exceed the requirements of Fisheries and Oceans Canada's Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters (D.G. Wright and G.E. Hopky, 1998)".

Condition 48a

The Proponent shall develop plans to 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, Tugaat and Qurluktuk. The Proponent shall consult with the MHTO regarding the design, timing, and location of proposed surveys and ongoing monitoring.

The Proponent reported that fulfilment of condition 48 was ongoing with discussion with the Marine Environment Working Group, and that no blasting occurred in or near fish bearing waters in 2014.

[59] Section 4.1 of Appendix J20- Surface Water Management Plan
[60] Section 5.4 of the 2014 Annual Report to the NIRB

Baffinland referenced a section[61] of its Surface Water Management Plan[62], which noted its commitment to engage with DFO and the QIA in establishing possible Project specific thresholds for blasting in or near Canadian Fisheries Waters. With respect to additional surveys for the presence of arctic char in freshwater bodies, and monitoring of arctic char health, Baffinland reported that its Core Receiving Environment Monitoring Program includes a char monitoring program intended to provide data to augment the baseline collected in 2008, 2010 and 2013.

Pursuant to condition 48a, Baffinland reported that it could not sample tissues of arctic char for metal analyses due to insufficient sample size as only 3 char samples were collected in the vicinity of Milne Port. While the Proponent did not specifically indicate how it consulted with the MHTO regarding the design, timing, and location of surveys, Baffinland noted that opportunistic sampling of char and sculpin tissue samples will be continued until results warrant an increase in sampling effort or alteration of study design.

2.3.10 **Terrestrial Wildlife and Habitat (including Monitoring)**

Condition 49

"The Proponent shall establish a Terrestrial Environment Working Group ("TEWG") which will act as an advisory group in connection with mitigation measures for the protection of the terrestrial environment and in connection with its Environmental Effects Monitoring Program, as it pertains to the terrestrial environment. Members may consider the draft terms of reference for the TEWG filed in the Final Hearing, but they are not bound by them. The role of the TEWG is not intended to either duplicate or to affect the exercise of regulatory authority by appropriate government agencies and departments."

Conditions 51

"The Proponent, either directly or as part of the TEWG, shall 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. The Proponent shall give special consideration for supporting regional studies of population health and harvest programs for North Baffin caribou which help address areas of uncertainty for Project impact predictions."

Condition 77

"A Marine Environment Working Group ("MEWG") shall be established to serve as an advisory group in connection with mitigation measures for the protection of the marine environment, and in connection with the Project Environmental Effects Monitoring program, as it pertains to the marine environment. Membership on the MEWG will include the Proponent, Environment Canada, Fisheries and Oceans Canada, the Government of Nunavut, the Qikiqtani Inuit Association and other agencies or interested parties as determined to be appropriate by these key members. Makivik Corporation shall also be entitled to membership on the MEWG at its election. The MEWG members may consider the draft terms of reference for the MEWG filed in the Final Hearing, but they are not bound by them."

[61] Section 4.4.2 of Appendix J20-Surface Water Management Plan

The Terrestrial Environment Working Group (TEWG) and Marine Environment Working Group (MEWG) have both been established with terms of reference for each having been finalized as of March 4, 2013 and March 6, 2013, respectively and have remained unchanged in 2014. Baffinland submitted its 2014 TEWG Meeting Notes[63], which indicated that meetings were held in April and November 2014 and focused on prioritizing monitoring programs, review of the Terrestrial Environment Monitoring Annual Report for group comments. Baffinland noted that the TEWG meeting reviewed work plan for terrestrial monitoring in 2014, and specifically discussed several items related to caribou surveys, harvesting/health survey, polar bear, HTO participation, dust, wolves and birds. In addition, other items discussed during the November meeting included caribou pellet collection, DNA sampling, installation of skirting on building, wildlife incident reporting, vegetation study design, harvest and hunter access.

Baffinland also reported[64] on activities of the MEWG, noting that as of October 2014, the MEWG had met for a total of four times, approximately every six months. Through the submitted MEWG Meeting Notes[65], Baffinland reported that meetings held in April and November focused on updates regarding spill modelling, progress of the Bruce Head observation study, Foxe Basin Polar Bear Survey, and general progress of the Project. Other actionable items noted during the meeting for Baffinland's follow-up include spill response in relation to Canadian Coast Guard and their coverage area for spill response, as well as coordination with DFO and EC regarding marine discharge from the stockpiles at Milne Port.

Conditions 50

"The Proponent shall continue to develop and implement Project-specific monitoring for the terrestrial environment, and will demonstrate appropriate refinements to design, incorporation of analytical methods and elaboration of methodologies. The monitoring plan shall contain clear thresholds to allow for the assessment of long-term trends and cumulative effects where project interactions are identified. Coordination and cooperation will be required where data collection, analysis and interpretation, or responsibility for mitigation and management requires the efforts of multiple parties (e.g., government, Qikiqtani Inuit Association, communities)."

Conditions 52

"Within 3 months of issuance of the Project Certificate, the Proponent shall initiate design, and develop the timeline to test and implement means of deterring caribou from pits and other hazardous areas. A review of best practices and techniques will be undertaken at other Northern mines where interactions with caribou occur. Considerations should include temporary ribbon placement, inuksuks, or fencing and subsequent monitoring for effectiveness. These activities shall be reported back to the Terrestrial Environment Working Group."

Conditions 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.

[63] Appendix D1-TEWG 2014 Meeting Notes
[64] Section 1.4 of Appendix J10-Shipping and Marine Wildlife Management Plan
[65] Appendix D2-MEWG 2014 Meeting Notes

i. *Specific measures intended to address the reduced effectiveness of visual protocols for the Milne Inlet Tote Road and access roads/trails during times of darkness and low visibility must be included.*

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. The details of these monitoring and mitigation measures shall be developed in conjunction with the Terrestrial Environment Working Group.*
c. *Evaluation of the effectiveness of proposed caribou crossings over the railway, Milne Inlet tote road and access roads as well as the appropriate number.*
d. *Development of a surveillance system along the railway corridor to identify the presence of caribou in proximity to the train tracks and operational protocols for the train to avoid collisions and enable caribou to cross the train tracks unimpeded.*
e. *Protocols for documentation and reporting of all caribou collisions and mortalities, as well as mechanisms for adaptive management responses designed to prevent further such interactions."*

Conditions 54

"The Proponent shall provide an updated Terrestrial Environmental Management and Monitoring Plan which shall include, but not be limited to the following:

a. *Details of the methods and rationale for conducting monitoring prior to the commencement of construction;*
b. *Monitoring for caribou presence and behavior during railway and Tote Road construction;*
c. *Description and justification of statistical design or other means of determining effect and proposed analyses to support the conclusions drawn from monitoring impacts of the mine and related infrastructure on wildlife;*
d. *Details of monitoring and mitigation activities, which should be established in collaboration with the Terrestrial Environment Working Group and are expected to include:*

i. *Dust fall (fugitive and Total Suspended Particulates), that addresses methods to reduce risk to caribou forage from dust fall;*
ii. *Snow track surveys during construction and the use of video-surveillance to improve the predictability of caribou exposure to the railway and Tote Road. Using the result of this information, an early warning system for caribou on the railway and Tote Road shall be developed for operation.*

e. *Details of monitoring thresholds related to level of mitigation and management;* and
f. *Details of a comprehensive hunter harvest survey to determine the effect on caribou populations and potential effects on caribou behaviour resulting from increased human access caused by upgrades to the Milne Inlet tote road (and any other roads if they are shifted from private to public use) and increase local knowledge of the mine site, including establishing pre-construction baseline harvesting data."*

Baffinland noted submissions of its Terrestrial Environmental Management and Monitoring Plan (TEMMP) and 2014 Annual Terrestrial Report, including Project commitments relevant to the Terrestrial Ecosystem Mitigation and Monitoring Plan. Several key indicators such as vegetation monitoring (exotic invasive species, vegetation health, dustfall), migratory birds (peregrine falcon, Common and King Eider, Red knot, Songbirds and Shorebirds) and wildlife (caribou and wolf) were identified within the Plan for follow-up monitoring in order to ensure that the long-term trends and cumulative effects of project interactions are identified.

Baffinland reported no observations of pit or new hazardous areas likely to harm caribou in event of interaction with the Project area, and indicated that discussion were ongoing with the Terrestrial Environment Working Group on measures to prevent mortality, development of surveillance system, and adaptive management as pertaining to caribou. Baffinland also noted that items (a) through (e) of Project condition 54 were addressed through submission of the TEMMP; and that item (f) of the condition will require the development of a hunter harvest survey, which has yet to be fully undertaken. Baffinland reported that from discussions with members of the TEWG, and in consideration of the current moratorium for North Baffin caribou, a Hunter Harvest Study is not practical or to be undertaken.

Conditions 55-56 (as related to Terrestrial Monitoring)

Pursuant to condition 55, Baffinland is required to develop an adaptive management plan for wolves and wolves' habitat in collaboration with the Government of Nunavut-Department of Environment (GN-DOE). Baffinland noted that its Terrestrial Environmental Management and Monitoring Plan address management and monitoring of wolves, and that discussions regarding adaptive management for wolves and wolf habitat were ongoing with the GN through the Terrestrial Environmental Working Group (TEWG). Baffinland reported observation of only one wolf den within the regional study area, and noted that the implementation of a wolf-specific monitoring program was currently unfeasible owing the low sample size. However, should additional dens be identified within 10 kilometres of Project infrastructures, Baffinland indicated that the monitoring program could be revisited. With the respect to condition 56, Baffinland reported that its reclamation strategies will evolve over the life of the Project and will be informed by best practices, regulatory consultation with the TEWG, as well as through available reclamation knowledge and site specific considerations.

Conditions 57

"The Proponent shall report annually regarding its terrestrial environment monitoring efforts, with inclusion of the following information:

a. *Description of all updates to terrestrial ecosystem baseline data;*
b. *A description of the involvement of Inuit in the monitoring program;*
c. *An explanation of the annual results relative to the scale of the natural variability of Valued Ecosystem Components in the region, as described in the baseline report;*
d. *A detailed presentation and analysis of the distribution relative to mine structures and activities for caribou and other terrestrial mammals observed during the surveys and incidental sightings;*
e. *Results of the annual monitoring program, including field methodologies and statistical approaches used to support conclusions drawn;*
f. *A summary of the chronology and level of mine activities (such as vehicle frequency and type);*
g. *An assessment and presentation of annual environmental conditions including timing of snowmelt, green-up, as well as standard weather summaries; and*
h. *A discussion of any proposed changes to the monitoring survey methodologies, statistical approaches or proposed adaptive management stemming from the results of the monitoring program."*

Condition 58

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

a. *An examination for trends in the measured natural variability of Valued Ecosystem Components in the region relative to the baseline reporting;*
b. *A detailed analysis of wildlife responses to operations with emphasis on calving and post-calving caribou behaviour and displacements (if any), and caribou responses to and crossing of the railway, the Milne Inlet Tote Road and associated access roads/trails;*
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;*
d. *A demonstration and description of how the monitoring results, including the railway, road traffic, air traffic and dustfall contribute to cumulative effects of the project;*
e. *Any proposed changes to the monitoring survey methodologies, statistical approaches or proposed adaptive management stemming from the results of the monitoring program;*
f. *Any updates to information regarding caribou migration trails. Maps of caribou migration trails, primarily obtained through any new collar and snow tracking data, shall be updated (at least annually) in consultation with the Qikiqtani Inuit Association and affected communities, and shall be circulated as new information becomes available."*

Baffinland reported that its Terrestrial Environmental Management and Monitoring Plan (TEMMP) has addressed items (a-h) of condition 57, and that its ongoing monitoring initiatives as presented within the TEMMP and Annual Report addresses items under condition 58, except for 58c. Baffinland reported that 58c, which relate to ash content of caribou pellets were problematic to achieve due to insufficient sample size, and the absence of fresh pellets within the Project area. Baffinland also reported that the following terrestrial monitoring mammal work completed in 2014, included Height-of-Land caribou surveys, caribou water crossing surveys, snow tracking surveys and snow bank height monitoring, caribou fecal pellet collection, active den surveys and incidental observations.

Condition 59

"The Proponent shall ensure that aircraft maintain, whenever possible (except for specified operational purposes such as drill moves, take offs and landings), and subject to pilot discretion regarding aircraft and human safety, a cruising altitude of at least 610 metres during point to point travel when in areas likely to have migratory birds, and 1,000 metres vertical and 1,500 metres horizontal distance from observed concentrations of migratory birds (or as otherwise prescribed by the Terrestrial Environment Working Group) and use flight corridors to avoid areas of significant wildlife importance. The Proponent, in collaboration with the Terrestrial Environment Working Group shall develop a program or specific measures to ensure that employees and subcontractors providing aircraft services to the Project are respectful of wildlife and Inuit harvesting that may occur in and around project areas."

Condition 71

"Subject to safety requirements, the Proponent shall require all project related aircraft to maintain a cruising altitude of at least:

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."*

Condition 72

"The Proponent shall ensure that pilots are informed of minimum cruising altitude guidelines and that a daily log or record of flight paths and cruising altitudes of aircraft within all Project Areas is maintained and made available for regulatory authorities such as Transport Canada to monitor adherence and to follow up on complaints."

Baffinland reported that poor weather conditions and visibility challenges did not allow for helicopter pilots to reach the prescribed altitude, and that flight data in the form of helicopter logs were provided to Environment Canada on a monthly basis in 2014. Baffinland also noted that it will ensure that conditions 59 and 72 will be included in all helicopter contracts going forward.

Condition 60

"Prior to construction, the Proponent shall develop a detailed blasting program to minimize the effects of blasting on terrestrial wildlife that includes, but is not limited to the restriction of blasting when migrating caribou, sensitive local carnivores or birds may be negatively affected."

Baffinland noted submissions of its Blasting Management Plan appended to the Quarry Management Plan[66], which include details of blasting protocol and procedure to be implemented to minimize impacts of blasting on terrestrial wildlife (caribou and carnivores) and birds within the Project areas. Baffinland has also developed several blasting protocols and procedures within its Quarry Blasting Operations Management Plan with one specific to terrestrial wildlife, which state:

"The area will be visually surveyed for terrestrial wildlife prior to blasting and the blast delayed, if required, to clear the area of any affected terrestrial wildlife. These include, but are not restricted to caribou, and local carnivores. Nesting birds will be respected according to Baffinland's Terrestrial Environmental Management and Monitoring Plan that abides by Environment Canada's Migratory Birds Act. The Environmental Monitor on-site will be trained in the requirements of the Terrestrial Environmental Management and Monitoring Plan."[67]

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.

Condition 62

"The Proponent shall prohibit project employees from transporting firearms to site and from operating firearms in project areas for the purpose of wildlife harvesting."

[66] Appendices J13.1 to J13.10
[67] Section 5.1 of Appendix J13.7-Q11 Quarry Management Plan

Baffinland noted submission of its 2014 Terrestrial Environmental Management and Monitoring Plan, which included a stop work policy that addresses Tote Road-specific mortality mitigation for wildlife encountered within the Project area. Baffinland also noted the submission of its Weapons Onsite Policy[68], which prohibits weapons that are classed as "non-restricted", "prohibited" and "restricted" by the Canadian Firearms Act from entry into the Project site. Baffinland also indicated that should any weapon listed under the categories above be inadvertently brought to site by an employee, or contractor, the weapon will be confiscated by security personnel, except for weapons used by authorized personnel such as bear monitors and security officers. Baffinland also referenced its Hunting and Fishing (Harvesting) Policy[69], which prohibits employees or contractors from hunting or fishing on lands leased to Baffinland.

Condition 63

> *"The Proponent shall liaise with local Hunters and Trappers Organizations in advance of carrying out terrestrial wildlife surveys. At a minimum, The Proponent shall also meet annually in person with Hunters and Trappers Organizations to discuss wildlife monitoring and mitigation plans and address community concerns regarding wildlife interactions. The Proponent may be required to facilitate these meetings through payment of honoraria and meeting costs."*

Baffinland has provided updates to the HTO through meetings, and by engagement with the Pond Inlet Community Advisory Group, of which the MHTO is a member. Baffinland also reported that in May and July 2014 respectively, meetings were held with the MHTO to discuss matters related to the relocation of the hunting cabin at Mary River, the Dock at Milne Port and site access.

Condition 64

"The Proponent shall ensure that its Environment Protection Plan incorporates waste management provisions to prevent carnivores from being attracted to the Project site(s). Consideration must be given to the following measures:

a. *Installation of an incinerator beside the kitchen that will help to keep the food waste management process simple and will minimize the opportunity for human error (i.e. storage of garbage outside, hauling in a truck (odours remain in truck), hauling some distance to a landfill site, incomplete combustion at landfill, fencing of landfill, etc.); and*
b. *Installation of solid carnivore-proof skirting on all kitchen and accommodation buildings (i.e., heavy-duty steel mesh that would drop down from the edge of the buildings/trailers and buried about a half meter into the ground to prevent animals from digging under the skirting)."*

Baffinland noted within its annual reporting to the NIRB that no incinerator was installed beside the kitchen for safety reasons, and that skirting installation was completed on the accommodation facilities. Baffinland also indicated that its 2014 Terrestrial Environmental Management and Monitoring Plan [70] include a plan to conduct regular surveillance of project facilities and waste disposal sites to ensure that predator control measures are effective.

[68] Refer to Appendix C2-Weapon Onsite Policy
[69] Refer to Appendix C3-Hunting and Fishing (Harvesting) Policy
[70] Section 3 of Appendix J7

2.3.11 **Birds Monitoring**

Condition 65

"The Proponent shall ensure all employees working at project sites receive awareness training regarding the importance of avoiding known nests and nesting areas and large concentrations of foraging and moulting birds."

Condition 66

"If Species at Risk or their nests and eggs are encountered during Project activities or monitoring programs, the primary mitigation measure must be avoidance. The Proponent shall establish clear zones of avoidance on the basis of the species-specific nest setback distances outlined in the Terrestrial Environment Management and Monitoring Plan."

Condition 67

"The Proponent shall ensure that the mitigation and monitoring strategies developed for Species at Risk are updated as necessary to maintain consistency with any applicable status reports, recovery strategies, action plans and management plans that may become available during the duration of the Project."

Condition 68

"The Proponent shall ensure flashing red, red strobe or white strobe lights and guy-wire deterrents are used on communications towers established for the Project. Consideration should also be given to reducing lighting when possible in areas where it may serve as an attractant to birds or other wildlife."

Condition 69

"Prior to bird migrations and commencement of nesting, the Proponent shall identify and install nesting deterrents (e.g. flagging) to discourage birds from nesting in areas likely to be disturbed by construction/clearing activities taking place during the nesting season."

Condition 70

"The Proponent shall protect any nests found (or indicated nests) with a buffer zone determined by the setback distances outlined in its Terrestrial Environment Mitigation and Monitoring Plan, until the young have fledged. If it is determined that observance of these setbacks is not feasible, the Proponent will develop nest-specific guidelines and procedures to ensure bird's nests and their young are protected."

Baffinland indicated that its 2014 Terrestrial Environmental Management and Monitoring Plan include project personnel orientation on general mitigation for birds, including protocols for avoiding known nests and large concentrations of foraging or molting birds. Baffinland also indicated that prior to bird migration and nesting, deterrents (e.g. flagging) to discourage birds from nesting in areas likely to be disturbed by construction/clearing activities will be identified and installed. Pursuant to condition 68, Baffinland reported no observation of injured or dead birds during surveys of the two communication towers located along the Tote Road. Baffinland reported no observation of apparent nesting attempts by birds in the cleared areas, and further indicated that should Species at Risk or their nests or eggs be encountered during Project activities, the primary mitigation measure will be avoidance and establishment of clear zones of avoidance using the recommended setback distances for activity near bird nests[71]. Pursuant to condition 70, Baffinland indicated that inspection of each work area for nests will be conducted prior to any clearing of land

[71] Table 3-1 Appendix J7-TEMMP and Section 7.3.1.3 of 2014 Annual Report (March 2015)

occurring during the nesting seasons, and that any nests found will be protected with a buffer zone until the young have fledged. Baffinland also reported that should observance of setbacks be not feasible, nest-specific guidelines and procedures will be developed and implemented to ensure bird nests and their young are protected.

Condition 74

> *"The Proponent shall continue to develop and update relevant monitoring and management plans for migratory birds under the Proponent's Environmental Management System, Terrestrial Environment Mitigation and Monitoring Plan prior to construction. The key indicators for follow up monitoring under this plan will include: peregrine falcon, gyrfalcon, common and king eider, red knot, seabird migration and wintering, and songbird and shorebird diversity".*

Condition 75

> *"The Proponent's monitoring program shall assess and report, on annual basis, the extent of terrestrial habitat loss due to the Project to verify impact predictions and provide updated estimates of the total project footprint.*

Within its 2014 annual reporting[72], Baffinland provided a detailed record of all bird monitoring work and habitat assessment undertaken for the reporting period, and noted that other additional key indicators were included in follow-up monitoring for the following birds:

- Gyrfalcon: Baffinland indicated these were added due to differences in ecology as Peregrine Falcon acts as a representative of most cliff-nesting raptors. In contrast to Peregrine Falcons, Baffinland noted that Gyrfalcons may be present in the study area year round, and the timing of nesting is much earlier;
- Seabird migration and overwintering: Baffinland noted that it will participate in a larger research project on seabird migration and overwintering; and that the project will provide input on the potential interactions of Project shipping with migrating and wintering seabirds;
- Songbird and shorebird diversity: Baffinland indicated it will assist in regional-level monitoring by Canadian Wildlife Service in order to assess the regional diversities of songbird and shorebirds.

Pursuant to condition 75, Baffinland indicated that activities were confined within the established Project Development Area (PDA), and that the areas disturbed as a result of Project activities and infrastructure within the PDA remain unchanged at 272 hectares as previously recorded in 2013[73].

2.3.12 **Marine Environment**

Condition 76 (and 89-91)

> *"The Proponent shall develop a comprehensive Environmental Effects Monitoring Program to address concerns and identify potential impacts of the Project on the marine environment".*

Condition 76 requires Baffinland to develop a comprehensive Environmental Effects Monitoring (EEM) Program to address concerns and identify potential impacts of the Project on the marine

[72] Section 7.3.1.3 of 2014 Annual Report to NIRB (March 2015)
[73] Refer to 7.3.1.3 of 2014 Annual Report to NIRB (March 2015)

environment. Baffinland reported that its 2013 Annual Report included an environmental effects monitoring program for marine mammal disturbance from noise, and that a draft marine mammal monitoring plan was proposed for 2014[74]. While the draft EEM was included in the Shipping and Marine Wildlife Management Plan, Baffinland indicated that an EEM for marine mammals is also under development, and that outcomes of monitoring conducted in 2014 pursuant to these two EEM study designs were summarized within the 2014 Annual Report.

Pursuant to conditions 89 through 91, Baffinland indicated within its annual reporting to the NIRB that no ore was shipped from Milne Port in 2014, and therefore no discharge of ballast water occurred. In order to reduce or eliminate the risk of invasive aquatic species and pathogens from being introduced into the Canadian waters as a result of shipping, Baffinland indicated that it is committed to conducting both mid ocean exchange and, upon it coming into force, using an International Maritime Organization (IMO) and Canadian Coast Guard approved Ballast Water Treatment System to treat ballast water. Baffinland also reported that the ballast water exchange will occur as per IMO Ballast Water Convention Regulation D-1, and as described in Section 6 (1) of the Canadian Ballast Water Control and Management Regulations. Baffinland also noted that anti-fouling system will be in place on all vessels that will arrive and depart from Milne Port and Steensby Port.

Condition 78

> *"The Proponent shall update the baseline information for landfast ice using a long-term dataset (28 years), and with information on inter-annual variation. The analysis for pack and landfast ice shall be updated annually using annual sea ice data (floe size, cover, concentration) and synthesized and reported in the most appropriate management plan."*

Condition 79

> *"The Proponent shall provide the Canadian Hydrographic Services with bathymetric data and other relevant information collected in support of Project shipping where possible, to assist in the development of nautical charts for Canadian waters."*

Baffinland indicated within its annual reporting to the NIRB that requirement to update the baseline for landfast ice using a long-term dataset was completed and provided to the NIRB prior to the final hearing in July 2012, and that further update on this condition will be provided once Baffinland commences execution of the rail project. Baffinland also noted that a collaborative cost-sharing agreement with Canadian Hydrographic Service was ongoing in 2014 for the nautical charting program.

Condition 83a

> *"The Proponent shall conduct 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. The modelling results shall be used to update the marine water and sediment quality monitoring and mitigation program to include activities associated with the construction and operation of the Milne Inlet Port. The monitoring program shall include an ongoing assessment of the potential introduction of metals that bio-accumulate in the marine food chain."*

Condition 84

[74] Refer to 2013 NIRB Annual Report Appendices V1 and V2).

"The Proponent shall update its sediment redistribution modeling once ship design has been completed and sampling should be undertaken to validate the model and to inform sampling sites and the monitoring plan".

Condition 86

"Prior to commercial shipping of iron ore, the Proponent shall use more detailed bathymetry collected from Steensby Inlet and Milne Inlet to model the anticipated ballast water discharges from ore carriers. The results from this modeling shall be used to update ballast water discharge impact predictions and should account for density dependent flow and annual timescales over the project life. Additional sampling should also be undertaken to validate the model and to inform sampling sites and the monitoring plan."

Condition 87

"The Proponent shall 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. This program needs to be able to detect changes that may have biological consequences and should be initiated several years prior to any ballast water discharge into Steensby Inlet and Milne Inlet to collect sufficient baseline data and should continue over the life of the Project."

Baffinland indicated within its Shipping and Marine Wildlife Management Plan[75] that it has developed a baseline sampling program to provide effective monitoring of physical and chemical effects of ballast water discharges, sewage outfall, and bottom scour by ship props, and that the collected data will be used as input to a model to monitor sediment re-distribution at the port site, and for ballast water dispersion modeling. Pursuant to condition 87, Baffinland indicated that in 2014[76], baseline information was collected on water column characteristics to develop modeling capability and that future updates to the sediment redistribution model will be carried out as Project ships are designed, constructed and brought into service on the Project. Baffinland reported that in 2014 it undertook a survey program to improve knowledge of bathymetry and physical oceanography, including pre-ore shipping information on the marine sediment, benthic macroinvertebrate communities and fish in the vicinity of the ore dock.

Condition 92

"The Proponent shall ensure that it maintains the necessary equipment and trained personnel to respond to all sizes of potential spills associated with the Project in a self sufficient manner."

Baffinland reported[77] that it became an associate member with Oil Spill Response Limited (OSRL) and has started the process of developing a spill contingency plan with OSRL in consultation with authorizing agencies such as Environment Canada, Transport Canada, Qikiqtani Inuit Association, community of Pond Inlet and Canadian Coast Guard. Baffinland noted that all vessels will comply with the Oil Pollution Prevention Regulation and maintain an approved shipboard oil pollution emergency plan, as well as have oil spill clean-up materials available onboard the vessel at all times.

Condition 97

[75] Section 7.5.2 of 2014 Annual Report to the NIRB (March 2015) and Section 6.3 of Appendix J10
[76] Appendix N1-2014 Marine Environmental Baseline Studies in Milne Inlet
[77] Sections 5.6 and 5.8 of Appendix J10-Shipping and Marine Wildlife Management Plan

"Prior to the commercial shipping of iron ore, the Proponent shall conduct fuel spill dispersion modeling that will, at a minimum, consider:

a. Modeling of oil spills for both the Northern and Southern Shipping Routes, in representative locations, identified by the Proponent, in consultation with the Marine Environment Working Group along both Shipping Routes, and including:

i. Pinch points;

ii. The approaches into Steensby Inlet and Milne Inlet;

iii. Shallow water and shorelines; and,Areas that have been identified as having high flows and/or high concentrations of marine mammals, marine fish or seabirds.

b. Open water and, where applicable, ice-covered conditions;

c. Spill volumes up to and including loss of a full tanker cargo; and,

d. Differences in the quantity and properties of each type of bulk fuel transported by vessels when they are at, or in transit to, the ports at Steensby Inlet and Milne Inlet."

Condition 98

"The Proponent shall incorporate the results of revised fuel spill dispersion modeling into its impact predictions for the marine environment and its spill response and emergency preparedness plans."

Baffinland indicated that a fuel spill model was in development, and that results of the modelling will be used to update the related impact predictions, spill response and emergency preparedness plans. Baffinland further noted that a risk assessment of Project-related shipping accidents was also planned that would take into consideration areas along the shipping route where vessels may be vulnerable to environmental conditions such as sea ice, as well as seasonal differences in level of risk. However, on September 8, 2015, Baffinland submitted its Spill at Sea Response Plan, as well as Fuel Spill Modelling Report to the NIRB.

Condition 99

"*The Proponent, working with the Marine Environment Working Group, shall consider and identify priorities for conducting the following supplemental baseline assessments:*

a. *Establish shipping season, inter-annual baseline in Steensby Inlet and Milne Inlet that enables effective monitoring of physical and chemical effects of ballast water releases, sewage outfall, and bottom scour by ship props, particularly downslope and downstream from the docks. This shall include the selection and identification of physical, chemical, and biological community/indicator components. The biological indicators shall include both pelagic and benthic species but with emphasis on relatively sedentary benthic species (e.g., sculpins).*
b. *The collection of additional baseline data:*
    i. *In Steensby Inlet on walrus, beluga, bearded seal anadromous Arctic Char abundance, distribution ecology and habitat use; and*
    ii. *In Milne Inlet on narwhal, bowhead and anadromous Arctic Char abundance, distribution ecology and habitat use.*
c. *Enhance baseline data on marine wildlife (fish, invertebrates, birds, mammals, etc.) and to provide more details on species abundance and distribution found in the Project area. This shall include, but not be limited to the following:*
    i. *Aerial surveys for basking ringed seals throughout the landfast ice of Steensby Inlet and at an appropriate control location;*

ii. Shore-based observations of pre-Project narwhal and bowhead whale behavior in Milne Inlet that continues at an appropriate frequency throughout the Early Revenue Phase and for not less than three consecutive years.

Enhance the baseline for affected freshwater systems, which includes control sites to detect Project-related changes before they cause significant harm."

Baffinland reported that monitoring at Steensby Port and Steensby Inlet pursuant to items (a), (b) and (c) of condition 99 have been deferred until development of the Steensby Port component of the Project[78]. Baffinland also noted that baseline data from Milne Inlet was collected in both 2013 and 2014 addressing items (a), (b) and (c) of the Project condition, and that information with respect to marine water, sediment, benthic invertebrate and fish baseline data was collected in 2014[79]. Baffinland also reported that data on marine mammal observations in Milne Inlet were collected via the shore-based monitoring program at Bruce Head, which also addressed item (c) of the Project condition. Baffinland noted that the draft EEM was included in the Shipping and Marine Wildlife Management Plan, and that an EEM for marine mammals was also being developed.

Condition 100

"The Proponent shall update its Shipping and Marine Wildlife Management Plan, to include avoidance of polynyas and mitigation measures designed for potential fuel spills along the shipping lane during the winter months, with consideration for the impact of spilled fuel on marine mammals when they might be less mobile or able to avoid contact with spilt fuel or fumes."

Baffinland indicated it has updated its Shipping and Marine Wildlife Management Plan (SMWMP) to include new measures for emergency preparedness to address unplanned events such as accidental spills of fuels and chemicals, extreme weather conditions, malfunctions during shipping operations, unforeseen events and implementation of fuel spill trajectory modeling. Baffinland also indicated within the SMWMP that baseline information on land fast ice will be updated annually, and that upon commencement of winter shipping, an overlay of ship tracks onto ice cover imagery will be provided to illustrate avoidance of polynyas and shore leads, and report on Project-related ship track and sea ice information.

Condition 101

"The Proponent shall incorporate into the appropriate monitoring plans the following items:

a. A monitoring program that focuses on walrus use of Steensby Inlet and their reaction to disturbance from construction activities, aircraft, and vessels;
b. Efforts to involve Inuit in monitoring studies at all levels;
c. Monitoring protocols that are responsive to Inuit concerns;
d. Marine monitoring protocols are to consider the use of additional detecting devices to ensure adequate monitoring through changing seasonal conditions and daylight;
e. Schedule for periodic aerial surveys as recommended by the Marine Environment Working Group;

[78] Refer to Section 7.5.5 of 2014 Annual Report to NIRB
[79] Refer to Appendix N2-2014 Observational Oceanography Program in Milne Inlet

f. Periodic aerial surveys for basking ringed seals throughout the landfast ice of Steensby Inlet, and a suitable control location. Surveys shall be conducted at an appropriate frequency to detect change inter-annual variability;

g. Shore-based observations of pre-Project narwhal behavior in Milne Inlet, that continues at an appropriate frequency throughout the Early Revenue Phase (not less than three years);

h. Conduct landfast ice monitoring for the duration of the Project Operations phase, which will include:

i. The number of ship transits that are able to use the same track; and,

ii. The area of landfast ice disrupted annually by ship traffic; and Monitoring strategy focused on assessing and mitigating interaction between humans and wildlife at the port site(s)."

Baffinland indicated that requirements of condition 101 (a), (f) and (h) have been deferred as they relate to activities on Steensby Inlet. With respect to condition 101 (b), Baffinland indicated a number of its Inuit employees were involved in the 2014 environmental monitoring program, and that Inuit Qaujimajatuqangit was considered in environmental monitoring. Pursuant to condition 101 (c), Baffinland established a Community Advisory Group (CAG) in Pond Inlet to engage affected communities, including elders in dialogue regarding potential issues and concerns related to the Mary River Project. In addressing conditions under item 101 (d), Baffinland indicated that it recruited shipboard marine wildlife observers from Pond Inlet and from other Nunavut communities. Additionally a gyrocopter type UAV (Unmanned Aerial Vehicle) was tested for suitability to provide additional surveillance capability for detection of marine mammals and seabirds ahead of the transiting vessel.

Baffinland also indicated that requirement of condition 101(e) were fulfilled through completion of aerial surveys at Eclipse Sound, Pond Inlet and Milne Inlet. Regarding condition 101(g), Baffinland indicated that in 2013, it implemented a pilot shore-based monitoring program at Bruce Head, and that in 2014 it modified the Bruce Head study approach to incorporate lessons learned from the 2013 pilot study[80].

Condition 102 (also applicable to 164 and 166)

"The Proponent shall ensure that routing of project vessels is tracked and recorded for both the southern and northern shipping routes, with data made accessible in real time to communities in Nunavut and Nunavik.

Baffinland indicated that during the shipping season, information regarding ship tracking will be made available on Baffinland's company website[81] and that once a day, update on ship locations will be displayed on a map during shipping activities. Baffinland reported that a letter noting fulfilment of these conditions (102, 164 and 166) was issued to the NIRB and communities on August 13, 2013; and that due to technological constraints and the geographic location of the shipping route, it will be unable to display ship locations in "real-time" for the foreseeable future. However, Baffinland reported that it will investigate ways in which information regarding this condition will be made available to the public, and that by the third quarter of 2015 it will update the

[80] Refer to Appendix N3

[81] http://www.baffinland.com//mary-river-project/logistics/location/

NIRB on this condition. Baffinland reported[82] that it will work to keep proximate communities informed of shipping schedules, where feasible and appropriate.

Condition 103

"The Proponent shall report annually to the NIRB regarding project-related ship track and sea ice information, including:

a. *A record of all ship tracks taken along both shipping routes covering the entire shipping season;*
b. *An overlay of ship tracks onto ice imagery to determine whether ships are effectively avoiding shore leads and polynyas;*
c. *A comparison of recorded ship tracks to the expected nominal shipping route, and probable extent of year-round shipping during periods of ice cover and open-water;*
d. *An assessment of the level of adherence to the nominal shipping route and the spatial extent of the shipping zone of influence; and*
e. *Marine bird and mammal species and number of individuals attracted to ship tracks in ice."*

Baffinland indicated that ice breaking was not undertaken in 2014, and as such a number of the items under condition 103 were not applicable. However, Baffinland reported on its Bruce Head Monitoring Study where it specifically noted observations of 36 small motorized vessels, and two medium sized vessels, with four large vessels transiting through the stratified sampling area.

Condition 104

"Subject to safety considerations and the potential for conditions as determined by the crew of transiting vessels, to result in route deviations,

a. the Proponent shall require, for shipping to/from Steensby Port, project vessels to maintain a route to the south of Mill Island to prevent disturbance to walrus and walrus habitat on the northern shore of Mill Island. Where project vessels are required to transit to the north of Mill Island owing to environmental or other conditions, an incident report is to be provided to the Marine Environment Working Group and the NIRB within 30 days, noting all wildlife sightings and interactions as recorded by shipboard monitors.

b. The Proponent shall summarize all incidences of significant deviations from the nominal shipping routes for traffic to/from Milne Port and Steensby Port as presented in the FEIS and FEIS Addendum to the NIRB annually, with corresponding discussion regarding justification for deviations and any observed environmental impacts."

Baffinland reported that in 2014, shipping activities did not occur along the southern shipping route, and that with respect to the northern shipping route, there were no significant deviations from the nominal shipping route during 2014.

Condition 105

"The Proponent shall ensure that measures to reduce the potential for interaction with marine mammals, particularly in Hudson Strait and Milne Inlet, are identified and implemented prior to commencement of shipping operations. These measures could include, but are not limited to:

[82] Section 4.1 and 7.5.7 of 2014 Annual Report to NIRB (March 2015)

a. Changes in the frequency and timing (including periodic suspensions) of shipping during winter months in Hudson Strait and during the open water season in Milne Inlet, i.e., when interactions with marine mammals are likely to be the most problematic;
b. Reduced shipping speeds where ship-marine mammal interactions are most likely; and
c. Identification of alternate shipping routes through Hudson Strait for use when conflicts between the proposed routes and marine mammals could arise. Repeated winter aerial survey results showing marine mammal distribution and densities in Hudson Strait would greatly assist in this task."

Baffinland indicated that conditions 105(a) and 105(c) were not applicable because there was no shipping during winter months nor shipping in the Hudson Strait in 2014. In regards to condition 105(b), Baffinland referenced its Shipping and Marine Wildlife Management Plan, noting its commitment to adhere to adaptive management protocols and mitigation measures for marine wildlife impacts.

Condition 106 *(including 121-123; 126)*

"The Proponent shall ensure that shipboard observers are employed during seasons where shipping occurs and provided with the means to effectively carry out assigned duties. The role of shipboard observers in shipping operations should be taken into consideration during the design of any ore carriers purpose-built for the Project, with climate controlled stations and shipboard lighting incorporated to permit visual sightings by shipboard observers during all seasons and conditions. Any shipboard lighting incorporated should be in accordance with the Canada Shipping Act, 2001's Collision Regulations, and should not interfere with safe navigation of the vessel."

Condition 107

"The Proponent shall revise the proposed "surveillance monitoring" to improve the likelihood of detecting strong marine mammal, seabird or seaduck responses occurring too far ahead of the ship to be detectable by observers aboard the ore carriers. A baseline study early in the shipping operations could employ additional surveillance to detect potential changes in distribution patterns and behavior. At an ambitious scope, this might be achieved using unmanned aircraft flown ahead of ships, or over known areas of importance for seabirds or haul-out sites in the case of walruses, in accordance with the requirements of their Special Flight Operations Certificate."

Condition 108

"The Proponent shall ensure that data produced by the surveillance monitoring program is analyzed rigorously by experienced analysts (in addition to being discussed as proposed in the FEIS) to maximize their effectiveness in providing baseline information, and for detecting potential effects of the project on marine mammals, seabirds and seaducks in the Regional Study Area. It is expected that data from the long-term monitoring program be treated with the same rigor.

Baffinland reported[83] that a ship-based observer program was conducted from mid-August to mid-September 2014 in spite of absence of iron ore shipping. As part of a pilot program, shipboard Inuit observers were recruited, trained and placed on three trips between Milne Inlet and Pond Inlet. Additionally, UAV (Unmanned Aerial Vehicle) operations were conducted from the bow of a

[83] Section 7.5.6.2 of 2014 Annual Report to the NIRB (March 2015).

moving vessel for the purpose of exploring alternate methods for ship-based observations, with the ship-based surveys focused exclusively on data collection within the shipping route between Milne Port and Pond Inlet. Baffinland also reported that during the August 15 trip it observed three marine mammal species, namely: narwhal, ringed seal and another seal species; however marine mammals were not observed during the other two trips in September 7, 2014, and September 10, 2014.

Conditions 109-112

Baffinland noted that a monitoring protocol for environmental effects monitoring for marine mammal disturbance was completed in July 2012, and additionally, a protocol for marine mammal monitoring was developed prior to ERP approval, and was submitted to DFO for implementation in 2015 for the Northern Shipping route. Baffinland specifically indicated that the monitoring program was intended to improve understanding of the natural variability of marine mammal distribution and abundance along the shipping route. With reference to item (f) of condition 112, Baffinland noted that blasting activities in marine waters did not occur in 2014, and that it will consult with DFO prior to undertaking any blasting activities in marine waters.

Conditions 113

> *"The Proponent shall conduct monitoring of marine fish and fish habitat, which includes but is not limited to, monitoring for Arctic Char stock size and health condition in Steensby Inlet and Milne Inlet, as recommended by the Marine Environment Working Group."*

Within its annual reporting to the NIRB, Baffinland noted the implementation of a marine ecosystem monitoring which includes sampling surveys to improve baseline knowledge of Arctic char and other species regarding density, distribution, condition and contaminant burden[84]. Baffinland reported that in addition to the ongoing baseline work to monitor Arctic char, it will consult with the MHTO on the design of additional surveys for the presence and health status of char in watersheds proximal to the Milne Inlet Port site, including Philips Creek, Tugaat and Qurluktuk.

Condition 114

> *"In the event of the development of a commercial fishery in the Steensby Inlet area or Milne Inlet-Eclipse Sound areas, the Proponent, in conjunction with the Marine Environment Working Group, shall update its monitoring program for marine fish and fish habitat to ensure that the ability to identify Arctic Char stock(s) potentially affected by Project activities and monitor for changes in stock size and structure of affected stocks and fish health (condition, taste) is maintained to address any additional monitoring issues identified by the MEWG relating to the commercial fishery."*

Baffinland reported[85] no update on this condition, given that commercial fishery has not been developed in either of the Steensby Inlet or Milne Inlet-Eclipse Sound areas.

Condition 115

[84] Appendix N1-2014 Milne Inlet Marine EEM Baseline
[85] Section 7.5.1 of 2014 Annual Report to the NIRB (March 2015)

"The Proponent is encouraged to continue to explore off-setting options in both the freshwater and marine environment to offset the serious harm to fish which will result from the construction and infrastructure associated with the Project."

Baffinland reported[86] that an off-set was determined under DFO's Serious Harm legislation for the ore dock located at Milne Port, and that until a decision is made regarding the development of Steensby Port, no further a progress or plans will be required or possible.

Conditions 116-118

Within its annual reporting to the NIRB, Baffinland indicated[87] that no blasting took place near marine areas in 2014, or is anticipated for 2015 and that prior to undertaking any blasting operations around marine areas it would ensure that adequate mitigation plans are in place to minimize any blasting effects on the marine environment.

Condition 119

"The Proponent shall, in conjunction with the Marine Environment Working Group, monitor ringed seal birth lair abundance and distribution for at least two years prior to the start of icebreaking to develop a baseline, with continued monitoring over the life of the project as necessary to test the accuracy of the impact predictions and determine if mitigation is needed. Monitoring shall also include a control site outside of the Project's zone of influence."

Baffinland reported[88] that it met with the Marine Environment Working Group four times during the year, and that requirement regarding this condition will be fulfilled when shipping through ice commences along the southern shipping route.

Condition 120

"The Proponent shall ensure that, subject to vessel and human safety considerations, all project shipping adhere to the following mitigation procedures while in the vicinity of marine mammals:

a. Wildlife will be given right of way;

b. Ships will when possible, maintain a straight course and constant speed, avoiding erratic behavior; and

c. When marine mammals appear to be trapped or disturbed by vessel movements, the vessel will implement appropriate measures to mitigate disturbance, including stoppage of movement until wildlife have moved away from the immediate area."

Condition 121

"The Proponent shall immediately report any accidental contact by project vessels with marine mammals or seabird colonies to Fisheries and Oceans Canada and Environment Canada respectively, by notifying the appropriate regional office of the:

- *a. Date, time and location of the incident;*
- *b. Species of marine mammal or seabird involved;*
- *c. Circumstances of the incident;*

[86] Appendix E1-Concordance to PC Conditions
[87] Appendix E1-Concordance to PC Conditions
[88] Section 7.5.1 of 2014 Annual Report to the NIRB (March 2015)

d. Weather and sea conditions at the time;
e. Observed state of the marine mammal or sea bird colony after the incident; and,
f. Direction of travel of the marine mammal after the incident, to the extent that it can be determined."

Condition 122

"The Proponent shall summarize and report annually to the NIRB regarding accidental contact by project vessels with marine mammals or seabird colonies through the applicable monitoring report."

Condition 123

***"**The Proponent shall provide sufficient marine mammal observer coverage on project vessels to ensure that collisions with marine mammals and seabird colonies are observed and reported through the life of the Project. The marine wildlife observer protocol shall include, but not be limited to, protocols for marine mammals, seabirds, and environmental conditions and immediate reporting of significant observations to the ship masters of other vessels along the shipping route, as part of the adaptive management program to address any items that require immediate action."*

Baffinland indicated[89] that its 2014 ship-based observers onboard did not report any collisions with whales during any of the three voyages between Milne Inlet and Pond Inlet, and that appropriate mitigation procedures regarding marine mammals are included within the Shipping and Marine Wildlife Management Plan. Baffinland also noted that in the event of any accidental contact with marine mammals by project vessels it would report such incidences to Fisheries and Oceans Canada, Environment Canada, and to the NIRB in the annual report.

Condition 124

"The Proponent shall prohibit project employees from recreational boating, fishing, and harvesting of marine wildlife in project areas, including Steensby Inlet and Milne Inlet. The Proponent is not directed to interfere with harvesting by the public in or near project areas, however, enforcement of a general prohibition on harvesting in project areas by project employees during periods of active employment (i.e. while on site and between work shifts) is required."

Baffinland indicated that this Project condition has been addressed by way of the hunting and harvesting policy that was appended[90] to the 2013 Annual Report previously submitted to the NIRB. While Baffinland specifically referenced section 4.5.1 of Appendix J10[91] in noting compliance with this condition, it was however noted that the referenced section was non-existent within the report, and that the Proponent has yet to include any update regarding enforcement of a general prohibition on harvesting in Project areas for this monitoring period.

Condition 125

"Prior to use of acoustic deterrent devices, the Proponent shall carry out consultations with communities along the shipping routes and nearest to Steensby Inlet and Milne Inlet ports to assess the acceptability of these devices. Feedback received from community consultations shall be incorporated into the appropriate mitigation plan"

[89] Ship-Based Observer Pilot Program Draft Report
[90] Refer to Appendix W.1 in 2013 Annual Report to the NIRB
[91] Shipping and Marine Wildlife Management Plan

Baffinland reported[92] that acoustic deterrents devices have neither been used nor contemplated for now. In addition, Baffinland referenced section 4.5.1 of Appendix J10[93], but this section is non-existent within the referenced report.

Condition 125(a)

> *"The Proponent shall consult with potentially affected communities and groups, particularly 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 received from community consultations shall be incorporated into the most appropriate mitigation or management plans."*

Baffinland reported[94] that in 2014, the Qikiqtani Inuit Association and Mittimatalik Hunters and Trappers Organization were included in emergency response planning for the northern shipping route.

Condition 126

> *"The Proponent shall 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."*

Baffinland reported[95] that in 2014 it recruited Inuit employees from North Baffin communities, and held community consultation meetings to discuss various project related activities, including the northern shipping route.

Condition 127 (including 164)

> *"The Proponent shall 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 reported[96] that a live website portal has been implemented to report on the expected arrival and departure times, ship statuses, and locations during shipping season, and that the feasibility of using an automated ship tracking mechanism in the remote environment was currently being investigated.

Condition 128

> *"The Proponent shall consult with local communities as fish habitat off-setting options are being considered and demonstrate its incorporation of input received into the design of the Fish Habitat Off-Setting Plan required to offset the Harmful Alteration, Disruption or Destruction of Fish and Fish Habitat (HADD)."*

[92] Appendix E1-Concordance to PC Conditions
[93] Appendix J10-Shipping and Marine Wildlife Management Plan
[94] Appendix E1-Concordance to PC Conditions
[95] Appendix E1-Concordance to PC Conditions; and Table 3.3 and Section 4.4 of 2014 Annual Report to the NIRB (March 2015)
[96] Appendix E1-Concordance to PC Conditions

Baffinland reported[97] the off-setting alternative which had been presented during the assessment process of the Early Revenue Phase was deemed sufficient by DFO, and had been constructed in 2014.

Condition 129

> *"The Proponent is strongly encouraged to engage in the work of the Qikiqtaaluk Socio-Economic Monitoring Committee along with other agencies and affected communities, and it should endeavour to identify areas of mutual interest and priorities for inclusion into a collaborative monitoring framework that includes socio-economic priorities related to the Project, communities, and the North Baffin region as a whole."*

Baffinland reported[98] that it met with the Mary River Socio Economic Monitoring Committee (MRSEMC), a subgroup of the QSEMC (Qikiqtaaluk Socio-Economic Monitoring Committee), in identifying and agreeing upon socio-economic monitoring priorities and Terms and Conditions.

Condition 130

> *"The Proponent should consider establishing and coordinating with smaller socio-economic working groups to meet Project specific monitoring requirements throughout the life of the Project."*

Baffinland noted[99] that the interests of communities would be served by working with the QSEMC and the Mary River SEMC, and that data collected and presented will have to remain at a fairly high level to prevent identification of individuals in specific communities.

Condition 131

> *"The Qikiqtaaluk Socio-Economic Monitoring Committee is encouraged to engage in the monitoring of demographic changes including the movement of people into and out of the North Baffin communities and the territory as a whole. This information may be used in conjunction with monitoring data obtained by the Proponent from recent hires and/or out-going employees in order to assess the potential effect the Project has on migration."*

Baffinland reported[100] that the QSEMC indicated interest in monitoring demographic changes, and will work with the Government of Nunavut to improve the gathering of information and align with data provided by Baffinland where possible.

Condition 132

> *"The Proponent is encouraged to partner with other agencies such as Hamlet organizations in the North Baffin region, the Municipal Training Organization, and the Government of Nunavut in order to adapt pre-existing, or to develop new programs which encourage Inuit to continue living in their home communities while seeking ongoing and progressive training and development. Programs may include driver training programs offered within Hamlets, providing upgraded equipment to communities for use in municipal works, providing incentives for small businesses to remain operating out of their community of origin, or*

[97] Appendix E1-Concordance to PC Conditions
[98] Appendix E1-Concordance to PC Conditions
[99] Appendix E1-Concordance to PC Conditions
[100] Appendix E1-Concordance to PC Conditions

supplementing existing recreational facilities and programming in North Baffin communities."

Baffinland reported that several transferrable skills/certificate were delivered in 2014, and that its training program will continue to evolve as its incorporate valuable feedback from Inuit employees. Baffinland also listed within the 2014 Annual Report[101] the proposed training programs for 2015.

Condition 133

"The Proponent is encouraged to work with the Qikiqtaaluk Socio-Economic Monitoring Committee and in collaboration with the Government of Nunavut's Department of Health and Social Services, the Nunavut Housing Corporation and other relevant stakeholders, design and implement a voluntary survey to be completed by its employees on an annual basis in order to identify changes of address, housing status (i.e. public/social, privately owned/rented, government, etc.), and migration intentions while respecting confidentiality of all persons involved. The survey should be designed in collaboration with the Government of Nunavut's Department of Health and Social Services, the Nunavut Housing Corporation and other relevant stakeholders. Non-confidential results of the survey are to be reported to the Government of Nunavut and the NIRB."

Within its 2014 Annual Report to the NIRB, Baffinland indicated that it is able to identify change of address activities through its payroll and or SAP database, and that it will report on these changes through an annual socio-economic report. Baffinland also reported[102] that it has yet to identify any change of address activities among Inuit employees as a result of employment with Baffinland.

Condition 134

"The Proponent shall include with its annual reporting to the NIRB a summation of employee origin information as follows:

a. The number of Inuit and non-Inuit employees hired from each of the North Baffin communities, specifying the number from each;

b. The number of Inuit and non-Inuit employees hired from each of the Kitikmeot and Kivalliq regions, specifying the number from each;

c. The number of Inuit and non-Inuit employees hired from a southern location or other province/territory outside of Nunavut, specifying the locations and the number from each;

d. The number of non-Canadian foreign employees hired, specifying the locations and number from each foreign point of hire."

Baffinland reported[103] that a total of 96 Inuit, and 3 non-Inuit employees were recruited from within the six North Baffin communities (Arctic Bay, Clyde River, Hall Beach, Igloolik, Pond Inlet and Iqaluit), and that no recruitment of employees occurred from the Kivalliq or Kitikmeot Regions in 2014. Baffinland also noted that a total of 2 Inuit employees, and 392 non-Inuit employees were recruited from other provinces and territories in Canada. Baffinland also noted that in 2014, it employed two Inuit who graduated from the Arctic College Environmental Technician Program.

[101] Section 3.3 of 2014 Annual Report to the NIRB (March 2015)
[102] Appendix E1-Concordance to PC Conditions
[103] Appendix S Supplemental to 2013 Annual Report submitted to the NIRB (March 2014); and Table 3.1 of 2013 Annual Report to the NIRB

2.3.13 **Education and Training**

Condition 135

> *"The Proponent is encouraged to consider offering additional options for work/study programs available to Project employees (in addition to study programs at project sites that would be offered to employees when off shift)."*

Baffinland reported[104] on its options for work/study programs, and noted that its orientation training includes initial formal introduction to the Project, the project site, general site health and safety procedures, cultural considerations, environmental management systems, and archaeological areas. Baffinland reported that a heavy equipment operator training program was in progress, and is expected to evolve into a Community Simulator Program that will see the installation, programming and training on a general purpose truck simulator located in Pond Inlet. Baffinland also noted that community members working at the Mine site will be trained on-site to become trainers in the community, and co-teach the first two classes in Pond Inlet.

Condition 136

> *"The Proponent is encouraged to work with training organizations and/or government departments offering mine-related or other training in order to provide additional opportunities for employees to gain meaningful and transferable skills, credentials and certifications especially where such training of employees offered by the Proponent remains valid only at the Mary River Project sites."*

Within its 2014 Annual Report to the NIRB[105], Baffinland indicated it will continue to develop and implement new initiatives to support education and capacity building for Inuit beneficiaries particularly from the North Baffin region and across Nunavut in order to develop new skill sets for advancement. Baffinland indicated that in 2014 it delivered a Supervisor Skills program called "Winning Ways" to enhance supervision skills for experienced managers, and that in 2015 it will deliver this program to supervisors with addition of: Introduction to supervision and conducting effective meetings.

Condition 137 (including 141)

> *"Prior to construction, the Proponent shall develop an easily referenced listing of formal certificates and licences that may be acquired via on-site training or training during employment at Mary River, such listing to indicate which of these certifications and licenses would be transferable to a similar job site within Nunavut. This listing should be updated on an annual basis, and is to be provided to the NIRB upon completion and whenever it is revised"*

Baffinland reported[106]on formal certificates and licences acquired via on-site training, and noted it will continue to work with the QIA pursuant to the provisions of the IIBA regarding Inuit employment.

[104] Section 3.2.4 of 2014 Annual Report to the NIRB (March 2015)
[105] Section 3.2.1 of 2014 Annual Report to the NIRB (March 2015)
[106] Section 3.2.1 of 2014 Annual Report to the NIRB (March 2015)

Condition 138

"The Proponent is encouraged to work with the Qikiqtani Inuit Association to ensure the timely development of effective Inuit training and work-ready programs."

Within its 2014 Annual Report to the NIRB[107], the Proponent indicated that pursuant to the requirement of the IIBA, Baffinland's and QIA Inuit Training and Employment Coordinators will be working together with the Executive and Management Committees to ensure the timely development of training and meaningful programming.

Condition 139

"*Prior to commencing construction, the Proponent is requested to undertake and provide the results of a detailed labour market analysis which provides quantitative predictions of the number of employees that may reasonably need to be sourced from southern Canada and from foreign markets, identifying where applicable, the country of origin for the foreign labour. Within 90 days of the issuance of the Project Certificate, the Proponent is required to submit an updated Labour Market Analysis which considers requirements of the ERP as well as hiring points within Nunavut and outside of the North Baffin region and RSA"*

Baffinland submitted its labour market analysis[108] noting that employment preference is given first to local Inuit and local non-Inuit employees before sourcing talent from rest of Nunavut and additional locations across Canada if necessary. Baffinland also noted that its Inuit Human Resource Strategy include commitment made under the Human Resource Management Plan and Inuit Impact Benefit Agreement and will cover the following four areas: Inuit employment, training and education, monitoring and reporting, Inuit content in contracts and sub-contracts.

Condition 142 (condition 155)

"The Proponent is 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, specifically paying attention to the potential alienation of some employees that may occur as a result of language or other cultural barriers."

Within the 2014 Annual Report to the NIRB[109], Baffinland indicated that the use of Inuktitut on-site is supported through provisions of the IIBA, and that being unilingual does not adversely affect beneficiaries from being employed at Mary River Project. Baffinland also reported that in 2014 it delivered approximately 1,200 hours of Inuktitut language training at site from a trained bilingual language instructor.

Condition 143

"The Proponent is encouraged to consider the use of both existing and innovative technologies (e.g. community radio station call-in shows, cell phones, video-conferencing, Skype, etc.) as a way to ensure Project employees are able to keep in contact with family and friends and to ward off the potential for feelings of homesickness and distance to impact on employee retention and family stability."

[107] Section 3.2.1 of 2014 Annual Report to the NIRB (March 2015)
[108] Appendix O2-2014 Labour Market Report
[109] Appendix E1-Concordance to PC Conditions

Pursuant to condition 143, Baffinland reported[110] that while all communication tools are primary focused on meeting the needs of the Project operations, internet and telephone access is available free of charge to employees in the new accommodation facility, and in some common areas.

Condition 144

> *"The Proponent is encouraged to make requirements for employment clear in its work-readiness and other public information programs and documentation, including but not limited to: education levels, criminal records checks, policies relating to drug and alcohol use and testing, language abilities."*

Baffinland indicated[111] that its job postings identify many of these requirements, which are made clear to potential employees during career fair events, community meetings, and pre-screening for Work Ready training. Baffinland also noted that pre-employment requirement such as background check, criminal record check and medical are included in the employment agreement new employees receive and sign.

Condition 145

> *"The Proponent is encouraged to work with the Government of Nunavut and the Qikiqtaaluk Socio-Economic Monitoring Committee to monitor the barriers to employment for women, specifically with respect to childcare availability and costs."*

Baffinland reported[112] on its engagement with the Qikiqtaaluk and Mary River Socio-Economic Monitoring Committees noting that it will address women in the workplace and the associated barriers in consultation with the QIA pursuant to Section 7.1.5 of the IIBA. Within its 2014 Socioeconomic Monitoring Report submitted to the NIRB[113], Baffinland specifically indicated that of the 414 individual who worked at the Mary River Project in 2014, 129 (31%) were women.

Condition 147 (and 151)

> *"The Proponent is 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 and obtain manageable rental rates."*

Baffinland reported that housing is the responsibility of the Government of Nunavut and Nunavut Housing Corporation, and that it will continue to engage with these parties on housing related issues as requested. Baffinland also indicated that with the introduction of paid employment at the Project, Nunavut based employees would be introduced to banking activities and programs including savings and investment accounts and possible access to mortgages and similar assistance, all of which are expected to help employees with eventual home ownership.

Condition 148

> *"The Proponent is encouraged to undertake collaborative monitoring in conjunction with the Qikiqtaaluk Socio-Economic Monitoring Committee's monitoring program which*

[110] Appendix E1-Concordance to PC Conditions
[111] Appendix E1-Concordance to PC Conditions
[112] Appendix E1-Concordance to PC Conditions
[113] Section 4.0 of Appendix O1

addresses Project harvesting interactions and food security and which includes broad indicators of dietary habits."

Baffinland reported[114] that food security issues are raised and discussed in the Qikiqtaaluk Socio-Economic Monitoring Committee and Mary River Socio-Economic Monitoring Committee.

Condition 149 (including 169)

"Prior to the commencement of operations, the Proponent is required to undertake an analysis of the risk of temporary mine closure, giving consideration to how communities in the North Baffin region may be affected by temporary and permanent closure of the mine, including economic, social and cultural effects and taking into consideration the potential drop in employment between the construction and operations phases of the Project."

On September 25, 2014 Baffinland submitted a report entitled "Potential Effects of a Mine Closure"[115] which included an analysis of the potential economic, social and cultural effects of closure of the Mary River Project. The report as submitted to the NIRB indicated that intermittent or temporary closure of the Mine may result to temporary or permanent layoff of staff employed at the Mary River Project. The report stated that in the event a permanent closure of more than 45 days was to occur, the mass termination provisions of Section 14.07 (1) of the *Nunavut Labour Standards Act* would come into effect, with Baffinland providing up to 16 weeks of paid working notice to employees.

It was further indicated within the report that during layoff a Labour Market Partnership Program would be jointly established by Baffinland and the Government of Nunavut to assist affected employees by offering social services, including job-search assistance, resume preparations, interview skills, vocational and educational counselling and personal support in dealing with stress of job loss, as well as information on starting small businesses.

In the event of a temporary layoff of less than 45 days, the report indicated that an Employee Assistance Program would be established to assist affected employees and their families on stress and financial management. With respect to the potential economic impacts, it was indicated that a temporary mine closure of up to 45 days would result in decline of employment income of more than $545,000[116] in the North Baffin area, noting that Pond Inlet, Arctic Bay and Iqaluit are likely to be the most affected communities in the event of a temporary or permanent closure.

Condition 150

"The Proponent will ensure the following:

a. The Proponent will maintain, where possible, a minimum flying altitude of 2,000 feet over the park, except for approaches to land, take-off or for safety reasons.

b. The Proponent will ensure that certification of noise compliance is current, where compliance is applicable.

c. For the purpose of briefing Park visitors, the Proponent will provide Parks Canada (1) prior to commencing the shipping season, with planned daily shipping schedules, and

[114] Appendix E1-Concordance to PC Conditions
[115] Appendix O3-Socioeconomic Effects of Mine Closure
[116] This calculation was based on hypothetical average weekly salary of Baffinland's North Baffin employee and assumed weekly Employment Insurance payment over a temporary layoff of 45 days.

(2) annually, with air traffic information, and (3) to provide updates when significant variations from these are expected.

d. *The Proponent is strongly encouraged to provide due consideration to wilderness experience during its operations in the open water season, especially during the month of August which is typically a time of high use by sea kayakers."*

Baffinland noted[117] within its 2014 Annual Report to the NIRB that it informed pilots on the Project conditions and has addressed flight altitude requirements through contracts with flight carriers and operators. Pursuant to conditions 150 (b-d), Baffinland reported that in 2014 it worked with Parks Canada to develop a trilingual brochure for kayaking safely around large ships in English, French and Inuktitut, which is located in the Pond Inlet parks office.

Condition 153 (including 157)

> *"The Proponent is 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 reported[118]that its ongoing Employee and Family Assistance Program offers all permanent employees and their dependents access to professional short-term counselling on as need basis. However, it was noted that Baffinland did not provide any specific information regarding employee's access to a mental health professional while working on site.

Condition 154

> *"The Proponent shall work with the Government of Nunavut and the Qikiqtaaluk Socio-Economic Monitoring Committee to monitor potential indirect effects of the Project, including indicators such as 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 others as deemed appropriate."*

Within its 2014 Annual Report to the NIRB, Baffinland reported[119] that as part of its socio-economic reporting framework it will provide reliable and quantifiable data to the Government of Nunavut and Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) to address this condition, and will ensure that the privacy rights and expectations of its workforce is maintained.

2.3.14 Human Health and Well-being

Condition 156

> *"The Proponent is 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' absences from home and community life."*

[117] Section 4.1 of 2014 Annual Report to the NIRB (March 2015)
[118] Appendix E1-Concordance to PC Conditions
[119] Appendix E1-Concordance to PC Conditions

Baffinland reported[120] that the llagiiktunut Nunalinnullu Pivalliajutisait Kiinaujat Fund has been established to address and mitigate potential impacts of the employee's absences from home and community. While it was noted within the 2014 Annual Report that the QIA was responsible for the administration of this fund, Baffinland indicated that the activities to be supported by the fund will include community projects, youth and elder program, family and community wide activities and other social activities as indicated in Arctle 12, Section 12.2.13 of the Inuit Impact and Benefit Agreement.

Condition 158

> *"The Proponent is encouraged to work with the Government of Nunavut and other parties as deemed relevant in order to develop a Human Health Working Group which addresses and establishes monitoring functions relating to pressures upon existing services and costs to the health and social services provided by the Government of Nunavut as such may be impacted by Project-related in-migration of employees, to both the North Baffin region in general, and to the City of Iqaluit in particular."*

According to this condition, the Proponent is required to work with the GN and other parties to develop a Human Health Working Group. Within its annual reporting to the NIRB, Baffinland indicated that this condition was being addressed through the Memorandum of Understanding signed with the Department of Health-Government of Nunavut on November 2013. Further information has yet to be provided in 2014 on the specific monitoring initiatives to be adopted in Iqaluit and other North Baffin communities in order to ensure that the health and social services provided are not affected due to potential in-migration of employees.

Condition 159

> *"The Proponent is encouraged to work with the Government of Nunavut to develop an effects monitoring program that captures increased Project-related pressures to community infrastructure in the Local Study Area communities, and to airport infrastructure in all point-of-hire communities and in Iqaluit."*

Baffinland indicated that it will continue to engage with the Qikiqtaaluk Socio-Economic Monitoring Committee, and participate with the Mary River Socio-Economic Monitoring Committees; and that should the Government of Nunavut (GN) choose to undertake such studies as noted under this condition, it will provide the GN with the relevant data to support the studies, if available.

2.3.15 Community Infrastructure and Public Services

Condition 161

> *"The Government of Nunavut should be prepared for any potential increased need for policing, and ensure that the Royal Canadian Mounted Police is prepared to handle ongoing Project-related demographic changes and subsequent crime prevention that may be needed as a result of the development, operation, and closure of the Project."*

[120] Appendix E1-Concordance to PC Conditions

Baffinland reported[121] that the Royal Canadian Mounted Police (RCMP) was informed of the banned substance (drug) inspection conducted on site. A senior staff meeting was also held in Pond Inlet in 2014 to update the RCMP on Project development; however, the Security Working Group, which include the Government of Nunavut, Transport Canada, RCMP and Custom Canada did not meet in 2014 to specifically address implementation of an integrated approproach for managing Project-related demographic changes and crimes.

Condition 162

> *"The Proponent should make all reasonable efforts to engage Elders and community members of the North Baffin communities in order to have community level input into its monitoring programs and mitigative measures, to ensure that these programs and measures have been informed by traditional activities, cultural resources, and land use as such may be implicated or impacted by ongoing Project activities."*

Baffinland indicated[122] that it hired two Elders in Residence on site, and that feedback from these persons will be added to IQ insight for monitoring programs and mitigation measures.

Condition 163

> *"The Proponent shall continue to engage and consult with the communities of the North Baffin region in order to ensure that Nunavummiut are kept informed about the Project activities, and more importantly, in order that the Proponent's management and monitoring plans continue to evolve in an informed manner."*

Baffinland referenced its consultation log[123], which listed the communities visited, description of events and dates of meetings at different North Baffin communities. The log indicated that as of January 2014, Baffinland had consulted with five North Baffin Communities during the Joint Public Review with the NIRB and Nunavut Planning Commission for the Early Revenue Phase, and that subsequent meetings were held between May through December at Pond Inlet with various groups such as the Community Advisory Group, MHTO, and community members on issues related to spill training exercise, Inuit Qaujimajatuqangit community celebration, marine development projects and hunting activities.

Condition 167

> *"The Proponent and the Government of Nunavut are strongly encouraged to, as soon as practical following the issuance of the Project Certificate, enter into discussions to negotiate a Development Partnership Agreement.*

Baffinland reported[124] that as of September 2013, it had issued a letter of invitation to the Government of Nunavut with reference to this condition, and that a response was yet to be received.

[121] Appendix E1-Concordance to Project Conditions- 2014 Annual Report to the NIRB (March 2015)
[122] Appendix E1-Concordance to PC Conditions
[123] Refer to Table 4.1 of the 2013 Annual Report to the NIRB (March 2014)
[124] Appendix E1-Concordance to PC Conditions

Condition 168

"The specific socioeconomic variables as set out in Section 8 of the Board's Report, including data regarding population movement into and out of the North Baffin Communities and Nunavut as a whole, barriers to employment for women, project harvesting interactions and food security, and indirect Project effects such as substance abuse, gambling, rates of domestic violence, and education rates that are relevant to the Project, be included in the monitoring program adopted by the Qikiqtani Socio-Economic Monitoring Committee."

Baffinland indicated[125] that as it continues to engage with the Qikiqtaaluk Socio-Economic committee and Mary River Socio-Economic committee that socio-economic monitoring priorities, including terms and conditions will be identified and agreed upon.

2.3.16 Accidents and Malfunctions

Condition 170

"The Proponent shall include in an updated Terrestrial Wildlife Management and Monitoring Plan, plans for increased caribou monitoring efforts including weekly winter track surveying and summer and fall surveys undertaken on foot twice per month."

Baffinland referenced its updated Terrestrial Wildlife Management and Monitoring Plan[126] noting that it will monitor caribou movement within the zone of influence, and implement monitoring programs to address effects of the Tote Road, including road maintenance activities, on caribou movements using snow track surveys, snow bank height monitoring, and remote motion-sensing cameras. Baffinland reported that analyses for caribou movement patterns would be carried out by the GN through the satellite collaring program.

Condition 173

"The Proponent shall employ best practices and meet all regulatory requirements during all ship-to-shore and other marine-based fuel transfer events."

Pursuant to condition 173, Baffinland reported that it employs best practices for all of its fuel transfer events and updates its OPEP annually, which is submitted to Transport Canada for review.

Condition 174

"The Proponent and the Canadian Coast Guard are required to provide spill response equipment and annual training to Nunavut communities along the shipping route to potentially improve response times in the event of a spill."

Baffinland indicated that it conducted a spill training exercise in August 2014, and that members of the Canadian Coast Guard including a Pond Inlet community member were invited to the training. The Proponent did not provide any indication of annual training to communities along the shipping route, nor was any mention made of equipment provided to these communities or indication of the involvement of the Canadian Coast Guard.

[125] Appendix E1-Concordance to PC Conditions
[126] Section 4.5.2 of Appendix J7

Condition 176

> *"The Proponent shall, in coordination and consultation with the Qikiqtani Inuit Association and the Hunters and Trappers Organizations of the North Baffin communities and Coral Harbour, provide updates to its Shipping and Marine Mammals Management Plan to include adaptive management measures it proposes to take should the placement of reflective markers along the ship track in winter months not prove to be a feasible method of marking the track to ensure the safety of ice-based travellers."*

Baffinland reported it has contracted expert consultants to conduct spill modeling for its spill at sea response plan, and that modeling and plan will be finalized prior to the commercial shipping of ore and included in the 2015 Annual Report to the NIRB.

Condition 177

> *"The Proponent shall 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."*

Baffinland reported[127] that all ships used will be contracted, and that the ship operators will be responsible for enrolling the vessel. Baffinland also noted that it will ensure that this condition is included into term and condition of any charter contract.

2.3.17 **Transboundary Effects**

Conditions 180-181

Within its 2014 Annual Report to the NIRB, Baffinland noted that the Makivik Corporation is an active member of the Marine Environment Working Group (MEWG)[128].

3 COMPLIANCE & EFFECTS MONITORING

On May 26, 2015 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) How the authorizing agency has incorporated the terms and conditions from the Project Certificate into their permits, certificates, licences or other government approvals, where applicable;
b) A summary of any inspections conducted during the reporting period, and the results of these inspections; and
c) A summary of Baffinland's compliance status with regard to authorizations that have been issued for the Project.

[127]

[128] Section 1.4 of Appendix J10; Appendix D24 – Supplemental to 2014 Annual Report submitted to the NIRB (March 2015)

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

a) Whether the conclusions reached by Baffinland in the *Mary River Project 2014 Annual Monitoring Report* are valid; and
b) Any areas of significance requiring further studies.

The following is a summary of the comments received from authorizing agencies regarding compliance and effects monitoring.

3.1.1 Qikiqtani Inuit Association (QIA)

- **Compliance Monitoring**

Site Visit and Inspections:

The operation of the Mary River Project on Inuit Owned Land is governed by QIA's Commercial Lease (Q13C301), Inuit Impact Benefit Agreement and Water Compensation Agreement. On May 6-8, 2014, the QIA conducted site inspection on portions of the Mary River Project that are part of the commercial lease, and directed the Board to the inspection report, which was submitted by Baffinland as an appendix to its 2014 Annual Report to the NIRB[129]. The QIA reported that during the inspection of the Project area, it observed a small leak at an inactive fueling station located at the bulk fuel facility at Milne Inlet, and that corrective action for this leak was implemented by Baffinland staff while QIA's inspectors were still onsite. QIA inspectors observed significant number of small spills onsite, and recommended proactive reporting of all spills including the use of spill trays. Other issues noted by the inspectors include failures of fences at the landfill, removal of burn pit hazardous materials into a secondary containment, general site clean-up, and removal of the content of the punctured tote into an intact container.

On June 24-26, 2014, the QIA conducted another inspection on portions of the Mary River Project that are part of the commercial lease. During the inspection, spilled hydrocarbons (and potentially other materials) and the associated free-product floating on meltwater were noted within three hazardous material laydown areas at the Milne Inlet camp; however the QIA acknowledge that these spills occurred within lined areas. The QIA reported that volume of spilled materials combined with the water within the laydown areas were an issue of environmental concern, and requested that Baffinland address causes of spills, and provide remedial actions to be taken. Within the June 2014 inspection report, QIA specifically reported that several environmental issues pertaining to reparation of the landfill fences and containment of hazardous materials at laydown areas were yet to be fully addressed. The QIA also reported on the need for Baffinland to monitor the use of new materials extracted along the Tote to support Tote Road realignment construction operations. Recognizing the series of environmental issues noted at the Project site during the inspections, the QIA made the following recommendations to Baffinland:

- Ensure that hazardous materials are disposed in proper containment at the Mary River burn pit.
- The burn pit area at Mary River should have all loose ash removed from the area and contai ned within drums, and waste should only be burned as specified in the Baffinland's Solid W aste Management Plan.

[129] Appendix F2-QIA Inspection Reports and Baffinland Responses

- The lined laydowns need to have meltwater removed from them.
- Baffinland spill contingency plans need to be known by all staff, particularly staff required to clean up spills.
- Waste bags containing food should not be left outside, and should be managed as per Baffin land's Waste Management Plan.
- The materials stored at Quarry 104 need to be stored properly, with all hydrocarbon burning equipment stored within containment. The multiple small spills in this area are to be addressed.

- **Effects Monitoring**

The QIA identified several information gaps within the 2014 Annual Report, and questioned the validity of Baffinland's conclusions with respect to several monitoring items as noted below:

Dust Suppression Protocol

QIA commented on dust suppression, noting that protocol for when dust suppression methods will be used on site are not well defined, but rather are based on a qualitative judgement by Baffinland staff. QIA recommends that the protocol to be used for dust suppression be rigorously defined to be reflective of industry best practices, and the potentially significant associated health risks.

Habitat Loss

QIA commented that the 2014 Annual Report indicated no new habitat loss occurred in 2014, further questioning that as construction activities began in 2014 it was doubtful of the validity of Baffinland's conclusion that no change in available habitat occurred. QIA additionally observed discrepancies in relation to monitoring project impacts on birds, indicating the need for greater consistency and clarity in reporting.

Human Resources

QIA commented on the Aquatic Effects Mentoring Program run by Knight Piesold, and further noted that the Program only achieved a 5% Inuit employment and has not achieved higher levels for Inuit participation. QIA request an explanation for this relative lower rate of Inuit employment and/or suggest measures that will be taken in the future to increase Inuit participation.

Outstanding Marine Information

QIA noted that the 2014 Annual Report was deficient of marine information regarding fuel spill modelling, hydrodynamic modeling and underwater sound monitoring, recommending that that as shipping activity increases, it is essential for Baffinland to report on all the outstanding marine information.

Contractor Employment

QIA noted that information in the 2014 Annual Report pertaining to Inuit employment has not included contractors' employment, further indicating that collection of this information is a requirement under Article 20 of the IIBA, and to be included in Baffinland's annual reporting to provide greater clarity regarding Inuit employment overall.

Apprenticeship Programs

QIA noted that the 2014 Annual Report has not included information regarding a 2014 Apprenticeship Program, and additionally details regarding number of Inuit participants, selection criteria, hours of training and successful completion rate.

Management Plan Updates

QIA indicated that the most recent version of the SMWMP (Appendix J10 in Table 6.1) was not updated, and that errors that were previously identified based on QIA and MEWG comments have been carried forward to the current version of the Plan. QIA specifically recommends that the SMWMP be revised and corrected prior to the annual report being finalized.

Raptor Occupancy and Productivity

QIA recommended that that more clarity is required on the methods used for the raptor program, and that more details on the comparison and difference be provided.

Wildlife Mortalities

QIA recommended that data on Arctic fox mortalities be provided in both the Annual Report and the Annual Terrestrial Monitoring Report.

Editorial Inconsistencies

QIA identified a minor editorial inconsistency within the annual report with respect to an extensive field program planned for 2014, and recommended that this be corrected to 2015.

Evaluation of Effects to the Terrestrial Environment

QIA recommended that discrepancy with respect to the conclusion regarding sensory disturbance to birds in 2014 be clarified as there was no evidence of a relationship noted.

Ballast Water

QIA recommended that Baffinland clarify the location for information on ballast water monitoring and sampling, and provide details on the proposed program in the annual report, and questioning whether ballast from all vessels be sampled.

Tote Road

QIA noted it was unclear as to the meaning of "increase road embankment width" meant, and requested that this be clarified as it may have implication to the semi-permeable barrier effects of the road to wildlife.

Caribou Protection Measures

QIA requested that the relationship between the Caribou Protection Measure and the TEMMP be clarified, including how disturbance is quantified.

Socioeconomic Monitoring Report

QIA noted that there is not enough supporting evidence to quantify significant positive change for socio-economic effect, and recommended that Baffinland present more compelling quantitative data that would support a significant rating.

Summary of Baffinland's Response to Comments Received from QIA[130]:

- With respect to dust suppression and protocol, Baffinland responded to QIA's comments stating that it has commenced dust suppression program using calcium chloride on roads at the camps and along several sections of the Tote Road, which is in accordance with the its Dust Management Protocol for the Mary River Project.

- Regarding habitat loss and discrepancies noted by QIA in relation to monitoring project impacts on birds, Baffinland responded that it was working to develop a more accurate method of assessing project area footprint in 2015, and that it will attempt to provide better clarity and consistency between summary information provided in the NIRB annual reports to the detailed information provided in the terrestrial ecosystem annual report.

- In response to human resources, specifically the relative lower rate of Inuit employment for the Aquatic Effects Mentoring Program (AEMP) noted by the QIA, Baffinland indicated that the AEMP is now been run in-house by the Site Environment team with support from specialized environmental scientist at Minnow Environmental Inc. as a result of the regulatory requirement to have an Aquatic Effects Monitoring Program under the Type A Water Licence. Baffinland also noted that the AEMP focused on the summer months, thereby making the opportunity for work only temporary (approximately 3 months).

- Regarding outstanding marine information, especially as related fuel spill modeling, hydrodynamic modeling and underwater sound monitoring, Baffinland indicated that modeling results were not yet completed, and that the Spill at Sea Response Plan was currently being finalized[131] based on input from the modeling report and review and input from different agencies, including Transport Canada and Canadian Coast Guard.

- With respect to contractor employment, the QIA had noted that the 2014 Annual Report pertaining to Inuit employment has not included contractors' employment; however, Baffinland responded that it will ensure that its 2014 IIBA Annual Implementation Report addresses both the Baffinland and contractor workforce in Section 2.5 of that report.

- The QIA had noted that the 2014 Annual Report has not included information regarding a 2014 Apprenticeship Program, however, Baffinland responded that section 2.2.10 of the IIBA Annual Implementation Report identified the Apprenticeship Preparatory Program undertaken in 2014, and that it will ensure that details of all training programs will be included in the 2015 Annual Report to the NIRB pursuant to conditions 132, 135, 136 and 138.

[130] http://ftp.nirb.ca/03-MONITORING/08MN053-MARY%20RIVER%20IRON%20MINE/03-ANNUAL%20REPORTS/02-PROPONENT/2014-2015/02-CORRESPONDENCE/

[131] On September 8, 2015 the NIRB received Baffinland's submission of Spill at Sea Response Plan and Fuel Spill Modeling Report

- **Workplace Incident at the Mary River Site**

On September 21, 2015, the QIA released a media statement regarding the workplace incident at the Mary River site that resulted in the death of a worker on September 20, 2015. QIA reported that it was in communication with Baffinland for further information regarding the incident, and that the Proponent along with the RCMP is currently conducting an investigation into the situation.

3.1.2 Aboriginal Affairs and Northern Development Canada (AANDC)

- **Permitting and Regulatory Comments**

AANDC noted in its comments to the NIRB regarding Baffinland's 2014 Annual Report, that in July 2007 it issued a Land Use Permit (No. N2007F0004) to Baffinland for development of the portion of the Tote Road that is not located on Inuit Owned Land; however, as the Permit for the Tote Road was issued prior to the issuance of the NIRB Project Certificate, AANDC reported it was not practicable to incorporate terms and conditions into the permit. AANDC also indicated that a Land Use Permit (No. N2014Q0016) and Quarrying Permit for the Tote Road, and permit for Steeensby and Milne Inlet (No. N2014C0013), as well as a Land Lease (47H/16-1-2) including Land Use Permit for the Milne Foreshore area (No. N2014X0012) were all issued in 2014. AANDC specifically noted that as the land use and quarry permits associated with these undertakings would be renewed in 2015, it would ensure that relevant term and condition from the Project Certificate were incorporated accordingly to the updated authorizations.

AANDC also reported that in 2014, Baffinland's Project activities and monitoring were conducted under the following water licences: Type A Water Licence 2AM-MRY1325, the expired bulk sampling/exploration Type B Water Licence 2BB-MRY114, the new exploration Type B Water Licence 2BE-MRY1421, the expired construction Type B Water Licence 8BCMRY1314, and the new construction Type B Water Licence 8BC-MRY1416.

- **Compliance Monitoring**

Water Quality Inspections

AANDC reported[132] that on April 15 and 16, 2014, its Water Resource Officers conducted site inspections at the Mary River and Milne Inlet camp sites for compliance with the Type A Water Licence (2AM-MRY1325) as issued by the Nunavut Water Board. AANDC reported three issues of non-compliance as related to the requirement of water licence as described below:

Storage of materials on surface of frozen lakes (Part D, Item 21):
The AANDC inspector noted Baffinland's failure to comply with Part D Item 21 of the water licence, which require that the Licensee not store materials on the surface of frozen lakes including the immediate banks except what is for immediate use, as evident through observation of equipment and materials being stored at the bank of Km 32 Lake, as well as storage of heavy machinery and frost fighters on David Lake.

Disposal of Ash (Part F, Item 8):

[132] Appendix G2-AANDC Inspection Reports and Baffinland Responses

The AANDC inspector reported Baffinland's failure to comply with Part F, Item 8 of the water licence, which require that the Licensee direct ash to an appropriate facility for disposal. At the time of the visit, the AANDC inspector observed ash at two locations.

Waste Management Plan (Part B, Item 16):

The AANDC inspector noted Baffinland's failure to comply with Part B Item 16 of the water licence dealing with waste disposal and hazardous waste management, and issues related to implementing the following items:

- Section 5.2.9 (Disposal of Open Burn Ash); Section 5.2.2 (Acceptable Clean Wood Waste); and Section 5.2.6 (Burning Guidelines) as related to Open Burning of Untreated Wood, Cardboard and Paper Products Procedures, 2014.
- Section 4.5.3 (Ash Disposal); Section 4.6 (Inert Landfill) as related to Waste Management Plan for Construction, Operation and Closure, 2013.
- Section 5.4.1 (Hazardous Waste Containers); Section 5.4.2 (Hazardous Waste Storage Areas) as related to Hazardous Materials and Hazardous Waste Management Plan, 2013.

AANDC reported that the following actions were recommended to Baffinland to address the observed non-compliance issues:

- Move the Terex Light Plant and the seacan to within an approved distance of the high water mark at Km 32 Lake.
- Immediate removal of equipment from the ice to within an approved distance of the high water mark, except for materials which is required for immediate use.
- All areas that were affected by hydrocarbon spill be scrapped up and disposed of in a proper waste management facility.
- Remove inappropriately dumped materials from the landfill.
- Conduct review of spill management practices and demonstrate that measures are being taken to reduce the amount of spill on site.
- Replace snow fencing with new fencing that is less sensitive to winters by June 15, 2015, as well as monitoring any windblown debris leaving the landfill facility and return any debris that blew away back to the facility.
- Properly secure all ash on site.
- Re-evaluate the effectiveness of quality assurance and quality control plan for the open burning Facility.

From June 17 to 19, 2014, a second inspection by AANDC inspectors was conducted to observe seasonal changes and site condition related to freshet, and to determine compliance with the previous water licence inspection conducted in April 2014. Two major concerns were reported as pertaining to waste ash storage at Milne Camp and Mary River camp, including surface drainage (Yard swale) to Camp Lake near MS-MRY-1(Mary River Camp). AANDC indicated that the plan for waste ash in barrels was requested to be submitted on or before July 4, 2014, and additionally the plan for the surface drainage (yard swale) was to be submitted on or before July 21, 2014. AANDC reported that Baffinland met the requirement of submitting both plans by the stipulated dates and that it will ensure that these plans are executed in accordance to the requirement of the Type A Water Licence.

On July 14, 2014, AANDC officers conducted an inspection of the Mid-Rail, and Steensby Camp, both of which were noted to be dormant. AANDC inspectors observed no areas of concern at either site.

From August 21-25, 2014, a water licence inspection was conducted at the Mary River Mine site, Milne Port area and along the Tote Road. No issues of non-compliance were observed, although it was noted that 2 sites required action plans to be submitted with respect to the open burn site, and drilling/road salt (calcium chloride) storage at Milne Inlet camp. AANDC indicated that both plans were submitted, and approved.

From November 18-20, 2014, the final inspections of the Mary River site, Milne Port area and Tote Road were conducted by AANDC officers; however it was noted that the inspection report was not included in the 2014 Annual Report to the NIRB. While no issues of non-compliance were observed except for minor concerns related to sediment control, AANDC reported that areas of previous concern were specifically checked for plan implementation. AANDC noted that in accordance with Part B, Item 18 of the water Licence, an annual review of the management plans, developed under the Water Licence has also been undertaken.

- **Incorporation of Terms and Conditions into AANDC Authorizations**

AANDC also reported specifically on how it had incorporated terms and conditions from the Project Certificate into its licensing for various aspects of the Mary River Project and has identified the following items:

Dust Management and Monitoring Plan
AANDC indicated it had incorporated requirements of Condition 10 of the NIRB Project Certificate as conditions within Part 31 (1) (m), 48 of the Land Use Permit (N2014Q0016).

Incineration Management Plan
AANDC reported it had partially incorporated Condition 11 of the Project Certificate as conditions within Part F as pertaining to the incineration and disposal plan for waste ash in barrels.

Noise, Effluents, Mine Pit Lake, Culverts, Blasting and Aquatic Effects
With respect to noise and vibration monitoring pursuant to Project Certificate condition 14, AANDC indicated that it had incorporated this requirement into Part 31 (1) (m) 49 of the land use permit. Pursuant to condition 16 as pertaining to the consistency of water related infrastructure with FEIS predictions, AANDC reported that this condition has been incorporated into Part D, which require that engineering drawings be provided upon request. Pursuant to condition 17, 18 and 24 as related to monitoring discharge criteria for effluent generated and analyses of fill time for the mine pit lake, AANDC reported that these requirements have been incorporated into Parts E and F, including Item 3 and I of its authorization. AANDC further indicated that NIRB conditions related to monitoring culverts and its effects on natural flow pursuant to condition 19 have been incorporated into Parts B, D, E and I. Pursuant to condition 47 as related to Project infrastructures in watercourses, AANDC reported this requirement has been incorporated into Part E, Item 23, and Part 31 (1) (f) 16 of land use permit.

Blasting Management Plan and Aquatic Effects Monitoring

AANDC reported that condition 20 as related to monitoring explosive residues and related by-products has been included as Part E, item 24; Part I, item 23 as well as Part D, Item 18g of its authorization. With respect to conditions 21 and 44 as related to Aquatic Effects Monitoring Plan and DFO blasting threshold; AANDC reported that the requirement pursuant to condition 21 has been incorporated into Part I of its authorization, and that condition 44 has been partially incorporated as Part E, Item 24, which require that the Licensee submit a Blasting Management Plan and a Construction Monitoring Report (Part D, Item 8) to ensure such measures are implemented.

Geotechnical Investigations and Engineering Drawings

Pursuant to condition 25 of the Project Certificate, AANDC indicated that Part D, Item 19 and Part I, Item 12 for water infrastructure have been incorporated into the authorization to address this requirement. Regarding condition 29 of the Project Certificate, AANDC noted that Part D, Item 2 and Part E, Item 23 already addresses this requirement.

Erosion Management Plan

AANDC noted that Part 31 (1) (m) 50, of the Land Use Permit has been incorporated into the authorization to address condition 26 as pertaining to erosion management plan. AANDC specifically noted that while there is no requirement for a Plan, there are requirements throughout the Water Licence to prevent or minimize erosion (Parts D, E, and F).

Effect of Project on Permafrost

AANDC reported that it has incorporated condition 28 as pertaining to monitoring the effects of the Project on the permafrost along the railway and other Project affected areas as Part D, Item 11 of its authorization.

Quarry Operations and Management Plans and Project Footprint

AANDC noted it had incorporated requirement of condition 30 as related to quarry operations into Part D, Item 7, and 31 (1) (m) 51 of the Land Use Permit.

Revegetation Program

AANDC reported that it had incorporated requirement of condition 39 and 40 as pertaining to progressive vegetation program into Part J, Items 10 and 11 of its authorization.

Buffer Zones, Silt Control and Runoff

Pursuant to conditions 41 and 42 regarding maintaining a minimum buffer zones between mining operations and adjacent water bodies, and prevention of impact due to potential for acid rock drainage or metal leaching, AANDC reported that it has incorporated these conditions as Part D (Item 13 and14 and as Part E, F and H. With respect to condition 43 pertaining to site drainage and silt control, AANDC reported it has included Part D, Item 2 to its authorization to address this requirement. With respect to condition 46 pertaining to monitoring runoff from facilities responsible for generating liquid effluent and runoff, AANDC reported this requirement has been incorporated into Part F of its authorization.

Caribou Mortalities

AANDC indicated that it had incorporated requirement of condition 53 pertaining to caribou mortality into Parts 31 (1) (h) 36-38, and 31 (1) (m) 52, of the Land Use Plan.

Environmental Protection Plan
With reference to waste management provisions pursuant to condition 64, AANDC noted that Part 31 (1) (g) 27, of the Land Use Plan, and Part F, Item 7 of the Water Licence, authorizes the incineration of all acceptable food waste.

Oil Spill Response
AANDC indicated that it had incorporated requirement of condition 92 as related to equipment for spill response into Part H, Item 5, and Part 31 (1) (g) 30, 31 of the Land Use Plan.

Socio-Economic Monitoring
AANDC reported that it continues to work collaboratively with Baffinland and the Government of Nunavut to develop a socio-economic monitoring program, which is anticipated to address conditions 129, 131, 133, 145, 148, 154, 159, 168 and 169, and that work towards a comprehensive program was expected to continue throughout 2015 to address these conditions.

- **Effects Monitoring**

AANDC noted that it had no concerns with regard to effects monitoring associated with the Mary River project, and that it has no comments on validity of Baffinland's conclusions as presented within its 2014 Annual Report.

3.1.3 Government of Nunavut

- **Compliance Monitoring**

The GN did not report any concerns with respect to compliance monitoring associated with the Mary River Project for 2014.

- **Effects Monitoring**

The GN provided general comments with respect to effects monitoring, and questioned the validity of Baffinland's conclusions regarding several items regarding socio-economic, environmental and human health issues as outlined below:

Polar Bear Monitoring-Shipping and Marine Wildlife Management Plan
GN commented on the Shipping and Marine Wildlife Management Plan, noting that the Plan has yet to include monitoring and mitigation for Polar bears. The GN recommends an update to the Plan to either include baseline and monitoring for polar bears on the sub-population(s) scale, or alternately have Baffinland collaborate with GN Department of Environment on research initiatives for the relevant subpopulations.

Terrestrial Wildlife Monitoring
The GN commented on terrestrial wildlife monitoring, noting that the 2013 Board recommendation to refine study design and improve monitoring program for mammals were insufficient in scope and practically inapplicable to detect any project-related effects on terrestrial mammals (e.g. caribou and wolves). The GN recommends cessation of den surveys until prey species densities are sufficient to

support wolves and further recommends that Baffinland conduct caribou monitoring by participating in the regional monitoring effort led by the GN.

Vegetation Monitoring

The GN commented on vegetation abundance monitoring, noting that the current study design will be unable to detect meaningful changes to the terrestrial vegetation and lichen due to small sample size, limited study area extent and site variability. The GN specifically recommends that vegetation monitoring program be redesigned to increase sampling efforts, and incorporate where possible other field techniques such as use of high resolution remotely sensed images.

Temporary or Premature Mine Closure

The GN commented on the Closure Scenario Report, noting that Baffinland considers temporary or premature mine closure very unlikely. The GN requests that Baffinland provide a more detailed and comprehensive risk assessment for temporary or premature mine closure in consideration of the inherent risk associated with the mining industry, as well as demonstrate engagement with the relevant stakeholders mentioned in the mitigation plans as well as the Mary River Socio-Economic Monitoring Working Group and Qikiqtaaluk Socio-Economic Monitoring Committee.

Health Related Terms and Conditions

The GN noted that the 2014 Annual Report did not specifically address term and conditions related to monitoring of demographic changes, employee and family health and well-being, including counselling and treatment programs, as well as impact to health services pursuant to conditions 133, 153, 154, 157 and 158 of the Project Certificate. The GN recommends that Baffinland conduct its residency and housing surveys in consultation with the Nunavut Housing Corporation to implement the relevant conditions.

Access to Affordable Housing Options

The GN commented on employees' access to affordable housing options, and further reported that Baffinland has yet to design its housing programs and measures to assist Project employees with homeownership or access to affordable housing options pursuant to condition 151. The GN indicated that the Nunavut Housing Corporation is willing to work with Baffinland to explore realistic options and viable opportunities to support the housing needs of its employees.

Family Services-Career Development

The GN commented on employee recruitment, noting it would like to clarify whether efforts are being made to recruit employees from other communities in the Baffin region and across the other two regions. The GN additionally requests that information on the process used by Baffinland to determine whether there is sufficient labor supply in Nunavut to ensure that residents of Nunavut are hired before sourcing southern Canadian workers be provided.

Summary of Baffinland's Response to Comments Received from GN[133]:

- Baffinland responded that it's Shipping and Marine Wildlife Management Plan (Appendix J10) includes sections notably section 5, 6 and Table 3 which describe environmental management specific to Polar bears. Baffinland also indicated that this topic has been the subject of discussion at the MEWG meetings, and that it does not propose to conduct population monitoring for polar bears, but will consider collaboration with the GN and other agencies.

- With respect to terrestrial wildlife monitoring, Baffinland responded that it continues to refine study design and improve the monitoring programs for mammals. However, due to the extreme low abundance/density of caribou and their predators on North Baffin Island, Baffinland indicated that it agreed with the GN's suggestion of cessation of den surveys, and that it will continue site-specific monitoring to ensure that operational mitigation actions are triggered when necessary based on local wildlife presence.

- Baffinland provided response with respect to vegetation monitoring, acknowledging that the current sample size was insufficient for reasonable power detection of change, and that results after one year of monitoring and power simulations using twice the current number of samples indicate that sample size will be increased to 15 balanced transects to account for inter-site variability.

- Regarding the likelihood for temporary or premature Mine closure, Baffinland responded that its Closure Scenario Socio-Economic Study provided (Appendix O3) considered the economic, social, and cultural impacts of temporary or permanent closure, and has taken into consideration the potential drop in employment between the construction and operations phases of the Project. Baffinland also indicated that is committed to creating partnerships with its government and community stakeholders to implement programs to support employee transition, if and when it became evident that closure, temporary or otherwise is likely to occur.

- With respect to health related terms and conditions (133, 153, 154,157 and 158) of the Project Certificate that were not specifically addressed in the 2014 Annual Report to the NIRB, Baffinland responded noting the housing survey referenced by the GN, and further indicated that it will implement this survey in collaboration with the GN and assess whether the housing survey will provide information that would be valid and valued.

- In addressing the GN's comments as related access to affordable housing options for beneficiary employees, Baffinland responded that the provision of housing is the mandate of the GN, and that through the provision of salaried employment in the territory, and helping employees set up permanent bank account, it is providing means to invest, borrow financing and obtain housing.

[133] http://ftp.nirb.ca/03-MONITORING/08MN053-MARY%20RIVER%20IRON%20MINE/03-ANNUAL%20REPORTS/02-PROPONENT/2014-2015/02-CORRESPONDENCE/

- In addressing the GN's comments as related to employee recruitment in Nunavut and from southern Canada, Baffinland responded that it follows the hiring protocol as established in Section 7.5 of the IIBA, and that measures were being implemented to reach potential candidates in other communities.

3.1.4 Environment Canada

- **Compliance Monitoring**

Site Visit and Inspections

EC reported that Environmental Enforcement Officer completed an inspection of the Project area between October 7-9, 2014 for the purposes of verifying compliance with Canadian Environmental Protection Act 1999 (CEPA, 1999) and associated regulations that apply to the Project site. EC specifically noted that since Part 9 of CEPA 1999 regarding petroleum and allied petroleum products storage tanks regulation, and the Federal halocarbon regulations 2003 do not apply on Inuit owned lands, inspections under these regulations only focused on federal lands. EC also reported that the site, including the Milne port area were inspected to verify compliance with the Fisheries Act for facilities located near fish bearing waters, and that it held discussion with Baffinland regarding when the Metal Mining Effluent Regulations (MMER) will apply to the site, including requirement that may apply once trigged in June/July 2015. EC reported that only minor non-compliance issues were identified during the inspection, and that it was generally satisfied that the identified issues were resolved by Baffinland in a timely manner.

- **Effects Monitoring**

EC noted no concerns with regard to effects monitoring, and accept the conclusions drawn by Baffinland within the 2014 Annual Report. In commenting on Baffinland's 2014 Annual Report, EC noted some issues, and provided recommendations regarding the following items:

Disposal of Sewage Sludge

EC commented on Sewage and Grey Water Management, recommending that Baffinland provide additional information to demonstrate that incineration of the polymer bound sludge is an environmentally sound practice, and that emissions from the incinerators will meet design specifications when processing sludge/polymer cake.

Exceedance of effluent discharge quality limits

EC commented on the Waste Management Plan, further recommending that the Membrane Bioreactor treatment plant performance be reviewed with necessary steps taken to ensure that effluent treatment is optimized.

Waste Management Plan-Incineration

EC commented on the Waste Management Plan, recommending that Baffinland revise the Plan to remove the option to incinerate grease and discontinue incineration of plastic materials.

Waste Management Plan-Record Keeping

EC commented on the Waste Management Plan, recommending that landfill operators keep written records of what wastes are accepted, when, how much, and where they are deposited within the landfill.

Unacceptable Environmental Risk

EC requested clarification on the definition of "unacceptable environmental risk", recommending that Baffinland provide what environmental standards site remediation will be judged against.

Pre-clearing Nest Surveys

EC requested that Baffinland update the key sensitive nesting period in the TEMMP to minimize the risk of incidental take, as well as prevent detrimental effects on migratory birds, nests and eggs. EC recommends that pre-clearing nest survey results include searching for evidence of nesting (e.g., presence of birds in breeding habitat through observation of singing birds, alarm calls, distraction displays) in its pre-clearing nest survey methodology. Additionally, EC recommends that pre-clearing nest surveys be carried out by skilled and experienced observers using appropriate methodologies, and that Baffinland increase training effort of staff to improve survey effectiveness.

Red Knot Surveys

EC suggest that Red Knot surveys should be improved rather than discontinued, and that priority should be given to surveying areas of preferred habitat that will be impacted directly by project activities and should include skilled and experienced observers. EC recommends that a risk assessment approach be used to select survey areas for future red knot surveys and that additional survey methods, such as PRISM, could be utilized to target a sample of preferred habitats indirectly impacted and control areas within the Regional Study Area.

Roadside Waterfowl Surveys

EC noted its concerns that Roadside Waterfowl surveys did not reconcile with indicator species identified in Project Certificate condition 74. EC questions the value of these surveys both in terms of impact prediction and contribution to regional monitoring, and further suggesting repeating surveys over the breeding season to better capture the range of nest initiation of various species and account for failed breeding attempts. EC additionally indicated concerns with respect to annual variation in sampling of waterbodies, indicating that sample sizes of most species are too small to determine any trend with confidence and recommending the re-allocation of resources to higher priority bird monitoring needs.

Documented Bird Species within the Terrestrial Regional Study Area

EC noted that baseline and monitoring data provided within the project area suggests that more bird species have been detected than reported in the annual report, with some unreported species being of conservation concern in Nunavut, including the Red Knot, listed on the Species at Risk Act. EC recommends that a thorough review of bird baseline and monitoring data be conducted to determine presence of bird species, including species at risk within the project area as well as follow-up on updating Table 26 of the 2014 Annual Terrestrial Monitoring Report.

Monitoring of Flight Altitude in Key Site for Moulting Snow Geese

EC noted its concerns with respect to monitoring flight altitude in key sites for moulting snow geese. EC specifically commented that helicopters on site were flying below recommended altitudes most of the time, and that Baffinland need to create increased pilot and staff awareness of the area of concern by displaying maps in appropriate locations or upload digital information in navigation GPSs, as well as analyze helicopter track log information in the Annual Terrestrial Monitoring Report.

Reporting of Project-related Mortalities, including Migratory Birds

EC commented on project-related mortality with specific notes on migratory birds' collision with project infrastructures. EC observed discrepancies between the earlier draft and final versions of the 2014 Annual Terrestrial Monitoring Report, noting that the final version of the report was missing a table of all project-related mortalities, as well as details regarding two long-tailed ducks that flew into an operational sheet piling crane. EC recommends that project-related mortality of migratory birds be reported to EC Wildlife Enforcement and that the reporting process be formalized in the TEMMP. Additionally, EC further recommends that Baffinland report all project-related mortalities with sufficient detail in the annual monitoring report to allow for adaptive management, and that information collected should include: date and time of discovery, estimate of date and time of death, species and number, suspected cause of death and rationale, general notes on weather at time of death (for e.g. high winds or fog), and any other information that may help to understand the specific circumstances.

Summary of Baffinland's Response to Comments Received from EC[134]:

- Baffinland responded that sewage sludge at Mary River Project sites is not polymer based, and that sewage is only treated with alum to control phosphorus levels and calcium carbonate or sulphuric acid for minor adjustments to pH as needed. Baffinland also noted that the remaining sludge is physically dewatered using a filter press prior to incineration.

- With respect to reviewing the performance of the Membrane Bioreactor treatment plant, Baffinland responded that performance of the plant is undertaken on a regular basis to ensure that effluent treatment is consistent optimized.

- In addressing EC's comment related to the removal of the option to incinerate grease and discontinue incineration of plastic materials, Baffinland indicated that it has implemented a waste sorting procedures to ensure proper segregation of polychlorinated plastics and any materials that would cause emissions of air discharge not within established criteria.

- Regarding the recommendation for landfill operators keep written records of what wastes are accepted, including when, how much and where they are deposited within the landfill, Baffinland indicated that waste segregation practices are currently effective, and that landfill

[134] http://ftp.nirb.ca/03-MONITORING/08MN053-MARY%20RIVER%20IRON%20MINE/03-ANNUAL%20REPORTS/02-PROPONENT/2014-2015/02-CORRESPONDENCE/

operations and documentation requirements are conducted in accordance with the Landfill Maintenance and Operation Manual.

- With respect to updating the key sensitive nesting period in the TEMMP, Baffinland indicated that the TEMMP identifies the nesting season as 31 May to 04 August, and that the next update of Baffinland's TEMMP will include the Active Migratory Bird Nest Survey Protocol that has been used on site since construction began, Baffinland also indicated that pre-clearing nest surveys will be carried out by skilled biologist and that training in 2015 will include additional technique of rope dragging as a precautionary measure to help locate potentially inconspicuous nesting birds such as red knot.

- In addressing EC's comments regarding roadside waterfowl surveys, Baffinland indicated that there is no project Condition committing the Proponent to conduct these surveys, and that the surveys have been conducted on an opportunistic basis when qualified ornithologists are on site at the appropriate time of the year.

- With respect to documented bird species within the terrestrial regional study area, Baffinland acknowledged that incidental sightings of red knots were recorded in 2007 and 2008, and that those records were inadvertently omitted from baseline reporting, Baffinland further indicated that the cumulative bird species list of observation on site, including retroactive accounts of recently available data, will be updated in the 2015 annual terrestrial environment monitoring report.

- Regarding EC's concerns as related to monitoring flight altitude in key sites for moulting snow geese, Baffinland responded that this condition continues to be discussed within the Terrestrial Environment Working Group, and it will provide helicopter track log data, including compiling and analyzing data in relation to the Snow Goose Management Area for the Annual Report in 2015.

- With respect to EC's comments on project-related mortality with specific notes on migratory birds' collision with project infrastructure, Baffinland responded that future annual terrestrial environment monitoring reports will include a tabulated summary of project-related mortalities, which will be incorporated in future revisions of the TEMMP with information provided by EC.

3.1.5 Department of Fisheries and Oceans (DFO)

- **Compliance Monitoring**

DFO Site Visit and Inspections

On September 24 to 25, 2014, DFO conducted a compliance monitoring site visit at selected Tote Road crossings and around the Milne Inlet ore dock. During observation of the Tote Road crossing, DFO inspectors noted that four bridge structures had been installed as proposed, and that no adverse impacts to fish and fish habitat was observed. DFO inspectors also reported that the removal of the

existing seacan crossings has been deferred until the end of December 2015. While at the Milne Inlet ore dock, DFO inspectors noted that the ore dock construction was ongoing, and that the silt curtain around the marine area was properly installed, and fully functional. Based on the observations from the site visit, and the review of Baffinland's 2014 Annual Report, DFO concluded that Baffinland was in compliance with conditions of the Fisheries Act authorization.

Incorporation of Terms and Conditions into DFO Authorization

DFO reported that it issued a letter of advice for the Tote Road crossing upgrades on December 16, 2013, and that on June 30, 2014 a Fisheries Act Authorization was issued for the construction of the Ore Dock at Milne Inlet.

DFO also reported that it had incorporated requirements of Condition 14 (a) of the NIRB Project Certificate as conditions 2, 2.3, 2.4 and 2.5 in the *Fisheries Act* 35 (2) (b) Authorization.

DFO also noted that it had modified NIRB Condition 87 and included it as Condition 3.1 in the *Fisheries Act* Authorization to specifically address the need to implement a monitoring program to evaluate changes to the marine fish, fish habitat and aquatic organisms, as well as introduction of non-native species resulting from ballast water discharges.

Furthermore, DFO indicated that it had incorporated Condition 105 (a, b) as Condition 3.5 in the *Fisheries Act* Authorization, and that NIRB Condition 109 was addressed by DFO Condition 3.2.

The requirements of Condition 110 were modified and incorporated as Condition 3.3 in the *Fisheries Act* authorization, while Condition 3.4 of the DFO permit addressed Conditions 121-123 of the Project Certificate.

While the relevance of Conditions 116 through 118 was noted, DFO specifically confirmed that there will be no blasting associated with the construction of the ore dock at Milne Inlet; as such no authorization conditions are required for this activity.

- **Effects Monitoring**

Within its comment submission to the NIRB, DFO reported concerns regarding the 2014 Annual Report noting the following items: <u>Effects of Lake Sedimentation on Arctic Char Egg Survival</u>**:**
DFO commented on the potential for deposition of sediments to adversely affect egg survival, recommending that Baffinland's monitoring of sediment deposition target actual spawning locations. DFO requested clarification with respect to Baffinland's future plans to identify Arctic Char spawning shoals in order to determine appropriate site selection for the sedimentation monitoring program.

<u>Stream Diversion Barrier Monitoring</u>
DFO commented on the Stream Diversion Barrier Monitoring, requesting clarification on the visual assessment methodology used to determine water levels and barriers in the stream diversion barrier study proposed by Baffinland. DFO further requested clarification as to whether or not future

surveys will include only visual surveys or utilize electrofishing surveys to confirm fish presence/absence when there is uncertainty regarding fish passage at potential barriers.

Milne Inlet Unmanned Aerial Vehicle (UAV) Field Test
DFO questioned the UAV used in the Milne field test, requesting additional information and clarification with respect to the maximum flight altitude achieved and resolution of camera used during the test. DFO recommended that Baffinland document behavioral reaction of marine mammals to the UAV in the event of future trials.

Bruce Head Shore Based Monitoring Report
DFO commented on the 2014 Bruce Head Shore Based Monitoring Report, questioning whether or not the monitoring program did test for observer biases, and further requested that Baffinland indicate how such biases was corrector for. Additionally, DFO commented on the Model Results reported in Section 3.3.3 and questioning whether the addition of an auto-correlation structure to the model was considered.

Ship Based Pilot Program Draft Report
DFO commented on its review of the Ship Based Observer Pilot Program Draft Report, questioning whether the option of including passive acoustic monitoring on the ships has been considered by Baffinland.

Summary of Baffinland's Response to Comments Received from DFO[135]:

- With respect to effects of lake sedimentation on Arctic Char egg survival, Baffinland responded that spawning sites have not been identified for Mine Area lakes, and that lake sedimentation monitoring program was designed to monitor for effects in different habitats, including suitable Arctic Char spawning habitat based on water depths and substrates. Baffinland also indicated that should the program find higher deposition rates than predicted in the FEIS, targeted programs could be conducted to attempt to identify spawning sites in the Mine Area lakes.

- In addressing DFO's comment on the visual assessment methodology used to determine water levels and barriers for stream diversion, Baffinland responded that visual assessment as referred to in the AEMP Section 4.3.3 refers to the use of professional visual assessment of whether or not a lower water area on a given stream represents a fish barrier. In addition, to visual observation, Baffinland also indicated that photographs, transects and flow velocity measurements were collected.

- With respect to DFO's questions regarding the maximum flight altitude achieved and resolution of camera used during the Milne Inlet Unmanned Aerial Vehicle (UAV) Field Test, Baffinland responded that a report has been prepared on the UAVdeployment trials

[135] http://ftp.nirb.ca/03-MONITORING/08MN053-MARY%20RIVER%20IRON%20MINE/03-ANNUAL%20REPORTS/02-PROPONENT/2014-2015/02-CORRESPONDENCE/

which included specific on each UAV launch. Baffinland further noted that should future trials be conducted the study design can include behavioral observation of any marine mammals encountered.

- In addressing DFO's comment on observer biases for the Bruce Head Shore Based Monitoring Report, Baffinland responded that it did not specifically test for observer bias and that accounting for observer bias would likely require a modified experimental design and more personnel in the field because independent observers would be needed to ascertain a correction factor.

- With respect to DFO's comment on the option of including passive acoustic monitoring on the ships within the ship based pilot program draft report, Baffinland responded it has considered this option, and that due to the current level of technological capability, it would not be practical or effective to mount systems on vessels transiting to the shipping port. Baffinland also noted that it will continue to monitor for practical methods for detection and avoidance of marine mammals, and will seek input from agencies such as DFO through the MEWG.

3.1.6 **Transport Canada**

Navigation Protection

TC reported on the legislative amendments to the Navigable Waters Protection Act, and noted a name change to the Navigation Protection Act (NPA). TC indicated that an application under the NPA may be required for proposed structures in Milne Inlet, as well as for any other structures proposed to be built in, on, over, under, through or across any scheduled waterways. TC recommends that Baffinland review the Order Amending the Minor Works and Waters Order, and self-assess to determine if the proposed work may be considered a Minor Work. TC indicated that minor works under the Order do not required notice or approval under the Navigable Waters Protection Act.

Marine Safety and Security

TC reported that Baffinland was compliant with the 2014 Oil Pollution Prevention Plan for Oil Handling Facilities.

3.1.7 **Workers' Safety and Compensation Commission (WSCC)**

The NIRB did not receive any specific comment responses on compliance or effects monitoring for the Mary River Project from the WSCC; however, Baffinland included within its 2014 Annual Report to the NIRB several WSCC inspection reports, which provided details of the Proponent's compliance with the Nunavut Mine Health and Safety Act (MHSA). Pursuant to Article 26 of the MHSA, WSCC reported that it conducted six inspections of the Project site in 2014, which resulted in a total of 109 directives being issued to Baffinland over the course of the year[136]. A summary of the inspection conducted, as well as items noted during the inspections are described below:

[136] Section 5.5.3.4 of 2014 Annual Report to the NIRB (March 2015)

Site Visit-1:
On January 15 and 16, 2014 a general site safety visit was conducted around the Mary River site, which included inspections of the new ice landing strip, electrical houses 1 and 2, new accommodation complex, emergency response training building, Arctic construction workshop, Hatch warehouse seacan storage area and the quarry. The WSCC inspector noted several concerns with respect to the operations of an ice strip, specifically the apron loading and their duration, ice surface inspection and training of the ground crew for working on the ice, and emergency response preparedness as related to multiple causalities such as a plane crash. Based on these observations, WSCC issued[137] seven directives to Baffinland, which are expected to address specific issues noted during the inspection.

Site Visit-2:
On March 18 to 20, 2014 an electrical safety inspection was conducted at Milne Inlet and the Mary River site, which included inspections of the generator and electrical houses 1 and 2, water storage building, cap magazine, explosive storage magazine, emergency response building, the bridge at Km 17 and the ice landing strip. Upon inspection of these facilities, WSCC inspector issued[138] 21directives to Baffinland as related to electrical and mechanical installations, ground conductors for generator e-house, maximum safe load for shelving units, access to fire extinguisher or eyewash station locations, transportation of explosive, safety against any trip hazard and repair of magazines floor.

Site Visit-3:
On May 20 to 22, 2014 a general site visit was conducted at Milne Inlet and Mary River site, which included inspections of Mine rescue teambuilding, water treatment plant, sewage truck garage, waste storage building, heated warehouse, Toromont shop, Arctic construction shop, batch plant, crushing and screening plant. Along the Tote Road, bridges at Km 62, Km 80, Km 97 and the ice landing strip were also inspected. At Mary River, the D1092 blast pattern, warehouse and quarry were inspected. Upon inspection of the facilities, WSCC issued 12 directives to Baffinland, which are expected to address specific issues noted during the inspection and as related to emergency communication onsite, dust control at crushing and screening plants, attachment of operating instruction to equipment, electrical installations of outdoor receptacles, certification of equipment before use, wearing of jewelry while at work, containment of loose materials from quarries, and collection of failed equipment parts for forensic analysis.

Site Visit-4:
From July 10 to 16, 2014 a general site visit was conducted at Milne Inlet and Mary River site, which included inspections of Milne Inlet, Tote road and Mine site. At Milne Inlet, the quarry, crusher, Nuna's shop, concrete batch plant, fuel storage tank and fuel bay, warehouse, Fountain tire shop, electrical shop, waste management building, water treatment plant, sewage treatment plant, yard and ship unloading area were inspected. The Tote Road explosive storage area at Km 62 was inspected. At Mary River, the quarry, explosive storage area, AN storage area, fresh water pump house, incinerator, crushing plant, warehouse, fuel bay, water treatment plant, diamond drill, batch plant building, maintenance shop and emulsion plant were inspected. Upon inspection of these

[137] Appendix I-2014 GN Inspection and Correspondence Pt-1
[138] Appendix I-2014 GN Inspection and Correspondence Pt-2

facilities, WSCC issued 27 directives[139] to Baffinland, which were expected to address specific issues noted during the inspection and as related to storage of explosives, containment of loose materials from quarries, use of wheel chocks to prevent unintended movements, modification to service crane on maintenance truck, communication with first aid facility, inspection of all magazine for staining or residues, tire damage, dust control and monitoring in crushing and screening plants, lightings, storage of flammable gas cylinders and other safety concerns.

Site Visit-5:
From October 23 to 28, 2014 a general site visit was conducted at Milne Inlet and Mary River site and Tote road. At Milne Inlet, the wharf construction, maintenance shop, water treatment plant, incinerator building, cold warehouse, emergency response team building, power plant E-houses 1 and 2, and ATCO's welding shop were inspected. The Milne Inlet's explosive storage and Tote Road were also inspected. At Mary River, the maintenance shop, emulsion plant, pit crushing plant installation, pit haul road, pit blast pattern, Nuna maintenance garage, incinerator building, and warehouse were also inspected. Following inspection of these facilities, WSCC issued 18 directives[140] to Baffinland, which were expected to address specific issues noted during the inspection.

Site Visit-6:
From December 11 to 16, 2014 a general site visit was conducted at Milne Inlet and Mary River sites. At Milne Inlet, the ship loader's conveyor drive and electrical room, wharf construction, tail end of the ship loader's conveyor, reclaim conveyor, stacker conveyor, electrical switchgear rooms 1 and 2, electrical rooms 1, 2, 3, 4, 5, and 7, maintenance shop, Toromont's shop, and unheated warehouse were inspected. At Mary River, the electrical switchgear rooms 1 and 2, electrical rooms 1 through 9, pit benches 685 and 675, quarry, crushing and screening plant A and B, maintenance shop, welding shop, new warehouse, incinerator building, detonator and explosive magazine, emulsion plant, kitchen and laboratory were inspected. In addition, data was collected on the Tote Road upgrade, site occupancy from October 1 to December 13, 2014, and emergency response member list and training, explosive magazine records and the pit blast whole collar locations.

Upon inspection of these facilities, WSCC issued 24 directives[141] to Baffinland, which were expected to address specific issues noted during the inspection and as related to fire safety, prevention of harmful exhaust fumes, electrical installations, use of permanent identifications labels on electrical equipment, engineering drawing for different facilities, emergencies stop switch for ship loading conveyor, safe use of stepladders, operation of articulating equipment, computerized engine control systems during blizzard events, safety training, fall protection, door lock out procedures, and eye wash station.

3.2 NIRB Review of Baffinland's 2014 Annual Report

The NIRB noted several information gaps and editorial inconsistencies, which bring into question the validity of the conclusion reached by Baffinland in the 2014 Monitoring Report. The following summarize the specific issues noted in NIRB's review of the 2014 Annual Report:

[139] Appendix I-2014 GN Inspections and Correspondence Pt 3
[140] Appendix I-2014 GN Inspections and Correspondence Pt 8
[141] Appendix I-2014 GN Inspections and Correspondence Pt 8

- Public Consultation Reporting

Pursuant to condition 27, Baffinland is required to include within its public consultation report information related to the sentiments expressed by affected communities about the impacts that changes to the topography and landscape have had on the aesthetic value of the Project area. While Baffinland reported[142] that no specific comments regarding this condition were noted during meetings or engagement with the Pond Inlet Community Advisory Group (CAG); however, the NIRB noted that the Proponent has yet to provide a clear rationale for not submitting a public consultation report, including records of its meeting with the CAG in May, July, October and December 2014.

- Adaptive Strategies for Dust Deposition Exceeding Predicted Thresholds

Baffinland reported that dustfall at Milne Port stations within the zone predicted to receive a moderate threshold range of deposition has received a high threshold level of deposition, exceeding levels predicted in the FEIS/FEIS Addendum. While Baffinland had committed to using dust suppressants across Project sites, the NIRB Project Certificate condition 10d specifically require that Baffinland identify the specific adaptive management measures to be considered should monitoring indicates that dust deposition from Project-related activities is greater than initially predicted. The NIRB noted during its review of the 2014 Annual Report that Baffinland has not provided any information on how and where specific adaptive management measures is to be used and incorporated to address dust exceedances for the affected Milne Port stations.

- Short-term Noise Level Exceedances at Mine site and Milne Port

Baffinland noted that occasional short-term noise level exceedances of up to 52.2 decibels (dBA) were reported at the Mine site and 64.7 dBA at Milne Port respectively for 2014. However, the NIRB noted that Baffinland has yet to indicate any information on how and where specific adaptive management measures will be implemented to address noise exceedances for the affected Project areas.

- Survey of Nunavummiut Employees

Pursuant to condition 140, the Proponent is encouraged to survey Nunavummiut employees as they are hired and specifically note the level of education obtained and whether the incoming employee resigned from a previous job placement or educational institution in order to take up employment with the Project. Baffinland reported that this condition has been addressed through submission of its Labour Market Report[143]and Socio-Economic Report[144]; however the NIRB noted that details regarding where and how these surveys have been undertaken were not stated or included in the referenced reports.

- 2014 Annual Terrestrial Monitoring Report: Appendix L2

The NIRB noted several information gaps and a series of assumptions regarding analyses of soil metals and vegetation health that call the validity of the 2014 Annual Terrestrial Monitoring Report into question, including its conclusions on the following items. Below are some of the information gaps noted within the 2014 Annual Terrestrial Monitoring Report:

[142] Appendix E1-Concordance to PC Conditions; Sections 4.1 and 4.3.4 of 2014 Annual Report
[143] Appendix O2-2014 Labour Market Report
[144] Section 3.0 of Appendix O1-2014 Socioeconomic Monitoring Report

- *Trace Metal Analyses without Mercury*

The NIRB noted that the 2014 TEMMP Report only provided discussions of lichen and soil accumulation of selected metals such as aluminum, arsenic, cadmium, copper, lead selenium, and zinc, and has not included detailed discussion for mercury (Hg) even though soil and lichen Hg data were available and included within Appendix D of the 2014 Annual Terrestrial Monitoring Report. The NIRB also noted that mercury levels in lichens from the Project Development Area were significantly higher relative to mercury concentration in underlying soils, and with no specific information given within the TEMMP Report regarding its source (s) or factors controlling its spatial distribution, including potential effects on wildlife, particularly caribou which forage on lichens.

- *Reporting Lead Deposition on Lichens*

In Page 56 of the 2014 Annual Terrestrial Monitoring Report, Baffinland reported that "one lichen sample exceeded the Project threshold for lead (5mg/kg dry weight), and with median concentration among all samples below the threshold level". However, the NIRB noted several locations, particularly from L-56 to L-67[145] where lichen lead levels was significantly higher than this project threshold, and was not fully discussed within the 2014 Annual Terrestrial Monitoring Report. In addition, the NIRB also noted that Baffinland has yet to provide detailed analyses of the source(s) of lead, or why the current levels of lead accumulation in lichens for 2014 differ from previous observations in 2012 and 2013, and the implication for terrestrial wildlife foraging on the vegetation.

- *Source Apportionment of Trace Metals*

In Page 57 of the 2014 Annual Terrestrial Monitoring Report, Baffinland reported that trend in cadmium and copper concentrations to distance from the PDA may not be biologically important and could be the result of natural mineralization of the Mary River area. The NIRB notes that the assumption of "natural mineralization" of cadmium and copper including other metals was not fully substantiated in the report, and that the existing trace metal monitoring program has not been successful in distinguishing local from regional or point source contamination in soils and lichens, nor has it critically examined the potential for relative contribution of atmospheric sources of elements. One way to potentially overcome this challenge is for Baffinland to consider calculating an enrichment factor based on the ratio of aluminum to the target element in the local soils compared to the aluminum of the target element ratio in local lichens to support assumption or conclusion of source apportionment of metal enrichment. While an enrichment factor could also be calculated for soils in order to differentiate natural background of elements from anthropogenic sources, a lead isotope fingerprint for both soils and lichens could be assayed to identify the origin and specific source of lead in the environment for the purpose of long-term monitoring.

- *Sample Size for Lichens and Soils:*

Baffinland reported in Table 18 of the 2014 Annual Terrestrial Monitoring Report that it intends to only collect 22 soil samples and 23 lichen samples for its 2015 terrestrial monitoring program. The NIRB noted that the Report has not included a rationale for why this specific number of samples was selected in spite of the GN's recommendation to increase sampling size for ecological monitoring, and concerns with respect to whether the sample size will be representative of the entire

[145] Appendix D to Appendix L2-2014 Annual Terrestrial Monitoring Report-Pt5

Project Development Area or sufficient for monitoring baseline levels of metals in soil and vegetation using the power of detection of change methodology.

- *Caribou Fecal Pellet Collection*

Baffinland noted within the 2014 Annual Terrestrial Monitoring Report that fecal pellet collection was ongoing within Mary River regional study area since 2011, and that to date, no analysis of the collected fecal pellets has been conducted. Recognizing the Government of Nunavut moratorium on North Baffin caribou, the NIRB noted that Baffinland 2014 Annual Terrestrial Monitoring Report has yet to provide any concrete timelines for providing results of the pellets that were already collected.

- Editorial Issues and Missing References in Baffinland's 2014 Annual Report

- *Disturbance Effects from Ships Noise*

Baffinland has yet to provide information regarding disturbance effects of ship noise on marine wildlife, including details of its underwater sound monitoring program pursuant to condition 109 of the Project Certificate. Baffinland had specifically referenced the submission of Appendix N9, a report regarding underwater sound monitoring; however, the NIRB noted that the referenced appendix or report was not included within the 2014 Annual Report to the Board.

- *Noise and Vibration Monitoring*

Baffinland referenced Section 3.0 of Appendix J7 regarding condition 14b; however, the NIRB noted that the referenced section does not contain any relevant information applicable to this condition.

- *Meteorology and Climate Monitoring*

Pursuant to Condition 1, Baffinland referenced Section 3.3.5 of Appendix J10; however, the NIRB noted that the referenced section does not exist within the referenced document.

- *Weather Monitoring Data and Emissions*

Baffinland referenced Section 7.0 of Appendix J1 regarding condition 5, 6, 8 and 9; however, the NIRB noted that the referenced section does not include any specific details or relevant information related to these conditions.

- *Air Quality Monitoring*

Pursuant to condition 7, Baffinland referenced Section 6.3 of Appendix J10, and Appendix K1; however, the NIRB noted that the referenced section 6.3 was irrelevant to condition 7, as it was directly related to marine water and sediment quality.

- *Additional Geotechnical Investigations*

With respect to condition 25, Baffinland referenced Appendices B1, B2 and H2; however, the NIRB noted that Appendix H2 was not submitted to the Board.

- *Erosion Management Plan*

Baffinland referenced Sections 4.1, 6.3.3, 7.1.1, 9.2.2 of Appendix J20 regarding condition 26; however the NIRB noted that the referenced Section 6.3.3 does not exist within the referenced document.

- *Freshwater Aquatic Environment*

Pursuant to condition 42, Baffinland referenced Section 6.3.3 of Appendix J20; however the NIRB noted that Section 6.3.3 does not exist within the referenced document.

- *Flight Altitude Requirements*

Baffinland referenced section 3.2.1 of Appendix N.1 regarding flight altitude requirement under condition 71; however, the NIRB noted that this referenced section was irrelevant to the condition.

- *Arctic Char*

Pursuant to condition 113, Baffinland referenced Section 6.6.1 of Appendix J10; however the NIRB noted that this specific section does not exist within the referenced document.

- *Marine Mammal Interactions*

Baffinland referenced Sections 4.5 and 4.5.1 of Appendix J10 regarding conditions 124 and 125; however, the NIRB noted that these sections does not exist within the referenced document.

- *Public Engagement*

Baffinland referenced Section 5.7 of Appendix J10 in addressing condition 128 related to fish habitat offsetting option; however the NIRB noted that the referenced section outlines policies for port security and smuggling prevention, which is not relevant to this condition.

- *Submission of AANDC Inspection Report for November 2014*

AANDC indicated within its comment to the NIRB that it conducted four inspections at the Mary River Project site between April and November 2014, and that only report for three inspections was included within the 2014 Annual Report as submitted by Baffinland. AANDC specifically noted that the inspection report for November 18 to 20, 2014 was not included within the 2014 Annual Report to the NIRB.

3.3 NIRB Site Visit- June 2015

As an integrated part of the NIRB's continuous monitoring program of the Project, the NIRB's Monitoring Officer visited the Mary River site on on June 3 and 4, 2015. The site visit at Mary River included tour of Milne Inlet via the Tote Road, which also included observational visits to the following locations: open burn area, quarry area, landfarm, temporary contractor shop, membrane bioreactor, incinerator, settling pond area, ore stockpiles, conveyor system, docking area, maintenance shop, borrow areas, fuel tank farm and accommodation facilities. Upon completion of the tour around Milne Inlet, the Monitoring Officer additionally visited the land fill and airstrip area at the Mine site. The Monitoring Officer continued the tour around the Mine site, which included observational visits to the following Project areas and facilities: deposit No. 1, incinerator, maintenance shop, emulsion explosive plant, quarry D1Q2, pre-packaged explosive storage area, crusher area, and accommodation building.

The following outlines the NIRB's findings as they relate to Project Certificate Terms and Conditions as applicable, and to the site visit in general:

- Based on observations made during the site visit, facilities in operation and those that remained under construction appear to be in proper conditions, well-managed and maintained, except for general aesthetic issues noted within the vicinity of the Project

development area, due to the pile up of scrap materials and unused items, such as corrugated steel pipes, salt bags, wooden materials, synthetic materials, and drums stored at various Project areas, and requiring site clean-up.

- The former temporary contractor shop was destroyed by a fire accident on April 15, 2015. The NIRB observed that that the blaze destroyed a great deal of the property and rendered the entire shop unsuitable to house any kind of operational activities.

- The major concern noted along Tote Road, particularly during the drive to and from the Milne Inlet was the significant generation of dust plumes during vehicular traffic.

- It was noted that many terms and conditions as contained within the Mary River Project Certificate are not applicable or have not been completely adopted at this time due to the current phase of development of the Mary River Project.

The NIRB has, however, noted several items and areas where improvement is required in order to fully meet the requirements of the Project Certificate Terms and Conditions. The following outline the major findings from the site visit:

3.3.1 Findings and Summary of Issues

3.3.1.1 Dust Suppression Measures

During the site visit, the NIRB noted that significant amount of visible dust was being generated across the Project Development Area due to increasing Project activities and vehicular traffic on site. The NIRB specifically noted the frequent generation of visible dust plumes during vehicular traffic, and in some instances the plumes severely affected driving visibility. No trucks were commissioned at the time of the site visit for watering roads to reduce visible dust plumes, and that previous WSCC site inspection in May and June 2014 had specifically recommended that Baffinland address dust emission issues at the crusher and screening plant, and implement appropriate control measures to prevent health hazards to workers at the site.

However, at the time of the NIRB site visit, visible dust was still noted to be generated from this facility and dispersed towards the accommodation area. The lack of use of dust suppression chemicals or water trucks to control dust continue to increase the environmental exposure of employees at site, as well as increase the potential for dust deposition into adjacent or nearby rivers, and could potentially threaten critical fish habitat due to roadside fugitive dust deposition.

On September 17, 2015, Baffinland provided an update to the NIRB regarding dust suppression practices at site, noting that a large quantity of salt was used for the purpose of dust suppression over the summer, and that in areas where salt was applied to the road, dust was reduced. The Board continues to recommend that the Proponent adhere to industry best practices for dust control, and implement mitigation and adaptive management plans for dust suppression, including directives from other authorizing agencies regarding fugitive dust emission.

3.3.1.2 Waste Landfill

The NIRB noted that past concerns about the landfill from other authorizing agencies such as QIA and AANDC were with respect to the deterioration of the protective mesh around the landfill, as

well as the potential for offsite dispersion of litter or debris by wind action. At the time of the NIRB site visit, the protective mesh around the landfill area was completely removed from the supporting poles. The NIRB further noted that the current condition of the fencing around the landfill is not deemed to be acceptable or consistent with best practices given that waste materials from the landfill were being blown away to the surrounding environment, and not well monitored. The progressive deterioration of the protective barrier has resulted in the dispersal of waste materials offsite, which has contributed to the poor aesthetics of the area around the landfill. AANDC had also previously recommended that Baffinland replace snow fencing with new fencing that is less sensitive to winters by June 2015, as well as monitor any windblown debris leaving the landfill.

Additionally, significant amount of collected water was observed around the landfill, as well as disposal of bulky waste materials (i.e. metal scrap materials) outside of the landfill footprint, which has yet to be addressed. There appears to have been no updated practices to improve the condition of fencing at the landfill in comparison with observations noted by the NIRB in 2014, and that AANDC's recommendations with respect to fencing replacement were yet to be implemented at the site. AANDC inspectors had previously recommended that Baffinland remove inappropriate dumped material from the landfill; however, at the time of the site visit, this concern appears not to have been fully addressed.

On September 17, 2015, Baffinland provided new photo update to the NIRB regarding the re-installation of landfill litter fences, noting that the fences at that time were in place and functioning to keeping windblown material within the confines of the landfill, and that the windblown material outside of the fence was picked up and properly disposed of. The NIRB notes that Baffinland has yet to provide any specific information, regarding the long-term sustainability and sensitivity of the litter fences to winters or winds to ensure that wastes disposed of are properly contained, and does not become dispersed off-site due to wind action or runoff.

3.3.1.3 Installation of Solid Carnivore-proof Skirting

The NIRB observed that solid carnivore-proof skirting has yet to be fully installed on the accommodation building located at the Mine site, and that waste materials and water continue to pond around the base of the accommodation building. There is need for immediate follow-up action on this item in order to ensure compliance with term and condition 64 of the Project Certificate.

3.3.1.4 Landfarm - Contaminated Snow, Soil and Synthetic Liners

Previous concerns about this site were with regard to the co-disposal of synthetic liners with contaminated snow and soil. The Board had initially requested within its 2014 recommendation to the Proponent that Baffinland provide a rationale for the co-disposal of synthetic liners within the landfarm, describe how the landfarm is designed to address the treatment of synthetic liners, and discuss its plan for long term disposal of these materials. Baffinland had responded to the NIRB indicating that during the bladder farm decommissioning in the summer of 2014 some liner material became entrained in the soils and ended up in the landfarm for temporary storage, and that site personnel ensured that the materials are stable and not transported by wind to the adjacent tundra. Baffinland specifically reported that the landfarm represented a low risk of windblown material, and that plans were underway in the spring/summer of 2015 to remove the liner from the facility and transport it off site to a certified disposal facility in Southern Canada.

However, at the time of the 2015 site visit, the NIRB noted that additional contaminated soil and snow were still entrenched in the synthetic liners, and that new bags were presently used for storage of contaminated soils. Small pieces of synthetic liners were also observed to be dispersed from the landfarm to the adjacent tundra; and that no leakage was noted around the bermed area of the landfarm. In addition, the NIRB did not observe any site-specific activities that suggest that water collected at the sump was routinely monitored, or indication of any plans for removal of liners from the site.

On September 17, 2015, Baffinland provided new update to the NIRB regarding the condition of the landfill, noting that over the course of the summer most of this material from the soils have been largely segregated and now stockpiled in several piles within the landfarm footprint. Baffinland further noted that the plan is to load this material into open topped seacans for disposal off site next year, and that that the segregated and stockpiled liner material is expected to be loaded into seacans within the next two months. Furthermore, Baffinland noted that the soils within the landfill were routinely scarified over the summer and samples collected at the beginning and end of the field season to monitor the level of soil treatment achieved over the summer period.

3.3.1.5 Aesthetic Quality

General observation regarding the aesthetic quality of the site was discussed within the context of term and condition 27 of the Project Certificate which stipulates that:

"The Proponent shall include within its public consultation report information related to the sentiments expressed by affected communities about the impacts that changes to the topography and landscape have had on the aesthetic value of the Project area."

Based on the aesthetic condition observed while onsite, the NIRB discussed with Baffinland staff uncontrolled litter was observed around contractor laydown areas and other locations, as well as the Mine site incinerator. While it was noted by Baffinland staff during the NIRB site visit that plans were underway to conduct a general site clean-up around mid-June 2015, the NIRB indicated this as an item requiring ongoing compliance. On September 17, 2015, Baffinland provided an update to the NIRB regarding salt storage at Milne, noting that a major clean-up of broken salt bags and pallets was undertaken over the summer.

3.3.1.6 Blasting and Explosive Residue Monitoring

In consideration of the ongoing blasting activities on site and operations of an explosive manufacturing plant, there is need to monitor runoff from blasted areas. At the time of the site visit, the NIRB was made aware of the ongoing Aquatic Monitoring Program, which will measure residues of ammonia and nitrogen and other residues associated with blasting activities pursuant to condition 20:

> *"The Proponent shall monitor the effects of explosives residue and related by-products from project-related blasting activities as well as develop and implement effective preventative and/or mitigation measures, including treatment, if necessary, to ensure that the effects associated with the manufacturing, storage, transportation and use of explosives do not negatively impact the Project and surrounding areas."*

3.3.1.7 Silt and Sediment Monitoring

Silt fence failures were observed in some locations around Km 66, 90, 91 and 97 along the Milne Inlet Tote Road. The NIRB also observed that at some locations silt fences were over-flowing with runoff to the nearby lake, and may require increased fencing to avoid further washouts and fence failures. It is recommended that Baffinland install new silt fence above or below the areas to collect additional sediments in order to prevent stream or lake contamination with sediments.

3.3.1.8 Safety Measures and Language

During September 2014 site visit, the NIRB noted that signage around the Project site did not incorporate Inuktitut to delineate potentially dangerous or hazardous site areas (e.g. blasting zones). The Board had made recommendation to Baffinland in 2014 to incorporate Inuktitut signage in order to ensure all Project employees were aware of safety, and potentially travelers who may be on site. During the 2015 site visit, the NIRB noted that the Board's recommendation has not been fully incorporated around blasting zones as signage was observed to be only in English. However, the NIRB further observed an Inuktitut yield traffic sign (inverted triangle) during its drive through a bridge along the Tote Road.

3.3.1.9 Road Stability and Maintenance

Although there no specific requirement for road maintenance in the Project Certificate, however, the NIRB notes that Baffinland has committed to implementing various maintenance and management measures within its Road Management Plan[146] for roads, particularly during freshet and spring thaw. While Baffinland indicated within the Road Management Plan that several operating procedures will be implemented to mitigate the potential impacts caused by freshet events or spring thaw on Project site roads, the Monitoring Officer did observe terrain stability issues on the roads leading to the effluent discharge area and to Deposit No. 1. Due to the poor condition of these roads at the time of the site visit, the expectations and efficiency of the operating procedures outlined within the Road Management Plan developed to mitigate potential impacts caused by freshets or spring thaw are to be re-considered.

For a comprehensive review of the NIRB's 2015 site visit and observations, please refer to the NIRB's 2015 Mary River Site Visit Report, included as Appendix I of this report.

3.4 Follow Up to NIRB's 2013-2014 Recommendations

As a result of the NIRB's 2013-2014 monitoring program, the Board made seventeen recommendations to Baffinland and one recommendation to the Canadian Coast Guard in order to provide guidance on compliance to the Mary River Project Certificate. The recommendations are outlined below, including updates from the Proponent and the Board's follow up on the items:

- **Baffinland:**

Recommendation 1 (Dust fall Monitoring)**:** *The Board requests that Baffinland provide results and analyses of the ash contents of caribou pellets collected for the monitoring period. It is requested*

[146] Appendix J9-Roads Management Plan

that this reporting gap be addressed and incorporated in the Proponent's Terrestrial Monitoring Report and presented in Baffinland's next annual reporting to the NIRB.

Baffinland indicated that ash content of caribou pellets was not analyzed due to the insufficient sample size and limited observations of caribou or fecal pellets within the Mary River study area. While three faecal samples were collected in 2014, Baffinland indicated that analysis of fecal pellet collections was yet to be completed, and that fecal pellets would be collected when encountered within the regional study area and will form part of a collection that can eventually be analyzed.

- **Canadian Coast Guard (CCG)**

Recommendation 1 (Community Level Spill Response): *The Board requests that the Canadian Coast Guard provide the NIRB with an update as to its plans to provide spill response equipment and annual training to Nunavut communities along the shipping route during the 2015 year, as well as a discussion as to how plans would be informed through consultation with Baffinland. The Board also respectfully request that the Canadian Coast Guard include a discussion as to how the training and equipment are expected to help improve upon response times in the event of a marine spill*.

On February 21, 2015 CCG provided responses to the Board's recommendation indicating participation in two oil spill preparedness and response activities. CCG indicated that on August 9, 2013 it participated in a mock spill exercise conducted by Baffinland for the Milne Inlet Fuel Storage Facility, by receiving the spill notification and reviewing Baffinland's final exercise report. CCG also noted within its response to the Board that it also participated by teleconference in a Fuel Spill Preparedness Workshop on April 16, 2014, which included participants from Baffinland, QIA, HTO, Mary River Project Committee as well as other federal government departments. CCG maintained that it has allocated equipment to support the escalation of response to potential spills within 19 communities across the Arctic, 15 of which are located in Nunavut, noting that Pond Inlet is one of the recipient communities of this shoreline response equipment. In conclusion, CCG indicated willingness to continue to participate in key activities and to provide expertise when requested by Baffinland in its compliance of Condition 174.

Recommendation 2 (Organ Tissue Monitoring)**:** *The Board requests that Baffinland provide information on its monitoring program for baseline metal levels in organ tissue from harvested caribou, with specific notes on its plans to engage the Government of Nunavut (GN) and Qikiqtani Inuit Association on the program. It is requested that this condition be addressed through laboratory analyses of caribou tissue samples, with a discussion of the results. It is requested that this information be provided and incorporated in Baffinland's next annual reporting to the NIRB.*

Baffinland responded that its ongoing effort for monitoring health of caribou in the local study area was based on assessing metal content of caribou forage as well dust accumulation from site and control stations; including abundance and recovery of lichens in the study area. While it was noted that the Proponent has implemented several programs to contribute to monitoring caribou health with monitoring results provided from 2012 to 2014, Baffinland reported that no organ tissues will be collected until there are indications of risk of increased metals uptake by caribou and has indicated by results of the ongoing dust fall monitoring and lichen sampling program. Baffinland

also indicated it will not commit to conduct additional organ tissue collection programs for any purposes outside of the support of the Government of Nunavut's caribou health monitoring program.

Recommendation 3 (Public Consultation Report)**:** *The Board request that Baffinland provide information related to the concerns expressed by affected communities about the impacts of the Project on topography and landscape as required by Condition 27. It is requested that this information be provided and incorporated in Baffinland's next annual reporting to the NIRB.*

Baffinland responded to the Board that concerns specifically referencing topography and landscape would be provided in the annual report to the NIRB. The status of Baffinland's compliance with this condition is further discussed in Section 2.5 of this Report.

Recommendation 4 (Survey and Monitoring of Arctic Char)**:** *The Board requests that Baffinland provide a plan to survey the population of arctic char in freshwater bodies, and implement monitoring of arctic char health in areas affected by the Project, as well as a discussion as to how this plan was informed through consultation with the Mittimatalik Hunters and Trappers Organization. It is requested that this information as well as any results of monitoring that may be initiated, be provided and incorporated in Baffinland's next annual reporting to the NIRB.*

Baffinland indicated that monitoring of arctic char in freshwater is covered in the Aquatic Effects Monitoring Program, and has been developed in consultation with various regulators such as EC, DFO, QIA, and NWB. Baffinland indicated that the finalized program was submitted to the NWB on June 27, 2014; however, for the 2014-2015 monitoring period, the Board has received Baffinland's Milne Inlet Marine Environmental Baseline Studies, which includes survey of Arctic char.

Recommendation 5 (Communication Towers for Bird Deterrence)*: The Board requests that Baffinland provide updates on its bird deterrence efforts, and information as to when it intends to engage Transport Canada's Aerodrome and Air Navigation process for installation of communication towers. It is requested that this information be provided within 45 days' receipt of the Board's recommendations.*

Baffinland indicated that it started monitoring the towers for potential bird mortalities in May 2014 and that so far there was no evidence of bird mortality associated with the towers. Baffinland also clarified that two of its communications towers (of ~30 m tall), located at km 33 and km 66 on the Tote Road, were erected in late summer 2013 with each tower with a flashing red strobe at the top to accommodate potential navigation concerns. However, Baffinland indicated that deterrents have not been added to the guy wires because in its opinion the a) the project condition is based on bird collisions with towers greater than 100 m in distinct migratory bird corridors in the eastern United States and b) it is unknown if there are bird interactions with 30 m tall communication towers on Baffin Island with limited periods of darkness when birds are present on site. Baffinland further stressed that any deterrence structures or strobe lights would not necessarily be precautious until it is known that these structures are an obstacle to bird flight. Baffinland also indicated that the project condition would be discussed further within the TEWG to determine the need for further investigation into specific guidance and applicability from EC, CWS.

Recommendation 6 (Accidents and Malfunctions)**:** *The Board requests that Baffinland and the Canadian Coast Guard provide the NIRB with an update as to plans to provide spill response equipment and annual training to Nunavut communities along the shipping route during the 2015 year. In addition, a discussion should be provided as to how the training and equipment are expected to help improve upon response times in the event of a marine spill. It is requested that this update be provided within 45 days' receipt of these recommendations, and that additional information and evidence of meetings held and materials provided be included within the Proponent's next annual reporting to the NIRB.*

Baffinland indicated to the Board that it has held two spill training exercises (one in 2013, and one in 2014), both with a representative from Pond Inlet in attendance, in the interest of that person informing their home community. Baffinland also confirmed that translation was provided by a site Elder-in Residence to ensure that all technical terms and activities related to the spill exercise were fully communicated. Baffinland also indicated that it has contracted a third-party response organization, based in the UK called OSRL to address fuel spill modelling and emergency preparedness, and that it held one multi-party workshop, which included federal regulators, QIA, Pond Inlet community members, HTO, OSRL, and Baffinland on April 16, 2014.

Recommendation 7 (Inclusion of Polar Bear in Marine Mammal Monitoring)**:** *The Board requests that Baffinland, in consultation with the Government of Nunavut, work to improve baseline data and refine study design for polar bear monitoring in the Project area, including the northern shipping route. It is requested that this information be provided and incorporated in Baffinland's next annual report to the NIRB.*

Baffinland responded that mitigation measures and procedures within its Shipping and Marine Wildlife Management Plan were in force while in the vicinity of marine mammals (including for polar bears), and that its shipboard monitoring program has not identified any instance where the occurrence of polar bears or other marine mammals have required the implementation of mitigation measures. Baffinland also indicated that it will continue to consult with the GN and refine study design for polar bear monitoring in consideration to potential project interaction, and in a manner that meets environmental effects monitoring design criteria.

Recommendation 8 (Air Quality Monitoring)**:** *The Board requests that Baffinland implement an air quality monitoring program, and account for the measurements of SO_2 and NO_2 emissions around point source locations. It is requested that evidence of monitoring through emission data be provided in Baffinland's next annual report to the NIRB.*

Baffinland indicated that it has implemented an air quality monitoring program at the Mine site and Milne Port, including a commitment to include report on air quality data in the next annual report to the NIRB. For the 2014-2015 monitoring period, the Board has received Baffinland's Gaseous Emissions Monitoring Report[147].

Recommendation 9 (Caribou): *The Board requests that Baffinland consider, in consultation with the GN, improvements to the techniques or tools used to monitor interactions of wildlife with the Project. It is suggested that this condition be addressed through the Proponent's consideration of*

[147] Appendix K1- Gaseous Emissions Monitoring Report

various field techniques and survey methodologies for monitoring wildlife interactions and Project impacts on wildlife. It is requested that this information be provided and incorporated in Baffinland's next annual reporting to the NIRB.

Baffinland responded that the surveys used for monitoring Project effects on terrestrial wildlife were justified in the Terrestrial Ecosystem Mitigation and Monitoring Plan, and was informed specifically through four Terrestrial Ecosystem Working Group meetings, all of which the GN was present. Baffinland indicated its willingness to support broader regional initiatives relevant to Project activities as well as continue to discuss regional monitoring initiatives with the GN.

Recommendation 10 (Statistical Analyses)**:** *The Board requests that Baffinland integrate the statistical tools necessary to support conclusions on its terrestrial monitoring program. It is recommended that this condition be addressed through the application of statistical analyses for birds, caribou and other wildlife within the Project Development Area. It is requested that evidence of the use of statistical techniques for terrestrial monitoring be incorporated in the Proponent's next annual reporting to the NIRB.*

Baffinland responded that information with respect to Project effects-related statistics for caribou and other terrestrial mammals were not available given the few caribou observed within the study area. In addition, Baffinland also indicated that wolf den survey as requested by the GN will not result in meaningful statistics until active wolf dens are found and long-term multi-annual data collected through the life of the Project. Baffinland indicated that the design of the surveys for raptor occupancy and productivity Project effects monitoring, including statistical methods is being completed for the 2014 terrestrial annual monitoring report and will be included in updated versions of the Terrestrial Ecosystem Mitigation and Monitoring Plan.

Recommendation 11 (Waste Management (Protection Barriers)**:** *The Board requests that Baffinland provide an explanation for the deteriorated condition of the protective mesh in use at the landfill, and outline its planned corrective measures to be taken to prevent wastes from been dispersed offsite by wind action or to be accessed by wildlife at the landfill and landfarm. It is requested that this information be provided within 45 days' receipt of the Board's recommendations.*

Baffinland responded that due to the expanding footprint of the landfill and high winds onsite, the current fence requires periodic relocation, maintenance, and repair and that the main control adopted for eliminating windblown debris is by regular (weekly or bi-weekly) cover application over the exposed waste in accordance with the Landfill Operations Manual[148]. Baffinland also noted that consideration is currently being given to examine potential alternative fence types and designs based on its experience to date.

Recommendation 12 (Waste Management (Protection Barriers)**:** *The Board requests that Baffinland provide a rationale for the co-disposal of synthetic liners within the landfarm, describe how the landfarm is designed to address the treatment of contaminated synthetic liners, and discuss*

[148] Waste Management Plan as submitted in the 2013 Annual Report to the NIRB (March 2014)

its plan for long term disposal of these materials. It is requested that this information be provided within 45 days' receipt of the Board's recommendations.

Baffinland responded that during the process of undertaking bladder farm decommissioning last summer, some liner material became entrained in the soils and ended up in the landfarm for temporary storage and that site services personnel ensure that the materials are stable and not transported by the wind to the surrounding environment. Baffinland indicated that its plan during the early summer of 2015 was to remove the liner from the facility and have them placed in sea containers for transportation to a certified disposal facility in Southern Canada.

Recommendation 13 (Sewage Sludge Disposal from Membrane Bioreactor): *The Board requests that Baffinland consider employing best practices that incorporate the use of containment with protective covers for sludge disposal. It is requested that a plan of action to this effect be provided within 45 days' receipt of the Board's recommendations*.

Baffinland responded to the Board that it employs best practices with respect to sewage and wastewater management, and that dewatered sewage is transferred to the onsite incinerator prior to landfill disposal or shipment off-site to certified disposal facility in southern Canada.

Recommendation 15 (Liquid Waste and Runoff to Drains)**:** *The Board requests that Baffinland conduct inspections of waste containment units for leakages on a regular basis, and implement appropriate measures to prevent future leakages or runoff of untreated wastes into the drainage system. It is requested that a discussion of Baffinland's plan to implement these measures be provided within 45 days' receipt of the Board's recommendations.*

Baffinland responded that during its routine handling, processing and packaging of waste within the Waste Management Building small volume of liquid waste was spilled onto the impermeable concrete floor of the building. Baffinland indicated that the concrete floored structure within the building was equipped with a self-contained sump that does not have a drain, and that any liquids that drain to the sump are stored in drums that are placed within lined and secure secondary containment. However, with respect to the spill noted during the site visit, Baffinland clarified that the volume of liquid observed is of no consequence in consideration of the concrete floor and sump design and current disposal practices to warrant additional action.

Recommendation 16 (Blasting and Explosives Residue Monitoring)**:** *The Board requests that Baffinland provide information on site-specific initiatives being adopted for monitoring the potential effects of explosives residue or related by-products in the Project areas. It is requested that this be provided within 45 days' receipt of the Board's recommendations.*

Baffinland indicated that under the Aquatic Effects Monitoring Program, monitoring locations for surface discharge downstream of construction areas, quarries, ore stockpiles, and waste rock stockpiles have been established, and that the schedule and scope of analyses, as outlined in the Water Licence, includes among other parameters, nitrogen compounds and acute toxicity.

Recommendation 17 (Safety Measures and Language)**:** *The Board requests that Baffinland provide a plan of action as to its incorporation of Inuktitut for use of all signage and other site-specific and safety documentation and postings. It is requested that Baffinland provide the Board*

with its plan of action to include Inuktitut within all signage and site-specific and safety documentation and postings within 45 days' receipt of the Board's recommendations.

Baffinland responded by citing provisions within Section 11 of the IIBA "Workplace Conditions" which specifies that the working language of the mine will be English. However, Baffinland indicated that the company supports the principle of increased usage of Inuktitut over the life of the project, and will focus on ensuring that translation and interpretation services are provided for all employees to function safely, effectively and comfortably.

4 FINDINGS AND CONCLUSIONS

During the 2014–2015 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. Pursuant to the NIRB's 2014 recommendation to the Proponent, the Board has identified several outstanding items requiring follow-up action by Baffinland in order to ensure that Baffinland achieve full compliance with the Mary River Project Certificate. Where the NIRB had recommended to the Proponent to include additional reporting information within the 2015 Annual Report, Baffinland had either submitted the required additional information, or provided its rationale for not reporting on the items.

During the site visit in June 2015 the NIRB did not observe many items of significant concerns, however the notes raised with respect to dust suppression measures, aesthetic quality of the project development area, waste landfill, land farm operations, silt fence failures, signage and road stability were considered, have been addressed in more detail in the site visit report (Appendix I). 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, it was noted that Baffinland has not provided updates or information with respect to the following items:

a. Improve terrestrial monitoring program by addressing the following:
    i. Results of ash contents for the caribou pellets collected for the monitoring period (Condition 58 c).
    ii. Detailed assessment of lichen accumulation of mercury (Hg) into the "Results and Discussion" sections of the Terrestrial Monitoring Report.
    iii. Update information regarding lead accumulation in lichens as well as a discussion of why several locations (L-56 to L-67) around the Project Development Area have concentration of lead in lichens that are significantly higher than the project threshold.
    iv. Differentiating background and anthropogenic sources of trace metals in order to determine whether metal enrichment in lichens or soils is to be attributed to natural mineralization or anthropogenic activities.
    v. Conditions 34-36: Increase sample size for subsequent vegetation and soil monitoring. As noted in the current Terrestrial Monitoring Report, the total number of vegetation and soil samples (20 soils, 17 lichens, 14 willow and 4 blue berries) collected for monitoring was relatively small as compared to the geographical extent of the Project area.
b. Address short-term noise level exceedances at Mine site and Milne Port
c. Submission of AANDC Inspection Report for November 2014.

d. Addressing editorial comments and inconsistencies within the 2014-2015 Annual Report, and improving referencing in subsequent reporting. Full details of the editorial issues have been fully noted in Section 2.5 of this Monitoring Report.

Furthermore, Baffinland needs to address comments and findings from authorizing agencies as indicated below:

QIA

e. Dust suppression protocol, with specific notes that Baffinland define the protocol to be used for dust suppression to be reflective of industry best practices, and the potentially significant associated health risks.
f. Improve reporting of habitat loss pursuant to condition 75, and that the Proponent addresses discrepancies in relation to monitoring project impact on birds, and indicates greater consistency and clarity in reporting.
g. Improvement of Aquatic Mentoring Program to ensure higher rate of Inuit employment and participation in the program.
h. Inclusion of marine information regarding fuel spill modelling, hydrodynamic modeling and underwater sound monitoring.
i. Ensure that report in Inuit employment includes contractor's employment, as well as information regarding Apprenticeship Program.

GN

j. Improve the Shipping and Marine Wildlife Management Plan to include monitoring and mitigation for polar bears.
k. Refine the scope of monitoring program for terrestrial mammals to be sufficient in detecting any project-related effects on terrestrial mammals (e.g. caribou and wolves)
l. Improve study design for vegetation monitoring in order to be detect meaningful changes to the terrestrial vegetation and lichen due to small sample size, and inconsideration of the study area extent and site variability,
m. Ensure that annual reporting address term and conditions related to monitoring of demographic changes, employee and family health and well-being, including counselling and treatment programs, as well as impact to health services pursuant to conditions 133, 153, 154, 157 and 158 of Project Certificate.

EC

n. Recommends that Baffinland revise the Plan to remove the option to incinerate grease and discontinue incineration of plastic materials
o. Improvement of record keeping with respect to waste management and landfill operations.
p. Provide its Pre-clearing nest surveys to include use of skilled and experienced observers, as well as update on the key sensitive nesting period in the TEMMP to minimize the risk of incidental intake, as well as prevent detrimental effects on migratory birds, nests and eggs.
q. Undertake a thorough review of bird baseline and monitoring data be conducted to determine presence of bird species, including species at risk within the Project area as well as follow-up on updating Table 26 of the 2014 Annual Terrestrial Monitoring Report.
r. Monitoring of flight altitude in key site for moulting snow geese.
s. Reporting of project-related mortalities, including migratory birds.

DFO

t. Monitoring of sediment deposition target actual spawning locations, and future plans to identify Arctic Char spawning shoals in order to determine appropriate site selection for the sedimentation monitoring program.
u. Document behaviour reaction of marine mammals to the Unmanned Vehicle Field Test in the event of future trials.

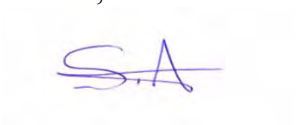
WSCC

v. Adhere to all of the 109 directives related to specific issues noted during the 2014 inspections, and address all infractions regarding mine health and safety.

5 SUMMARY

Baffinland commenced construction of the Mary River Project in May 2013. 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, there are several key outstanding issues which require Baffinland's attention as noted during the NIRB's site visit, and as discussed throughout this report. These issues are further addressed in the Board's 2015 recommendations issued to the Proponent. Pursuant to NLCA Sections 12.7.2 and 12.7.3, the NIRB will continue to work with Baffinland and other authorizing agencies in order 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 NIRB Project Certificate.

Report Prepared by: Solomon Amuno, PhD
Title: Monitoring Officer
Date: September 28, 2015



Signature: _____

Reviewed by: Tara Arko
Title: Director of Technical Service
Date: October 5, 2015

Signature: _____

Appendix I: June 2015 Site Visit Report

Appendix II: Pond Inlet Consultation Report

2015 Site Visit Report

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

Nunavut Impact Review Board

October 2015

Report title:	2015 Site Visit Report for the Nunavut Impact Review Board's Monitoring of Baffinland Iron Mine Corp.'s Mary River Project (NIRB File No. 08MN053)
Project:	Mary River Project
Project Location:	Qikiqtani Region, Nunavut
Project Owner:	Baffinland Iron Mines Corporation 2275 Upper Middle Road East, Suite 300 Oakville, ON L6H 0C3
Proponent Contact:	Oliver Curran, Director, Sustainable Development
Telephone:	(416) 814-3195
Visit conducted by:	Solomon Amuno, Technical Advisor and Monitoring Officer
Telephone:	(867) 983-4603
Site visit dates:	June 3 and 4, 2015
Report prepared by:	Solomon Amuno, Monitoring Officer
Pictures by:	Solomon Amuno, Monitoring Officer
Cover picture:	Aerial view of site facilities

TABLE OF CONTENTS

LIST OF PHOTOGRAPHS

1 INTRODUCTION

The Nunavut Impact Review Board (NIRB or Board) was established through Articles 10 and 12 of the Nunavut Land Claims Agreement (NLCA) and is responsible for post environmental assessment monitoring of a Project in accordance with Part 7 of Article 12 of the NLCA.

This report provides the findings that resulted from the NIRB's site visit to the Mary River Project site on June 3 and 4, 2015 as part of the NIRB's 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 the NIRB's Project Certificate issued for the Mary River Project, in accordance with Section 12.7.2(b) of the NLCA.

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 NLCA.

1.2 Introduction of the Mary River Project

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 tons per year (Mt/a). There are 3 main Project locations – 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, approximately 100 kilometers (km) in length. The Project as originally proposed was to include construction of a railway approximately 150 kilometers (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 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 consultation and public hearing.

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 development as initially approved. The ERP involved an amendment to the Mary River Project, and 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. Given that 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 reconsider, under Section 12.8.2 of Article 12 of the NLCA, modifications to the terms and conditions of the original Project Certificate. On May 28, 2014, pursuant to Sections 12.5.5 and 12.8.2 of Article 12 of the NLCA, the NIRB issued an *Amended*

Project Certificate [No. 005], allowing the Project to proceed in accordance with 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 NLCA.

As currently approved and in accordance with Baffinland's development plans, the extracted ore will 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. 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, 3500 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.

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 site visit reports, including Baffinland's 2014 Annual Report and associated appendices, as well as the previous year's follow-up correspondence regarding review of Annual Reports and monitoring of the Mary River Project.

2 SITE VISIT

The site visit was conducted on June 3 and 4, 2015 by Solomon Amuno, NIRB Monitoring Officer. On Wednesday, June 3, 2015, the Monitoring Officer flew from Pond Inlet to the Mary River site via Baffinland's regularly scheduled aircraft charter, and was met by Baffinland's Environmental Manager, Mr. Jim Millard.

Once at the Mary River site, the Monitoring Officer was provided with a brief health and safety orientation before undertaking a tour of Milne Inlet via the Tote Road, which also included observational visits to the following locations: open burn area, quarry area, landfarm, temporary contractor shop, membrane bioreactor, incinerator, settling pond area, ore stockpiles, conveyor system, docking area, maintenance shop, borrow areas, fuel tank farm and accommodation facilities. Upon completion of the tour around Milne Inlet, the Monitoring Officer proceeded to visit the land fill and airstrip area at the Mine site.

On Thursday, June 4, 2015, the Monitoring Officer continued the tour around the Mine site, which included observational visits to the following Project areas and facilities: deposit No. 1, incinerator, maintenance shop, emulsion explosive plant, quarry D1Q2, pre-packaged explosive storage area, crusher area, and accommodation building. Steensby Port was not visited by the Monitoring Officer as the site was not fully operational, therefore the site was not included in the 2015 site visit.

Upon completion of the tour around Project areas, the Monitoring Officer discussed several issues with Baffinland's Environmental team, which included Mr. James Millard, Allan Knight and Trevor Myers, and focused on the observations noted during the tour and as implementation of the terms and conditions of the Project Certificate. The site visit provided the Monitoring

Officer with an opportunity to observe Project component areas, as well as to note areas of ongoing construction activities.

Picture 1: Construction at Milne Port

Picture 2: Ore stock pile loading Area at Milne Port

2.1 General Observations based on Progress from Previous Site Visit

The following sections briefly describe the major facilities visited during the tour around Milne Inlet, Tote Road and Mine site, and specifically observations of overall progress of the site from the previous site visit. Where applicable, the Monitoring Officer noted compliance with specific terms and conditions of the Project Certificate, and followed up with Baffinland's commitment towards mitigating the potential ecosystemic impacts of the Mary River Project. While English was widely used on various signage on roads at Mine site and Milne Port, the Monitoring officer

did note the limited use of Inuktitut language, especially for designating potentially hazardous areas such as blasting zones (Pictures 3 and 4).

Picture 3: Signage for Explosive area

Picture 4: Inuktitut signage

Milne Inlet Ore Dock and Stockpiles

The tour of Milne Inlet was led by Mr. Millard and the Site Project Manager, and included the ore dock construction area and stockpile loading area. At the time of the visit, construction activities were still ongoing at the ore dock area but not completed, with stockpiling of iron ore noted around the restricted loading area (Pictures 2 and 5). During the 2014 site visit, the Monitoring Officer had observed that a silt curtain was installed around the marine area during construction activities around the ore dock; however, during the 2015 visit, ore dock construction was still ongoing, with freezing conditions noted in the marine area. The Site Project Manager indicated during the tour that the amount of iron ore stockpiled around the area was approximately 0.5 million tones, and further indicated that equipment was in place to facilitate transportation and subsequent shipping of the ore out of the Port later in 2015.

Picture 5: Ore stock piles

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

At the time of the visit, the visual and aesthetic quality of the Project Development Area (PDA), including the surrounding areas of the site were requiring clean up actions due to the pile up of scrap materials and unused items, such as corrugated steel pipes, salt bags, wooden materials, synthetic materials, and drums stored at various Project areas, particularly around the Mine site, along the Tote Road (Km 12, 37, 73 and 96) and Milne Inlet (Pictures 6, 7, 8 and 9). The Monitoring Officer noted that scrap or unused materials stockpiled were not expected to constitute any significant environmental hazard, and recommended to Mr. Millard that Baffinland adopt best practices to maintain the aesthetic quality of the PDA.

Picture 6: Wooden Materials

Picture 7: Corrugated steel pipes along Tote Road

Picture 8: Contractor laydown area

Picture 9: Salt bags along Tote Road

Mr. Millard further indicated during the visit that most scrap materials generated onsite were stockpiled in the contractor laydown areas for sealift, and that plans were underway to address the associated visual concerns through a site clean-up scheduled for the middle or end of June 2015.

Maintenance Facilities at Mine site and Milne Port

The Monitoring Officer also took a tour of the two maintenance facilities located at the Mine site and Milne Port, and noting that both facilities were fully functional and providing maintenance services for site equipment and vehicles. Although heavy trucks were observed at the facilities at the time of the visit; the Monitoring Officer could not immediately verify whether or not the trucks were undergoing routine maintenance or mechanical repairs in order to facilitate their use onsite. Additionally, no fuel spills were noted on the floors of the facilities. The wastes generated from routine operations at both facilities appeared to be properly sorted and appropriately contained. Outside of the maintenance shop located at the Mine site, the Monitoring Officer observed several mobile generator units equipped with spill trays to prevent potential fuel spills (Pictures 10 and 11).

Picture 10: Maintenance Shop

Picture 11: Generator equipped with spill trays

Deposit No. 1 Reserve and Crushing Area

The tour of the deposit reserve was led by Mr. Millard and the Mine site Project Manager (Picture 12). The Monitoring Officer noted during the drive to the area that some part of the main road leading to the deposit reserve were in deteriorating conditions, and could not verify whether or not vehicle load restrictions were generally in place to ensure that the carrying capacity of the road is reduced during spring thaw periods. Scrap materials were also observed along the road, with no clear indication as to when the materials would be removed. Additionally, it was noted that several heavy trucks were not in operational use at the time of the visit (Picture 15); however, a tracked excavator was observed to be in use by a Mine site operator around the open pit area (Pictures 13).

While at the Deposit Area, Mr. Millard pointed out an area designated to be used for the disposal of potentially acid generating rocks, and further noted to the Monitoring Officer that these rocks will be appropriately covered with non-acid generating rocks in order to prevent the occurrence of acid water drainage onsite. After the tour of deposit No. 1, the crusher area was visited, and at this location, significant dust plumes were observed due to ongoing crushing operations and movement of haul trucks to and from the area (Picture 14). Additionally, the Monitoring Officer also noted that the dust being generated from this crushing area was been dispersed to the vicinity of the main accommodation building for employees. However, at the time of the NIRB site visit, visible dust was still noted to be generated from this facility and dispersed towards the accommodation area.

Picture 12: Deposit No. 1 Reserve

Picture 13: Ore loader at Milne Port

Picture 14: Crusher Area

Picture 15: Parked trucks at Deposit No.1

Borrow Source Area Along Tote Road

The activities associated with the Mary River Project on Inuit Owned Land are governed by Qikiqtani Inuit Association's (QIA) Commercial Lease (Q13C301), Inuit Impact Benefit Agreement and Water Compensation Agreement. Within the comments received from the QIA regarding Baffinland's 2013-2014 Annual Report, the QIA had indicated that on September 20-22, 2013, it conducted a site inspection of the Mary River site, and noted that the major borrow area located at Kilometer (Km) 97 (borrow pit #2) was requiring remedial action due to

significant deterioration of permafrost. The QIA further reported that the borrow pit #2 was discharging water contained within the borrow area into Camp Lake, and expressed concerns that the discharge may present an environmental issue if not addressed. Additionally, the QIA recommended that Baffinland implement a reclamation program to manage the potential liabilities associated with the identified borrow area, as well as address the uncontrolled seepage of waste into the Camp Lake.

During the site visit, the Monitoring Officer followed up on the condition of borrow pit #2 (Picture 16 and 17), and observed significant amount of settled water within the borrow pit, including extensive degradation of permafrost, and further noted that soil was stockpiled around the borrow area for future reclamation activities. While the Monitoring Officer noted that reclamation was yet to commence at the borrow source area, Mr. Millard did indicate that once started, the reclamation process could take up to two years to complete.

Picture 16: Borrow source at Km 97

Picture 17: Area needing reclamation at borrow area

Burnt Temporary Contractor Shop

During the tour around Milne Inlet, Mr. Millard reported that the former temporary contractor shop was destroyed by a fire accident on April 15, 2015 (Picture 18). The Monitoring Officer observed that the blaze destroyed a great deal of the building. At the time of the site visit, Mr. Millard indicated that the shop was designated a contaminated site, and that plans were underway to clean-up the site from any kind of hazardous materials or contaminants.

Picture 18: Temporary Contractor Shop

Effluent Discharge Area at Mine site

During the 2014 site visit, the Monitoring Officer visited the Membrane bioreactor (MBR) located at the Mine site, and observed the associated effluent discharge area (Picture 19). During the current site visit, the MBR located at Milne Inlet was visited by the Monitoring Officer and noted to be in good condition, however, the MBR and associated effluent discharge area located at the Mine site could not be visited due to poor condition of the road leading to the discharge area.

Picture 19: Effluent Discharge Area noted during (2014 visit)

Milne Inlet-Tote Road

Along the Tote Road, the Monitoring Officer noted road upgrades, and observed some bridge crossings, as well as an area where removal of an existing seacan crossing remain pending. Generally, no negative impacts to fish and fish habitat were observed at the various Tote Road crossings. The major concern noted along Tote Road, particularly during the drive to and from the Milne Inlet was the generation of dust plumes during vehicular traffic. In addition, congregation of migratory birds such as Sandhill cranes, Snow geese and other unknown bird

species were observed at various ponds and lakes along the Tote Road. The following provides a brief description of the Monitoring Officer's additional observation along the Milne Inlet Tote Road:

- Open Burn area

Along the Milne Inlet Tote Road, Mr. Millard pointed out a designated site routinely used for open burning of non-hazardous waste materials such as wood and cardboard (Picture 20). The Monitoring Officer observed that vented seacans were used within the burn area, and noted that the site was appropriately gated to prevent public entry into the area. At the time of the visit, no open burning was taking place within the area.

Picture 20: Open Burn Area along Tote Road

- Silt Curtains

While road alignment and upgrades was noted around Km 92, the Monitoring Officer observed that several silt curtains installed along the Tote road were either in deteriorating conditions or damaged to the point of being non-functional, particularly around Km 66, and from Km 90 to 91 (Picture 19). Further details regarding the deterioration of silt curtains are discussed in Section 2.2.5 of this Report pursuant to conditions 22, 26 and 43 of the Project Certificate.

Picture 21: Deteriorated Silt Curtain

- Water Ponding, Migratory Bird Congregation and Archaeological Area

The Monitoring Officer observed significant water ponding within some areas along the Tote Road, particularly from Km 23 to 24, and noted the congregation of Snow geese around Km 25 to 26. Mr. Millard also identified an archaeological area along the Tote Road, and indicated that the surrounding area near the archaeological site has been marked off to prevent access to the site.

Picture 22: Migratory Birds

Picture 23: Archaeological site

Other observations noted along Tote Road are summarized below:

- KM 32-34: An emergency shelter and water intake point for Milne Inlet camp was observed along the road. General comments regarding the emergency shelter is discussed in more details in Section 2.33 of this Report pursuant to condition 168 of Project Certificate.
- KM 51: The Monitoring Officer did note significant degradation of permafrost in this location. This condition was further discussed in Section 2.2.7 of this Report pursuant to condition 28.
- KM 67: Dust fall monitoring units were observed at this location. Observation regarding dust monitoring is discussed in more details in Section 2.21 of this Report pursuant to conditions 10, 21b (iii) and 58c of the Project Certificate.
- KM 68: Communication tower and generator system was observed at this location, with further details discussed within Section 2.2.12 of this Report pursuant to condition 68 of the Project Certificate.
- KM 76: The Monitoring Officer noted that prepackaged explosive were stored in an open area around this location.

Road Stability and Maintenance

At the time of the visit, no major road hazard was observed along the Tote Road, or within Milne Port and Mine site. However, the Monitoring Officer did note that conditions of some access road within the Mine site may require further upgrades and maintenance particularly during freshets and spring thaw. The NIRB notes that the actions are to be taken with respect to the following issues noted:

- Road leading to Effluent Discharge Area: No major road hazard was detected at this road, however, the Monitoring Officer and Mr. Millard did experience serious terrain difficulties that eventually terminated the planned trip to the effluent discharge area as a

result of road surface instability or insufficient thickness of the road to support vehicular traffic.

- Road leading to Deposit No. 1: some parts of the main road leading to the deposit reserve appear to be deteriorated with little or no surface grading to support smooth vehicular traffic. While heavy trucks were noted to be moving to and from this location, the Monitoring Officer did not observe any vehicle load restriction in place to ensure that the carrying capacity of the access road is reduced during the spring thaw period.

2.2 Observations Based on NIRB Project Certificate [005]

The following are observations made during the site visit that pertain specifically to terms and conditions of the Project Certificate:

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 21b (iii)

"The Proponent shall ensure that the scope of the Aquatic Effects Monitoring Plan (AEMP) includes, at a minimum:
iii) To assess the seasonal deposition (rates, quantities) and chemical composition of dust entering aquatic systems along representative distance transects at right angles to the Tote Road and radiating outward from Milne Port and the Mine Site."

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;"

Prior to the site visit, Baffinland submitted its Air Quality and Noise Abatement Management Plan[1] to the NIRB for the 2014-2015 monitoring period, which outlined specific air quality monitoring program such as ambient air quality monitoring, incineration emission testing and expanded regional study, including several mitigation measures. However, at the time of the site visit, the Monitoring Officer noted that a significant amount of dust was being generated across the Project Development Area, particularly at the Mine site and along the Milne Inlet Tote Road due to Project development and increased vehicular activities on site (Picture 24). Throughout the site, the Monitoring Officer observed "brownish" surface discoloration of snow pack and surface water due to particulate deposition and dust accumulation (Picture 26, 28 and 29).

Picture 24: Dust Plume from Truck

Picture 25: Dust suppression chemicals

In general, dust plumes and surface discoloration appeared to be more pronounced in high traffic locations, and in areas affected by construction activities, ore crushing and loading operations. Along the Tote Road, the Monitoring Officer also noted that dust plumes were frequently observed during truck movement to and from the Mine site or Milne Port, and with potential for dust plumes to affect driving visibility and quality of adjacent lakes such as Muriel Lake (Km 80), David Lake (Km 87) and Camp Lake (Km 100).

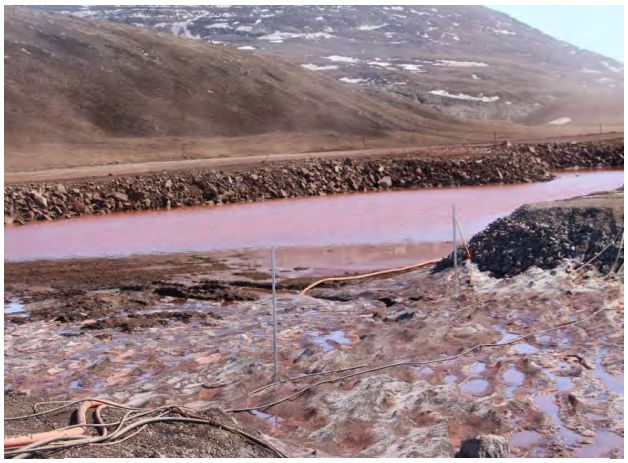
At Milne Inlet, dust plumes were not frequently observed; however, the Monitoring Officer did note the accumulation of dust particles on sea ice and snow pack in the marine area adjacent to the ore dock. While the sources of dust emissions in the Port area, and effects of dust deposition could not be immediately verified, the Monitoring Officer did observe the close proximity of the ore stockpile to the marine area, and noted the potential for the dispersion of ore dust to the marine area. At the time of the site visit, no application of dust suppression chemicals was observed to be used onsite; however, the Monitoring Officer did note an area near the airstrip where dust suppression chemicals were stored in anticipation for future application at the airstrip (Picture 25).

Mr. Millard specifically commented that water trucks to be used for reducing visible dust plumes had yet to be commissioned by Baffinland due to pending amendment to its Type A water

[1] Appendix J1-Air Quality and Noise Abatement Plan supplemental to 2014 Annual Report to the NIRB (March 2015)

licence which would allow for the additional use of water for site activities, including dust control.

Picture 26: Dust deposition at Milne Port



Picture 28: Dust in surface water at Mine site

Picture 27: Dust fall Station

Picture 29: Dust in snowpack

At the time of the visit, neither best management practices related to dust suppression protocols were in place, nor measures within Baffinland's Air Quality and Noise Abatement Management Plan[2] fully implemented onsite. Additionally, the Monitoring officer observed several dust-fall monitoring stations along the Milne Inlet Tote Road, but could not verify whether or not the dust fall stations were in good condition or compromised due to disturbance from natural elements (ice, precipitation or wind), or land based activities (Picture 27).

No visible dust plumes were observed related to vehicle movement around the ore dock or within the stockpile area; however, the Monitoring Officer did note deposition and accumulation of dust particles on sea ice and snow pack around the marine area near the ore dock by discoloration of the ice surface (Picture 26). While sources and potential effects of dust accumulation in marine areas were not observable during the site visit, the Monitoring Officer did note the potential for wind-blown dust from the ore stockpile loading area into the adjacent marine environment. At

[2] Section 3.2.1 of Appendix J1-Air Quality and Noise Abatement Management Plan

the time of the site visit, the Site Manager indicated that a seal was spotted near the dock area; however, the Monitoring Officer did not observe any marine mammals during the site visit.

2.2.2 Air Quality –Incineration

Condition 11

"The Proponent shall develop and implement an Incineration Management Plan that takes into consideration the recommendations provided in Environment Canada's Technical Document for Batch Waste Incineration (2010)."

Condition 12

"Prior to commencing any incineration of on-site Project wastes, the Proponent shall conduct at least one stack test immediately following the commissioning of each temporary and permanent incinerator."

The incinerators in use at the Mine site and Milne Port were appropriately contained within housing units, and appeared reasonably well maintained, except for minor water pooling at the drainage within the Mine site incinerator facility (Pictures 30 and 31). It was noted that Baffinland's high temperature incinerators were monitored during operations to prevent discharge of pollutants into the wider environment. Mr. Millard further indicated that once incineration was completed, Baffinland will undertake chemical analyses of the ash residues to ensure that it does not contain any hazardous constituents above concentration levels for safe disposal.

Picture 30: Incinerator at Mine site

Picture 31: Water pooling at Incinerator

2.2.3 Use of Explosives and Blasting Activities

Condition 20

"The Proponent shall monitor the effects of explosives residue and related by-products from project-related blasting activities as well as develop and implement effective preventative and/or mitigation measures, including treatment, if necessary, to ensure that the effects associated with the manufacturing, storage, transportation and use of explosives do not negatively impact the Project and surrounding areas."

Condition 60

"Prior to construction, the Proponent shall develop a detailed blasting program to minimize the effects of blasting on terrestrial wildlife that includes, but is not limited to the restriction of blasting when migrating caribou, sensitive local carnivores or birds may be negatively affected."

Blasting activities were noted to be ongoing at different Project site locations, particularly along the Milne Inlet Tote Road, and around the Mine site (Picture 32). Pre-packaged explosives magazines were observed at different site locations, and noted to be well isolated from areas frequented by workers. In recently blasted areas, some plastic cone materials and cords were seen on the ground and with no observation of any particular site specific activities indicative of either monitoring or treatment of explosive residues, and related by-products from blasting activities. Mr. Millard further indicated that Baffinland's ongoing aquatic effects monitoring program continue to focus on monitoring blasting residues, particularly the concentration of ammonia nitrate in the aquatic environment.

Picture 32: Blasting Operations

In addition, the Monitoring Officer also toured the emulsion explosive manufacturing plant (Picture 33), and was given a general orientation of the operations of the facility, which included visits to the ammonium nitrate storage room, emulsion explosive production area, handling and loading area, as well as locations for washing and decontamination of facilities. While at the manufacturing plant, a sample of the emulsion explosive product (Picture 34) was shown to the Monitoring Officer, however, no fumes, or wastes discharge was observed within or around the vicinity of the manufacturing plant. In general, the manufacturing plant and surrounding areas appeared to be well maintained and not seen generating any hazardous wastes materials of environmental concerns.

Picture 33: Emulsion Explosive Plant

Picture 34: Emulsion Explosive Product

2.2.4 Hydrology and Hydrogeology (Effluent Management)

Condition 17

"Develop and implement effective measures to ensure that effluent from project-related facilities and/or activities….satisfies all discharge criteria requirement established by the relevant regulatory agencies prior to being discharged into the receiving environment."

Condition 19

"The Proponent shall ensure that it develops and implements adequate monitoring and maintenance procedures to ensure that the culverts and other conduits that may be prone to blockage do not significantly hinder or alter the natural flow of water from areas associated with the proposed mine. In addition, the Proponent shall monitor, document and report the withdrawal rates for water removed and utilized for all domestic and industrial purposes."

Condition 24

"The Proponent shall monitor as required the relevant parameters of the effluent generated from Project activities and facilities and shall carry out treatment if necessary to ensure that discharge conditions are met at all times."

Baffinland has implemented different measures to monitor effluents generated from the site; as noted during site visit, membrane bioreactors (MBR) and polishing waste stabilization ponds (PWSP) continue to be in use at the Mary River site to ensure effluents and treated sewage discharge criteria are met. While it was noted during the visit that the PWSP located at Milne Port was dewatered and the liner beneath exposed, the Monitoring Officer did not observe any concerns with respect to the operations of the MBRs or associated wastes generated (Picture 35).

Picture 35: Dewatered Polishing Waste Stabilization Pond

With respect to ensuring that culverts and other conduits that may be prone to blockage do not significantly hinder or alter the natural flow of water from areas associated with the mine, Mr. Millard did indicate that Baffinland's Environmental Staff were routinely undertaking monitoring of dirty drainage and alerting site personnel for potential road issues.

2.2.5 Sediment and Erosion Management Plan

Condition 22

The Proponent shall develop a detailed Sediment and Erosion Management Plan to prevent and/or mitigate sediment loading into surface water within the Project area.

Condition 26

The Proponent shall develop and implement a comprehensive erosion management plan to prevent or minimize the effects of destabilization and erosion that may occur due to the Project's construction and operation

Condition 43

Prior to the start of construction, the Proponent must submit a Site Drainage and Silt Control Plan to the appropriate regulatory authorities for approval.

Prior to the site visit, Baffinland submitted its Surface Water Management Plan[3] (Plan) to the NIRB, which address the requirements for site drainage, silt control, sediment and erosion management. However, at the time of the site visit, spring thaw and rapid snow melt were noted around the Project Development Area, with surface water runoff observed along the Milne Inlet Tote Road. Baffinland had specifically noted within its Plan[4] that silt fences will be used in areas where surface water could potentially come into contact with disturbed sites causing elevated suspended solids, and that where applicable silt fences will be used as an alternative to construction of a channel or berm.

[3] Appendix J20-Surface Water Management Plan supplemental to 2014 Annual Report to the NIRB (March 2015)
[4] Page 18 of 49-Appendix J20-Surface Water Management Plan supplemental to 2014 Annual Report to the NIRB (March 2015

While silt fences observed were made of geotextile or fabric materials, and supported using wooden stakes and placed at different monitoring locations along the Tote Road to protect adjacent streams, lakes and rivers from contamination by silt, sediment and construction debris, the Monitoring Officer did note that most of the silt fences were either damaged, or non-functional at several locations such as Km 66, 90, 91 and 97.

Additionally, the Monitoring Officer did not receive any indication as to whether or not silt fences were routinely inspected particularly after runoff events in order to ensure that they were not damaged by water over flow or debris (Picture 36). The Monitoring Officer also noted in some locations that silt fences were overflowing, and may be requiring increased fencing to avoid potential washouts and fence failures.

Picture 36: Degraded Silt fence

2.2.6 **Aesthetic Quality**

General observation regarding the aesthetic quality of the site was presented in previous section of this report and discussed here within the context of and the requirements of Condition 27 of the Project Certificate, which stipulate that:

"The Proponent shall include within its public consultation report information related to the sentiments expressed by affected communities about the impacts that changes to the topography and landscape have had on the aesthetic value of the Project area."

Based on the aesthetic condition observed while onsite, the Monitoring Officer discussed the need to develop a consistent cleanup plan for the Project areas, with specific focus on general cleanup of areas with unused materials, corrugated steel pipes, salt bags, wooden materials, synthetic materials, drums particularly around contractor laydown areas and other locations (Picture 37). Aesthetic quality of the area around the Mine site incinerator facility also requires clean-up (Picture 38). While Mr. Millard pointed out during the site visit that plans were underway to conduct a general site clean-up later around mid-June 2015, the Monitoring Officer indicated that Baffinland adopt best practices for maintaining visual and aesthetic quality.

Picture 37: Laydown Area needing cleanup

Picture 38: Area around Incinerator

2.2.7 Landforms, Geology and Geomorphology, Soils and Permafrost

Condition 28

"The Proponent shall monitor the effects of the Project on the permafrost along the railway and all other Project affected areas and must implement effective preventative measures to ensure that the integrity of the permafrost is maintained."

While the effects of the Project on permafrost could not be fully verified at the time of the site visit, the Monitoring Officer did note some areas along the Milne Inlet Tote Road and around Deposit No. 1 with extensive permafrost degradation (Picture 39). The Monitoring Officer also noted other areas where ice-rich permafrost has degraded from the surface, causing widespread thaw and potential terrain instability for roads and other structures. Mr. Millard did note that backfilling of the degraded areas was one of the option considered by Baffinland to address permafrost degradation in the affected areas. In addition, during the site visit, nomajor road hazard was observed along the Tote Road, or within Milne Port and Mine site. The Monitoring Officer did note that conditions of some access road within the Mine site area may require further upgrades, maintenance and management particularly during freshet and spring thaw. Although there are no specific terms and conditions within the Project Certificate that addresses road stability concerns from freshet events, however the NIRB notes that actions are to taken to address deterioration of roads leading the effluent discharge area and to Deposit No. 1.

Picture 39: Area of disturbed permafrost along Tote Road

2.2.8 **Freshwater Aquatic Environment-Drainage & Watercourses**

Condition 46

"The Proponent shall ensure that runoff from fuel storage and maintenance facility areas, sewage and wastewater other facilities responsible for generating liquid effluent and runoff meet discharge requirements."

During the tour of the site, the Monitoring Officer visited several facilities responsible for generating liquid effluents such as the mechanical maintenance shops, incinerator facilities, Membrane Bioreactors. While at the mechanical shop, the Monitoring Officer did not observe any major oil spills, and in general the facility appeared well maintained with appropriate waste disposal and sorting protocols for discarded batteries, aerosol cans, shop dirt and floor dry.

Condition 47

"The Proponent shall ensure that all Project infrastructure in watercourses are designed and constructed in such a manner that they do not unduly prevent and limit the movement of water in fish bearing streams and rivers management protocols."

The Monitoring Officer observed bridge crossings, as well as installations of culverts at various watercourses along the Tote Road (Picture 40). Along the road, a seacan bridge was observed at the side of newly constructed bridge, however the Monitoring Officer could not verify whether or not, or to what extent the seacan bridge or the new bridge crossing constituted limits to the movement of water or to fishes. Mr. Millard further noted that plans were underway to fully decommission and remove the side seacan bridge by the end of the year.

Picture 40: Bridge Crossing

2.2.9 **Terrestrial Wildlife and Habitat**

Caribou

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

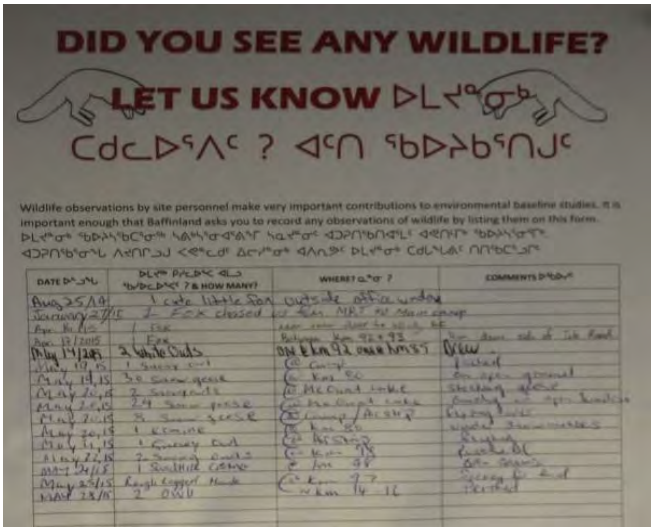
for safe traffic relative to operations on the railway, Milne Inlet tote road and associated access roads.

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 site visit, the Monitoring Officer did not observe any caribou or wildlife at any Project locations. Mr. Millard did clarify that caribou were not frequently sighted around the Project Development Area by project staff; and that in the event caribou or other wildlife are encountered on site, a right of way policy, which requires vehicles to stop in order to allow wildlife pass safely is in place. Wildlife logs were posted at the main camp building, and listed wildlife encountered or observed around Mary River, Milne Port and along the Tote Road (Picture 41).



Picture 41: Wildlife log at Mary River

2.2.10 Fire Arms and Wildlife Harvesting

Condition 62

"The Proponent shall prohibit project employees from transporting firearms to site and from operating firearms in project areas for the purpose of wildlife harvesting."

With respect to fire arms and wildlife harvesting, Mr. Millard indicated to the Monitoring Officer that, except for polar bear monitors, all employees are prohibited from having firearms in their possession while onsite or engaging in wildlife harvesting activities. The Monitoring Officer was further informed that all firearms are stored in a secure location and are not used for wildlife harvesting.

Condition 124

"The Proponent shall prohibit project employees from recreational boating, fishing, and harvesting of marine wildlife in project areas, including Steensby Inlet and Milne Inlet. The Proponent is not directed to interfere with harvesting by the public in or near project areas, however, enforcement of a general prohibition on harvesting in project areas by project employees during periods of active employment (i.e. while on site and between work shifts) is required."

Mr. Millard indicated to the NIRB Monitoring Officer that Baffinland has developed a hunting and harvesting policy[5] that prohibits employees from engaging in hunting and harvesting activities while on site.

2.2.11 **Environmental Protection Plan**

Condition 64

"The Proponent shall ensure that its Environment Protection Plan incorporates waste management provisions to prevent carnivores from being attracted to the Project site(s). Consideration must be given to the following measures:

a. *Installation of an incinerator beside the kitchen that will help to keep the food waste management process simple and will minimize the opportunity for human error (i.e. storage of garbage outside, hauling in a truck (odours remain in truck), hauling some distance to a landfill site, incomplete combustion at landfill, fencing of landfill, etc.); and*
b. *Installation of solid carnivore-proof skirting on all kitchen and accommodation buildings (i.e., heavy-duty steel mesh that would drop down from the edge of the buildings/trailers and buried about a half meter into the ground to prevent animals from digging under the skirting)."*

Currently at the Mary River site, there was no observation of any installation of an incinerator beside the kitchen; but no concern was noted with respect to the food wastes, odour and storage of garbage that may serve as attractant to wildlife. However, pursuant to condition 64 (b), the Monitoring Officer also noted that solid carnivore-proof skirting was not fully installed around the accommodation building (Picture 42).

Picture 42: Building without carnivore-proof skirting

[5] Refer to Appendix W, supplemental to Baffinland's 2013 Annual Report to the NIRB

The Monitoring Officer observed the landfill site. Past concerns raised by the NIRB as well as other authorizing agencies regarding this site were with respect to the deterioration of the litter fences around the landfill, as well as the potential for offsite dispersion of litter or debris by wind action to the area. The Board had recommended in 2014 that Baffinland provide an explanation for the deteriorated condition of the protective mesh in use at the landfill, and outline its planned corrective measures to be taken to prevent wastes from been dispersed offsite by wind action or to be accessed by wildlife at the landfill and landfarm. At the time of the site visit, wastes within the landfill site were mostly covered with sand; however, the litter fences around the site were completely removed from the supporting poles and appear to be significantly damaged (Pictures 43 to 45).

Picture 43: Damaged protective mesh

Picture 44: Fencing of landfill not yet installed

Picture 45: Landfill condition

Picture 46: Wastes outside of landfill footprint

In addition, some waste materials were noted to have been blown away to the adjacent tundra. The Monitoring Officer also observed significant water pooling around the landfill, and noted the disposal of wastes materials (e.g. scrap metals) outside of the landfill footprint (Picture 46). In

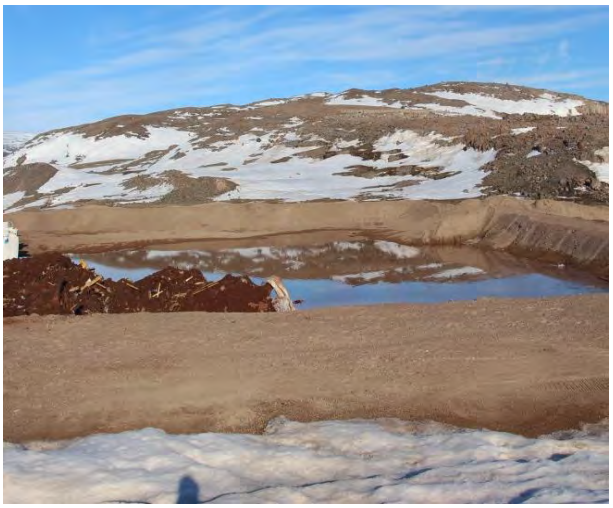
general, the condition of the landfill, including management of the wastes within the site does not appear to have improved since the 2014 site visit given the progressive deterioration of the protective mesh or litter fences and obvious dispersal of waste materials offsite.

There are no specific terms and conditions regarding the regular operation of the landfarm within the current Project Certificate (Pictures 47 to 50). However, the Board notes that previous concerns about this site were with regard to the co-disposal of synthetic liners with contaminated snow and soil. The Board had initially requested within its 2014 recommendation that Baffinland provide a rationale for the co-disposal of synthetic liners within the landfarm, describe how the landfarm is designed to address the treatment of synthetic liners, and discuss its plan for long term disposal of these materials. Baffinland responded in its correspondence to the Board that during the bladder farm decommissioning in the summer of 2014 some liner material became entrained in the soils and ended up in the landfarm for temporary storage, and further indicated that site personnel ensured that the materials were stable and not transported by wind to the adjacent tundra.

Picture 47: Landfarm with liners

Picture 48: Contaminated soils in bags

Picture 49: Pieces of liners blown away



Picture 50: Landfill Sump

Baffinland had further noted that the landfarm represented a low risk of windblown material, and that plans were underway in the spring/summer of 2015 to remove the liner from the facility and transport it off site to a certified disposal facility in Southern Canada. However, the Monitoring Officer noted that additional contaminated soil and snow were still entrenched in the synthetic liners, and that new bags were presently used for storage of contaminated soils (Pictures 47 and 48). At the time of the visit, small pieces of synthetic liners were observed to be dispersed from the landfarm to the adjacent tundra (Picture 49). While no leakage was noted around the bermed area of the landfarm, the Monitoring Officer did not observe any site-specific activities that suggest that water collected at the sump (Picture 50) was routinely monitored. No plans were indicated as to the progress made with respect to the maintenance of the facility or removal of liners from the site. The Monitoring Officer mentioned to Mr. Millard that there was need for Baffinland to be consistent with the monitoring protocol outlined within Baffinland's Surface Water and Aquatic Ecosystem Management Plan, particularly as relevant to landfarm management.

On September 17, 2015, Baffinland provided new update to the NIRB regarding the condition of the landfill, noting that over the course of the summer most of this material from the soils have been largely segregated and now stockpiled in several piles within the landfarm footprint. Baffinland further noted that the plan is to load this material into open topped seacans for disposal off site next year, and that that the segregated and stockpiled liner material is expected to be loaded into seacans within the next two months.

2.2.12 **Birds**

Condition 66

> *"If Species at Risk or their nests and eggs are encountered during Project activities or monitoring programs, the primary mitigation measure must be avoidance. The Proponent shall establish clear zones of avoidance on the basis of the species-specific nest setback distances outlined in the Terrestrial Environment Management and Monitoring Plan."*

Condition 70

> *"The Proponent shall protect any nests found (or indicated nests) with a buffer zone determined by the setback distances outlined in its Terrestrial Environment Mitigation and Monitoring Plan, until the young have fledged. If it is determined that observance of these setbacks is not feasible, the Proponent will develop nest-specific guidelines and procedures to ensure bird's nests and their young are protected."*

Mr. Millard noted that Baffinland has policies in place to undertake bird monitoring and surveying in Project areas for nests and eggs prior to the commencement of construction or operations. During the site visit, the Monitoring Officer observed that buffer zones and setback distances were in place to ensure that eggs, bird nests and the young are not disturbed by Project related activities until fledging has taken place (Picture 51). Though numerous wildlife observations were present in the posted Wildlife Log (Picture 41), none included details on eggs or nests observed at site, and the Monitoring Officer did observe the congregation of migratory birds at different locations along the Milne Inlet Tote Road (Km 65, 25 and 26).

Picture 51: Buffer Zone for Bird Protection

Condition 68

The Proponent shall ensure flashing red, red strobe or white strobe lights and guy-wire deterrents are used on communications towers established for the Project. Consideration should also be given to reducing lighting when possible in areas where it may serve as an attractant to birds or other wildlife.

During the 2014 and 2015 site visits, the Monitoring Officer had observed the installation of a communication tower at Km 68 (Picture 52). Past issues raised by Baffinland regarding the installation of communication towers onsite were with respect to concerns that lights have been shown to be an attractant to birds, and that in the study area birds are active during the 24 hour daylight season. At the time of the site visit, no bird deterrent strobe or flashing lights was observed on the communicator tower. However, Mr. Millard did mention to the Monitoring Officer that bird reflectors were planned to be installed on the tower in the weeks after the site visit.

Picture 52: Communication Tower

2.2.13 **Marine Environment**

Condition 92

"The Proponent shall ensure that it maintains the necessary equipment and trained personnel to respond to all sizes of potential spills associated with the Project in a self-sufficient manner (marine shipping)."

At Milne Inlet, the Monitoring Officer observed emergency equipment and truck used for oil spill response, however there was no indication as to whether site personnel were trained to use equipment. The Monitoring Officer further noted that spill response equipment were appropriately located at Milne Port area (Pictures 53 and 54).

Picture 53: Spill Response equipment

Picture 54: Emergency Truck

2.3 Education and Training

Condition 137

"Prior to construction, the Proponent shall develop an easily referenced listing of formal certificates and licences that may be acquired via on-site training or training during employment at Mary River, such listing to indicate which of these certifications and licences would be transferable to a similar job site within Nunavut. This listing should be updated on an annual basis, and is to be provided to the NIRB upon completion and whenever it is revised."

During the tour of the main accomodation building at Mine site, the Monitoring Officer observed a driving simulator room; however, there were no employees using it at the time of the site visit.

2.3.1 Livelihood and Employment

Employee family contact

Condition 142

"The Proponent is 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, specifically paying attention to the potential alienation of some employees that may occur as a result of language or other cultural barriers."

Condition 143

"The Proponent is encouraged to consider the use of both existing and innovative technologies (e.g. community radio station call-in shows, cell phones, video-conferencing, Skype, etc.) as a way to ensure Project employees are able to keep in contact with family and friends and to ward off the potential for feelings of homesickness and distance to impact on employee retention and family stability."

At the time of the site visit, the Monitoring Officer did not observe any obvious alienation of any employee as a result of language or other cultural barriers; however, with respect to the use of innovative technology to ensure that Project employees are able to keep in contact with family or friends and ward off feelings of homesickness pursuant to condition 143, the Monitoring Officer noted that the accommodations facilities at the Mine site were equipped with land phones to allow employees stay in contact with family and friends while working at site.

Condition 145
The Proponent is encouraged to work with the Government of Nunavut and the Qikiqtaaluk Socio-Economic Monitoring Committee to monitor the barriers to employment for women, specifically with respect to childcare availability and costs.

Condition 146
The Government of Nunavut and the Qikiqtani Inuit Association are strongly encouraged to investigate the possibility for Project revenue streams to support initiatives or programs which offset or subsidize childcare for Project employees.

As posted on the information board located at the accommodation facility, the NIRB Monitoring Officer observed notices in English and Inuktitut encouraging Inuit women to explore employment at the Mary River Project in the following positions: heavy equipment operators, haul truck drivers, skilled trades, mechanic, administrators, human resources and training (Picture 55). The Monitoring Officer did not observe any information regarding childcare availability or initiatives to offset or subsidize childcare for Project employees.

Picture 55: Human Resource Information Board

2.3.2 Human Health and Wellbeing

Condition 153

> *"The Proponent is encouraged to employ a mental health professional to provide counseling to Inuit and non-Inuit employees in order to positively contribute toward employee health and well-being."*

At the time of the site visit, the NIRB Monitoring Officer did not observe any medical personnel at the health centre or professional mental health counselling services for employees onsite.

2.3.3 Culture, Resources and Land Use

Condition 165

> *"The Proponent is strongly encouraged to provide buildings along the rail line and Milne Inlet Tote Road for emergency shelter purposes, and shall make these available for all employees and any land users travelling through the Project area. In the event that these buildings cannot, for safety or other reasons be open to the public, the Proponent is encouraged to set up another form of emergency shelters (e.g. seacans outfitted for survival purposes) every 1 kilometre along the rail line and Milne Inlet Tote Road…."*

The Monitoring Officer observed two emergency shelters along the Tote Road, at Kilometres 33 and 69 respectively (Picture 56). The Monitoring Officer was informed that these emergency shelters were for use by Project personnel only.

Picture 56: Emergency shelter along Tote Road (at Kilometre 33)

3 FINDINGS AND SUMMARY

Due to the ongoing construction of the Mary River Project, it was noted that many 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. During the site visit, the NIRB Monitoring Officer observed that facilities in operation and those that were under construction were generally well-maintained. 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

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 site visit, there was an open storage of dust suppression chemicals located near the airstrip; however no trucks were observed applying water to road surfaces, nor were any other dust suppression methods observed being implemented. The NIRB Monitoring Officer noted that dust was being generated across the Project Development Area as evident by accumulation on snow and ice surfaces throughout the site, as well as direct observation of dust plumes generated by vehicular operation, and in some instances the plumes limited local visibility and creating a safety concern for others using the roads. Previous site visit by WSCC site inspectors in May and June 2014 had recommended that Baffinland address dust emission issues at the crusher and screening plant, and implement appropriate control measures to prevent health hazards to workers at the site. Visible dust was still noted to be generated from the crusher area and dispersed towards the accommodation area. Site staff noted that the ongoing permitting process for the site may be contributing to a delay on the implementation of the commitments related to dust suppression. Dust fall stations are present along the Milne Inlet Tote Road, which can be noted as compliance to part c of Condition 10; however, the dust suppression measures committed to in the Final Environmental Impact Statement and Early Revenue Phase Addendum on which the acceptable limits were based for deposition rates and which were expected to trigger adaptive management strategies in Baffinland's Air Quality and Noise Abatement Management Plan, are not in place and therefore the NIRB cannot assess compliance to part d of Condition 10.

3.2 Waste Landfill

Although there are no specific terms and conditions in the NIRB Project Certificate regarding the regular operation of the landfill, general waste management practices at the Project site are certainly expected to be consistent with best practices. Condition 64 requires that the Proponent ensure its Environment Protection Plan incorporates waste management provisions to prevent carnivores from being attracted to the Project site. During the NIRB site visit, the Monitoring Officer noted that the landfill contained waste materials from different sources and observed the continued deterioration of the protective mesh around the landfill. The NIRB's 2014 Recommendation 11 required follow up from Baffinland as a result of the deterioration of the protective mesh around the landfill; to which Baffinland responded[6] that due to the expanding footprint of the landfill, and the high winds often observed, the fence required periodic relocation, maintenance, and repair which was undertaken on a regular basis. Baffinland further indicated to the Board that overall, the effectiveness of the current fence type and configuration was deemed to be acceptable as it considered examining potential alternative fence types and designs based on its operational experience to date.

At the time of the site visit, most the protective mesh around the landfill area was completely removed from the supporting poles. The Monitoring Officer further notes that the condition of

[6] http://ftp.nirb.ca/03-MONITORING/08MN053-MARY%20RIVER%20IRON%20MINE/03-ANNUAL%20REPORTS/01-NIRB/2013-2014/02-CORRESPONDENCE/141212-08MN053-Baffinland%20Ltr%20NIRB%20Re%202014%20Board%20Recommendations-IA2E.pdf

the fencing around the landfill was not consistent with best practices required in the Environmental Protection Plan or the expectations of the Litter Fences noted in the Waste Management Plan given that waste materials from the landfill were not being contained within the landfill area. The progressive deterioration of the protective barrier has resulted in the dispersal of waste materials offsite, which has contributed to the poor aesthetics of the area around the landfill.

3.3 Installation of solid carnivore-proof Skirtings

Condition 64 b) require the installation of carnivore-proof skirting on all kitchen and accommodation buildings, which was observed to not yet be in place; therefore, Baffinland remains non-compliant to the requirements of this condition.

3.4 Landfarm - Contaminated Snow, Soil and Synthetic Liners

The monitoring protocol outlined within Baffinland's Surface Water and Aquatic Ecosystem Management Plan, particularly as relevant to landfarm management, had indicated that the 2014 Work Plan includes the construction of a contaminated soil landfarm facility to receive and treat hydrocarbon contaminated soils, and that treated soils that meet appropriate criteria will be used as landfill cover material or other acceptable purposes. The Plan further outlined that lined containment ponds will be constructed to receive snow contaminated by accidental fuel and oil spills, and that water collected in the ponds will be treated during the summer months and monitored to ensure compliance with prescribed water quality guideline criteria. As noted in the previous Section 2.2.11 of this Report, the protocol related to monitoring of collected water at the facility, including proper management of disposed synthetic liners did not appear to be implemented, and has resulted in the dispersal of small pieces of synthetic liners from the landfarm to the adjacent tundra.

3.5 Aesthetic Quality

Condition 27 require the submission of a public consultation report related to the sentiments expressed by affected communities about the impacts that changes to the topography and landscape have had on the aesthetic value of the Project area. While Baffinland had specifically reported within its 2014 Annual Report to the NIRB[7] that no specific comments regarding this condition were noted during meetings or engagement with the Pond Inlet Community Advisory Group (CAG), the Monitoring Officer had observed the poor aesthetic quality of the project area noting the need for general cleanup of areas with unused materials, corrugated steel pipes, salt bags, wooden materials, synthetic materials, drums particularly around contractor laydown areas and other locations. Although Baffinland had indicated during the site visit that that plans were underway to conduct a general site clean-up later around mid-June 2015, the Monitoring Officer notes the need for the Proponent to adopt best practices for maintaining visual and aesthetic quality of the project area.

3.6 Silt and Sediment Monitoring

Conditions 22, 26 and 43 require that Baffinland implement a Sediment and Erosion Management Plan as well as Site Drainage an Silt Control Plan in order to prevent and/or

[7] Appedix E1-Concordance to PC Conditions; Sections 4.1 and 4.3.4 of 2014 Annual Report

mitigate sediment loading into surface water within the Project area; however as noted within the Proponent's 2014 Annual Report to the NIRB, Baffinland has included the requirements of both of these Plans into its Surface Water and Aquatic Ecosystems Management Plan. As noted in Section 2.2.5 of this Report, during the site visit several silt fences were observed to be not well maintained and non-functional in proximity to Km 66, 90, 91 and 97, as well as other locations around the site. Due to the non-functional condition of numerous silt fences throughout the site, the expectations of Condition 22, 26, and 43 are not being met and the mitigation measures in the applicable plans should be re-considered.

3.7 Signage

During the September 2014 NIRB site visit, the Monitoring Officer noted that signs around the Project site did not incorporate Inuktitut to delineate potentially dangerous or hazardous site areas (e.g. blasting zones). The Board had made recommendation to Baffinland in 2014 requesting that the Proponent provide a plan of action as to its incorporation of Inuktitut for use of all signage and other site-specific and safety documentation and postings. At the time of the site visit, the Monitoring Officer noted that Baffinland has yet to be fully incorporate Inuktitut around blasting zones as signage was observed only in English (Pictures 3). The Monitoring Officer further observed an Inuktitut yield traffic sign (inverted triangle) during its drive through a bridge along the Tote Road (Picture 4). The use of Inuktitut in the workplace, particularly in delineating potential hazardous areas is recommended in order to ensure safety of all Inuit employees and potentially travelers who may be on site.

3.8 Road Stability and Maintenance

Although there no specific requirement for road maintenance in the Project Certificate, however, the NIRB notes that Baffinland has committed to implementing various maintenance and management measures within its Road Management Plan[8] for roads, particularly during freshet and spring thaw. While Baffinland indicated within the Road Management Plan that several operating procedures will be implemented to mitigate the potential impacts caused by freshet events or spring thaw on Project site roads, the Monitoring Officer did observe terrain stability issues on the roads leading to the effluent discharge area and to Deposit No. 1. Due to the poor condition of these roads at the time of the site visit, the expectations and efficiency of the operating procedures outlined within the Road Management Plan developed to mitigate potential impacts caused by freshets or spring thaw are called into question and should be re-considered.

[8] Appendix J9-Roads Management Plan

Prepared by: Solomon Amuno, PhD
Title: Technical Advisor/Monitoring Officer
Date: September 28, 2015

Signature: _____

Reviewed by: Tara Arko
Title: Director, Technical Services
Date: October 5, 2015

Signature: _____

Public Information Meeting Summary Report June 2, 2015 for the NIRB's Monitoring of Baffinland Iron Mines Corp's Mary River Project

Public Information Meeting Summary Report
June 2, 2015

For the NIRB's Monitoring of Baffinland Iron Mines Corp's Mary River Project (NIRB File No. 08MN053)

Report Title: Public Information Meeting Summary Report June 2, 2015 for the NIRB's Monitoring of Baffinland Iron Mines Corp's Mary River Project (NIRB File No. 08MN053)

Report prepared by: Alexandra Hizaka, Assistant Technical Advisor and Solomon Amuno, Monitoring Officer

Photos by: Alexandra Hizaka, Assistant Technical Advisor and Solomon Amuno, Technical Advisor

Cover photo: Community Information session in Pond Inlet, June 2, 2015 and the Mary River Iron Mine site

Table of Contents

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 Pond Inlet on June 2, 2015. The information session took place during the evening from 8:00 pm to10:30 pm at the Attakaalik Community Hall, with a recorded attendance of sixty-two people. The NIRB Staff in attendance included Solomon Amuno (Technical Advisor/Monitoring Officer) and Alex Hizaka (Assistant Technical Advisor). In addition to the NIRB staff, representatives from the following agencies were also in attendance at the meeting:

- Baffinland Iron Mine Corporation: Joe Krimmerdjuar (Community Liaison Officer)
- Government of Nunavut: James Rogers (Environmental Assessment Coordinator)
- ISUMA TV/NITV: Jon Franz (Project Leader)

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. 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

The community information session was open to all members of the public with ISUMA TV broadcasting the live coverage of the meeting. 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 Board 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 presentation was delivered in English, with consecutive interpretation provided in Inuktitut. 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 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)
- The NIRB's Environmental Assessment Brochures (in English and Inuktitut)
- The NIRB's 2013-2014 Annual Monitoring Report for Baffinland's Mary River Iron project (in English)
- Baffinland's Mary River Project Certificate (in English)
- Baffinland's Mary River 2014 Annual Report (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:
ftp://ftp.nirb.ca/03-MONITORING/08MN053-MARY%20RIVER%20IRON%20MINE/03-ANNUAL%20REPORTS/01-NIRB/2014-2015/02-CORRESPONDENCE/

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 May 8, 2015 to June 2, 2015.

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

Cable
Cable television advertisements were aired in both English and Inuktitut advertising the information session in Pond Inlet from May 2, 2015 – June 2, 2015.

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 Dust and Monitoring

- Community members commented on the widespread generation of dust from the Project area, raising specific concerns on the impact of dust accumulation on melting sea ice. Additionally, community members commented on the potential for dust accumulation to result in early thawing of snow and sea ice, thereby complicating travel for hunters and other public members passing through the Mary River site.
- A community member specifically stated, that "The community requested dust fall monitoring at the Final Hearing, and that Pond Inlet residents are seeing with their own eyes that there is a serious dust fall issue on sea ice as a result of Baffinland's operations. The community takes this condition very seriously, and the NIRB should follow up on this because it's important to the people of Pond Inlet." The community member further stressed that Pond Inlet has yet to receive information regarding sea-ice dust monitoring from Baffinland.
- A community member commented on the iron ore mined from the Mary River site, and requested further clarification as to whether or not the chemical composition of the ore could affect human health and the wider environment.

2.2 Issues regarding Wildlife Monitoring

- A community member commented on the Proponent's Marine Mammal Surveys undertaken at Bruce Head, and questioned the conclusions reached by Baffinland that there was neither a "clear trend or obvious changes in narwhal behaviour detected from the observation site at Bruce Head, nor significant effect of vessel presence on narwhal abundance". The community member further indicated that such conclusions were not well supported, and that more research will need to be conducted to fully verify impact of shipping activities on whales and other marine mammals.
- A community members noted concerns about the impact of dust accumulation and melting snow and ice on wildlife, particularly snow geese.
- A community member commented on waste management practices at the Mary River site, and noting the incidence of fox exposure to potentially contaminated materials from the garbage left at the site.
- One community member commented on wildlife health, particularly indicating her recent observation of a dead seal with open sores near Milne Inlet. The community member expressed concerns that it was not clear as to whether or not the sores was associated with project activities.
- One elder commented that, "Last year we were at Bruce Head near the mountain. We used these telescopes and our camp was 100 m below [the] observations site. Last year we observed narwhals travelling in that area. Like those in the photo. We also saw bearded seal, ringed seal and char. We will be conducting the same observation at Bruce Head next summer. I also noticed that narwhal are not necessarily deterred by ocean vessels, they will temporarily move away from [the] ship then return to the original spot."

2.3 Issues regarding Public consultation and Participation

- Community members commented that the NIRB has relied on studies and consultation activities conducted by the Proponent. They requested that the NIRB conduct their own consultation activities during times when the community can meaningfully engage. They

further indicated that holding meetings during the summer months conflicts with hunting and gathering activities on the land which results in less attendance and participation from community members impacted by the project. An increase in local monitoring with a focus on community, cultural and socio-economic impacts was also requested.

- It was mentioned that because of the low participant turnout and short consultation meetings, Inuit concerns and Inuit Qaujimajatuqangit were not being properly integrated or considered in the monitoring process. However, it was suggested that in conjunction with the community information session, the NIRB should also host a radio show in the future to reach a broader audience.
- Community members also expressed concerns that the NIRB's approach to environmental assessment focuses on the biophysical impacts and appears to have ignored socio-economic impacts. It was suggested that the NIRB consult with the community to better understand their concerns and experiences.
- Furthermore, a community member wrote in a comment form that "the community is constantly in a reactionary position. [There] needs to be support on an equal footing with the proponent." Another community member stated that "Phase II is causing tension; stress and bullying in the community by people who want to move the project forward." Concern was expressed that for many people, the environmental assessment process causes stress as community members are not properly supported with sufficient resources to adequately express their concerns. It was recommended that the NIRB coordinate visits to Pond Inlet with the Qikiqtani Inuit Association and Baffinland to increase local participation and limit the amount of disruptions in the community.
- It was suggested that the NIRB support community town hall roundtables with community representatives on specific areas of concern without the presence of the proponent.
- The community also requested more in-person updates from the NIRB and additional meetings with the hamlet, Hunters and Trappers Organizations and the community.
- It was also mentioned that socio-economic and human impacts should be monitored as well as the biophysical impacts.

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 dust and monitoring, wildlife and consultation as was related to the Mary River Iron Mine project. Concerns were also raised regarding the need for more Inuit monitoring and consultation with the local people about changes to several components of the environment, as well as socio-economic impacts they are observing. The community has requested more updates on the project activities and a greater presence by the NIRB and other authorizing agencies, particularly with respect to dust management from the operations of Baffinland's Mary Project. The comments and concerns raised during the public information meetings 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.