

2023 NIRB ANNUAL REPORT

Baffinland Iron Mines
2023 Annual Report to the
Nunavut Impact Review Board

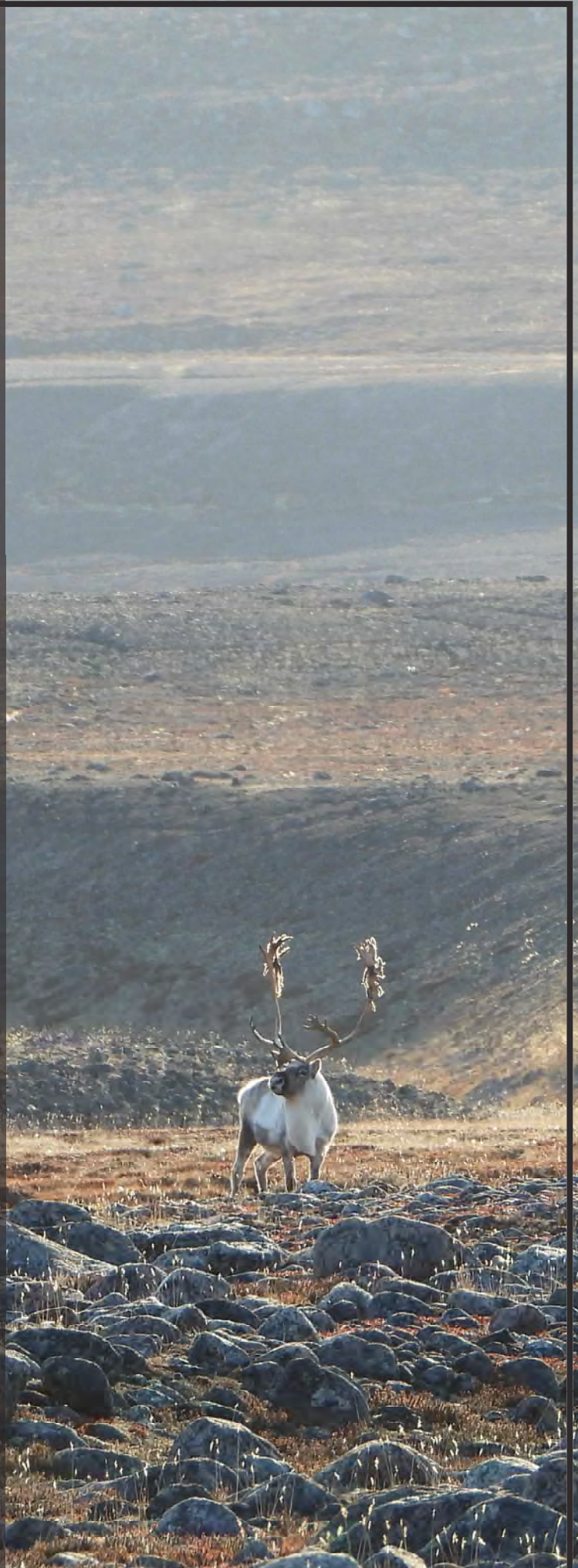
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Project Certificate No. 005

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May 3, 2024 | LΔ 3, 2024

 **Baffinland**



Baffinland Iron Mines Corporation

Mary River Project

2023 ANNUAL REPORT TO THE NUNAVUT IMPACT REVIEW BOARD




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Date	Rev.	Reviewed By	Approved By

TABLE 0: REPORT SUBMISSION SUMMARY

Year of Annual Report	2023
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ABBREVIATIONS

AANDC	Aboriginal Affairs and Northern Development Canada
ABE	Adult Basic Education
ADCP	Acoustic Doppler Current Profilers
AED	Automatic External Defibrillator
AEMP	Aquatic Effects Monitoring Plan
AHTO	Aiviq (Kinngait) Hunters and Trappers Organization
AIS	Aquatic Invasive Species
AIIS	Automatic Identification System
AL	Action Limit
AMAR	Autonomous Multichannel Acoustic Recorder
AMBNS	Active Migratory Bird Nest Surveys
AMP	Adaptive Management Plan
ANOVA	analysis of Variance
AQNAMP	Air Quality and Noise Abatement Management Plan
ARD	Acid Rock Drainage
ARU	Autonomous Recording Units
As	Arsenic
ASA	Applied Science Associates
ASR	Annual Security Review
ATV	All Terrain-Vehicle
Baffinland	Baffinland Iron Mines Corporation
BC MOE	British Columbia Ministry of Environment
BCLO	Baffinland Community Liaison Officer
BDO	BDO Canada LLP
BHL	Baffinland Hematite Lump
BSA	Behavioural Study Area
BWM	Ballast Water Management
BWMP	Ballast Water Management Plan
CAAQS	Canadian Ambient Air Quality Standards
CANNOR	Canadian Northern Economic Development Agency
CC	Contracting Committee
CES	Critical Effect Size
CCG	Canadian Coast Guard
CCME	Canadian Council of Ministers of the Environment
Cd	Cadmium
CDP	Career Development Plans
CEDO	Community Economic Development Officer
CES	Critical Effect Size
CF	Crusher Facility
CHS	Canadian Hydrographic Service

CIRNAC.....	Crown Indigenous Relations and Northern Affairs Canada
CIS	Canadian Ice Service
CMMS	Computerized Maintenance Management System
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
CO ₂ eq.....	Carbon Dioxide Equivalent
CoPC.....	Constituent of Potential Concern
CORI	Coastal and Ocean Resources Inc.
CPA	Closest Point of Approach
CPHO.....	Chief Public Health Officer
CPR.....	Cardiopulmonary Resuscitation
CPUE	Catch-Per-Unit-Effort
CRD	Collaborative Research and Development
CREMP	Core Receiving Environment Monitoring Program
CRG	Community Resources Guides
CSP	Corrugated Steel Pipe
CSR	Construction Summary Report
CTD	Conductivity, Temperature, and Depth
Cu.....	Copper
CWA.....	CWA Engineers Inc.
CwS	Canada-Wide Standards
CWS	Canadian Wildlife Service
dB.....	Decibels
dBA	A-weighted Decibels
DFO	Fisheries and Oceans Canada
DPA	Development Partnership Agreement
DPF.....	Direct Project Footprint
DSP.....	Direct Shipping Pellets
dw	Dry Weight
EC.....	Environment Canada
ECCC.....	Environment and Climate Change Canada
ECSAS	Eastern Canada Seabirds at Sea
EDI.....	Environmental Dynamics Inc.
EEM.....	Environmental Effects Monitoring
EFAP	Employee Family Assistance Program
EIS	Environmental Impact Statement
EL	Exposure Limit
EPP.....	Environmental Protection Plan
ERP.....	Emergency Response Plan
ERT	Emergency Response Team
ESC	Erosion and Sediment Control
ETIS	Employment and Training Information Sessions

EWI	Early Warning Indicators
FAA.....	<i>Fisheries Act</i> Authorization
FEIS	Final Environmental Impact Statement
FTE	Full-Time Equivalents
FWSSWMP	Fresh Water Supply, Sewage and Wastewater Management Plan
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GN	Government of Nunavut
GPS.....	Global Positioning System
GT.....	Gross Tonnage
ha	hectares
HADD	Harmful Alteration, Disruption or Destruction (of Fish Habitat)
HBHTO	Hall Beach Hunters and Trappers Organization (Sanirajak)
HEO	Heavy Equipment Operator
HOL	Height of Land
HR	Human Resource
HTA	Hunter and Trapper Association
HTO	Hunter and Trapper Organization
HWB.....	Hazardous Waste Berm
ICA.....	Inuit Certainty Agreement
ICE	Inuit Cultural Engagement
ICRP	Interim Closure and Reclamation Plan
IFC	Issued-for-Construction
IFO.....	Intermediate Fuel Oil
IHRS.....	Inuit Human Resources Strategy
IHTA	Ikajutit Hunters and Trappers Association (Arctic Bay)
IHTO	Iglolik Hunters and Trappers Organization
IIBA	Inuit Impact and Benefit Agreement
IFO.....	Intermediate Fuel Oil
ILBA.....	Inuit Labour Force Barriers Analysis
ILDLP	Inuit Leadership Development Program
IMO	International Maritime Organization
INPK	Ilagiiktunut Nunalinnullu Pivalliajutisait Kiinaujat
IOL.....	Inuit Owned Land
IPCC.....	Intergovernmental Panel on Climate Change
IPF	Indirect Project Footprint
IQ	Inuit Qaujimajatuqangit
ISQG	Interim Sediment Quality Guidelines
JEC.....	Joint Executive Committee (Baffinland and the QIA)
JPCSL	Jason Prno Consulting Services Ltd.
kn	Knot
kPa	Kilopascal

KPI	Key Performance Indicators
Km	Kilometre
L	Litres
Landfill Facility	Mine Site Non-Hazardous Waste Landfill Facility
LGL	LGL Limited
LMA	Labour Market Analysis
LOA	Letters of Advice
LRR	Listening Range Reduction
LSA	Local Study Area
LTWMP	Long Term Water Management Plan
MAC	Mining Association of Canada
magl	Meters Above Ground Level
MDMER	Metal & Diamond Mining Effluent Regulations
MEEMP	Marine Environmental Effects Monitoring Program
MEWG	Marine Environment Working Group
MHTO	Mittimatalik Hunters and Trappers Organization
MHTA	Mayukalik (Kimmirut) Hunters and Trappers Association
MIEG	Minimum Inuit Employment Goal
MiHR	Mining Industry Human Resources Council
Milne Port	Milne Port Facility
Mine Site	Mary River Mine Site
Minnow	Minnow Environmental Inc.
MISL	Mining Impact Specialists Limited
Mg/L	Milligrams per Liter
mL	Millilitre
MMASP	Marine Mammal Aerial Survey Program
MMO	Marine Mammal Observers
MMON	Marine Mammal Observation Network
MMP	Marine Monitoring Plan
MoU	Memorandum of Understanding
MRDS	Mark-Capture Distance Sampling
m/s ²	Meter per Second Squared
MSC	Mine Site Complex
MSV	Multipurpose Supply Vessel
Mt	Million Tonnes
Mtpa	Million Tonnes Per Annum
MWO	Marine Wildlife Observer
NAAQS	National Ambient Air Quality Standards
NAMRP	Narwhal Adaptive Management Response Plan
NAC	Nunavut Arctic College
NCP	Northern Contaminants Program
NHC	Nunavut Housing Corporation

NHTO	Nangmautuq Hunters and Trappers Organization
NIRB	Nunavut Impact Review Board
NIS.....	Non-Indigenous Species
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxide
NPC	Nunavut Planning Commission
NPMO	Northern Projects Management Office
NPRI	National Pollutant Release Inventory
NRCan	Natural Resources Canada
NSA	Nunavut Settlement Area
NSC	North South Consultants
NSERC	Natural Sciences and Engineering Research Council of Canada
NTI	Nunavut Tunngavik Incorporated
NT-NU	Northwest Territories-Nunavut
NuPPAA.....	<i>Nunavut Planning and Project Assessment Act</i>
NWB.....	Nunavut Water Board
NWMB	Nunavut Wildlife Management Board
NWPA.....	<i>Navigable Waters Protection Act</i>
OBPS	Output-Based Pricing System
OETIO.....	Operating Engineers Training Institute of Ontario
OHS	Occupational Health & Safety
ON.....	Oceans North
OPEP	Oil Pollution Emergency Plan
OPPP	Oil Pollution Prevention Plan
OSRL.....	Oil Spill Response Ltd.
OWTS	Oily Water Treatment System
PAI.....	Potential Acidic Input
PAH	Polycyclic Aromatic Hydrocarbon
PAM	Passive Acoustic Monitoring
PASS.....	Pathway to Adult Secondary School
Pb.....	Lead
PC.....	Project Certificate
PCa.....	Parks Canada
PDA	Project Development Area
PEFA.....	Peregrine Falcon
PHE	Public Health Emergency
PIF	Preferred Inuit Firms
PIP	Production Increase Proposal
PIPE.....	Production Increase Proposal Extension
PIPR.....	Production Increase Proposal Renewal
PLC	Programmable Logic Controller
PM.....	Preventative Maintenance

PPE	Personal Protective Equipment
PRISM	Program for Regional and International Shorebird Monitoring
PSC	Port Site Complex
psi	Pounds per Square Inch
PWSP	Polishing and Waste Stabilization Pond
Q-STEP	Qikiqtani Skills and Training for Employment Partnership
QA/QC	Quality Assurance / Quality Control
QIA	Qikiqtani Inuit Association
QLMA	Qikiqtani Labour Market Analysis
QSEMC	Qikiqtaaluk Socio-Economic Monitoring Committee
QWB	Qikiqtaaluk Wildlife Board
RCMP	Royal Canadian Mounted Police
RFID	Radio Frequency Identification
RLHA	Rough-Legged Hawk
RMA	Raptor Monitoring Area
RMP	Roads Management Plan
ROM	Run of Mine
ROV	Remotely Operated Vehicle
ROW	Right-of-way
RPD	Relative Percent Difference
RSA	Regional Study Area
RSASP	Ringed Seal Aerial Survey Program
SAO	Senior Administration Officer
SBO	Ship-Based Observer
SCA	Skills and Capacities Assessment
SDLT	Sheardown Lake Tributary
Se	Selenium
SEAT	Skills Equivalency Assessment Template
SEMP	Socio-Economic Monitoring Plan
SEMR	Socio-Economic Monitoring Report
SEMWG	Socio-Economic Monitoring Working Group
SITM	Standing Instructions to Masters
SMWMP	Shipping and Marine Wildlife Management Plan
SNP	Surveillance Network Program
SO ₂	Sulphur Dioxide
SOLAS	Safety of Life at Sea
SOP	Sustaining Operations Proposal
SOPEP	Shipboard Oil Pollution Emergency Plan
SPL	Sound Pressure Level
SSA	Stratified Study Area
SSRP	Spill at Sea Response Plan
STP	Sewage Treatment Plants

SUSF	Super Sinter Fines
SWAEMP	Surface Water and Aquatic Ecosystem Management Plan
TARP	Trigger Action Response Plan
TC	Transport Canada
TCLP	Toxicity Characteristic Leaching Procedure
TCMSS	Transport Canada Marine Safety and Security
TDG	Transportation of Dangerous Goods
TEAMR	Terrestrial Environment Annual Monitoring Report
TEMMP	Terrestrial Environment Mitigation and Monitoring Plan
TEWG	Terrestrial Environment Working Group
the Communities	North Baffin Communities
the Fund	Ilagiiktunut Nunalinnullu Pivalliajutisat Kiinaujat Fund
the Project	Mary River Project
TKN	Total Kjeldahl Nitrogen
TOG	Total Oil and Grease
ToR	Terms of Reference
Tote Road	Milne Inlet Tote Road
TREEP	Tote Road Earthworks Execution Plan
TRMP	Tote Road Management Plan
TSD	Technical Supporting Document
TSP	Total Suspended Particulate
TSS	Total Suspended Solids
UAV	Unmanned Aerial Vehicle
VCC	Visitor Communication Centers
VHF	Very High Frequency
VIC	Viking Ice Consultancy
VSEC	Valued Socio-Economic Components
WHMIS	Workplace Hazardous Materials Information System
WHO	World Health Organization
WQG	Water Quality Guidelines
WRF	Waste Rock Facility
WRP	Work Ready Program
WSCC	Workers' Safety and Compensation Commission
WSP	WSP Environment and Infrastructure Canada Limited
WTP	Water Treatment Plant
WWF	World Wildlife Fund
WWTP	Waste Water Treatment Plant
Zn	Zinc

1 INTRODUCTION

This 2023 Annual Report (the Report) to the Nunavut Impact Review Board (NIRB) is a requirement of Baffinland Iron Mines Corporation's (Baffinland's) Project Certificate (PC) No. 005 (Amendment No. 05) for the Mary River Project (the Project). The Annual Report summarizes:

- Project activities, including Inuit and stakeholder engagement, undertaken during the reporting year (January 1, 2023 to December 31, 2023);
- Baffinland's performance against the requirements of the Terms and Conditions in PC No. 005 (Amendment No. 05);
- An evaluation of the Project's effects in relation to those predicted in the Final Environmental Impact Statement (FEIS; Baffinland, 2012); the Addendum to the FEIS (FEIS Addendum; Baffinland, 2013a; NIRB Registry No. 290839) for the Early Revenue Phase which included a temporary approval for production up to 6 million tonnes per annum (Mtpa), the Production Increase Proposal (PIP)/Production Increase Proposal Extension (PIPE) exclusive to years 2018 to 2021 (NIRB, 2018a, 2020a; NIRB Registry No. 320857, 330475), the Production Increase Proposal Renewal for 2022 (PIPR; NIRB, 2022a; NIRB Registry No. 342056), and most recently the Sustaining Operations Proposal (SOP) for the years 2023-24 (SOP; NIRB 2023a; NIRB Registry No. 347553); and
- Planned Project work for the next reporting year (January 1, 2024 to December 31, 2024).

1.1 COMPANY DESCRIPTION

The Mary River iron ore deposits on North Baffin Island are considered to be one of the largest and highest quality iron ore open pit deposits in the world. With such high grade iron ore, there are no concentrators, tailings, or tailings ponds associated with production activities. Baffinland produces three iron ore products that are shipped during the shipping season to international markets: Direct Shipping Pellets (DSP), Super Sinter Fines (SUSF) and Baffinland Hematite Lump (BHL). The Project is operated by Baffinland and is jointly owned by The Energy and Minerals Group and ArcelorMittal (minority).

The mine is located on Baffin Island, approximately 160 Km south-southwest of the nearest community of Pond Inlet (Mittimatalik), in the Qikiqtani region of Nunavut, and 1,000 Km north-northwest of the territorial capital of Iqaluit. Baffinland's head office is located in Oakville, Ontario and its northern headquarters is located in Iqaluit, Nunavut. Baffinland also has offices in five (5) North Baffin communities including Arctic Bay, Clyde River, Igloolik, Pond Inlet, and Sanirajak (Figure 1.1).

Baffinland's Mission, Vision and Values were developed with the Government of Nunavut's (GN) eight (8) Inuit Societal Values in mind, and include:

Mission: To become the lowest-cost producer of high grade iron ore in the world

Vision: To safely and efficiently identify and develop resources within Baffin Island, unlocking their wealth-generating potential

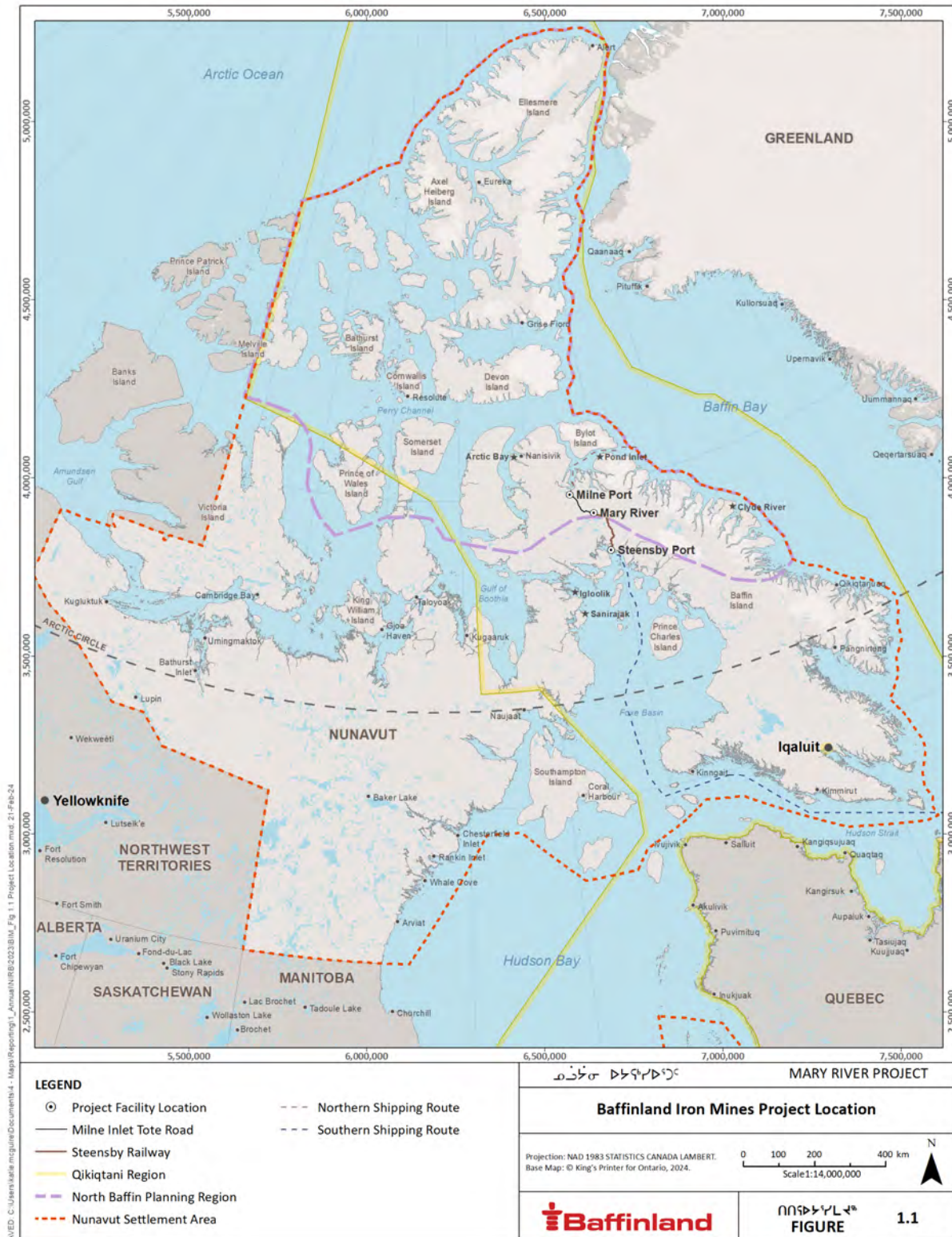


Figure 1.1: Baffinland Iron Mines Project Location

Values: Health and Safety – Safety as a Value: When safety is a personal value, people naturally choose to make the safe choice. They even use hearing protection and safety glasses at home. Employers who have safety as a value make their workplace safe because they want to, not because of government regulation. Employees work safely because they want to, not because it is a company rule. In this environment, companies go above and beyond regulations to protect their people.

Integrity: Do What is Right, Not What is Easy: Integrity is often defined as doing the right thing even when no one else is around. It is the ability to act with honesty, be consistent, and ethical in whatever it is we are doing. It's about being accountable, transparent and building trust through communications.

Engage and Develop our People: An organization where good work is recognized and rewarded. All employees are seen and treated as valued partners. Baffinland will invest in employee's success and growth through providing tools, training and support needed to unleash their potential. Baffinland will endeavour to become the employer of choice for Inuit in Nunavut.

Respect for All: We will respect and abide by Inuit Societal Values in the workplace and as a manner of doing business. We will strive to provide a healthy and safe workplace, free from physical or psychological bullying, harassment and violence. Violations of respect will be investigated and if substantiated will be dealt with expeditiously. Multiculturalism will be viewed as a strength and promoted. Consideration for people will be first and foremost in all interactions.

Environmental Stewardship: Respect the air, land, water and wildlife as we thoughtfully put to good use the earth's resources. Always remember that we are guests on this land and treat it respectfully. We will develop it responsibly and be good stewards of the land in concert with Inuit.

Pursue Performance Excellence: We are relentless in challenging ourselves and others to achieve high performance and create lasting socio-economic impacts in all that we do. We focus on improving every day and delivering on commitments. Innovation is seen as a key mechanism to achieve this outcome. Rigor in planning and thoughtful execution is a key strength. Teamwork is necessary for desired outcomes.

1.2 MARY RIVER PROJECT HISTORY

Baffinland is currently mining high-grade iron ore from the area referred to as Deposit No. 1, which was first discovered in 1962. The currently approved mine operation is expected to last for more than 20 years, however through ongoing exploration activities and the development of additional deposits the Mary River Project has the potential to operate for significantly longer. The Project represents a potential multi-generational opportunity for resource-driven socio-economic development in the North Baffin region.

The Project has gone through a number of important milestones prior to operating at the 2023-2024 approved production rate of six (6) Mtpa. Baffinland's initial proposal consisted of mining iron ore from the reserve at Deposit No. 1 and using a port south of the Mine Site in Steensby Inlet, serviced by an approximately 149 Km railway to transport the ore to market (i.e., Southern Transportation Corridor; Figure 1.1). The NIRB issued Project Certificate No. 005 for this proposal on December 28, 2012 (additional information specific to the Project Certificate is provided in Section 1.4.1).

From 2013 to 2014, in response to changing iron ore market price conditions, Baffinland prepared an alternative development approach, the Early Revenue Phase, supported by an addendum to the FEIS for the Mary River Project.

The Project Certificate was subsequently amended to include the mining of additional ore to be hauled on the existing Milne Inlet Tote Road (Tote Road) north to a port at Milne Inlet (Milne Port). In 2018 (NIRB, 2018a; NIRB Registry No. 320857.), 2020 (NIRB, 2020a; NIRB Registry No. 330475), 2022 (NIRB, 2022a; NIRB Registry No. 342056), and 2023 (NIRB, 2023a; NIRB Registry No. 347553) the PC was amended again following approval of the PIP, PIPE, PIPR and most recently the SOP.

In parallel to the operation of the mine, Baffinland also developed the Phase 2 Proposal, which underwent regulatory review from 2015 until 2022. While there had been revisions to the Phase 2 Proposal since its inception, the most recent Phase 2 Proposal outlined an increase in output from Milne Port, from the originally approved 4.2 Mtpa to 12 Mtpa supported by the construction of a new railway running largely parallel to the existing Tote Road within the Northern Transportation Corridor. On May 13, 2022, the NIRB recommended to the Minister of Northern Affairs that the Project's Phase 2 Expansion Proposal not proceed at this time (NIRB, 2022b; NIRB Registry No. 339558). Subsequently, on November 16, 2022, the Minister accepted the Board's recommendation to not approve the Phase 2 Proposal at this time (Minister of Northern Affairs, 2022a).

The fifth (5) PC amendment for the SOP (NIRB, 2023a; NIRB Registry No. 347553) allows for up to 6 Mtpa plus 0.9 Mtpa of "stranded ore" to be transported and shipped through Milne Port until the end of 2024. Stranded ore is defined as iron ore that was delivered in the previous year to Milne Port but was not shipped in that year's shipping season due to weather or other shipping constraints.

Through the SOP application process in 2023, Baffinland made 28 new commitments, which are reflected in Appendix B to Project Certificate No. 005, Amendment No. 05. These extensive commitments relate to various aspects of the Project, such as dust mitigation, marine monitoring measures, Inuit training plans and management plans. Status on these commitments will be reported in line with the requirements of Term and Condition No. 189, with the most recent report being submitted to the NIRB on March 31st, 2024 (Appendix F.2).

1.3 EXISTING PROJECT OVERVIEW

The Approved Project currently consists of four main operating areas: The Mary River Mine Site (the Mine Site), the 100-Km long Tote Road, the Milne Port facility (Milne Port) and the Northern Shipping Route. Collectively the areas north of the Mine Site are known as the Northern Transportation Corridor. Operational activities include:

- Ore extraction;
- Ore processing via crushing;
- Transportation of the ore from the Mine Site to Milne Port via the 100 Km long Tote Road;
- Loading and shipping of ore from Milne Port via the Northern Shipping Route (Milne Inlet – Eclipse Sound);
- Seasonal shipping of ore to markets in Europe and Asia between July and end of October;
- Stakeholder and Inuit community engagement; and
- Environmental monitoring and reporting.

During 2023 (the ninth (9) shipping season), mining operations at Deposit No.1 resulted in a total of 5.6 million tonnes (Mt) of ore was crushed, and a total of 5.5 Mt of that ore was transported by ore haul trucks along the Tote Road and stockpiled at Milne Port. Between August 9 and October 31, 2023, a total of 6.1 Mt of ore was shipped from Milne Port to international markets. The shipments included ore mined, transported and stockpiled after the 2022 shipping season ended. That ore was removed from Milne Port on a total of 39 distinct ore carriers, many of which made multiple trips for a season total 75 voyages. As in previous years, ore carriers and other vessels

continued to partake in an opportunistic convoy program to reduce underwater noise disturbance. Similarly, 2023 was the first year Capesize vessels called on and were loaded at Milne Port, further reducing the total number of voyages required to evacuate the ore stockpiles at Milne Port.

In addition to the primary components of the current operation, the Approved Project also includes construction, operation, closure and post-closure activities associated with the following Approved Project components, known collectively as the Steensby Component of the Approved Project, that have yet to be developed:

- The 149 Km Steensby Railway from the Mine Site to a new port facility at Steensby Inlet (Figure 1.2);
- Steensby Port, which will operate year-round; and
- Year-round shipping along the Southern Shipping Route (Foxe Basin - Hudson Strait).

A summary of the overall Approved Project is provided in Table 1.1.

1.4 REGULATORY CONTEXT

1.4.1 Project Certificate

On December 28, 2012, the NIRB issued PC No. 005 for the Project to Baffinland (NIRB, 2012a; NIRB Registry No. 286442) pursuant to Section 12.5.12 of Article 12 of the Nunavut Agreement (CIRNAC and Nunavut Tunngavik Inc., 2018). The basis for the PC is Baffinland's FEIS (Baffinland, 2012), which presented an assessment of potential environmental and socio-economic effects associated with mining the reserves of Deposit No. 1.

The FEIS for the approved Project was prepared in adherence to Guidelines for the Preparation of an Environmental Impact Statement for Baffinland Iron Mines Corporation's Mary River Project (the Guidelines; NIRB, 2009); and NIRB's Preliminary Hearing Conference Decision (NIRB, 2011).

Five (5) amendments to the PC have been issued to Baffinland, in 2013, 2018, 2020, 2022 and 2023. This history is described below.

Amendment No. 01 of Project Certificate No. 005 for the Early Revenue Phase

Following the issuance of the PC, Baffinland requested an amendment to the PC to undertake the 4.2 Mtpa Early Revenue Phase, and an Addendum to the FEIS was submitted to the NIRB in June 2013 (Baffinland, 2013a; NIRB Registry No. 290839). The Minister of Aboriginal Affairs and Northern Development Canada (AANDC; now Crown Indigenous Relations and Northern Affairs Canada - CIRNAC) approved the Early Revenue Phase on April 28, 2014 (Minister of Aboriginal Affairs and Northern Development, 2014), and NIRB subsequently issued an amended PC in May 2014 (NIRB, 2014; NIRB Registry No. 290664).

Amendment No. 02 of Project Certificate No. 005 for the Production Increase Project Proposal and Extension Request

In 2018, Baffinland applied for, and was granted a second amendment to its PC for the PIP.

In April 2018, Baffinland submitted a project proposal to the Nunavut Planning Commission (NPC) for an increase in production from the current 4.2 Mtpa to 6.0 Mtpa (Stantec, 2018; NIRB Registry No. 318140). On May 18, 2018 the NPC referred the Production Increase Proposal (PIP) to the NIRB for screening. In the PIP, Baffinland requested that

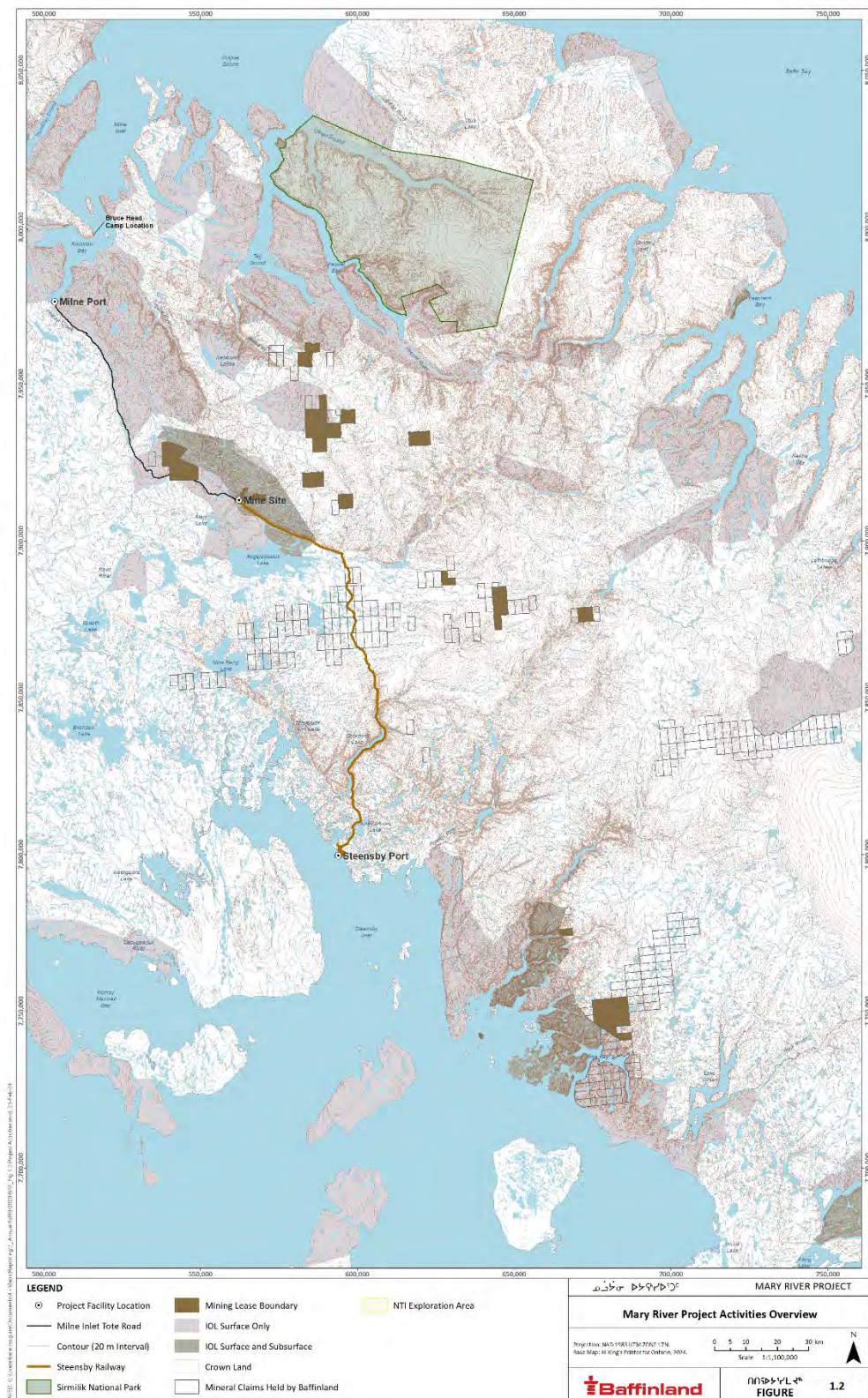


Figure 1.2: Project Activities Overview

Table 1.1: Mary River Project Description Summary

Information Type	Description
Location	North Baffin Island, Nunavut; 160 Km south/southwest from the closest Inuit community, Pond Inlet (Mittimatalik) (Figure 1.1).
Facility Name	Mary River Mine Site (Mine Site) and Milne Port Facility (Milne Port) connected via the Milne Inlet Tote Road (Tote Road). Steensby Port and Steensby Railway (Southern Transportation Corridor) are approved but not active.
Type of Mine	Open pit (Deposit No. 1; Photo 1 in Appendix D)
Summary of Current Mine Operations (from blasting to shipping)	<ol style="list-style-type: none"> 1 Iron ore is blasted and extracted from Deposit No. 1, loaded onto mine trucks and transported to the crushers (Photos 1 and 2 in Appendix D). 2 Run-of-mine (ROM) iron ore is crushed at Mine Site. 3 Crushed ore is transported from Mine Site to Milne Port (Photo 3 Appendix D). 4 Ore is stockpiled at Milne Port until the shipping season begins (Photo 4 in Appendix D). 5 Ore is loaded onto ships at Milne Port (Photo 5 in Appendix D). 6 Ore is shipped to customers worldwide.
Key Operation Dates – Mary River and Milne Port	<ul style="list-style-type: none"> • Bulk sample shipped from Milne Port in 2008; • Construction at Mine Site and Milne Port initiated in 2013; • Mining from Deposit No. 1 began in 2014; and • First ore carrier loaded and shipped out of Milne Port in 2015.
Environmental Impact Statement Submissions to the Nunavut Impact Review Board and Amendments	<p>FEIS: Submitted in February 2012; approval in December 2012 (Southern Transportation Corridor).</p> <p>Amendment No. 01: Submitted in June 2013; approval in 2014 (4.2 Mtpa via Northern Transportation Corridor).</p> <p>Amendment No. 02: Submitted in April 2018; approval in 2018 (increase to 6 Mtpa).</p> <p>Amendment No. 03: Extension request submitted in January 2020, approval in June 2020 (6 Mtpa until end of 2021).</p> <p>Amendment No. 04: Renewal request submitted in June 2022, approval (October 2022) and revised Terms and Conditions issued in November 2022 (6 Mtpa until end of 2022).</p> <p>Amendment No. 05: Sustaining Operations Proposal submitted in March 2023, approved in October 2023 and revised Terms and Conditions issued in November 2023 (6 Mtpa + 0.9 Mtpa of stranded ore until the end of 2024).</p>
Products	Direct Shipping Pellets (DSP), Super Sinter Fines (SUSF) and Baffinland Hematite Lump (BHL).
Expected Life	20+ years, with potential for expansion.
Access	Remote fly-in/fly-out access via charter flights to and from Mine Site from various hubs including Mirabel, Iqaluit, and five (5) North Baffin communities. There are also two (2) land-based connections between the Mine Site and tidewater, the first being the Tote Road to Milne Port, which existed prior to Baffinland developing the

Information Type	Description
	Project. The other is the 149 Km Steensby Railway to Steensby Port, which is approved to move forward but has not yet been developed.

NIRB reconsider Mary River PC No. 005 and amend Term and Condition No. 179(a) and 179(b) in order to accommodate the increase in the volume of ore transported and shipped out of Milne Port.

On June 11, 2018 the NIRB determined that the modifications proposed in the PIP required assessment through a formal reconsideration of the PC Terms and Conditions. On June 20, 2018 Baffinland filed additional information in support of the FEIS Addendum (Baffinland, 2018a; NIRB Registry No. 318295) and on June 27, 2018, the NIRB issued correspondence formally accepting the FEIS Addendum (NIRB, 2018b; NIRB Registry No. 318402), and inviting comment on the proposal from interested parties to be received on or before July 26, 2018. The NIRB held a public information session in Pond Inlet on July 12, 2018.

The NIRB issued its Reconsideration Report and Recommendations on August 31, 2018 that recommended partial approval of the application. Specifically, NIRB recommended Baffinland be approved to move forward with the construction of its 380-person camp and additional 15 million litre fuel tank at Milne Port, but not be approved to increase its annual limits for trucking and shipping ore to market (NIRB, 2018c; NIRB Registry No. 319640). On September 30, 2018, following an appeal by Baffinland and the Qikiqtani Inuit Association (QIA) to the Minister responsible for final approval – the Minister of Intergovernmental Affairs, Northern Affairs and Internal Trade - Baffinland received an approval to increase its trucking and shipping limits for 2018 and 2019 (Minister of Intergovernmental and Northern Affairs and Internal Trade, 2018). Subsequently, on October 30, 2018, the NIRB issued PC Amendment No. 02 (NIRB, 2018a; NIRB Registry No. 320857).

Amendment No. 03 of Project Certificate No. 005 for the Production Increase Project Proposal and Extension Request

In early December 2019, Baffinland sent a notification of its intention to NIRB to request an additional extension to the production increase limits (i.e., extending the 6 Mtpa limit beyond 2019) and thereby consider further modifications of PC Term and Condition No. 179(a) and 179(b) (Baffinland, 2019a; NIRB Registry No. 327657). On January 6, 2020, Baffinland submitted a formal Extension Request Package. Baffinland's intention to continue shipping 6 Mtpa in 2020 was widely supported by the five (5) North Baffin region hamlets and regulators, with letters of support submitted to the NIRB (Baffinland, 2020a NIRB Registry No. 327951. On March 4, 2020 the NIRB issued its "Reconsideration Report and Recommendations" indicating that they recommended approval of the extension of the 6 Mtpa production increase until December 31, 2021 (NIRB, 2020b; NIRB Registry No. 328809). The Responsible Ministers approved the temporary expansion request on May 19, 2020. NIRB subsequently issued an amended Project Certificate in June 18, 2020 (NIRB, 2020a; NIRB Registry No. 330475) with varied or new PC Terms and Conditions, notably Term and Condition No. 179(c) and 183.

Amendment No. 04 of Project Certificate No. 005 for the Production Increase Proposal Renewal (PIPR)

On June 7, 2022 the NPC notified Baffinland, the NIRB and other relevant parties of a positive conformity determination for the PIPR (Proposal) and forwarded the Proposal to NIRB for consideration of the modifications to NIRB Project Certificate No. 005. On June 13, 2022 Baffinland completed NIRB's on-line application and the NIRB circulated the PIPR, inviting written comments by June 28, 2022. On June 15, Baffinland filed the Supplemental Information Package, which was circulated by the NIRB on June 17, 2022. On June 24, 2022 the NIRB approved an

extension request by the Ikajutit (Arctic Bay) Hunters and Trappers Organization to submit written comments by July 5, 2022. On July 5, 2022 the NIRB received written comments from all parties. The formal notice of a reconsideration under *Nunavut Planning and Project Assessment Act* (NuPPAA) s. 112(3) was issued on July 19, 2022 (NIRB, 2022c; NIRB Registry No. 124703).

On August 11, 2022, parties provided technical written submissions on the PIPR, which was followed by a hybrid (in person and virtual) Community Roundtable meeting in Pond Inlet. On August 19, 2022 Baffinland provided replies to parties' comments and on August 24, 2022 interested residents from Pond Inlet unable to comment during the Community Roundtable were able to provide their written comment submissions. On September 22, 2022 the NIRB issued the Board's Reconsideration Report and Recommendation to the Responsible Minister, indicating the PIPR should be allowed to proceed (NIRB, 2022b; NIRB Registry No. 341713).

Based on mediation that began between Baffinland and QIA supported by the Government of Canada in June 2022, Baffinland and QIA agreed to a number of joint PC Terms and Conditions and commitments, which both parties agreed to on September 23, 2022. On October 4, 2022 the Minister officially accepted the NIRB Reconsideration Report and Recommendations, and added the majority of the Baffinland and QIA jointly proposed PC Terms and Conditions and commitments in an amended Project Certificate No. 005 (Minister of Northern Affairs, 2022b; NIRB Registry No. 341711). On October 17, 2022 the NIRB held a Project Certificate Workshop to confirm parties' expectations with respect to the modified and new terms and conditions within Project Certificate No. 005, as well as the commitments contained within a new Appendix B. On November 3, 2022, NIRB issued an amended Project Certificate (NIRB, 2022a; NIRB Registry No. 342056) with revised Terms and Conditions (No. 179(a) and 179 (b)), varied Terms and Conditions (No. 49, 77 and 183), and additional Terms and Conditions (No. 185-189).

Amendment No. 05 of Project Certificate No. 005 for the Sustaining Operations Proposal (SOP)

On March 16, 2023, Baffinland submitted the Sustaining Operations Proposal (SOP) to the NIRB requesting a 2-year allowance for the transportation and shipping up to 6 Mtpa of iron ore, until December 31, 2024. On May 8, 2023, the NIRB initiated a formal reconsideration of the terms and conditions of Project Certificate No. 005 to reflect the submission of Baffinland's Proposal. Two (2) written commenting periods and two community roundtable sessions in Iqaluit (July 27-29, 2023) and Pond Inlet (August 1-2, 2023) were held by the NIRB. Baffinland received a positive recommendation from the NIRB on September 13, 2023 (NIRB, 2023b; NIRB Registry No. 347145). On October 17, 2023, the Minister of Northern Affairs, on behalf of the Responsible Ministers provided notice under s. 112(9) of the NuPPAA that the Ministers had accepted the NIRB's Reconsideration Report and Recommendation for the Mary River Project's SOP (Minister of Northern Affairs et al., 2023; NIRB Registry No. 347422). The Responsible Ministers approved the SOP agreeing with the revised PC Term and Condition No. 28, 35, 76, 82, 83(a), 85, 99, 101, 150, 179(a) and (b) outlined in the Board's Reconsideration Report and Recommendations as Amendment No. 05 to Project Certificate No. 005. On November 3, 2023, the NIRB held a Project Certificate Workshop and the amended Terms and Conditions were subsequently issued on November 17, 2023 as Amendment No. 05 to the Project Certificate No. 005 (NIRB, 2023a; NIRB Registry No 347553).

1.4.2 Permits

Baffinland operates the Early Revenue Phase in accordance with the permits, licences, approvals, authorizations and agreements identified in Table 1.2. In addition, Baffinland's contractors and consultants undertake various activities on the Project under additional permits in the areas of scientific research, archaeology, and explosives manufacture, storage and use.

Table 1.2: Permit Registry

Approval	Project Activity and Update	Expiry
Nunavut Impact Review Board (NIRB) Nunavut Agreement, and the Nunavut Planning and Project Assessment Act		
Project Certificate No. 005 (Amendment No. 05)	Required under Article 12 of the Nunavut Agreement to obtain the requisite permits and approvals to proceed with the Project	No Expiry
Nunavut Agreement (Article 12) Qikiqtani Inuit Association (QIA) Agreements issued under Articles 6, 20 and 26 of the Nunavut Agreement		
Inuit Owned Land (IOL) Commercial Lease Q13C301	Mine development activities on IOL; Compliance with the lease is outlined in the <i>2023 QIA and NWB Annual Report for Operations</i> and the <i>2023 QIA and NWB Annual Report for Geotechnical Drilling</i> , submitted March 31, 2023 (Baffinland, 2024a,b).	December 31, 2043
Inuit Impact and Benefit Agreement (IIBA)	Required under Article 26 of the <i>Nunavut Agreement</i> to proceed with Project - concluded first in September, 2013, subsequently amended in October, 2018 to account for the Production Increase Proposal; Compliance with the agreement is outlined in the Annual Inuit Impact and Benefit Agreement (IIBA) Implementation Report submitted by March 31 st of each year.	No Expiry
Wildlife Compensation Agreement	Wildlife Compensation required under Article 6 of the <i>Nunavut Agreement</i> , with the regime set out in IIBA.	No Expiry
Quarry Concession Agreement	Required to extract specified substances (quarried rock and borrow sand and gravel) on Inuit Owned Land under the Commercial Lease (QIA, 2018)	Not Applicable
Water Compensation Agreement	Required under Article 20 of the <i>Nunavut Agreement</i> to provide compensation to Inuit for water use by the project or impact to water use.	No Expiry
Nunavut Water Board (NWB) Water Licences issued under the Nunavut Agreement (Article 13), the Nunavut Waters and Nunavut Surface Rights Tribunal Act, and the Northwest Territories Water Regulations		
Type 'A' Water Licence 2AM-MRY1325 Amendment No. 1	Water use and waste disposal associated with the mine; In good standing; no amendments were issued by the NWB in 2023. Compliance with the Licence is outlined in the 2023 QIA and NWB Annual Report for Operations, submitted March 31, 2023 (Baffinland, 2024a).	June 10, 2025
Type 'B' Water Licence 2BE-MRY2131	Regional exploration activities, including exploration drilling; In good standing; a licence renewal application was approved in 2021. Compliance with the Licence is outlined in the 2023 QIA and NWB Annual Report for Geotechnical Drilling, submitted March 31, 2023 (Baffinland, 2024b).	April 16, 2031

Approval	Project Activity and Update	Expiry
Crown Indigenous Relations and Northern Affairs Canada (CIRNAC) Mineral Leases and Land Leases, Land Use Permits, and Quarry Permits on Crown Land, issued under the Territorial Lands Act and associated Canadian Mining Regulations and Territorial Land Use Regulations		
Foreshore Lease 47H/16-1-2 Lease Amendment 47H/16-1-5	Supersedes historical Class A Land Use Permit N2014X0012; Use of foreshore area for current Milne Port Ore Dock and Freight Dock; In good standing.	June 30, 2035
Tote Road and Borrow Area Land Use Permit N2019Q0011	Land use permit for the section of Tote Road on Crown Land, associated quarries and infrastructure.	June 29, 2024
Land Use Permit Bruce Head: N2019J0010	Land use permit for the summer marine monitoring camp at Bruce Head, in Milne Inlet.	June 29, 2024
Land Use Permit Steensby: N2019C0009	Land use permit for the Infrastructure and activities on Crown Land at Steensby Port.	June 29, 2024
Mineral Leases #2483, #2484 and #2485	Rights to extract minerals; Lease #2484 covers Deposit No.1.	August 27, 2034
Fisheries and Oceans Canada (DFO) Authorizations and Letters of Advice issued under the Fisheries Act		
Letters of Advice (various)	Prior to 2021, DFO issued Baffinland various letters of advice in regard to Project crossings along the Tote Road, culvert extensions and replacements, laydown construction, and for stockpile expansion and barge landing expansion work at Milne Port.	No Expiry
Fisheries Authorization 14-HCAA-00525	Authorization to construct the Milne Port Ore Dock in fish habitat; DFO reviewed final monitoring report and closed file on May 31, 2021.	Not applicable
Fisheries Authorization 18-HCAA-00160	Authorization to construct the Freight Dock in fish habitat; The Year 2 monitoring report for the Milne Port Freight Dock was submitted to DFO on March 18, 2023, in accordance with regulated timelines. A revised amendment application for the Freight Dock was also submitted by Baffinland on March 3, 2023 (Baffinland, 2023a).	Not applicable; Request for amendment TBD
Transport Canada (TC) Approvals of in-water works under the Navigable Waters Protection Act (NWP; now the Canadian Navigable Waters Act); and Marine Facility Approval under the Marine Transportation Security Act and Regulations		
Approvals: 8200-07-10273, 8200-07-10267, 8200-07-10269, 8200-07-10268, 8200-07-10274, 8200-07-10272, 8200-07-10266, 8200-07-10271	Approvals to interfere with navigation within navigable waters along the Tote Road at crossings: CV-040, BG-50, CV-128, CV-223, CV-072, BG-17, CV-217, and CV-099. In good standing, no changes from previous year.	No Expiry; Until complete

Approval	Project Activity and Update	Expiry
Statement of Compliance of a Marine Facility # 1000000660	Approval for the Milne Inlet Marine Facility to conduct iron ore operations.	May 27, 2025
National Resources of Canada Licensing of Explosives Manufacture and Storage Facilities under the <i>Explosives Act</i>		
Division 1 Factory Licence #F76068/E	Issued to Baffinland's explosives contractor to manufacture explosives for the mine.	-

1.4.3 Permitting of Sustaining Operations Proposal 2

Baffinland is continuing to evaluate its plans for the long term success of the Project, which includes a renewed focus on the development of the Steensby component of the Approved Project. Baffinland plans to continue to transport lump and fine iron ore products to market via the Northern Transportation Corridor until the Steensby Component of the Approved Project has been commissioned and achieved commercial transportation rates. Once this occurs, Baffinland plans to redirect all ore haulage through the Southern Transportation Corridor, leaving only limited freight and fuel shipments to continue through the Northern Transportation Corridor, as described in the original 2012 Final Environmental Impact Statement (FEIS; Baffinland, 2012). Baffinland is preparing an application to secure an amendment to Project Certificate No. 005 to allow for the continued operation of the approved 2018-2024 transportation activity levels through to 2032, unless the Steensby Components reach commercial transportation rates first. Baffinland plans to submit this application, the Sustaining Operations Proposal 2 (SOP2), to NIRB in May 2024.

1.5 REPORT STRUCTURE

1.5.1 Report Content

This report is structured as follows:

Section 1: Provides an overview of the Project and the regulatory context in which this Report is being submitted.

Section 2: Highlights key activities and consultation efforts conducted with Inuit and stakeholders for the Project, including:

- The five (5) North Baffin communities (the Communities);
- The Qikiqtani Inuit Association (QIA) ;
- Relevant regulatory agencies; and
- PC mandated Project working groups (Marine Environment Working Group (MEWG), Terrestrial Environment Working Group (TEWG) and the Mary River Socio-Economic Monitoring Working Group (SEMWG).

Section 3: Describes the Project's operational context in 2023 and operational successes and challenges Baffinland associated with implementation of the PC Terms and Conditions.

Section 4: Includes tailored 'summary sheets' for each Term and Condition, which provide an overview of the work completed towards meeting the requirements of the PC Terms and Conditions as well as Baffinland's self-assessment

of compliance. This section also describes stakeholder feedback on relevant components and effects of the Project, observed trends, a comparison of the Project's effects in comparison with predictions made in the FEIS and FEIS Addendum and plans for future works relative to the implementation of the PC Terms and Conditions, where relevant.

Section 5: Outlines the correspondence Baffinland has had with NIRB during 2023 and comments provided by interested Parties on Baffinland's 2022 Annual Report to NIRB.

Section 6: Lists all updates made to environmental management plans as a result of monitoring programs and engagement activities throughout 2023.

1.5.2 Supporting Documents and Appendices

Where PC Terms and Conditions specify that Baffinland provide supporting documentation to NIRB as part of the submission of this Report, these documents have been appended and are identified in the Table of Contents. Other appendices, such as reports or documentation that are likely to be of specific interest to NIRB as part of their review of this Report, and those that provide a pertinent context to the discussions are also included in this Report. 2023 final Marine, Terrestrial, and Socio-Economic monitoring reports have been included as appendices to this report. The Working Groups, to which the NIRB is an observing member, will have the opportunity to review and provide comments on these reports through the annual reporting process and will be given opportunity to ask questions related to the 2023 Annual Report to the NIRB at future meetings.

In the interest of sustainability, other Project documentation that may be of interest to NIRB and other interested parties has been posted to the Project Document Portal available on the Baffinland website (www.baffinland.com). As described in Section 2.5 several reports are shared with the Working Groups and regulatory agencies throughout the year during various engagement activities.

For information on Baffinland's updates to IR responses related to the 2022 NIRB annual report, please see Appendix E.

2 ENGAGEMENT ACTIVITIES

2.1 ENGAGEMENT APPROACH

Meaningful and substantive Inuit, community, and stakeholder engagement is valued by Baffinland as a means of building and maintaining community relationships and maximizing benefits from the Project. Baffinland's approach to engagement emphasizes the importance of informing Inuit, affected communities, and other stakeholders. The intent is to establish effective dialogue, and collect feedback to inform Company planning, while resolving issues and concerns (Figure 2.1). Baffinland understands that Inuit engagement and consultation must occur in a manner that is appropriate to the Nunavut and Qikiqtani regional context. Engagement and consultation methods and approaches appropriate for Southern groups, other Northern jurisdictions or an academic setting, are not necessarily transferable. Baffinland has made every effort to provide Inuit employees, individuals, communities, and Inuit organization groups with practical opportunities to engage in meaningful dialogue in the format of their choosing, and in a way that would meet their objectives and values.



Figure 2.1: Baffinland's Approach to Inuit and other Stakeholders Engagement

Baffinland held in-person meetings in the five (5) North Baffin communities and Iqaluit, with some events and meetings being held virtually or on telephone conference. Baffinland continued to maintain a presence on social media and local radio as a means to ensure that information about the Project was accessible to a wide audience. In addition to the five (5) North Baffin communities, Baffinland also engaged the communities of Kinngait and Kimmirut on the Steensby Component of the Mary River Project. Additionally, there were public consultations held for the SOP in 2023.

Baffinland continued to provide relevant operational updates to the communities and regulators throughout the year. Baffinland engaged on the SOP, with Inuit in the five (5) North Baffin communities and the QIA, to allow for the continued operation of the Project at a nominal 6 Mtpa activity level to along the Northern Shipping Route for two (2) years. After much consultation and two, two-day Community Roundtables held in July/August, Baffinland received approval in October from the Minister of Northern Affairs following a positive recommendation from the NIRB. This means that Baffinland was approved to ship 6 Mtpa plus additional ore stranded at Milne Port until December 2024. Baffinland received a number of letters of support from stakeholders supporting the SOP including from the Communities of Arctic Bay, Igloolik, Pond Inlet, and Sanirajak.

Baffinland's engagement approach incorporates the feedback received from Inuit, communities and stakeholders and applies it to existing operations. This includes developing new mitigations to address priority areas of the Project as identified by Inuit. Some examples of this include: proactively implementing commitments for additional ballast water mitigations (i.e., requiring vessels to conduct both exchange and treatment); running narwhal entrapment clearance aerial surveys since 2019 when supported by the community; and ensuring that communities have up-to-date information on the movement and transits of Project vessels. Furthermore, Baffinland reengaged communities in 2023 on the Steensby Component of the Mary River Project and has been applying Inuit Qaujimajatuqangit (IQ) into many aspects of the Steensby plans including fisheries offsetting. These few examples highlight where Baffinland has incorporated information received through previous engagement events and integrated in both the SOP application and the operations in general.

2.2 ENGAGEMENT OBJECTIVES

Baffinland is committed to meaningful engagement with Inuit and other stakeholders potentially affected by the Project, including the five (5) North Baffin Communities (Arctic Bay, Clyde River, Igloolik, Pond Inlet, and Sanirajak), the QIA, applicable regulatory agencies and the general public. In 2023, Baffinland broadened its efforts to include Kimmirut, Kinngait, and Coral Harbour, as well as Makivik Corporation, on the Steensby Component of the Project.

The objectives of Baffinland's engagement efforts are to:

- Provide Inuit, communities, and other stakeholders with relevant Project information in a timely, accessible, and culturally appropriate manner in order to identify issues and concerns and provide input into the development of appropriate mitigation measures and issues resolution;
- Ensure that Inuit, communities, and other stakeholders have the opportunity to understand and meaningfully engage in the processes initiated by the Project;
- Consider Inuit traditional knowledge as well as scientific expertise and community feedback in decision making processes;
- Build constructive and positive relationships with communities most likely to be affected by the Project; and
- Focus priorities so that potential adverse effects are mitigated, and Project benefits are enhanced.

2.3 ENGAGEMENT ACTIVITIES

In support of Baffinland's focus on continuous improvement and the engagement objectives defined for the Project (Section 2.2), Baffinland regularly implements a variety of engagement mechanisms that are intended to ensure a broad and comprehensive approach to the identification of Inuit stakeholders and relevant interested parties, and

that enhanced opportunities for dialogue and input are provided. Baffinland successfully completed a number of public engagement activities in 2023, which included:

- Providing regular and ongoing opportunities for the dissemination of Project-related information and receipt of stakeholder input through Baffinland Community Liaison Officers (BCLOs), Inuit Knowledge Holders (IKH), Community Resources Guides (CRGs), stationed in each of the five (5) North Baffin Communities;
- Providing regular and ongoing opportunities for the dissemination of Project-related shipping activities and receipt of Inuit input through the Baffinland Shipping Monitor roles stationed in Pond Inlet (in-person visits, radio shows, ongoing marine VHF radio communications about vessel traffic, dedicated 'Baffinland Shipping' Facebook posts);
- Hosting public meetings, with enhanced use of public radio shows in response to in-person gathering limitations;
- Conducting employee surveys;
- Participation in virtual multi-stakeholder forums (e.g., Working Groups);
- Holding meetings with community groups and Hamlet Councils;
- Distributing Project-related information through the corporate website, social media sites including Facebook, LinkedIn and Twitter, newsletters, advertisements, radio shows, and other means;
- Holding one-on-one virtual, teleconference and in-person discussions with Mayors and other officials from Arctic Bay, Clyde River, Igloolik, Pond Inlet, Sanirajak, and Iqaluit to provide updates on Mary River Project's existing and future operations including conversations in 2023 related to the SOP and Steensby Component, to hear community updates and issues of importance;
- Baffinland incorporate engagement with Kimmirut, Kinngait, Coral Harbour, as well as Makivvik Corporation on the Steensby Component of the Project; and Baffinland has continued expanding its Northern Affairs and Community Relations team this year to lead community engagements.

A summary of engagement events including details on public meetings and community group meetings held in 2023 are presented in Appendix B.1.

Baffinland's approach to receiving and addressing concerns/feedback is dynamic and evolves based on the circumstances and channels through which feedback has been received. Baffinland uses a variety of methods for receiving and responding to community comments. In addition to Baffinland's Northern Headquarters, critical points of contact for employees, members of the public, elected officials, and other interested bodies in the five (5) Communities are the BCLOs. These team members receive feedback, often informally, and ensure follow-up is conducted and that responses to feedback are provided when required. Updates about Baffinland activities are also regularly provided by BCLOs on local radio, as well as in-person during daily office hours (unless there are office closures). Inuit feedback and comments in some instances are gathered through informal phone or in-person interactions. Information gathered in this way is passed along to the relevant subject matter expert(s) at Baffinland and subsequently may be used to influence future engagement efforts, monitoring program design, or adaptive management considerations. A summary of Inuit feedback related to potential environmental effects of the Project, captured through these engagement efforts, is provided in Section 4 when relevant to specific ecosystemic and socio-economic effects and detailed in Appendix B.

Baffinland has also created additional community-based positions in Pond Inlet in direct response to community feedback. Since 2019, Shipping Monitors have been hired annually during the shipping season to provide an in-

community point of contact between Pond Inlet residents and their elected representatives, the Mittimatalik Hunters and Trappers Organization (MHTO) and Baffinland in order to expand local communications about shipping-related matters such as daily vessel activity. Comments, questions and concerns can be submitted by community residents through a variety of methods (e.g., Baffinland Shipping Facebook Messenger account, in-person interactions, email). This feedback is actively tracked by Shipping Monitors and responded to on an as-needed basis. Shipping monitors recorded 60 questions or comments during the 2023 shipping season and one concern related to VHF announcements being hard to hear (Appendix B.2.1). Time was given to discuss concerns related to shipping at the post-shipping season meetings. Neither the Hamlet Council nor the MHTO raised concerns with the 2023 shipping season.

In 2021, Baffinland created a Community Environmental Coordinator position in Pond Inlet to provide a local point-of-contact throughout the year for residents and organizations (e.g., MHTO) to obtain information about Baffinland's environmental monitoring programs and provides an opportunity for residents to voice concerns/comments they may have on Baffinland's activities and the potential effects these may have on the environment. This role is provided exposure to the environmental monitoring programs and other capacity building opportunities such as participating in the Bruce Head Shore-based Monitoring Program field team as an Inuit researcher to experience first-hand one of the monitoring programs implemented by Baffinland to study potential impacts of shipping on narwhal. In 2023, the Community Environmental Monitor worked alongside Fisheries and Oceans Canada (DFO) learning about Ballast Water Sampling and helped conduct sampling at Milne Port.

This year saw increased engagement in the five (5) North Baffin Communities and Kinngait and Kimmirut to the south related to the Steensby Component of the Approved Project. A workshop on the Steensby Component was held in the fall, to share information including how Inuit Qaujimajatuqangit (IQ) was integrated into Steensby baseline studies, monitoring, design and construction plans. The workshop was held for Inuit Knowledge Holders and Community Relations Guides from the five (5) Baffin Island communities of Arctic Bay, Clyde River, Igloolik, Pond Inlet, and Sanirajak. These roles are seen as critical to guiding Baffinland's senior management in its decision making, facilitating knowledge transfer within and between community members and Baffinland staff, and guiding the collection and use of IQ. In addition, Baffinland met with Hamlet Councils and Hunters and Trappers Organizations in each of the communities generally to discuss the Steensby Components of the Project as well as more specifically on dedicated topics related to on-going permitting exercises.

Baffinland uses a combination of manual entry of data into Excel and the StakeTracker software system to input meeting records (includes concerns and feedback) from more formal engagements like public meetings and working groups. Additionally, community- and activity- focused emails have been created, which are monitored by staff across relevant departments, as well as the creation of topic specific Facebook pages. This year, questions related to shipping were received primarily through the Baffinland Shipping Facebook page.

Baffinland will continue to implement a proactive approach to engagement with Inuit and other various stakeholders through informal and formal methods that include meetings, workshops, surveys and dissemination of information and reports. This broad range of engagement methods are designed to ensure that the communities, QIA, regulators and the public are informed in a timely and culturally relevant manner of the Project's progress and the potential environmental and social impacts of the Project.

2.3.1 Public Meetings & Events

In 2023, Baffinland held various public meetings and/or radio shows within the five (5) North Baffin communities. These meetings provided an important opportunity for Baffinland to share information with the Communities related to current operations and avenues for Inuit to become more involved in the Project and/or a way to access the benefits of the Project. A list of more formal public meetings and events held in the communities is provided in Table 2.1.

A summary of engagement events including details on public meetings and community group meetings held in 2023 are presented in Appendix B.1.

Table 2.1: Public Meetings & Events in 2023

Date	Meeting Type	Sample of Topics Discussed
Arctic Bay		
March, October, December	Open House	<ul style="list-style-type: none"> Employment and Training Information Session with Baffinland and QIA
Clyde River		
March, May, October December 6	Open House Public Radio Show	<ul style="list-style-type: none"> Employment and Training Information Session with Baffinland and QIA Mary River Project update as part of Steensby Component
Igloolik		
March, May, October March 27 May 10 November 29	Open House Public Radio Show	<ul style="list-style-type: none"> Employment and Training Information Session with Baffinland and QIA Mary River Project update as part of Steensby Component and SOP Mary River Project updates including information on Steensby & Fish Offsetting Mary River Project update as part of Steensby Component
Pond Inlet		
February 2023 March, May October June 27 July 11 November 30 December 5	Open House Public Radio Show	<ul style="list-style-type: none"> Summary of Baffinland's 2022 shipping season Employment and Training Information Session with Baffinland and QIA Pre-season shipping update & mitigation measures Mary River Project updates including information on Steensby & Fish Offsetting Mary River Project update as part of Steensby Component End of shipping season radio show
February 7 & 9 May 24-25 October 7	Open House	<ul style="list-style-type: none"> Open House to ask about the 2022 shipping season NIRB's Marine Mitigation Workshop Geo-diversity Day

Date	Meeting Type	Sample of Topics Discussed
Sanirajak		
March, October March 29 May 17 December 4	Open House Public Radio Show	<ul style="list-style-type: none"> Employment and Training Information Session with Baffinland and QIA Mary River Project updates including information on Steensby & Fish Offsetting Mary River Project update as part of Steensby Component
Iqaluit		
March, May, October	Open House	<ul style="list-style-type: none"> Employment and Training Information Session with Baffinland and QIA

2.3.2 Community Group Meetings

As part of its engagement efforts, Baffinland also meets directly with various community groups on a regular basis to discuss aspects of the Project and ongoing issues, concerns or recommendations community representatives may have. Accordingly, Baffinland also engaged with several community groups in 2023 including local Hunter and Trapper Organisations/ Hunter and Trapper Associations (HTOs/HTAs), Hamlet Mayors and Councils, using in-person or virtual/teleconference methods. Key events are listed in Table 2.2. Specific details are provided in in Appendix B.1.

Table 2.2: Community Group Meetings in 2023

Date	Community Group	Sample of Topics Discussed
Arctic Bay		
February 8 April 5 December 5	Hamlet of Arctic Bay and Ikajutit Hunters and Trapper Association (IHTA)	<ul style="list-style-type: none"> Sustaining Operations Proposal Discussion of proposed fisheries offsetting measures associated with the existing freight dock. Mary River Project update as part of Steensby Component
April 4 & 5	Hamlet Council/or Mayor/or Senior Administration Officer (SAO) of Arctic Bay	<ul style="list-style-type: none"> Sustaining Operations Proposal
July 10 August 28 October 17	Hamlet of Arctic Bay	<ul style="list-style-type: none"> Benefits Lunch program Operations
Clyde River		
April 5	Municipality of Clyde River/or Mayor/or SAO	<ul style="list-style-type: none"> Sustaining Operations Proposal
May 4	Clyde River HTO	<ul style="list-style-type: none"> To further explain meeting materials (Marine Environment Working Group (MEWG) Terms of Reference) from April 19 2023 MEWG meeting

Date	Community Group	Sample of Topics Discussed
December 6	Municipality of Clyde River and MHTO	<ul style="list-style-type: none"> Mary River Project update as part of Steensby Component
Igloolik		
March 28 May 9, 10, 11 October 6 November 27	Hamlet of Igloolik and Igloolik Hunters and Trappers Organization (IHTO)	<ul style="list-style-type: none"> Mary River Project update as part of Steensby Component and SOP Workshop on Fish Habitat Offsetting Options for the Steensby Component of the Project Steensby permitting update Mary River Project update as part of Steensby Component
April 4 April 28	Hamlet Council/or Mayor/or SAO of Igloolik	<ul style="list-style-type: none"> Sustaining Operations Proposal
January 16 April 5	Igloolik Hunters and Trappers Organization (IHTO)	<ul style="list-style-type: none"> Sustaining Operations Proposal Sustaining Operations Proposal
Pond Inlet		
January 30 February 6 February 28 April 29 June 27 & 28 June 29 & 30 July 11 August 9 August 31 September 11 September 16 September 22 September 28 October 3 December 7	Hamlet Council/or Mayor/or SAO of Pond Inlet	<ul style="list-style-type: none"> Sustaining Operations Proposal Discussion of proposed fisheries offsetting measures associated with the existing freight dock. Steensby Pre-shipping season meeting Move vehicle to Pond Inlet via cargo ship Shipping Tasiuqtiit Working Group Shipping season extension Steensby permitting update End of 2023 Shipping Season Meeting
March 27 & 29 April 5 May 26 June 28 July 11 October 3 December 7	Mittimatalik Hunters and Trappers Organization (MHTO)	<ul style="list-style-type: none"> Discussion of the Milne Inlet Freshwater Fish Health Program related to PC Term and Condition No. 48(a) Discussion of the Milne Inlet Freshwater Fish Health Program related to PC Term and Condition No. 48(a) To discuss options for transfer of research vessel, determine dates for pre-shipping season meeting, discuss trail improvements at KM 13 Pre-shipping season meeting Steensby End of 2023 Shipping Season Meeting

Date	Community Group	Sample of Topics Discussed
February 8 June 28 July 11 October 7 December 1	MHTO and Hamlet of Pond Inlet	<ul style="list-style-type: none"> End of 2022 Shipping Season Meeting including key highlights such as use of convoys Pre-season Shipping meeting Mary River Project updates including information on Steensby & Fish Offsetting Steensby permitting update Mary River Project update as part of Steensby Component
Sanirajak		
January 12 May 16, 17, 18 October 5 November 29	Sanirajak Hamlet Council, and Hall Beach Hunters and Trappers Association (HBHTA)	<ul style="list-style-type: none"> Sustaining Operations Proposal Engagement Meeting Workshop on Fish Habitat Offsetting Options for the Steensby Component of the Project Mary River Project update as part of Steensby Component
March 30 April 4	Hamlet Council/or Mayor/SAO of Sanirajak	<ul style="list-style-type: none"> Sustaining Operations Proposal
March 30 April 5	Sanirajak Hunters & Trapper Association	<ul style="list-style-type: none"> Steensby and Sustaining Operations Proposal
Multiple North Baffin Communities		
January 17 & 18	North Baffin Working Group (Hamlet of Pond Inlet Ikajutit Hunters and Trappers Association Hamlet of Arctic Bay Nangmautuq Hunters and Trappers Organization - Clyde River Hamlet of Clyde River Hall Beach Hunters and Trappers Association - Sanirajak Hamlet of Sanirajak Igloolik Working Group)	<ul style="list-style-type: none"> Presentation on Sustaining Operations Proposal, Question and Answer period, and discussion on process
February 27 & 28	Government of Canada Qikiqtani Inuit Association Government of Nunavut Nunavut Impact Review Board Mittimatalik Hunters & Trappers Organization Hamlet of Pond Inlet Ikajutit Hunters & Trappers Association Hamlet of Arctic Bay Sanirajak Hunters & Trappers	<ul style="list-style-type: none"> Project Monitor Terms of Reference

Date	Community Group	Sample of Topics Discussed
	Association Hamlet of Sanirajak Igloodik Hunters & Trappers Association Hamlet of Igloodik Clyde River Hunters & Trappers Association Hamlet of Clyde River	
Kimmirut		
June 26 & 27	Hamlet Council and HTA	<ul style="list-style-type: none"> Mary River Project update as part of Steensby Component Hiring of Community Relations Guide and Inuit Knowledge Holder
Kinngait		
June 20	Hamlet Council and Aiviq HTO	<ul style="list-style-type: none"> Mary River Project update as part of the Steensby Component Hiring of Community Relations Guide and Inuit Knowledge Holder

2.3.3 Community Donations and Sponsorships

In keeping with its values, Baffinland understands the importance of supporting various social, recreational and cultural activities in communities. In addition to IIBA-dedicated staff, which oversee the implementation of social support programs outlined in the IIBA, Baffinland has a Donations and Sponsorship Committee that evaluates proposals requesting support, in addition to being mandated to proactively identify opportunities to support North Baffin communities. Baffinland also delivers annual support for Inuit who are advancing their education (i.e., high school graduation laptop program, annual scholarships, etc.). The following lists some of the community donations, sponsorships and IIBA commitments provided in 2023. Primarily in the first half of 2023, as Baffinland made the difficult decision to take a pause on all new donations and sponsorships until more certainty over the future of Baffinland's operations is secured.

- 60 laptops to high school graduates in the North Baffin Communities.
- \$20,000 to four (4) recipients as part of the 2023 annual scholarship fund.
- \$300,000, adjusted annually for inflation based on 2018 dollars, is made available for the North Baffin Local Study Area (LSA) School Lunch Program annually, as per the IIBA. In 2023, \$160,330 was distributed as part of this program to schools in Arctic Bay, Clyde River, and Igloodik.
- Over \$500,000 towards the Harvesters Enabling Program in Pond Inlet, which was established through the IIBA, to support a gas program to enhance Inuit travel in the area.
- \$497,023 in community benefits distributed as a result of the contracting with Arctic Co-Op.
- A \$5,000 Holiday donation to each of the five (5) North Baffin LSA communities.
- Provided a \$5,000 sponsorship at the Qikiqtani Charity Gala to support Breakfast Programs for schools in the Qikiqtani Region.

- Contributed a total of \$25,000, \$5,000 per community, for Nunavut Day Community BBQ celebrations.
- Provided a food hamper donation to Grise Fiord.
- \$270,000 provided to the Tasiuqtiit Working Group to support community wellness initiatives selected by the Hamlet of Pond Inlet and the MHTO in Pond Inlet

In 2023, Baffinland and its business partners such as Arctic Co-Ops (through quarterly benefits, food banks, other initiatives) contributed over \$1,500,000 towards various social, recreational, educational and cultural initiatives throughout North Baffin Communities and Iqaluit, further enhancing Baffinland's commitment to creating a positive benefit to Nunavummiut communities.

2.4 ENGAGEMENT WITH THE QIA

Baffinland is committed to maintaining a productive relationship with the QIA through ongoing engagement and collaboration. Engagement with the QIA is generally focused on the implementation of the IIBA and on the Commercial Lease (Q13C301), associated Agreements, and other regulatory authorizations. Baffinland and QIA Senior Management has also been meeting face to face on a quarterly basis to discuss project updates and advancement on project development.

2.4.1 Engagement on IIBA Implementation

Implementation of the IIBA is managed by a Joint Executive Committee (JEC), Employment Committee and Contracting Committee (CC). These committees consist of an equal number of representatives from Baffinland and QIA, and meet on a regular basis by phone, virtually or in-person.

During 2023, the Employment and Contracting Committees focused their efforts on supporting Inuit through employment, training, education and contracting. The committees met regularly to discuss and plan initiatives that could be executed in 2023.

Baffinland and QIA held teleconferences and in-person committee meetings with the JEC, CC, and Employment Committee on several occasions throughout 2023, as presented in Table 2.3.

Baffinland and QIA held jointly the Annual Project Review Forum in May 2023 in Pond Inlet. The Annual Project Review forum, is an opportunity to present updates on the Project and activities related to IIBA implementation. The Forum is also an opportunity for communities to discuss concerns about the Project and to provide recommendations for the consideration of the Joint Executive Committee.

Table 2.3: 2023 Meetings with QIA (IIBA)

Date	Location	Description
Employment Committee		
17-Jan-23	Teleconference	Employment Committee Meeting
16-Feb-23	Teleconference	Employment Committee Meeting
8-Mar-23	Teleconference	Employment Committee Meeting
4-May-23	Teleconference	Employment Committee Meeting
6-Jun-23	Teleconference	Employment Committee Meeting

Date	Location	Description
15-Jul-23	Teleconference	Employment Committee Meeting
16-Aug-23	Oakville	Employment Committee Meeting
28-Nov-23	Teleconference	Employment Committee Meeting
4-Dec-23	Teleconference	Employment Committee Meeting
Contracting Committee (CC)		
7-Feb-23	Ottawa	Contracting Committee Meeting
23-May-23	Teleconference	Contracting Committee Meeting
22-Jun-23	Teleconference	Contracting Committee Meeting
15-Aug-23	Oakville	Contracting Committee Meeting
24/25-Oct-23	Iqaluit	Contracting Committee Meeting
7-Dec-23	Zoom	Contracting Committee Meeting
Joint Executive Committee (JEC)		
5-Apr-23	Teleconference	Joint Executive Committee Meeting
11/12-Oct-23	Iqaluit	Joint Executive Committee Meeting

2.4.2 Engagement on the Commercial Lease and Associated Agreements

In addition to implementation of the IIBA, Baffinland and QIA also engage on a regular basis with respect to the Commercial Lease, associated Agreements and a range of management plans. Meetings in 2023 were primarily focused on discussing the Annual Security Work Plan, Annual Security Review, and the development of the Steensby Component of the Approved Project. Following submission of the 2024 Annual Securities Work Plan on December 1, 2023, Baffinland has continued to work with QIA on updates to the reclamation security estimate for the Mary River Project.

2.5 ENGAGEMENT WITH WORKING GROUPS

Project Certificate No. 005 Terms and Conditions require that Baffinland establish three (3) working groups for the Project, identified as the:

- Terrestrial Environment Working Group (TEWG);
- Marine Environment Working Group (MEWG); and
- Mary River Socio-Economic Monitoring Working Group (SEMWG).

The Working Groups provide a valuable forum for ongoing Project communication and reporting between Baffinland and interested parties. The Working Groups also function as an advisory group that provide recommendations on monitoring and management approaches related to the Project.

The meetings are structured to enable participants to have the opportunity to provide input on monitoring program design and implementation. The TEWG and MEWG receive presentations on the implementation of field programs and subsequent results in order to prioritize monitoring plans. Working group members are also able to provide input on measures for mitigation where required. The Working Groups provide a platform for the discussion of

collaborative research opportunities between parties and to identify monitoring programs suited for community-based monitoring and Inuit participation. The TEWG and MEWG include member-status and observer-status participant organizations.

Generally, the MEWG and TEWG meetings are structured in such a way to include:

- Baffinland to provide a Project update to the members (e.g., includes mining and shipping-related activities such as ore production, and vehicular and vessel traffic);
- Discussion of monitoring program planning including sampling approach (e.g., sampling variables, sites, and data collection methods) in advance of field programs to obtain feedback from MEWG and TEWG members;
- Discussion of results of monitoring programs to obtain feedback by MEWG and TEWG members; and
- Various research presentations (given by Baffinland, Baffinland technical consultants, and other working group members).

The Working Groups typically schedule two (2) yearly in-person meetings, in addition to hosting two (2) interim teleconferences per year. This is subject to change based on the most recent draft of the Terms of Reference (ToR), which states that three regular meetings and up to three touchpoint meetings will be held, in addition to ad hoc meetings at the request of members. As mentioned in Section 2.1, wherever possible, Baffinland has taken feedback received throughout the Phase 2, PIP, PIPE, PIPR, and SOP review processes, and applied it to existing operations.

A SEMWG meeting is typically held following the Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) annual meeting. The SEMWG is delivered a short presentation and overview of monitoring activities scheduled for the year. Project and monitoring program updates are also provided. A general discussion and comment period is then held with all working group members. In 2023, one (1) QSEMC meeting took place in Iqaluit on May 2 and 3, 2023, which included a dial-in option for those who could not attend in person. One (1) SEMWG meeting was also held via teleconference on September 7th, 2023.

Updates on 2023 activities specific to each working group are provided below. A record of meeting minutes for all Working Group meetings held in 2023 are provided in Appendix C.

2.5.1 Marine Environment Working Group

Project Certificate Term and Condition No. 77 mandated the establishment of the Marine Environment Working Group (MEWG). Members of the group include the MHTO, GN, QIA, Environment and Climate Change Canada (ECCC), Fisheries and Oceans Canada (DFO), Parks Canada (PCa), Makivvik Corporation, and Baffinland. The Igloolik Hunters and Trappers Organization (IHTO), Arctic Bay (Ikajutit) Hunters and Trappers Organization (IHTA), Hall Beach (Sanirajak) Hunters and Trappers Organization (HBHTA), and Clyde River (Nangmautug) Hunters and Trappers Organization (NHTO) have also been acting as members since February 2023, but the revised ToR indicating their member status has not been finalized at the time of this report. Additionally, World Wildlife Foundation Canada (WWF), the NIRB, the Canadian Northern Economic Development Agency (CANNOR), and Oceans North (ON) participate as observers of the group. Transport Canada (TC) has also been actively participating as an observer on the MEWG since June 14th, 2022.

The NIRB recommended revisions to eleven (11) Terms and Conditions in its Reconsideration Report for Baffinland's SOP (NIRB, 2023b), which are outlined in Section 1.4.1. Of these modifications, six (6) relate directly to the MEWG, including Terms and Conditions No. 76, 82, 83(a), 85, 99, and 101. Additionally, the NIRB's Reconsideration Report for Baffinland's SOP (NIRB, 2023b) included a list of 28 commitments in Appendix D that Baffinland is required to

meet in support of the SOP approval. Of these commitments, seven (7) relate directly to the MEWG, including Commitment No. 7, 8, 9, 10, 24, 26, and 27. The revised Project Certificate No. 005 Amendment No. 05 (NIRB, 2023a) included an additional commitment pertaining to the MEWG, which is commitment No. 28. Status updates on the various commitments are provided to the NIRB in bi-annual reports, as well as verbally at Working Group meetings when there are relevant agenda items. This also pertains to commitments related to the previous PIPR, which are captured in Appendix B of Project Certificate No. 005 Amendment No. 04 (NIRB, 2022a). A summary of the SOP commitments related to the MEWG are provided in Table 2.4 below, followed by a summary table of discussion topics from 2023 MEWG meetings (refer to Table 2.5). Note that Table 2.4 is not exhaustive and Appendix D of Project Certificate No. 005 Amendment No. 05 (NIRB, 2023a) should be referenced for a complete list of commitments relating to general Project operations that are applicable to all parties.

Table 2.4: SOP Commitments in Appendix D of Project Certificate No. 005 Amendment No. 05 Related to the MEWG

Commitment No.	Intervenor	Relevant SOP Technical Comment(s)	Commitment
7	QIA	QIA ME-6	<p>Baffinland will provide NIRB and all Parties, by January 31, 2024, a report identifying all the vessels chartered by Baffinland (ore carrier, freight, fuel) that have called on Milne Port since commercial shipping started in 2015, with all available information on vessel characteristics (length and beam, draft, DWT or GT as appropriate), years those vessels called on port, and noise characteristics from Passive Acoustic Monitoring (PAM) data (including all available Baffinland monitoring data such as multiple noise measures per vessel, if available). The report should also highlight any noise mitigating measures incorporated into the vessel design or retrofits (and when this occurred). This information will be used to inform updated acoustic modeling by Baffinland for the purpose of determining the effectiveness of additional mitigations, if required.</p> <p>Note: Refer to Appendix G.6.16 for the report relevant to commitment QIA ME-6.</p>
8	QIA	QIA ME-7 (1)	<p>Baffinland will provide by January 31, 2024, a comparative assessment of the potential environmental impact trade-offs of using Babycap and Capesize vessels relative to the smaller vessels currently in use, both at and en route to and from Milne Port, including but not limited to trade-offs related to accident risk, GHG emissions, noise disturbances to marine mammals, convoy optimization, ballast water discharges, seasonal operations, and docking and loading.</p> <p>Note: Refer to Appendix G.6.17 for the aforementioned comparative assessment.</p>
9	QIA	QIA ME-7 (2)	Should they be required in future, Baffinland commits that there will be no dredging or in-water modifications to the port

Commitment No.	Intervenor	Relevant SOP Technical Comment(s)	Commitment
			at Milne Inlet in relation to Capesize vessels unless and until any dredging or in-water modifications are approved in accordance with all applicable regulatory requirements and the above noted comparative assessment has been provided to QIA.
10	QIA	QIA ME-7 (3)	If Capesize vessels are used, Baffinland commits to augment its benthic sediment and infaunal monitoring programs by conducting annual sampling at existing sites SW-1 through SW-4, SE-18-1 and SNW-1, and at two (2) new sites situated to ensure that any changes in bottom scouring by these longer, deeper vessels are captured—one site offshore the northwest corner of the dock at a similar distance/depth to SNW-1, the other between SW-1 and SW-2 but at the 25 m depth contour. Sampling shall continue annually at these locations for a minimum of three years following the initial use of Capesize vessels at Milne Port. Following this three-year period, Baffinland will consider a reduced frequency in sampling at these locations (once every three years) if sediment and benthic conditions at these sites are shown to be stable (and within the limits of impact predictions).
24	ECCC	ECCC-TRC-01 (1)	Baffinland will confirm for ECCC in November 2023 the actual dates the Capesize vessels were in the Milne Port vicinity (at berth and at anchor) in 2023
26	ECCC	DFO-TRC-01(1)	<p>DFO recommends the Proponent clarifies when baseline conditions existed.</p> <ul style="list-style-type: none"> Baffinland will provide a data package and analysis of available project shipping data from prior to 2013 by August 31, 2023. Baffinland will include the following item on the next MEWG agenda: “Discussion regarding Baffinland’s proposed baseline years. Baffinland will put into the meeting agenda, after discussion with DFO, a sufficient amount of time to ensure fulsome discussion of this topic can be had at the MEWG. Baffinland will prepare and distribute to MEWG 2 weeks prior to meeting a comparison table and figures showing the difference in outcomes of the current vs DFO suggested baseline years and implications for the Eclipse Sound Stock. Baffinland will provide a plain language summary of the issues including definitions and Baffinland will submit the plain language summary to DFO for review weeks prior to wider distribution to the MEWG members.

Commitment No.	Intervenor	Relevant SOP Technical Comment(s)	Commitment
			<ul style="list-style-type: none"> If adopted by Baffinland according to the MEWG Terms of Reference, changes to baseline years to be implemented for 2023 Annual Reporting.
27	DFO	DFO-TRC-01(2)	<p>DFO recommends taking the average of the survey repeats and the Proponent discussing their data analysis practices with the MEWG.</p> <ul style="list-style-type: none"> Baffinland will include “Discussion regarding DFO proposed aerial survey repeats averaging” to the next MEWG meeting agenda, and is willing to produce reports averaging aerial surveys in one or more future years, provided certain survey conditions are met (i.e., based on standard scientific methodology). Baffinland will put into the meeting agenda, after discussion with DFO, a sufficient amount of time to ensure fulsome discussion of this topic can be had at the MEWG. Baffinland will prepare, for the MEWGs benefit, a comparison table showing the difference in outcomes of the current vs DFO suggested methods of survey analysis. Baffinland will provide a plain language summary of the issues including definitions/descriptions of “certain survey conditions” at least 2 weeks prior to the next MEWG for all MEWG members. Baffinland will submit the plain language summary to DFO for review and comment 2 weeks prior to wider distribution to the MEWG members. If adopted by Baffinland according to the MEWG Terms of Reference, new analytical methodologies to be adopted by the 2024 shipping season or as recommended by the MEWG.
28	DFO	DFO-TRC-02	<p>DFO recommends the Proponent update the risk assessment methodology in collaboration with DFO subject matter experts.</p> <ul style="list-style-type: none"> Baffinland will update the Risk Assessment for Introductions of Aquatic Invasive Species from Ballast Water in collaboration with DFO after the Milne Port Biological Ballast Water Sampling Program is complete and the results are available. Baffinland will continue to support the collection of biological data to evaluate efficacy of ballast management

Commitment No.	Intervenor	Relevant SOP Technical Comment(s)	Commitment
			<p>measures and identify species of concern, in collaboration with DFO, through the Milne Port Biological Ballast Water Study Program initiated in 2023 (as outlined in 210324--08MN053-DFO Draft Ballast Study Plan- IT4E.pdf).</p> <ul style="list-style-type: none"> Baffinland will update the Project-specific Risk Assessment for Introductions of Aquatic Invasive Species from Ballast Water in collaboration with DFO within six (6) months after the Milne Port Biological Ballast Water Sampling Program is complete and the results are available. Final drafts and plain language summaries will be shared with the MEWG for discussion the first meeting following.

Table 2.5: Topics Discussed at 2023 MEWG Meetings

Date	Location	Topics Discussed
February 15 th and 16 th , 2023	Ottawa, Ontario; Iqaluit, Nunavut; Hybrid with virtual component	<ul style="list-style-type: none"> 2022 Operations Update: no. ore carriers/sea lifts/fuel tankers, tonnage shipped, marine mitigation measures, no. vessel route and speed deviations, summary of community comments and concerns received throughout 2022 shipping season. Overview of 2022 convoy operations Summary of 2022 preliminary marine monitoring results Summary of proposed 2023 marine monitoring programs
April 19 th , 2023	Virtual	<ul style="list-style-type: none"> Terms of Reference status update – review of April 2023 draft and identification of outstanding concerns
July 12 th , 2023	Virtual	<ul style="list-style-type: none"> 2023 operations update – anticipated no. vessels, including ore tankers, sea lifts and fuel tankers; overview of confirmed 2023 marine monitoring programs and proposed study designs Question and answer period relating to final 2022 marine monitoring reports
December 11 th and 12 th , 2023	Iqaluit, Nunavut; Hybrid with virtual component	<ul style="list-style-type: none"> 2023 End of Shipping Season Summary (included no. vessels, vessel types, tonnage shipped, ice conditions, no. convoys, summary of community concerns/comments received throughout 2023 shipping season). Summary of marine monitoring programs completed in 2023, inclusive of summary outlining implications of ice conditions on field programs Overview of completed 2023 collaborative DFO ballast water pilot program Status Update pertaining to ECCC's seabird research completed at Cape Graham Moore

Date	Location	Topics Discussed
		<ul style="list-style-type: none"> Discussion relating to SOP commitment No. 26 – Project shipping levels prior to 2013

2.5.2 Terrestrial Environment Working Group

Project Certificate Term and Conditions No. 49 mandated the establishment of the Terrestrial Environment Working Group (TEWG). Members of the TEWG are consistent with the MEWG outlined in Section 2.5.1, with the exception of DFO and Makivvik, which are only members of the MEWG. Natural Resources Canada (NRCan) participates as an observer to the TEWG, but does not participate on the MEWG. TC, ON, and WWF Canada are only observers for the MEWG and do not participate on the TEWG.

The NIRB recommended revisions to eleven (11) Terms and Conditions in its Reconsideration Report for Baffinland's Sustaining Operations Proposal (NIRB, 2023b), which are outlined in Section 1.4.1. Of these revised Terms and Conditions, two (2) pertained to the Terrestrial Environment/TEWG, including Term and Conditions No. 28 and 35. Of the 28 commitments listed in Appendix D of the NIRB's Reconsideration Report for Baffinland's SOP (NIRB, 2023b), eleven (11) relate directly to the TEWG, including commitment No. 2, 3, 4, 5, 6, 14, 15, 19, 20, 23, and 25. A summary of the SOP commitments related to the TEWG are provided in Table 2.6 below, followed by a summary table of discussion topics from 2023 TEWG meetings (refer to Table 2.7). Note that Table 2.6 is not exhaustive and Appendix D of Project Certificate No. 005 Amendment No. 05 (NIRB, 2023a) should be referenced for a complete list of commitments relating to general Project operations that are applicable to all parties.

Table 2.6: SOP Commitments in Appendix D of Project Certificate No. 005 Amendment No. 05 Related to the TEWG

Commitment No.	Intervenor	Relevant SOP Technical Comment(s)	Commitment
2	QIA	QIA AE-4	Baffinland will provide sufficient funding for the Dust Audit Committee to continue to support the annual dust audit and associated reporting for the life of the Project, and for any other work of the Dust Audit Committee where it supports other areas of the project. Specifically, the second annual dust audit report will include a one-time retrospective review of the Objectives, Indicators, Thresholds and Responses related to dust in the most up to date version of the Air Quality and Noise Abatement Management Plan, unless the Dust Audit Committee independently determines it does not wish to carry out such review. It is acknowledged that the Dust Audit Committee name and duties may change or expand in future to other topics, and will continue to carry out annual dust auditing until such time as Baffinland and QIA agree such audits are no longer needed.
3	QIA	QIA TE-2 (1)	Baffinland commits to work with the TEWG to redefine deflections to include repeated caribou balking in the Project

Commitment No.	Intervenor	Relevant SOP Technical Comment(s)	Commitment
			area by November 30, 2024, to ensure that a new definition of deflections is included in an updated Terrestrial Environment Mitigation and Monitoring Plan filed with the 2024 Annual Report to NIRB.
4	QIA	QIA TE-2 (2)	Baffinland commits to working with the TEWG to explore whether marked recapture using pellets is an approach that could be used to estimate caribou abundance across the regional study area, including whether this method would be acceptable to Inuit, and provide a report with recommendations to TEWG by November 30, 2024, on potential use of this method. Whether this program can be considered as an alternative will consider if 1) the information is required, 2) the information provided would not be duplicative of another program that is running, and 3) the potential impact of additional flights is acceptable.
5	QIA	QIA FE-1	<p>Baffinland and the Qikiqtani Inuit Association commit to meet by September 30, 2023, November 30, 2023 and January 31, 2024 to discuss dust dispersion data from the following sites being monitored in 2023:</p> <ul style="list-style-type: none"> • Deposit No. 1 blasting • Mine Site crusher • OHT transport along the Tote Road • OHT offloading point at Milne Port • Stacking at Milne Port • The highest point of the conveyor system at Milne Port <p>Baffinland commits to providing NIRB and all Parties with a final version of the site-specific thresholds for dust dispersion by March 30, 2024.</p>
6	QIA	QIA FE-3	Baffinland commits to provide, by January 31, 2024, updated versions to NIRB and all Parties the Fresh Water Supply, Sewage and Wastewater Management Plan, the Snow Management Plan, and the Aquatic Effects Management Plan with Trigger Action Response Plan components.
14	GN	GN-FWS-01	While the Inuit led North Baffin Caribou Study is being completed, Baffinland will develop interim caribou protection measures within 6 months of issuance of the amended Project Certificate The interim measures will include group size and distance thresholds that will trigger specified responses, including activity suspensions, on an activity-by-activity basis. These interim measures will apply during the period May 15 to July 15. Baffinland will seek advice from TEWG Members and available literature in the development of the interim measures. [Note this commitment is related to

Commitment No.	Intervenor	Relevant SOP Technical Comment(s)	Commitment
			existing Appendix B Commitment No. 064 of Project Certificate No. 005 Amendment No. 04; NIRB, 2022a]
15	GN	GN-FWS-03	Baffinland will implement snow track surveys and will make best efforts to conduct them at a frequency of once per week along the Tote Road during the 2023/2024 snow cover seasons when environmental conditions permit the surveys to be conducted effectively and safely. The conditions criteria include fresh snowfall (within last 48 hours) and suitable light conditions. The results of these surveys are to be reviewed by the TEWG following completion of the 2023/2024 snow cover season for potential alterations. [Note survey condition criteria will be the ultimate driver of the number of surveys conducted each month and may be less than the frequency of once per week and due to darkness will not generally be possible in January and February].
19	CIRNAC	CIRNAC-TRC-02	Baffinland shall provide updates on Waste Rock Facility thermal modeling based on monitored deposition sequences and measured on site conditions. The update shall also include commentary on performance of instrumentation. The WRF thermal modelling updates shall be submitted in the Phase 1 Waste Rock Management Plan (see Appendix G.8.1), for review, no later than December 31, 2023. As new information is made available to inform updated thermal modelling, Baffinland will update the model.
20	CIRNAC	CIRNAC-TRC-03	<ul style="list-style-type: none"> Baffinland will include leachability studies as a response option in the Terrestrial Environment Mitigation and Monitoring Plans adaptive management action toolkit if soil metal concentrations are higher than baseline or CCME guideline values over two (2) consecutive years. Note - The CCME soil guideline for agricultural land uses is for soils and not applicable to construction rock. As per the Quarry Management Plans approved for the current Project the screening criteria applied is consistent for all construction rock. Baffinland will include data in the 2023 QIA and NWB Annual Report for Operations to confirm only construction rock with low metal content and non-acid generating is used for road construction (Baffinland, 2024a).
23	CIRNAC	CIRNAC-TRC-07	Baffinland will continue to confirm through annual monitoring and reporting if dust deposition is negatively affecting surface water quality and confirm that the adaptive management components of the Surface Water and Aquatic Effects Ecosystems Management Plan (SWAEMP) and Air

Commitment No.	Intervenor	Relevant SOP Technical Comment(s)	Commitment
			Quality and Noise Abatement Management Plan (AQNAMP) will be implemented, if necessary, to adaptively manage impacts on surface water and sediment quality.
25	ECCC	ECCC-TRC-01 (2)	Baffinland will conduct an internal review of the continuous air quality monitoring data from July 1 to October 31 to identify potential hourly and daily concentrations greater than the 2025 Canadian Ambient Air Quality Standards and Nunavut Ambient Air Quality Standards. Concentrations greater than the threshold will be investigated to determine potential cause. Baffinland will provide results of the review of the continuous air quality monitoring data to ECCC by December 15th, 2023. All data for the season will continue to be reported on the standard annual report timeline.

Table 2.7: Topics Discussed at 2023 TEWG Meetings

Date	Location	Topics Discussed
February 14 th and 16 th , 2023	Ottawa, ON; Iqaluit, NU; Virtual	<ul style="list-style-type: none"> 2022 Operations Update: no. ore carriers/sea lifts/fuel tankers, tonnage shipped, tonnage hauled Overview of revised Terrestrial Environment Mitigation and Monitoring Plan (TEMMP) Overview of proposed 2023 terrestrial monitoring programs (Environmental Dynamics Inc. [EDI]) Update on dust mitigation measures with regards to the PIPR Discussion of potential site specific thresholds for conditions that may increase dust dispersion (Site Environment) Helicopter restrictions – Acceptable rationale for low level flights
April 19 th , 2023	Virtual	<ul style="list-style-type: none"> Terms of Reference status update – review of April 2023 draft and identification of outstanding concerns
December 13 th and 14 th , 2023	Iqaluit, NU; Virtual	<ul style="list-style-type: none"> 2023 Operations Update: no. ore carriers, tonnage shipped, tonnage hauled Summary of terrestrial monitoring work completed in 2023, including overview of 2023 caribou aerial survey methodology Future operations update relating to Steensby development: construction timelines, required permits, question and answer period Status update on ECCC's Arctic Program for Regional and International Shorebird Monitoring (PRISM) Question and answer period relating to final 2022 Terrestrial Environment Annual Monitoring Report (EDI, 2023) and 2022 NIRB Annual Report

Date	Location	Topics Discussed
		<ul style="list-style-type: none"> Overview of updates to the Terrestrial Environment Mitigation and Monitoring Plan (TEMMP) Status update on NRCAN's proposed dustfall monitoring program: overview of the collaborative development of a research proposal Status update on GN's caribou health monitoring program – inclusive of potential collaborative collaring program on North Baffin Island

2.5.2.1 Looking Ahead

In addition to the annual operational activities of the MEWG and TEWG outlined in Sections 2.5.1 and 2.5.2 above, Baffinland has also been engaging with both Working Groups to update the Terms of Reference (ToR) since 2019.

Baffinland provided the most recent draft ToR to the Working Group in April 2023, which incorporated further feedback and recommendations received on previous drafts. Baffinland met with representatives of both working groups on April 19, 2023 to present the updated ToR. The Working Groups are working towards appointing an independent chair for both the MEWG and TEWG, who would be responsible for scheduling and administering meetings. The Working Groups' decision-making process is being amended so that decisions are consensus-based, and recorded in writing by the independent chair. Recommendations brought forward by the Working Group that are not seen as enforceable will go to the independent chair for dispute resolution to ensure a fair outcome. The TEWG and MEWG have also been modified to include Hunters and Trappers Organization (HTO) members from an additional four (4) communities—Arctic Bay, Clyde River, Igloolik and Sanirajak.

2.5.3 Mary River Socio-Economic Monitoring Working Group

Baffinland coordinates the Mary River Socio-Economic Monitoring Working Group (SEMWG) in fulfillment of Project Certificate Term and Condition No. 129. SEMWG membership includes members from the GN, the QIA, CIRNAC, and Baffinland.

A SEMWG meeting was held on September 7, 2023 via teleconference. To ensure efficient discussion during the meeting, Baffinland provided working group members a list of questions to come prepared to discuss during the meeting. The draft 2023 Inuit Employee Survey was also circulated with members for comment and feedback. Comments and suggestions were submitted by the QIA on the survey, where suggested changes were integrated into the finalized survey. During the meeting the QIA also voiced for Baffinland to explore avenues to increase survey response rate for the 2023 year, and suggested Baffinland introduce the use of incentives as well as to trial the administration of the survey in North Baffin communities (in addition to the Mine Site and Milne Port). Due to receiving such feedback, Baffinland provided incentives (i.e., chance to win one of 2 pre-loaded visa cards) as well as, piloted the administration of the survey in the LSA communities. Additional topics discussed during the meeting are outlined in Table 2.8. Minutes from this meeting are also found in Appendix C.3.

Additional information on the meeting held and information shared can be found in the 2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024).

Table 2.8: Mary River Socio-Economic Monitoring Working Group Meeting in 2023

Date	Location	Topics Discussed
September 7, 2023	Teleconference	<ol style="list-style-type: none"> 2022 Socio-Economic Monitoring Report (SEMR) and QSEMC <ul style="list-style-type: none"> Brief overview of report development Highlights, follow-up and feedback from the 2023 QSEMC Discussion of key topics: <ul style="list-style-type: none"> Public data availability challenges/NBS Crime monitoring results Payroll tax discrepancy Inuit Employee Survey <ul style="list-style-type: none"> Overview of 2022 Inuit Employee Survey approach/results Proposed questions related to food security Timing and approach Looking Forward <ul style="list-style-type: none"> 2024 QSEMC meeting Review of working group Terms of Reference

2.5.3.1 Looking Ahead

In addition to annual operation requirements of the SEMWG, Baffinland is looking to initiate a review period for the working group's Terms of Reference in the 2024 year. As the ToR has not been updated since 2019, Baffinland looks forward to restabilising governance and membership under the Working Group.

2.5.4 Qikiqtaaluk Socio-Economic Monitoring Committee

The SEMWG is a sub-group of the Regional QSEMC, which usually meets annually. Baffinland also acts as a participant in the QSEMC which is organized and led by the GN. A 2-day meeting of the QSEMC took place May 2-3, 2023 in Iqaluit. The purpose of the QSEMC is to monitor the socio-economic impacts of major development projects in the Qikiqtani region and to support and facilitate discussion on collaborative socio-economic monitoring of major development projects.

Three general topics were discussed during the 2-day meeting, which included community well-being and culture, Qikiqtaalungmiut participation in major projects, and Qikiqtaalungmiut business opportunities and economics benefits experienced due to major projects. Baffinland, the Government of Canada, the Government of Nunavut, and the QIA delivered several presentations on these topics, where breakout group discussions were held following conclusion of presentations for each topic. Topics discussed during the 2023 QSEMC meeting are outlined in Table 2.9.

Table 2.9: Qikiqtaaluk Socio-Economic Monitoring Committee Meeting in 2023

Date	Location	Topics Discussed
May 1, 2023	Teleconference and In-Person (Iqaluit)	<ol style="list-style-type: none"> Opening Remarks and Introductions <ul style="list-style-type: none"> SEMC Overview and Recap of Previous Meeting Current Socio-economic Monitoring Efforts Community Well-Being and Culture in the Context of Major Projects Qikiqtaalungmiut Participation in Major Development Projects
May 2, 2023	Teleconference and In-Person (Iqaluit)	<ol style="list-style-type: none"> Qikiqtaalungmiut Business Opportunities and Economic Benefits Building a Plan for Additional Socio-economic Monitoring in the Qikiqtani Region

3 OPERATIONS OVERVIEW

3.1 SITE ACTIVITIES COMPLETED IN 2023

Baffinland continued to focus on mine production from Deposit No. 1 in 2023. Key activities undertaken in 2023 occurred at the active Project component areas including Milne Port, the Tote Road, and the Mine Site. No Project activities were undertaken related to the development of the Steensby Railway or at Steensby Port in 2023, with the exception of physical and archaeological surveys, and studies to update baseline information on fish and fish habitat along the Steensby Railway and at Steensby Port to support additional permitting activities.

Mining and hauling activities from the Mine Site to Milne Port continued throughout 2023, with 5.5 Mt of iron ore hauled using the Tote Road and stockpiled at Milne Port. This year also marked the ninth shipping season with a total of 6.1 Mt of iron ore shipped between August 9 to October 31, 2023, the most ore shipped in Baffinland's history. For the third year in a row, Baffinland proactively made the decision to delay the start of the shipping season until ice-breaking could be avoided on the shipping route. Subsequently, delayed breakup of sea ice along the shipping route resulted in a later than typical start to the shipping season. Seventy-five (75) individual ore carrier round trip voyages were executed during the 2023 shipping season, which for the first time included two (2) Babycape and three (3) Capesize vessels. The seventy (70) Supramax to Post Panamax size vessels carried an average of approximately 76,000 tonnes of iron ore each, while the Babycape and Capesize vessels carried an average of approximately 117,000 and 157,000 tonnes of iron ore each, respectively.

Operational activities in 2023 included:

- The continued development and construction of Project infrastructure required at Milne Port and the Mine Site, and along the Tote Road;
- Development and operation of the mine at Deposit No. 1, including the crushing, trucking, stockpiling and shipping of ore to international markets;
- Continued year-round operation of camp facilities at the Mine Site and Milne Port, and seasonal operation of the Bruce Head camp for marine monitoring programs, which included the use of water and deposition of waste as authorized under existing permits;
- At Milne Port, vessels carrying fuel, equipment and supplies for activities at the Mine Site and Milne Port arrived during the shipping season;
- Material, fuel and supplies required for construction and operational activities were transported from Milne Port to the Mine Site year-round via the Tote Road;
- Operation of the aerodrome at the Mine Site, which supported year round passenger and freight service by aircraft to/from local communities, Iqaluit and southern Canada;
- Operation of helicopter and fixed wing aircraft to service Steensby Railway geotechnical program and environmental monitoring studies, and other general Project activities;
- Care and maintenance of the inactive Steensby Port camp;
- Continued progressive reclamation of areas of current and past use;
- On-going progressive reclamation of historic borrow sources along the Tote Road;
- Continued development of the Km 97 Borrow Source for landfill cover material;
- Blasting and extraction of aggregates from the Q1 Quarry;

- Construction of a new road in the active mine from the 480 bench to the existing Mine Haul Road (480 Road Cross-cut)
- Continued remedial works to the surface water management pond (MS-11) at KM 105, and completion of a geotechnical drilling program to obtain subsurface conditions data to develop a comprehensive remediation plan to reduce seepage through the dam foundation at the KM 105 Pond constructed in 2021-2022;
- Implementation of erosion and sediment control measures at multiple locations on the Tote Road, which did not involve in-stream work, was completed and monitored
- The continued application of chemical dust suppression treatment on the Tote Road (calcium chloride and water applications), and Milne Port ore stockpiles;
- Development of a Permanent Crossing Remediation Plan for various culverts along the Tote Road;
- Completion of environmental studies and monitoring programs identified in the Final Environmental Impact Statement (FEIS), FEIS Addendum and Type 'A' Water Licence; and
- Continued engineering and environmental studies to support future phases of the Project.

Representative photographs showing major 2023 site activities are included in the Photo Essay (Appendix D).

3.2 2023 HIGHLIGHTS AND CHALLENGES

The Project has been in operation since September 2014 and operational experience has proved that high volume, bulk commodity mining in the Canadian Arctic is feasible. Despite harsh environmental and economic conditions, Baffinland's investors continue to support the Project with the goal of increasing production to reach an economically sustainable operation.

For the third year in a row, Baffinland pro-actively made the decision to delay the start of the shipping season until ice-breaking could be avoided on the shipping route. Subsequently, delayed breakup of sea ice along the shipping route resulted in a later than typical start to the shipping season. Despite this later start, the amount of ore shipped from Milne Port was 6.1 Mt, the most in Baffinland's history. This was much greater than the 4.7 Mt shipped in 2022, and was greater than the previous record of 5.9 Mt shipped in 2019. For the first time in Baffinland's history, larger, Babycape and Capesize, vessels were utilized to transport ore from Milne Port. Baffinland also saw an increased use of vessel convoys in 2023, with 39 convoys resulting in a 22% reduction in transits through the Northern Shipping Route.

3.2.1 Project Economics

Throughout 2023, Baffinland has been consistent in its messaging with Inuit and other Project stakeholders, and through regulatory processes, that a rail line is required for the long term viability of the Project. In addition, expansion of the mine's resources through access to other deposits and finding efficiencies in the throughput capacity of the Project is essential to ensure the delivery of the Mary River Projects multi-generational potential.

Baffinland is focusing on the development of the Steensby Component of the Approved Project, which includes the Steensby Railway and Steensby Port. The construction and commissioning of the Steensby Component is contingent on receiving final permits, project financing and a positive construction decision. The improvements in production and transportation from this development will serve to insulate the Project against fluctuating global iron ore prices by reducing unit costs to produce and transport Nunavut high-grade iron ore. Development of the Steensby Component of the Approved Project will safeguard it from vulnerability to market fluctuations, which will

subsequently help prevent temporary or early closure of the Project. Baffinland will continue to communicate the development of its long term project plans with its stakeholders.

3.2.2 COVID-19 and Infectious Disease Summary

On March 11, 2020 the World Health Organization (WHO) declared COVID-19 viral disease a pandemic and the status remains an official declaration in all jurisdictions of Canada. Currently, the Government of Nunavut (GN) does not have a Public Health Emergency (PHE) in effect for COVID-19 and the Government of Nunavut and Nunavut's Chief Public Health Officer (CPHO) have determined that Nunavut can manage COVID-19 without the powers provided under a Public Health Emergency.

In response to the COVID-19 Pandemic, additional precautions continued to be applied in the 2023 commensurate with level of risk, exposure and transmission. Baffinland and its infectious disease consultants continued to implement comprehensive health and safety plans and protocols to minimize the risk of exposure to all communicable diseases for employees, contractors and communities.

Baffinland continued to implement and monitor preventative protocols established in consultation with federal and territorial public health personnel, guidelines and external infectious disease experts, which included COVID-19 testing on site if symptoms were present, physical distancing, proper hand washing and frequent sanitizing of high traffic areas. Baffinland maintains that required all personnel accessing site to be fully vaccinated. This consistent layer of protection allowed Baffinland to ease some of the constraints and restrictions upon all personnel. While it was encouraged, mask wearing was no longer mandatory unless a person was post-COVID or exhibiting flu like symptoms. Baffinland has maintained handwashing protocols and community flight wellness checks as these are also important preventative measures for all transmittable viruses including Tuberculosis. This transition allowed Baffinland to ensure the risk of COVID-19 exposure to Nunavut communities was minimized, and the environmental monitoring programs were completed with minimal risk in a safe but communal environment.

3.2.3 IIBA Implementation Highlights

Implementation of the IIBA contributed to many new and notable highlights for the year 2023. These include, but are not limited to, the following:

- The Mary River Inuit Training budget (Article 8.6) at Baffinland was \$2.25 million dollars between 2018 until 2021, and then \$1.5 million dollars, adjusted annually for inflation based on 2018 dollars, for the years of 2021 through 2031. Baffinland and QIA through the IIBA Annual Work Plan highlight what training will be conducted in each year. A large focus was placed on increasing training and development across all skill classifications in 2023.
- Successful implementation of the Harvesters Enabling Program (Article 17.7) in Pond Inlet which supplies each Inuk residing in Pond Inlet, who on January 1st of that year is not less than twelve years old, with three hundred liters of gas to support harvesting activities that occur during that year.
- In 2023, Baffinland extended their scholarship application deadline for school year 2022/2023 into February 2024, which awards five (5) scholarships (Article 8.8.2) to North Baffin residents, totaling \$25,000. Following the 2023/2024 school year, Baffinland will have awarded \$245,000 to 49 well-deserving students since 2014 in pursuit of continuing education. Inuit students are welcome to apply each year that they further their education.

- Baffinland continued to provide opportunities for Inuit to participate in training while keeping health and safety as the number one priority. Training was provided in both online, and in-person formats throughout 2023.
- Baffinland and QIA held in-person Employment and Training Information Session (ETIS) tours (Article 7.8) in each of the five (5) North Baffin communities. These tours provided an opportunity to discuss training and employment opportunities related to the Mary River Project, share success stories, and connect with community members about their interests. The first in-person ETIS tour of 2023 was held in November.
- Baffinland hired two (2) new Inuit trainers as the Company's Inuit Employment and Training Specialists (Article 8.4) in 2023.
- Baffinland also hired Inuit Knowledge Holders and Community Relations Guides in each of the five (5) North Baffin communities. While not direct requirements of the IIBA, these positions were created to further our commitment to ongoing engagement with all Nunavummiut, and particularly in North Baffin.
- While not a direct requirement of the IIBA, since 2007 Baffinland has provided laptops to high school graduates in the North Baffin communities as an incentive to motivate local youth to complete their high school education and pursue post-secondary education. Baffinland provided 60 laptops to grade 12 Inuit graduates in 2023.

3.2.4 Inuit Employment and Contracting

In 2023, a total of 491,330 hours were worked by Inuit and 3,107,634 by Non-Inuit. These hours include those worked by both Baffinland and Contractor employees. In total, Inuit employment hours were 13.6% of the total hours worked. Baffinland's Inuit employee payroll totaled \$17,117,007.02. These amounts include all Inuit employees who lived in and outside of Nunavut. Contractor's Inuit employee payroll totaled \$ 7,439,091.02. These amounts include all Inuit employees who lived in and outside of Nunavut.

Throughout 2023, Baffinland continued to hire Shipping Monitors in Pond Inlet to provide a direct liaison between the community of Pond Inlet, the MHTO and Baffinland. A total of twelve (12) Shipping Monitors were hired in 2023 in order to provide local community oversight on Baffinland shipping operations over the entire length of the season, including daily tracking of vessel locations and speeds.

Since 2014, Baffinland (not inclusive of contractors) has provided \$108.5 million in payroll to Inuit. Wages paid to Inuit is an important measure of the Projects significant positive socio-economic impact on Nunavummiut. Through the provision of wages, Baffinland is providing Inuit with the opportunity to purchase goods and services in their communities creating positive benefits for local business, including Inuit Owned firms.

Article 6 of the IIBA refers to procurement and contracting to ensure that all economic activity associated with the Project will be available to Inuit firms. Baffinland utilizes the registry of Inuit Firms maintained by Nunavut Tunngavik Incorporated (NTI) to identify Inuit Firms which may be eligible/qualified for various contracting opportunities.

Procurement with Inuit-owned businesses and joint ventures in 2023 totaled approximately \$173.4 million. This includes forty-two (42) contracts with Inuit Owned businesses and joint ventures, most of which were based in either the North Baffin communities or Iqaluit. Since Project development, a total of more than \$1.8 billion worth of contracts have been awarded to Inuit-owned businesses and joint ventures.

Throughout 2023, Baffinland continued to take steps to ensure that maximum benefits of the Project, represented by employment and contracting opportunities, were accessible to Inuit. Training Initiatives

Qikiqtani Skills and Training for Employment Partnership (Q-STEP)

Baffinland and QIA are continuing to support the Mary River IIBA implementation with the Q-STEP Inuit Training and Development Program. Funded by the Government of Canada, and with financial and in-kind support from Baffinland, this initiative focuses on pre-trades instruction and related training and employment initiatives for apprenticeships at the Project. The funding is providing supports for expenses relate to training, such as wages, accommodations, and travel. This program began in February, 2022, and it is scheduled to continue to March 31, 2028. The target is to hire and maintain 16 Inuit apprentices in various trades, with the end goal that apprentices complete training and advancing in their careers in mining industry trades.

Aulatijiit Inuit Leadership Development Program (ILDLP)

In 2023, the Aulatijiit Inuit Leadership Development Program (ILDLP) was developed and launched with four participants in the first cohort. It is an innovative, culturally based program that gives Inuit employees the opportunity to advance to leadership roles within the company. The program follows the “70-20-10 framework” for adult learning - 70% of the program involves job shadowing, 20% includes mentoring and relationship-building, and 10% is course work and training. The first cohort is expected to graduate in September 2024. The ILDP integrates Inuit Qaujimajatuqangit (IQ), the Inuit seasonal calendar and the use of Inuktitut. It was created in partnership with Flip Learning, with input from Inuit and Non-Inuit employees, community members, the Mining Association of Canada, and the Mining Industry Human Resources Council of Canada.

Career Development Plans

In 2023, Baffinland continued to implement a process, a plan and the associated documents for Career Development Plans (CDP). In order to improve Inuk employee retention, Baffinland looks to establish structures for more frequent interactions about one’s career development and their opportunities within the business. These are achieved through Career Development Plans for every permanent Inuk employee. These plans are developed through periodic discussions that explore where the employee is now in their career, what they might be interested in doing in the future, and what Baffinland can do to support and assist Inuit employees in advancing at Baffinland. Once the actions and plans are mutually agreed including realistic expectations, the employee will be supported so that they can undertake training and development as required to grow their career. Baffinland has implemented Career Development Plans for all Inuit employees in 2023 in a systematic approach with 126 plans completed in 2023.

Training Hours

Inuit training for 2023 totalled 34,450 hours, equivalent to 29.9% of the total training provided by Baffinland. This is a decrease in Inuit training hours when compared to 2022. This can be explained by the higher volume of training completed in 2022 due to the return of Nunavummiut workers from home following a COVID outbreak from December 2021 to early March 2022; this indicates there was an increase in Inuit training hours in 2022 when Nunavummiut returned to site.

3.2.5 Support for Local Businesses

In addition to provisions respecting the participation of Inuit Firms in Project contracting opportunities as detailed in Article 6 of the IIBA (IIBA, 2018) and the Inuit Procurement and Contracting Strategy, Baffinland supports the development of local businesses through its annual contribution of \$275,000 through the IIBA’s Business Capacity and Start Up Fund. The fund, which is administered by the QIA, is designed to assist existing Inuit Firms to develop capacity to participate in the bidding process and to encourage business start-ups in the communities.

Baffinland has worked with, and will continue to work with local businesses on an ongoing basis to create contracting opportunities in the communities. In March of 2023 Baffinland hosted their first Bid Simulation Workshop and invited Inuit Firms to participate. Seven (7) firms attended and were provided a walkthrough of the contracting process. Topics discussed included Pre-qualification, Advanced Contract Notification, Purchase Orders and a step-by-step walkthrough of the entire Bid Process. After the main workshop, Baffinland conducted one-on-one sessions with individual Inuit Firms to answer any questions and engage in discussions regarding contracting with Baffinland.

Baffinland along with the QIA has initiated a Preferred Inuit Firms (PIF) designation. PIF receive added benefit over Inuit Firms and Non-Inuit Firms including prioritizing PIFs through contract tailoring and giving priority access to contracts valued \$3 million or less.

An Inuit firm must satisfy the following criteria:

- Registered with Nunavut Tunngavik Incorporated (NTI);
- Located and operating within the Qikiqtani Region of Nunavut;
- 100% owned and operated by Inuit (not a joint venture with a larger organization); and
- Community presence (beyond a post office box) and ability to demonstrate such presence.

3.3 LOOKING AHEAD

The 2024 Annual Security Work Plan was submitted to the NWB, QIA and CIRNAC on December 1, 2023 (Baffinland, 2023b). This submission is a requirement under Part J, Item 3 of Amendment No. 1 of Type 'A' Water Licence 2AM-MRY1325 (NWB, 2015) and under Section 6.1 of Commercial Lease No. Q13C301 (QIA, 2013) agreed between Baffinland and the QIA.

A summary of the planned 2024 activities are as follows:

- Development and operation of the mine, ore crushing and land transportation, stockpiling and marine shipment of ore;
- The continued development and construction of infrastructure required at Milne Port and the Mine Site and along the Tote Road for the Project;
- Continued operation of Mine Site and Milne Port Camps to support ongoing operations and construction activities which will include the use of water and deposition of waste as authorized under existing permits;
- Ongoing operation and expansion of permitted quarry and borrow sources;
- At Milne Port, vessels carrying fuel, equipment and supplies for use at the Mine Site and Milne Port will arrive during open water. Material, fuel and supplies required for operational and construction activities will be transported to the Mine Site year round via the Tote Road;
- Ongoing environmental effects studies and baseline data collection will continue to support the construction and operation of the Project as well as for future engineering requirements;
- Continued environmental monitoring in accordance with the Approved Project Certificate, licenses, authorizations, management plans and environmental effects monitoring plans;
- On-going exploration activities including drilling, mapping, prospecting, sampling, and geophysics. Planning of the details of the summer drilling and/or trenching program is not yet finalized;
- Tote Road improvements to address safety concerns, freshet runoff issues and progressive reclamation of the historic borrow sources;

- Site grading and laydown construction for supplies and equipment to support future construction activities and remove ponding and permafrost degradation issues around current infrastructure; and
- Erection of additional maintenance facilities to safely service equipment.

Activities planned to be undertaken along the Steensby Railway alignment or at Steensby Port in 2024, include a geotechnical drilling program, archeological site mitigation, and a sealift of supplies and equipment to Steensby Port that may occur to support the commencement of construction works in 2024.

Project environmental monitoring programs prescribed by the Project Certificate, Water Licences, authorizations, management plans and environmental effects monitoring plans will continue through 2024.

4 PERFORMANCE ON PC TERMS AND CONDITIONS

The following sections provide a discussion of Baffinland's self-assessed status of compliance and performance related to each of the Project Certificate (PC) Terms and Conditions for the Project in 2023.

The discussion of compliance with PC Terms and Conditions has been disaggregated into the following categories:

- Performance on General Conditions;
- Performance on Compliance with Regulatory Instruments;
- Performance on Ecosystemic Terms and Conditions;
- Performance on Socio-Economic Terms and Conditions; and
- Performance on Other Terms and Conditions.

4.1 METHODOLOGY AND CRITERIA

Table 4.1 outlines the status of compliance levels and describes the criteria related to each of these options. Each PC Term and Condition has been assigned a status of compliance. Where a PC Term and Condition is designated as being only 'In Progress' or 'Non Compliant', a rationale explaining why 'In Compliance' was not achieved in 2023 and, where applicable, a strategy for moving towards full compliance in a future reporting year has been provided. It is noted that some Terms and Conditions may or may not be active during a phase of the Project and/or a specific component of the Approved Project may not yet be active in the reporting year (e.g., Steensby Port). Accordingly, for those Terms and Conditions that may be applicable to both the Northern (Tote Road and Milne Port) and Southern Transportation Corridors (Steensby Railway and Steensby Port), compliance status will be split up and reported for the active component only.

Table 4.1: Status of Self-Assessment Compliance Terminology and Criteria

Status	Criteria
Status of Project Condition	
Active	The PC Term and Condition is active during the current phase of the Project for the relevant monitoring period and in consideration of the relevant active Project component.
Not Active	The PC Term and Condition is not active for the relevant monitoring period, is tied to a project component that was not yet applicable during the reporting year, and/or is tied to a phase of the project that is currently completed.
Status of Compliance	
In Compliance	Obligations have been met or exceeded, as intended in Project Certificate No. 005 for the relevant monitoring period. A previous 'Completed' and 'Accomplished' by the NIRB status will remain 'In Compliance' with a 'Not Active' status. *Rationale for meeting compliance requirements is provided.
In Progress	Obligations have been partially fulfilled, as intended in Project Certificate No. 005 for the relevant monitoring period, or a plan to achieve full compliance is being actioned. *Demonstrable efforts towards meeting compliance requirements is evidenced.

Status	Criteria
Non Compliant	Obligations have not been met as intended in the Project Certificate No. 005 for the relevant monitoring period. *Rationale for being unable to meet compliance requirements is provided.
Not Applicable	The Term and Condition is not applicable to the current phase of the Project for the relevant monitoring period.

Baffinland has taken a conservative approach for self-assessing the status of compliance with PC Terms and Conditions for 2023. When determining a status of compliance for each of the PC Terms and Conditions, the following process was implemented by Baffinland and its technical experts:

1. A review of the specific requirements outlined in each PC Term and Condition is conducted.
2. A review of all relevant work completed by Baffinland in the reporting year and/or previous reporting years (if applicable) relevant to the PC Term and Condition is conducted.
3. A consideration of previous status assignments by NIRB and associated interpretation.
4. A gap analysis is completed to assess whether or not there is a delta between the requirements of the PC Term and Condition and the work completed by Baffinland to meet these requirements.
5. Inuit and stakeholder comments as relevant to the PC Term and Condition are considered. Baffinland maintains a list of meeting records (formal and informal) that were held with Inuit or other stakeholders and integrates any relative feedback heard according to topics covered through the various ecosystemic and socio-economic Terms and Conditions.
6. A status of compliance based on the results of Baffinland's self-assessment is assigned.

Baffinland will continue to complete its self-assessment using this approach in the absence of specific guidance from the NIRB on expectations on Proponents for the preparation of Annual Reports and a description of the NIRBs compliance assessment evaluation process.

4.2 APPROACH TO REPORTING ON PERFORMANCE

An individual summary sheet for each of the ecosystemic, socio-economic and 'other' Terms and Conditions have been provided in Sections 4.6 to 4.8. The category and content of information provided in these summary sheets is outlined in Table 4.2.

Table 4.2: Layout of PC Term and Condition Summary Sheets

Item	Summary of Content
Category	<ul style="list-style-type: none"> Category as defined in PC No. 005 Amendment No. 05 (NIRB, 2023a).
Responsible Parties	<ul style="list-style-type: none"> Responsible party as defined in PC No. 005 Amendment No. 05 (NIRB, 2023a).
Project Phase(s)	<ul style="list-style-type: none"> Phase(s) of the Project the PC Term and Condition is applicable to: <ul style="list-style-type: none"> Construction Operations

Item	Summary of Content
	<ul style="list-style-type: none"> ○ Temporary Closure / Care and Maintenance ○ Closure ○ Post-Closure Monitoring (as outlined in PC No. 005 Amendment No. 05 (NIRB, 2023a))
Objective	<ul style="list-style-type: none"> • The objective as outlined in PC No. 005
Term or Condition	<ul style="list-style-type: none"> • The Term or Condition as written in PC No. 005
Relevant Project Commitment	<ul style="list-style-type: none"> • List of all corresponding Baffinland commitments outlined in the Final Hearing Report (NIRB, 2012b) and PC No. 005 Amendment No. 05 (NIRB, 2023a)
Reporting Requirement	<ul style="list-style-type: none"> • The reporting requirement as outlined in PC No. 005 Amendment No. 05 (NIRB, 2023a)
Status of Project Condition	<ul style="list-style-type: none"> • A self-assessed status of compliance for the PC Term and Condition: <ul style="list-style-type: none"> ○ Active ○ Not Active
Status of Compliance	<ul style="list-style-type: none"> • A self-assessed status of compliance for the PC Term and Condition: <ul style="list-style-type: none"> ○ In Compliance ○ In Progress ○ Non Compliant ○ Not Applicable
Inuit and Stakeholder Review	<ul style="list-style-type: none"> • Inuit, stakeholders and other interested parties that participate in discussions and reviews related to aspects and implementation of regulatory submission of actions or documents relevant to the PC Term and Condition.
Reference	<ul style="list-style-type: none"> • Description / title of relevant documents where supporting information related to PC Term and Condition status of compliance is available for review. • URL to web-portal where referenced documentation can be accessed, and/or Appendix where documentation can be found appended to the report.
Methods	<ul style="list-style-type: none"> • The methods employed to complete work required to meet compliance to the PC Term and Condition. • Summary of any adaptive management measures employed that year in support of achieving compliance to the PC Term and Condition.
Results	<ul style="list-style-type: none"> • Summary of analytical results, quantitative/qualitative data or work that were completed in support of achieving PC Term and Condition compliance in 2023.
Trends	<ul style="list-style-type: none"> • Summary of notable trends from previous years, if identified, and relevant discussion on whether these are stemming from Project-related effects or due to natural variability. When relevant, reference is made to effects predicted as part of NIRB environmental assessment processes (i.e., FEIS and FEIS addendum). • Trends are identified using the following general guidance: <ul style="list-style-type: none"> ○ A review of all work completed in the reporting year and/or previous reporting years (if applicable) relevant to the PC Term and Condition is conducted. ○ If the data is quantitative, an evaluation of trends and statistical analysis is completed (i.e., graphs and metrics presented), where sufficient data exists to do

Item	Summary of Content
	<p>so. Quantitative, statistical trends are presented numerically and in graphs using previously collected data, if available to do so.</p> <ul style="list-style-type: none"> For qualitative indicators, an evaluation of applicable reports, engagement sessions and meeting records applicable to the topic are evaluated to develop content for the 'trends' information presented.
Recommendations / Lessons Learned	<ul style="list-style-type: none"> Summary of any operational changes undertaken or recommended for the future to achieve compliance or to further enhance environmental performance. Assessment of effectiveness of monitoring program and whether any changes to the scope of monitoring are appropriate. Identification of any challenges related to implementing mitigation measures, undertaking monitoring, or obtaining data from other sources.

4.3 SUMMARY OF 2023 COMPLIANCE WITH TERMS AND CONDITIONS

Baffinland's performance in fulfilling the PC Terms and Conditions in 2023 is presented on Figure 4.1. A summary of each of the Terms and Conditions and the Project status with respect to 2023 is presented in Appendix A. Since Terms and Conditions related to the not yet constructed components of the Approved Project (i.e., the Southern Transportation Corridor comprising the Steensby Railway and Steensby Port) were not applicable in 2023, compliance performance is focused on those related to the Mine Site and the Northern Transportation Corridor (Tote Road and Milne Port). Once applicable Terms and Conditions are triggered through the development of the Steensby Component, compliance performance will consider all Approved Project components.

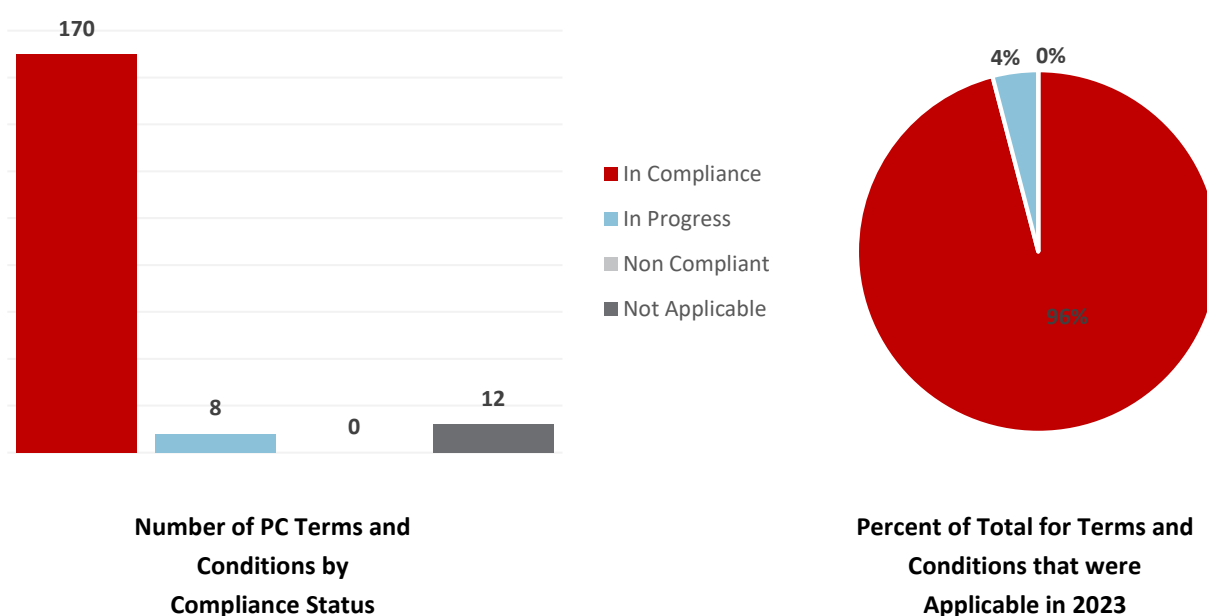


Figure 4.1: Baffinland's Overall Performance against Project Certificate Terms and Conditions in 2023

Overall, Baffinland is in compliance with the required Terms and Conditions for the Project. Of the 190 Terms and Conditions that were applicable to the Project in 2023, Baffinland is 96% In Compliance with these Terms and Conditions. This is consistent with 2020 - 2022 and demonstrates Baffinland's continued commitment to maintaining compliance with the Project Certificate. In areas where improvement is still required, Baffinland will continue to make operational changes, implement adaptive management, and work with regulators and the communities to ensure the Project remains in compliance with Project Certificate No. 005.

4.4 PERFORMANCE ON GENERAL TERMS AND CONDITIONS

The following presents the performance on general conditions set out in Section 4.1 of the Project Certificate, and Baffinland's comment on the condition performance. Items one to four in this section of the Project Certificate speak to the NIRB's monitoring responsibilities, and Sections five (5) through 12 describe additional requirements for Baffinland. A 2023 status on these items is provided below.

5. The Proponent must obtain all required federal and territorial permits and other approvals, and shall comply with the requirements of such regulatory instruments.

Baffinland has received the necessary approvals from NIRB to construct and operate the Steensby rail and port project, the Early Revenue Phase, and for the Production Increase Proposals and Sustaining Operations Proposal starting in 2018 until the end of 2024, as well as the permits necessary to operate the latter two (2) components of the Project (Table 1.2).

These approvals often include additional permits with their own annual reporting requirements. Other major annual reports include the combined annual report for operations submitted to the QIA and the NWB, pursuant to Baffinland's Type 'A' Water Licence and Commercial Lease. The Annual Report to the QIA and the NWB is substantial and, in comparison to the NIRB Annual Report, includes much greater detail on water, waste management activities, as well as spill management and other topics related to water as per guidance. These reports can be found on Baffinland's Document Portal at: <https://www.baffinland.com/media-centre/document-portal/>.

No additional federal or territorial permits or other approvals were required or received in support of the current operation in 2023.

A separate annual report on the status of implementation of the IIBA in 2023 was issued to the QIA and Joint Executive Committee on March 31, 2023. The contents of the IIBA report address or partly address many components of socio-economic monitoring and management.

Baffinland is working to obtain all additional permits related to the Steensby Component of the Approved Project in 2024 and 2025 prior to construction.

The Company's performance on compliance with its regulatory instruments is described in Section 4.5.

6. The Proponent shall take prompt and appropriate action to remedy any occasion of non-compliance with environmental laws and regulations and/or regulatory instruments, and shall report any non-compliance as required by law immediately. A description of all instances of non-compliance and associated follow up is to be reported annually to the NIRB.

The Company's performance on compliance with its regulatory instruments is described in Section 4.5.

7. The Proponent shall meet with respective licensing authorities prior to the commencement of construction to discuss the posting of adequate performance bonding. Licensing authorities are encouraged to take every measure to require that sufficient security is posted before construction begins.

Closure and reclamation costs and resulting corresponding bonding requirements for the Mary River Project are determined through the Annual Security Review (ASR) process conducted in accordance with Schedule C of the Type 'A' Water License 2AM-MRY1325, Amendment No. 1, and the QIA Commercial Lease Q13C301. Under the Annual Security Review (ASR) process, Baffinland, the respective landowners (the QIA & the Crown), the Nunavut Water Board, and other interested parties meet and confer to determine the estimated closure and reclamation costs for an upcoming year. Baffinland submitted the Marginal Closure and Reclamation Financial Security Estimate to the NWB and QIA with the Annual Work Plan on December 15, 2022 for the 2023 year. Publicly available ASR document submissions for a respective year, describing in detail annual estimated closure and reclamation costs, can be downloaded from the NWB FTP site at: <ftp.nwb-oen.ca>. On August 15, 2023 Baffinland recommended to the NWB that Parties forgo the 2023 Annual Security Review process and instead focus resources on the upcoming submission of the 2024 Work Plan. Baffinland further identified that no adjustment to reclamation security held by QIA or CIRNAC be made in 2023, as sufficient security remains in place for the Mary River Project to cover the limited planned works, as demonstrated below. On August 23, 2023 CIRNAC accepted Baffinland's proposal as did QIA on September 8, 2023. Both parties provided additional comments to the NWB for consideration in relation to the 2024 ASR. September 14, 2023 the NWB accepted Baffinland's proposal and closed the 2023 ASR process.

8. All monitoring information collected pursuant to the Project Certificate and various regulatory requirements for the Project shall contain the following information:

- a. The name of the person(s) who performed the sampling or took the measurements including any relevant accreditations;*
- b. The date, time and place of sampling or measurement, and weather conditions;*
- c. The date of analysis;*
- d. The name of the person(s) who performed the analysis including any relevant accreditations;*
- e. A description of the analytical methods or techniques used; and*
- f. A discussion of the results of any analysis.*

Baffinland ensures that the records for all monitoring programs includes the above information. Baffinland has included this requirement in all monitoring program outlines and notifies all external consultants of the requirements.

9. The Proponent shall make its monitoring results available, to the fullest extent possible, in English and Inuktitut.

From 2014 to 2023 Baffinland included a summary of all monitoring programs in the Popular Summary of the NIRB annual report which was translated into Inuktitut. Starting in 2019, Baffinland also began including a popular / executive summary translated into Inuktitut for all final report versions of the Socio-economic, Terrestrial and Marine Annual Monitoring reports. A translated executive summary is also included with the QIA and NWB Annual Report for Operations and the QIA and NWB Annual Report for Exploration and Geotechnical Drilling. Meeting minutes and presentation materials of the Terrestrial and Marine Environment Working Group meetings are also typically translated into Inuktitut.

10. The Proponent shall keep and maintain the records, including results, of all Project-related monitoring data and analysis for the life of the Project, including closure and post-closure monitoring.

Baffinland keeps and maintains all Project-related monitoring data and will continue to do so.

11. The Proponent shall maintain the Final Environmental Impact Statement and the Environmental Effects Monitoring program developed for the Project, with predictions updated as new baseline data is collected.

The predictions contained in the Final Environmental Impact Statement and subsequent Addendums are reviewed against Environmental Effects Monitoring program outcomes on an annual basis. Baffinland continues to confirm the majority of predictions are accurate, and where there are deviations, conducts investigations under the guidance contained in the Adaptive Management Plan. Any adaptive management investigation carried out to date has either found an exceedance of a prediction to be not attributable to the Project, or it has prompted the development of corrective actions to maintain monitoring effects within FEIS and Addendum predictions. The Environmental Effects Monitoring program components are reviewed on a regular basis through discussions with the Terrestrial and Marine Environmental Working Groups. Monitoring programs that are not managed under one of the environmental working groups are reviewed with applicable regulatory agencies. A summary of the effects of the Project compared to those predicted in the FEIS is also provided in Sections 4.5 through 4.7.

12. The Proponent shall establish a Project-specific web portal or web page as a means of making all non-confidential monitoring and reporting information associated with the Project available to the general public. This does not limit what the Proponent may be required to submit to the NIRB or other regulatory authorities to meet reporting requirements.

In 2017, Baffinland launched a Project-specific Document Portal on its corporate website in order to provide monitoring and reporting information to the public (<https://www.baffinland.com/media-centre/document-portal/>). The web portal has been live as of March 31, 2017 and remained operational throughout 2023, and remains operational as of the date of this report's submission. Where relevant, the web portal provides links to English and Inuktitut versions of the popular summary of most recent final reports as well as the main body of the report or document.

Baffinland will also continue to provide all documentation required by regulatory agencies directly to the appropriate body. The status of commitments can be found in Appendix F.1.

4.5 PERFORMANCE ON COMPLIANCE WITH REGULATORY INSTRUMENTS

General regulatory requirements under the PC requires Baffinland to take prompt and appropriate action to remedy any event of non-compliance, and to report all instances of non-compliance and associated follow-up annually to NIRB. Baffinland's compliance with applicable regulatory instruments in 2023 is discussed below.

4.5.1 Agency Inspections and Site Visits

Throughout 2023, to validate compliance with the Project's various regulatory instruments, Baffinland hosted numerous inspections and audits from CIRNAC, QIA, and NIRB, as well as the Workers' Safety & Compensation Commission (WSCC) Mines Inspector, and inspectors from ECCC, DFO, and Transport Canada Navigable Water Protection. Where relevant, documentation and correspondence associated with these inspections are available in the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a). The following subsections outline the inspections conducted by regulatory agencies and stakeholders at the Project in 2023. Details regarding NIRB's site visits are provided in Section 5.1.

4.5.1.1 CIRNAC Inspections

During 2023, CIRNAC Water Resources Officers conducted three (3) inspections of the Project. The dates of the inspections are as follows:

- January 25, 2023;
- July 12-13, 2023; and
- September 7, 2023.

Inspection results were conveyed during close-out meetings at the Project and are documented in Water Licence Inspection Reports distributed to Baffinland following the inspection. Baffinland responded to any concerns identified in the inspections to provide additional information and/or address the identified concerns. More details are available in the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a).

4.5.1.2 QIA Inspections

In 2023, QIA completed two (2) inspections/visits of the Project under the Commercial Lease. The dates of the inspections are as follows:

- June 28 to 29, 2023; and
- September 20 to 21, 2023.

LGL Limited (LGL), and Mining Impact Specialists Limited (MISL) conducted the June Environmental Site Inspection and September Environmental Site Inspection on QIA's behalf. In addition to the inspections, the QIA conducted one (1) environmental audit from August 31 to September 4 in 2023.

The findings from the inspections and audit were conveyed during the close-out meetings and documented in subsequent reports and correspondence. Baffinland responded to the concerns identified in the inspections to provide additional information and/or address the identified concerns. More details are available in the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a).

Additionally, site-based QIA Environmental Monitors were employed by QIA and integrated into the Site Environment team. The QIA environmental monitors allow for QIA oversight of monitoring activities and data collection at the Project site year round.

4.5.1.3 ECCC Inspections

ECCC Enforcement Officers conducted one (1) inspection in 2023. The dates of the inspection are as follows:

- October 9 to 11, 2023.

On February 7, 2024, ECCC issued a warning letter to Baffinland for exceeding the grab sample limit for Total Suspended Solids (TSS) at MS-08 on September 3, 2023 and the monthly mean concentration for September 2023.

4.5.1.4 DFO Site Visit

In 2023, DFO completed one (1) inspection of the Project to inspect fish-bearing crossing locations along the Tote Road. The date of the inspection is as follows:

- August 15 to 18, 2023.

Baffinland is continuing to work with DFO to address fish passage issues along the Tote Road at specific locations. A Request for Review was submitted to DFO in May 2022, and DFO staff subsequently visited the Project to inspect the fish-bearing crossing locations. Throughout 2023, Baffinland continued to develop a plan to address the fish passage issues, and to engage with DFO as the plan was developed. On January 19, 2024, DFO issued a Letter of Advice for Baffinland's Tote Road Culvert Remediation proposal to implement a permanent crossing solution for ten (10) corrugated steel pipe (CSP) crossings along the Tote Road (DFO, 2024). Tote Road Culvert Upgrades work under the Type 'A' Water Licence (NWB, 2015) commenced in early 2024.

4.5.1.5 Transport Canada Marine Safety and Security (TCMSS) Inspection

Representatives from Transport Canada inspected the site in September 2023. Inspections of the navigable water crossings were completed along the Tote Road, as well as an overflight of the navigable crossings along the Steensby rail alignment.

No significant concerns were noted during the inspection or formal inspection report issued.

4.5.1.6 Workers' Safety and Compensation Commission (WSSC) Mine Inspections

The WSSC conducted one (1) inspection of the Project in 2023. The date of the inspection is as follows:

- June 28 to 29, 2023.

The inspector carried out general inspections at various locations at the Mine Site. The main focus of the general inspections was Mining Operations, including the Mine Haul Road and the Dyno Nobel Emulsion Plant and magazines; Mobile Maintenance, Crusher, and Power Generation facilities; and the Sailivik Waste Water Treatment Plant (WWTP). Deficiencies identified during the general inspections were captured in the WSSC inspection reports and distributed to Baffinland management and the Baffinland Occupational Health & Safety (OHS) Committee. The 2023 directives that resulted from the visit were reviewed by the management team; the majority of the directives were completed during the inspection and the remainder were completed within a timely manner shortly thereafter and before the requested completion dates.

4.5.2 Unauthorized Discharges and Spills

During 2023, twenty (20) spills were reported to the Northwest Territories-Nunavut (NT-NU) Spill Report Line, CIRNAC and QIA by the Project. Overall, this represented a frequency decrease of 17% when compared to the frequency of reportable spills in 2022. Baffinland continues to work to identify basic causes so that effective long term corrective actions can be implemented.

In addition to the original spill report submitted within 24 hours of each spill event in 2023, a detailed follow-up report was submitted within thirty (30) days of each reported spill. An incident investigation was conducted for all spills that were reported to the 24-hour NT-NU Spill Report Line, or other applicable reporting processes, to assist in determining the root cause of a spill event and in identifying effective corrective actions. The follow-up reports included a description of the event, the immediate cause(s), corrective and preventative action(s), photos, and a map showing the location of the spill. A summary of the 2023 spills reported by the Project are outlined in Table 4.3. Details regarding all spills reported to the NT-NU Spill Line in 2023, including follow-up and original spill reports and corrective actions and future plans for mitigation have been provided to relevant regulatory bodies and were also provided to the NWB, CIRNAC, ECCC and the QIA in March 2024 with the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a).

Baffinland continues to conduct robust incident investigations to identify root causes of reportable incidents so that effective long-term corrective actions can be developed and implemented. An incident investigation was conducted for all reportable spills to assist in determining the root cause and in identifying effective corrective actions. A basic analysis of non-reportable spill incidents that occurred across the Project in 2023 indicated that the most common causes for the spills was related to component malfunction and equipment failure, followed by procedural issues (inadequate procedure or training). The analysis indicated the most common causes of reportable spills (reported to the NT-NU Spill Line) in 2023 was surface water management infrastructure deficiencies. Surface water infrastructure deficiencies resulted in the ten (10) reportable spills of sediment-laden water in 2023; accounting for 40% of all reportable spills. Mandatory spill reporting is enforced at all levels in the organization and initiatives are undertaken by Baffinland to reduce the frequency spills at the Project, including but not limited to: mandatory spill reporting enforced at all levels in the organization, improved preventive maintenance plans, daily pre-operational checks of all equipment, site-wide communication bulletins (i.e. spill reporting, secondary containment and spill tray usage memos), tool box meetings, prescribed training sessions, and specific product handling and spill reduction plans.

Construction began in 2021 on approved surface water management infrastructure outlined in the Long Term Water Management Plan (LTWMP), approved under Modification No. 13 (NWB, 2021a), to enable effective management of surface water at the Mine Site. In 2022, construction of the MS-11 (KM 105) Surface Water Management Pond was completed, as part of the first phase of the implementation of the plan. Construction activities were also completed in the Camp Lake area in 2022, to reduce potential erosion and sedimentation in the area and minimize releases of TSS to Camp Lake and its tributaries. The LTWMP continued to be implemented in 2023 with a geotechnical drilling program conducted to support engineering design work. The LTWMP will continue to be implemented in 2024. Construction activities planned for 2024 include construction of a erosion and sediment controls measures at QMR2 Quarry. The geotechnical drilling program conducted in 2023 supported the design of the SDLT-1 Sedimentation Pond, planned for construction in winter 2024/2025.

Table 4.3: List of Reported Spills and Unauthorized Discharges – 2023

Date of Occurrence	Quantity (m³)	Material Spilled	Approximate Location (Latitude/Longitude; degrees, minutes, seconds)		Proximity to a Waterbody (m)	Spill Line ID No.
			Latitude	Longitude		
2-Feb-23	425	Diesel Fuel	71° 19' 24"	79° 13' 47"	1,500	2023-032
13-Feb-23	200	Sewage - Untreated	71° 18' 51.23"	79° 17' 59.27"	100	2023-048
28-Feb-23	130	Diesel Fuel	71° 53' 04"	80° 53' 35"	320	2023-072
1-May-23	Unquantified	Sediment Laden Water	71° 18' 59"	79° 18' 45"	0	2023-177
20-May-23	Unquantified	Sediment Laden Water	71° 18' 46"	79° 15' 45"	500	2023-208
2-Jun-23	5,000	Sewage - Untreated	71° 18' 51.23"	79° 17' 59.27"	100	2023-238

Date of Occurrence	Quantity (m ³)	Material Spilled	Approximate Location (Latitude/Longitude; degrees, minutes, seconds)		Proximity to a Waterbody (m)	Spill Line ID No.
			Latitude	Longitude		
1-Jun-23	Unquantified	Sediment Laden Water	71° 52' 54"	80° 55' 06"	0	2023-245
5-Jun-23	Unquantified	Sediment Laden Water	71° 19' 42" 71° 19' 47" 71° 18' 40"	79° 22' 55" 79° 23' 07" 79° 17' 37"	0	2023-248
12-Jun-23	Unquantified	Sediment Laden Water	71° 22' 56" 71° 23' 34"	80° 00' 48" 79° 51' 22"	0	2023-258
22-Jun-23	Unquantified	Sediment Laden Water	71° 18' 45"	79° 12' 00"	300	2023-276
7-Jul-23	Unquantified	Sediment	71° 53' 14"	80° 53' 37"	30	2023-294
8-Jul-23	Unquantified	Sediment Laden Water	71° 20' 40"	79° 13' 51"	2,000	2023-297
14-Aug-23	Unquantified	Sediment Laden Water	71° 19' 44" 71° 19' 50" 71° 21' 25" 71° 22' 32" 71° 22' 40" 71° 23' 52" 71° 20' 25" 71° 22' 32"	79° 23' 15" 79° 30' 54" 79° 34' 51" 79° 42' 09" 79° 58' 40" 79° 48' 38" 79° 32' 51" 79° 43' 11"	0	2023-343
17-Aug-23	260	Diesel Fuel	71° 23' 40"	80° 01' 53"	150	2023-352
17-Aug-23	500	Waste Oil	71° 53' 07"	80° 53' 08"	74	2023-353
27-Aug-23	Unquantified	Sediment Laden Water	71° 18' 38"	79° 16' 03"	1,000	2023-366
8-Sep-23	500	Sewage - Untreated	71° 53' 02"	80° 53' 22"	370	2023-384
26-Oct-23	Unquantified	Sediment Laden Water	71° 20' 42"	79° 13' 45"	1,900	2023-456
4-Nov-23	167	Hydraulic Oil	71° 18' 42"	79° 16' 31"	500	2023-463
28-Nov-23	1,000	Sewage - Untreated	71° 18' 53"	79° 16' 58"	200	2023-508

4.5.3 Water Licence Compliance (Type 'A' 2AM-MRY1325 and Type 'B' 2BE-MRY2131)

In 2023, Baffinland operated the Mary River Project under its Type 'A' Water Licence (2AM-MRY1325 – Amendment No. 1) and a Type 'B' Water Licence (2BE-MRY2131). The scope of the Type 'A' Water Licence focuses on active mining operations while the scope of the Type 'B' Water Licence focuses on geotechnical and exploration activities, including drilling operations and the establishment of satellite exploration camps. Both Water Licences include

conditions on water use, wastewater management and water quality monitoring as well as the management of waste.

Compliance with the conditions and requirements outlined in the Type 'A' Water Licence (NWB, 2015) during 2023 is discussed in the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a). Similarly, compliance with the conditions and requirements outlined in the Type 'B' Water Licence (NWB, 2015) is discussed in the 2023 QIA and NWB Annual Report for Geotechnical Activities (Baffinland, 2024a).

4.6 PERFORMANCE ON ECOSYSTEMIC TERMS AND CONDITIONS

4.6.1 Meteorology and Climate (PC Terms and Conditions 1 through 6)

The first six (6) PC Terms and Conditions relate to the potential impacts of the Project on meteorology and the climate, including climate change.

Inuit & Stakeholder Feedback

Baffinland's stakeholders and local communities have identified climate change as a key issue in Nunavut, with communities reporting observations of the changing climate. NIRB prescribed several conditions in Baffinland's Project Certificate related to climate change, requesting Baffinland to identify Greenhouse Gas (GHG) emissions reduction opportunities and to share any research or observations of climate change with communities, agencies and researchers. Participants from the Mary River Inuit Knowledge Study (2006 to 2010; Baffinland, 2014a) shared observations related to climate change in the Arctic. Baffinland engaged the communities of Pond Inlet and Arctic Bay through workshops to discuss the Phase 2 Proposal in 2015 and 2016, and a limited amount of feedback was received regarding observations of climate change (JPCSL, 2017). Baffinland recorded questions from one community member during consultation events in 2017; the individual asked if the permafrost and the ocean was being monitored for climate change, if Baffinland was combining Inuit and scientific knowledge, and if rapid changes were being observed. Since then, climate change remained a topic in 2019 during Phase 2 community meetings (Igloolik, Sanirajak, and the Mine Site), and was also identified during Phase 2 Community Risk Assessment Workshops (ERM, 2019) where there was the recognition that all aspects of the environment (land, sea, people, wildlife) are changing because of climate change and that this should be considered in addition to mine impacts. In 2021, input on climate change considerations was specifically sought by various institutions, Inuit and community groups in order to further inform revisions to the Draft Climate Change Strategy. Baffinland recognizes that the Company has a role to play in reducing its energy use and emissions and is aware that arctic environments are changing, which is a concern to Inuit. Accordingly, Baffinland's Climate Change Strategy (Stratos, 2023) recognizes the role that Inuit want to take to monitor climate changes and associated impacts and has integrated these considerations into its supporting actions.

Monitoring Activities

Baffinland operates two meteorological stations, and this information is made publically available for Mary River Mine Site (Mine Site) and Milne Inlet through The Weather Network and on the Baffinland website (www.baffinland.com). A third station is located along the Haul Road at KM 110 to support internal local tracking. Details on annual weather conditions at both Mine Site and Milne Inlet are included in the 2023 Terrestrial Environment Annual Monitoring Report (TEAMR; Appendix G.5.1; EDI, 2024a) as well as the Air Quality, Dustfall and Meteorology Report (Appendix G.2.1; Stantec, 2024).

Ongoing Project monitoring provides the potential to track potential changes in temperature, precipitation, and wind speed over time. Monthly mean temperatures at the Mine Site were lowest in February (-40.1°C), rising above zero in June (1.5°C) and peaking in July (10.3°C). Monthly means fell back below zero in October (-8.9°C). February 2023 presented the largest monthly anomaly, 9.2°C colder than the baseline average, while November was 8.3°C above the baseline. The temperature from June 16 until September 1 remained above 0°C . Minimum and maximum temperatures in 2023 at the Mine Site were recorded on February 20 (-48.9°C) and July 30 (21.3°C), respectively. These extremes lie within the recorded historical range. Wind blows predominately along a northwest-southeast axis at the Mine Site, although uncommon eastward winds tend to be the very strongest to hit the station. Baseline (2005 to 2010) and post-baseline (2013 to 2022) wind directions and speeds at Mine Site were consistent compared to those in 2022. In baseline years, most winds were southeasterly and characterized as ‘moderate breeze’ to ‘strong breeze’. Post-baseline years also had predominantly southeasterly winds, typically ranging between a ‘gentle breeze’ and a ‘fresh breeze’, though occasional ‘gale’ (17.2 to 20.8 m/s) and ‘strong gale’ winds occurred.

Monthly mean temperatures at Milne Port were at their lowest in February (-43.9°C), rising above freezing in June (0.9°C) and peaking in July (8.4°C) before dropping back below freezing in October (-8.2°C). From June 26 to September 6, 2023, the temperature remained above freezing (see Figure 4-3 in EDI, 2024a; Appendix G.5.1). Milne Port in 2023 closely resembled baseline temperatures throughout the spring, fall and summer, with a colder January and February and a warmer November and December. The lowest temperature of 2023 at Milne Port was -43.9°C on February 21, 2023, while the highest was 19.6°C on August 1, 2023. Comparing trends between the two weather stations, Milne Port is consistently cooler and drier than the Mine Site. In 2023, temperatures recorded at Milne Port were, on average, 0.4°C cooler than the Mine Site throughout the year. The effect is more pronounced in the summer and less in the winter. Since the start of the baseline recording, Milne Port has averaged 2.1°C cooler than simultaneous measurements from the Mine Site. The prevailing wind directions at Milne Port in 2023 were from the north-northwest (offshore winds blowing across the width of the inlet) and southwest (onshore winds blowing down the length of the inlet), with very little wind from the west or east. The 2023 wind records at Milne Inlet are consistent with the prior year’s values.

Baffinland continues to track and monitor GHG emissions and report as per ECCC’s GHG Emissions Reporting Program and National Pollutant Release Inventory (NPRI), which is included as part of the Air Quality and Noise Abatement Management Plan (AQNAMP; Baffinland, 2021a). Baffinland submitted a Climate Change Strategy to NIRB on February 12, 2019 (Baffinland, 2019b). This first strategy initially included a description of the actions Baffinland will undertake to validate and update climate change impact predictions for the Project and the effects of the Project on climate change. Baffinland subsequently worked with external experts from a third-party partner, to help refine and elaborate the existing Strategy and approach for effective implementation. A revised Climate Change Strategy was developed in 2023, focusing on emissions reductions and work with Nunavummiut to monitor and adapt to climate changes in the North (Stratos, 2023).

Table 4.4 provides a summary of monitoring completed in 2023, and an evaluation of impacts relative to the predictions presented in the FEIS and FEIS Addendum. The calculated gaseous emissions in 2023 (Table 4.4) are below the maximum annual GHG, Sulphur Dioxide (SO_2) and Nitrogen Dioxide (NO_2) emissions predicted in the FEIS.

Table 4.4: Climate Impact Evaluation

Component	Effect	Monitoring Program	Impact Evaluation
Greenhouse Gases (GHGs)	Increased GHG emissions	GHG emissions calculated from fuel combustion: Emissions below FEIS forecast	Effect within FEIS predictions
SO ₂ and NO ₂ emissions at Milne Port	Increased SO ₂ and NO ₂ emissions	SO ₂ and NO ₂ emissions calculated from fuel combustion: Emissions below FEIS forecast	Effect within FEIS predictions
SO ₂ and NO ₂ emissions at Mine Site	Increased SO ₂ and NO ₂ emissions	SO ₂ and NO ₂ emissions calculated from fuel combustion: Emissions below FEIS forecast	Effect within FEIS predictions

Path Forward

As Baffinland implements the supporting actions of its amended two-goal Climate Change Strategy (Stratos, 2023), updates regarding the status of action plans will be provided as part of annual reporting efforts. The Climate Change Strategy will serve as an important tool to guide and articulate Baffinland's efforts on PC Terms and Conditions No. 2, 3 and 4 (Stratos, 2023). Baffinland will continue to undertake monitoring activities and develop initiatives to ensure any impacts that the Project may have on the climate are measured to the extent possible. Reporting on each PC Term and Condition is included in the pages that follow.

Project Certificate Term and Condition No. 1

Category	Meteorology and Climate
Responsible Parties	The Proponent
Project Phase(s)	All phases
Objective	To provide feedback on the impacts that climate change might be having on the port facilities.
Term or Condition	The Proponent shall use Global Positioning System (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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	The Proponent shall summarize and supply these monitoring results to NIRB in the annual project report.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - In Progress
Stakeholder Review	Marine Environmental Working Group (MEWG)
Reference	2021-22 Physical Oceanography Report (WSP, 2024a)
Ref. Document Link	Appendix G.1

METHODS

Steensby Port

Term and Condition No. 1 is not applicable to Steensby Port at this time and oceanographic monitoring of relative sea levels and storm surges was not conducted at Steensby Port in 2023.

Oceanographic data were collected at the Steensby Port site in 2021-2022 to update the oceanographic baseline and support future marine permitting requirements. Tidal elevation, current velocity, conductivity and temperature were measured from September 8, 2021 to September 11, 2022 using uplooking and downlooking Acoustic Doppler Current Profilers (ADCPs) moored to the west of Steensby Island (WSP, 2024a; Appendix G.1). Additionally, vertical profiles of water conditions were collected using a Conductivity-Temperature-Depth (CTD) recorder along three transects located to the east and west of Steensby Island, and six (6) GPS drogue surveys were conducted to measure surface currents. The 2021-22 Oceanography Report for Steensby Port is available in Appendix G.1.

Milne Port

Oceanographic monitoring of relative sea levels and storm surges was not conducted at Milne Port in 2023. Monitoring of Term and Condition No. 1 has been paused, while Baffinland consults the MEWG on methods. Baffinland has included alternative indicators for tidal gauge monitoring as an agenda item at the April 2024 MEWG meeting, outside of this reporting period, in order to meet this Term and Condition in subsequent monitoring years.

RESULTS***Steensby Port***

Not applicable. No data were collected in 2023.

Milne Port

Not applicable. No data were collected in 2023.

TRENDS***Steensby Port***

Not applicable.

Milne Port

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED***Steensby Port***

Not applicable

Milne Port

Not applicable

Project Certificate Term and Condition No. 2

Category	Meteorology and Climate - Climate Change Validation and Studies
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To provide feedback on the impacts that climate change might be having on the Project.
Term or Condition	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.
Relevant Baffinland Commitment	58
Reporting Requirement	The Proponent shall provide new or revised assessments and studies to the NIRB, the affected communities, relevant regulatory authorities, and interested parties.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Nunavut Impact Review Board (NIRB)
Reference	Climate Change Strategy (Stratos, 2023)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

No new or revised assessments or studies were required in 2023 to validate and/or update the climate change impact predictions for the Project.

Baffinland first submitted a Climate Change Strategy (the Strategy) to the NIRB on February 12, 2019 (Baffinland, 2019b). The Strategy described the actions Baffinland planned to undertake to validate and update climate change impact predictions for the Project, and the effects of the Project on climate change. These included:

- Implementing comprehensive environmental monitoring and management programs that are based on a combination of scientific data and Inuit Qaujimajatuqangit to safeguard the environment.
- Modifying or replacing equipment with more efficient alternatives to reduce Greenhouse Gas (GHG) emissions.
- Researching the potential for renewable energy sources, and where possible, implementing these sources to off-set fuel requirements and reduce GHG emissions.
- Conducting ongoing risk assessments to ensure that all aspects of the operations are able to withstand potential climate change related events.
- Identifying opportunities for energy efficiency through Project design optimizations.
- Ensuring that an effective closure strategy is in place at all stages of Project development that considers best available science for future climate scenarios.
- Maintaining compliance with monitoring and regulatory reporting requirements.

Baffinland subsequently sought the external expertise of a third-party partner in June 2019 to help refine and elaborate the Strategy and approach for effective implementation. Refinement of the Strategy in 2022 aimed to identify priorities and describe the approach to greenhouse gas emissions management including plans for emissions reductions, assessment of anticipated impacts of climate change on the Project, and how Baffinland may work with Nunavummiut to monitor and adapt to climate changes in the North.

RESULTS

The newest Climate Change Strategy was finalized in March 2023 (Appendix G.1 of Baffinland, 2023c, NIRB Registry No. 345091; Stratos, 2023) and included in last year's annual report. Since the finalization in the early part of 2023, Baffinland has been working to implement initiatives that support the two goals of the strategy. This includes the Fuel Reduction Program through Baffinland's Continuous Improvement Department and the implementation of Rapid Improvement Opportunities.

Baffinland's overarching climate change aspiration, building upon its existing mission statement, is to become '*the lowest-cost, low carbon producer of high-grade iron ore in the world*'. Within the new Climate Change Strategy, Baffinland has established two (2) goals with associated actions to support achievement of its Climate Change Strategy:

1. Improve energy efficiency and forge a path to decarbonization; and
2. Monitor changes in climate and associated risks to inform adaptation and closure strategies.

As detailed in last year's report, some of the key supporting actions included in the five-year strategy (2023-2028) include undertaking a Site-wide energy audit to identify, evaluate and select reduction opportunities. This includes the aforementioned Fuel Reduction Program. Other actions outlines are establishing short, medium and long-term GHG emission targets, characterizing Scope 3 emissions, and engaging with organizations and supply chain partners where possible to advance climate action, including with shipping partners.

In 2023, Baffinland summarized GHG emissions released by all vessel classes used at Milne Port as part of a comparative assessment of shipping operations along the northern shipping route with and without Capesize ore carriers (Appendix G.6.9, Baffinland, 2024a) in response to a technical comment received on the Sustaining Operations Proposal (SOP). The comparative assessment concluded that the use of larger class carriers results in a net reduction in the number of Project vessels and transits required to support shipping operations in the RSA. By reducing the number of vessel and transits, the number of berthing and loading events in port is also reduced. Collectively, this results in a reduced risk of accidents in Milne Port and along the Northern Shipping Route. Further to this, reducing the number of ships per season results in improvements in the majority of environmental performance criteria considered in this assessment, including a net decrease in GHG, shorter periods of underwater noise disturbance, and reduced risk for ship strikes on marine wildlife. Baffinland will continue to work with shipping partners on these scope 3 emissions as we work through the 5-year climate change strategy.

Table 4.5 provides a summary of some of the revisions made in direct response to feedback received through external engagements. As part of ongoing engagement activities, various annual reporting review processes and operational activities, Baffinland will provide status updates on implementation, and will continue to refine its implementation roadmaps as new opportunities and/or priority areas are identified over time. Accordingly, Baffinland's path to decarbonization is expected evolve over time based on the latest operational realities.

Table 4.5: Summary of External Engagement Insights and Examples of how Feedback has been incorporated in the revised Climate Change Strategy

Theme	Feedback and Revisions
Inuit leadership and ownership	<p>Inuit need to be assured of implementation and should be ‘in the driver’s seat’, leading some of the actions (e.g., environmental monitoring).</p> <p><i>Revision: Baffinland changed the Guiding Principle from Collaboration to ‘Collaboration and Co-Creation’. The Strategy was updated to reflect its intention to pursue collaborations to undertake Inuit-led monitoring and to investigate low carbon technologies and renewable energy with Inuit collaborators.</i></p>
Targets and timeframes aligned with international commitments	<p>Interviewees expected short- and long-term GHG emissions reduction targets to be established and aligned with international commitments.</p> <p><i>Revision: Baffinland updated one of its Strategy goals to cut direct GHG emissions with plans to establish short, medium, and long-term GHG emissions targets.</i></p>
Transparency	<p>To foster trust, Baffinland should apply the principle of transparency to all streams of action, including data sharing and reporting.</p> <p><i>Revision: In addition to establishing Transparency as a pillar within the Strategy, the updated Strategy also includes a commitment to publicly report on progress, and engage and involve Inuit to provide assurance on strategy implementation.</i></p>
Collaboration	<p>Communities and institutions were all generally interested in collaborating on climate change. Network building was identified as being important for the promotion of renewable technology, industry collaboration and information sharing.</p> <p><i>Revision: One of the six (6) guiding principles focuses specifically on ‘collaboration and co-creation’ with Inuit and other stakeholders.</i></p>
Shipping and other transportation	<p>Shipping and shipping management, including implications of changing climate conditions, should be addressed more directly in the Strategy and prioritized in implementation.</p> <p><i>Revision: Baffinland included a specific action to engage with organizations and supply chain partners, including shipping partners, to advance climate action. This action seeks to support reduction of air and GHG emissions associated with marine transportation.</i></p>
Environmental priorities	<p>Action plans should consider environmental priorities of concern and development of monitoring plans (e.g., glacial melt, ice, sea levels).</p> <p><i>Revision: One of the supportive actions of Goal 2 focuses on pursuing collaborations to undertake Inuit-led monitoring of climate changes and associated impacts.</i></p>
Community resilience and adaptation	<p>Action plans should consider community and regional vulnerabilities created by climate change. Communities should be supported through sharing of knowledge, resources and strategic investments.</p> <p><i>Revision: Goal 2 supporting action includes sharing information and approaches to support increased community resilience and adaptation.</i></p>
Climate scenario analysis	<p>A noted strength of the Strategy is its commitment to climate scenario analysis. This analysis should be prioritized to inform specific actions. It should also specifically consider implications for closure planning and reclamation.</p> <p><i>Revision: Baffinland will prioritize climate scenario analysis in its strategy implementation roadmaps and included the specific consideration for adaptation planning to cover the full mine life, including closure.</i></p>

Theme	Feedback and Revisions
Data monitoring and reporting	Enhanced focus on data monitoring and sharing. Data collection is a major source of value that Baffinland can provide; monitoring should also be Inuit-led where feasible. <i>Revision: Inclusion of data sharing within supporting action and support of Inuit-led monitoring.</i>

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland remains committed to improving energy efficiency and greenhouse gas emissions performance, and working with Nunavummiut to monitor and adapt to climate change. The path forward is based on guiding principles inclusive of transparency, collaboration and co-creation, and continual improvement. In 2024, Baffinland will work towards the development of goal- and cross-cutting-specific roadmaps in support of implementing the various supporting actions for the two-goal Climate Change Strategy. The draft actions and timeframes to be included in the internal roadmaps will likely evolve within the five-year implementation period to reflect learnings, stakeholder input, and changing internal and external conditions.

As Baffinland implements the various elements of the revised Climate Change Strategy from 2023 to 2028, Baffinland will make its approach to managing climate change publicly available, and this will include reporting performance relative to targets, once established (Appendix G.1 of Baffinland, 2023c, NIRB Registry No. 345091; Stratos, 2023). These results will be shared in future annual reports to NIRB, as well as part of the Mining Association of Canada's Towards Sustainable Mining reporting requirements through the Climate Change protocol.

Project Certificate Term and Condition No. 3

Category	Meteorology and Climate - Green House Gas Emissions
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To confirm that the Proponent is exploring and implementing concrete steps to reduce greenhouse gases.
Term or Condition	The Proponent shall provide interested parties with evidence of continued initiatives undertaken to reduce greenhouse gas emissions.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	The Proponent shall include relevant information in the Annual Report submitted to the NIRB.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Nunavut Impact Review Board (NIRB)
Reference	Climate Change Strategy (Baffinland, 2019b) Climate Change Strategy (Stratos, 2023)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

As operations progress and production increases, Baffinland has increased its efforts for exploring and implementing concrete steps towards the reduction of greenhouse gas emissions through the implementation of various initiatives. These initiatives were implemented prior to the formal development of a strategic plan aimed at reducing emissions because Project operations were still in their infancy, however they are all geared towards improving energy efficiency and greenhouse gas emissions performance.

In 2017, Baffinland established an Idling Policy to reduce unnecessary vehicle and equipment idling (BAF-PH1-830-P16-0027; Baffinland, 2017a). This was developed with the specific purpose of reducing air pollution generated as a result of Project activities. Since its inception, employees are required to follow the Idling Policy where manufacturer guidelines for warm-up periods are not readily available. Where specific manufacturing guidelines are not provided, idling times are restricted to a maximum of 10 minutes for light vehicles and 20 minutes for heavy vehicles and equipment in -20 degrees Celsius or below, and a maximum of five (5) minutes for light vehicles and 10 minutes for heavy vehicles and equipment when the ambient temperature is between 0 to -2 degrees Celsius.

From 2013 to 2017, Baffinland used solar/wind power generators to supplement energy requirements at its remote environmental monitoring sites (e.g., Bruce Head Camp). Substantial damage possibly from extreme cold prevented its use as a main energy source at Bruce Head Camp between 2019 and 2021, however both radio and Automatic Identification System relay systems continue to be powered by solar. Baffinland continues to have aspirations to explore the feasibility of incorporating alternative energy sources or enhanced energy storage capabilities that may

be suitable for the remote reality of the Project's location and reduce dependency on fossil fuels. Further action planning will be informed through the development of tailored roadmaps in support of the two (2) goal-goal Climate Change Strategy.

Baffinland developed and submitted its first Climate Change Strategy (The Strategy) to the NIRB on February 12, 2019 (Baffinland, 2019b). The Strategy included a description of the actions the Company will undertake to validate and update climate change impact predictions for the Project and the effects of the Project on climate change. Baffinland subsequently sought the external expertise of a third-party partner in June 2019 and began background work in September 2019 to help refine and elaborate the Strategy and approach for effective implementation. Refinement of the Strategy will expand on descriptions of priorities and approach to greenhouse gas emissions management, the anticipated impacts on climate change on the Project, and how Baffinland will work with Nunavummiut to adapt to climate changes in the North.

In 2021, despite some previous delays related to challenges associated with the COVID-19 Pandemic and the reprioritization of activities, Baffinland continued to build upon the foundational basis initiated in September 2019 by working through the drafting of an amended Draft Climate Change Strategy (Draft Strategy) based on its two-staged approach as initially presented in the 2019 Annual Report to the NIRB (Baffinland, 2020b). Additional details on the status of the refinement initiative is summarized as part of Methods under PC Term and Condition No. 2.

Recognizing that operations depend heavily on diesel fuel to produce energy and that emissions generated are tied directly to fuel consumption, and consistent with its objective to continually improve energy efficiency and greenhouse gas emissions performance, Baffinland completed the installation of two (2) new generators at the Mary River Mine Site to replace less fuel-efficient units in late February 2020. The site-based Power Generation and Distribution Department created in 2019 continues to bear the responsibility of overseeing power generation and distribution, which comprises, in part, the tracking of Key Performance Indicators (KPIs) on fuel/energy use, efficiencies, load factor, etc. As part of this transfer to more fuel efficient generators, tracking of fuel consumption is now implemented on a regular basis (and can be accessed daily) using an automated data collection tool. It is now possible to pull fuel consumption data directly from the engine control unit allowing to track weekly and monthly-based fuel consumption for each operating generator at the Mine Site and Milne Port to assess relative performance.

Due to reporting obligations related to the newly implemented Output-Based Pricing System (OBPS) established in mid-2019, a third-party verification of Baffinland's 2022 GHG emissions data was completed in 2023. An external verification of 2023 emissions data will occur in 2024. Results from this work will contribute towards the setting of more refined GHG short and medium term emissions targets.

As a member of the Mining Association of Canada (MAC), Baffinland also completes a self-assessment for the Energy Use and GHG Emissions protocol on an annual basis. Results from Baffinland's 2023 external verification are made publically available on the MAC website (<https://mining.ca/companies/baffinland-iron-mines-corporation/>). This protocol was revised and renamed the 'Climate Change' protocol, with the goal of driving further the performance of MAC members, and will be applicable for the 2023 reporting year.

RESULTS

As Baffinland continues to move ahead with building out specific roadmaps for its two-goal Climate Change Strategy, the Company remains committed to implementing actions leading to improving its energy efficiency and greenhouse gas emissions performance.

One of the key steps to ensuring continued improvements in energy efficiency and GHG emissions performance is to focus on improving the management of energy/fuel use consumption. This includes developing and implementing processes that allow for tracking of energy use/fuel use by type of activity or infrastructure requirement. Tracking of energy consumption requires a good understanding of how much fuel is consumed by, for example, individual components of the heavy equipment fleet and how changes may lead to efficiencies (e.g., driving practices, regular maintenance), fuel required to run generators to heat individual buildings versus those connected on same power grid, or key infrastructure components such as ore loader, crusher, and how efficiencies may be achieved through better ore handling sequencing, etc. In 2023, Baffinland installed Radio Frequency Identification (RFID) tags on equipment that use fuel and implemented a fuel management system and software that allow each Baffinland department to monitor and manage their fuel consumption.

2023 was considered a high fuel usage year for power generation, likely mainly due to below normal extreme weather conditions which required additional power. Without the new generators installed at the Mine Site, fuel use would have been higher in 2023 under these extreme conditions, as estimated for Milne Port where replacement of less efficient to more efficient generators has yet to occur. In 2023, Baffinland also prioritized running generators based on fuel efficiency, while rebuilding older engines to improve their fuel efficiency.

Fuel reduction continued to be emphasized as an important objective across all Site departments, with a number of fuel reduction initiatives implemented in 2023. Power distribution systems in parking areas known as ready lines were established which allow vehicles and equipment to be plugged in during extreme cold events, rather than having these vehicles idling. The use of frost fighters has been significantly reduced across site, replaced with more efficient electrical heaters. Permanent power distribution has also been installed in many locations to reduce the use of portable generators. A power savings initiative has also been implemented at the Mine Site and Milne Port to reduce power demand and lower fuel consumption.

Baffinland's third-party verification of its 2019 to 2022 GHG emissions were completed in years 2020 to 2023, respectively, has confirmed that the data has been accurately calculated. The external verification of 2023 emissions will be undertaken in 2024. Results from this work will feed into the finalization of the supporting action roadmaps of the two-goal Climate Change Strategy, and will contribute towards the setting of future GHG emissions targets.

As a member of the Mining Association of Canada, Baffinland also completes a self-assessment for the Energy Use and GHG Emissions protocol on an annual basis. Self-assessment scores from 2022 were externally verified in 2023 which provided an opportunity for Baffinland to evaluate its current status and identify opportunities for improvement in the coming years. Results from this external verification were considered as part of final edits to the Strategy initiative and subsequent implementation of future supporting actions.

TRENDS

Between 2015 to 2023, Baffinland increased the amount of iron ore hauled on the Tote Road by 321% from its first year of production, although GHG produced by the Project only increased by 35% (Figure 4.2).

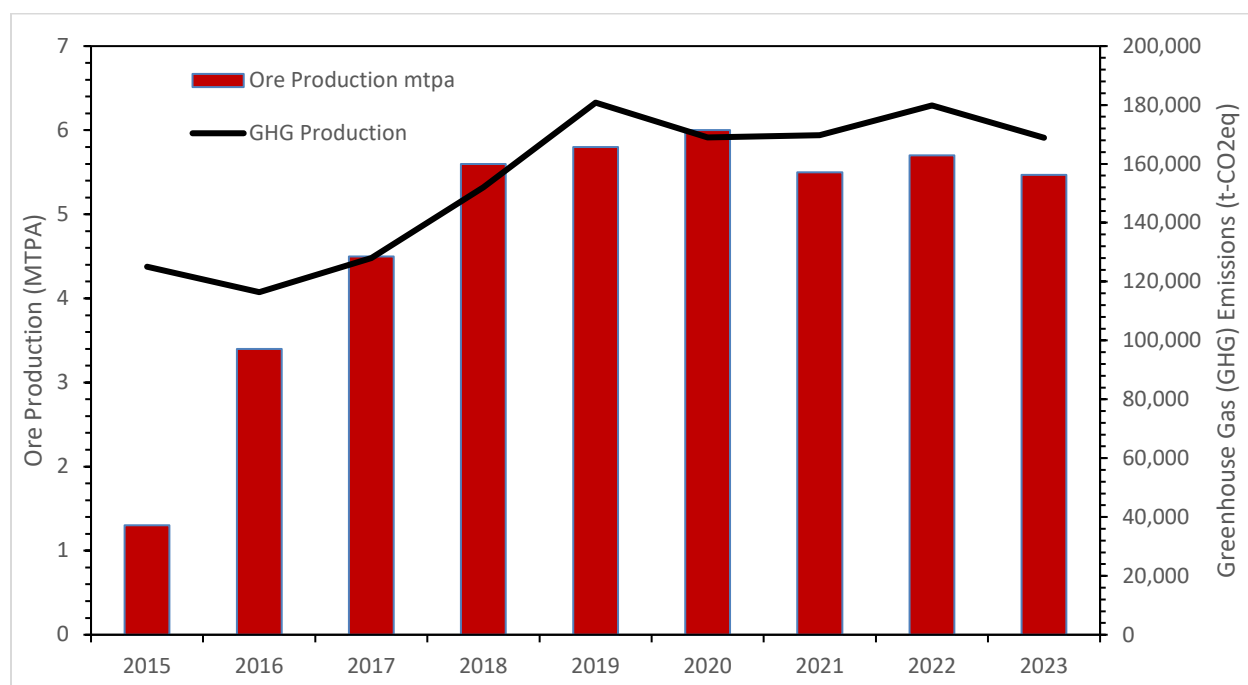


Figure 4.2: Greenhouse Gas (GHG) Emissions relative to Ore Production

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to build upon the fuel reduction efforts initiated in 2023 for continuous improvement opportunities to lower its fuel/energy use. Baffinland will continue to modify or replace equipment with more energy efficient alternatives, and where possible will evaluate the use of renewable energy sources (e.g., wind, solar) to reduce dependence on diesel fuel. Baffinland will continue to identify opportunities for energy efficiency through optimizations in the Project design and considering more energy-efficient generators for power generation all in an effort to further reduce GHG emissions. Additional initiatives will be identified, formalized and prioritized once implementation roadmaps are finalized and launched through implementation of the revised Climate Change Strategy (Stratos, 2023).

Future updates regarding Baffinland's GHG emission production and initiatives being undertaken to optimize efficiencies in energy requirements will continue to be reported in Baffinland's Annual Report to the NIRB, in addition to providing updates on the various supporting actions developed through the roadmaps as Baffinland implements the various elements including setting of targets through implementation of its revised Climate Change Strategy (Stratos, 2023).

Project Certificate Term and Condition No. 4

Category	Climate Change - Consultation on Climate
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To promote public awareness and engagement of affected groups.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Nunavut Impact Review Board (NIRB)
Reference	Climate Change Strategy (Baffinland, 2019b; Stratos, 2023)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

No specific or additional climate change related studies or research other than those already required as part of PC Term and Condition No. 5 were undertaken in 2023.

Baffinland submitted its first Climate Change Strategy (the Strategy) to the NIRB on February 12, 2019 (Baffinland, 2019b). The Strategy included a description of activities the Company will undertake to validate and update climate change impact predictions for the Project and the effects of the Project on climate change. This included, though was not limited to:

- Implementing comprehensive environmental monitoring and management programs that are based on a combination of scientific data and Inuit Qaujimajatuqangit (IQ) to safeguard the environment.

Baffinland has since refined and elaborated its Climate Change Strategy (Appendix G.1 of Baffinland, 2023c, NIRB Registry No. 345091; Stratos, 2023) and approach for effective implementation. Additional details on the efforts Baffinland undertook to amend the Climate Change Strategy is further described in PC Term and Condition No. 2.

In the newest Climate Change Strategy, one of the six guiding principles includes “Collaboration and Co-creation” to acknowledge that complex challenges like climate change require unique collaborations and partnerships to drive change (Appendix G.1 of Baffinland, 2023c, NIRB Registry No. 345091; Stratos, 2023). Accordingly, supporting actions identified as part of Goal 2, “Monitor Changes in Climate and Associated Risks to Inform Adaptation and Closure Strategies”, include the pursuit of collaborations to undertake Inuit-led monitoring of climate changes and associated impacts. This supporting action was well received by those interviewed during external engagement efforts.

It is noted that as Baffinland continues to collect and report data on climate-related metrics such as temperature, precipitation, and ice concentration data at start and end of shipping season, that additional information may be identified of importance through future external engagement efforts and considered for integration into future action planning. Results from these efforts will help to guide future participation of Inuit from affected communities and other communities in Nunavut when undertaking climate-change related studies and research as identified through the development of roadmaps showing specific action plans.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

As Baffinland implements its roadmaps established under the newly revised Climate Change Strategy (Appendix G.1 of Baffinland, 2023c; NIRB Registry No. 345091; Stratos, 2023), updates regarding the status of these activities, including consultation/collaborating with Inuit communities and identifying opportunities to integrate the participation of Inuit into climate change studies, will be provided in future relevant updates in the Annual Report to the NIRB.

Project Certificate Term and Condition No. 5

Category	Meteorology and Climate - Weather Monitoring Data
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To provide families of employees with up-to-date information.
Term or Condition	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.
Relevant Baffinland Commitment	5
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Not applicable
Reference	Baffinland Corporate Website
Ref. Document Link	https://www.baffinland.com/operation/mary-river-mine/

METHODS

Baffinland ensures that weather-related information is publicly accessible for the Mary River Project by posting current weather information on the Baffinland website (www.baffinland.com) by selecting the “+ Operation>Mary River Mine”. Weather-related information is pulled onto its website from the publicly available website, www.weathernetwork.com, for the two weather stations, Mary River (Mine Site) and Milne Inlet.

RESULTS

Weather-related information for Project sites is publicly available.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to provide weather-related information on publicly available websites for all active Project sites.

Project Certificate Term and Condition No. 6

Category	Meteorology and Climate – Emissions
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To provide feedback on the Project's emissions.
Term or Condition	The Proponent shall provide the results of any emissions calculations conducted to determine the level of sulphur dioxide (SO ₂) emissions, nitrogen oxide (NO _x) emissions and greenhouse gases generated by the Project using fuel consumption or other relevant criteria as a basis.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be included in the Annual Report submitted to the NIRB.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Not applicable
Reference	Technical Guidance on Reporting Greenhouse Gas Emissions (ECCC, 2016) National Inventory Report 1990–2015: Greenhouse Gas Sources and Sinks in Canada (ECCC, 2017) Environment and Climate Change Canada's GHG Emissions Reporting Program (ECCC, 2019, 2020, 2021, 2022, 2023) 2006 IPCC Guidelines for National Greenhouse Gas Inventories (IPCC, 2006) Baffinland's Climate Change Strategy (Stratos, 2023) 2022 Annual Report to the Nunavut Impact Review Board (Baffinland, 2023c)
Ref. Document Link	Not applicable

METHODS

Baffinland used guidance documents provided by Environment and Climate Change Canada (ECCC, 2016; 2017, 2019; 2020, 2021, 2022, 2023) and the Intergovernmental Panel on Climate Change (IPCC, 2006) along with published emission factors to estimate the Project's annual Greenhouse Gases (GHG), SO₂ and Nitrogen Oxide (NO_x) emissions. Annual emissions were calculated based on on-site fuel consumption and waste management at the Project.

Baffinland continues to report annual emissions to ECCC through the National Pollutant Release Inventory (NPRI) and GHG reporting programs.

RESULTS

Baffinland's 2023 annual emissions for GHGs, SO₂ and NO_x are presented in Table 4.5.

Table 4.5: Calculated 2023 Project Gaseous Emissions

Gaseous Emission	Units	Calculated Emissions
GHG	t-CO ₂ eq	168,888
SO ₂	t (SO ₂)	13
NO _x	t (NO ₂)	3,702

TRENDS

Total gaseous emissions have decreased slightly from 183,949 tonnes in 2022 to 172,603 tonnes in 2023. When compared to FEIS predictions, Baffinland's 2023 total Scope 1 gaseous direct emissions from equipment owned or controlled by the company are below FEIS predicted emissions estimates. Annual GHG, SO₂ and NO_x emissions relative to ore production from 2015 to 2023 are shown on Figure 4.3.

RECOMMENDATIONS / LESSONS LEARNED

The implementation of the Climate Change Strategy (Appendix G.1 of Baffinland, 2023c, NIRB Registry No. 345091; Stratos, 2023) and transition to a rail based ore haulage Project remain critical to Baffinland's emission reduction objectives.

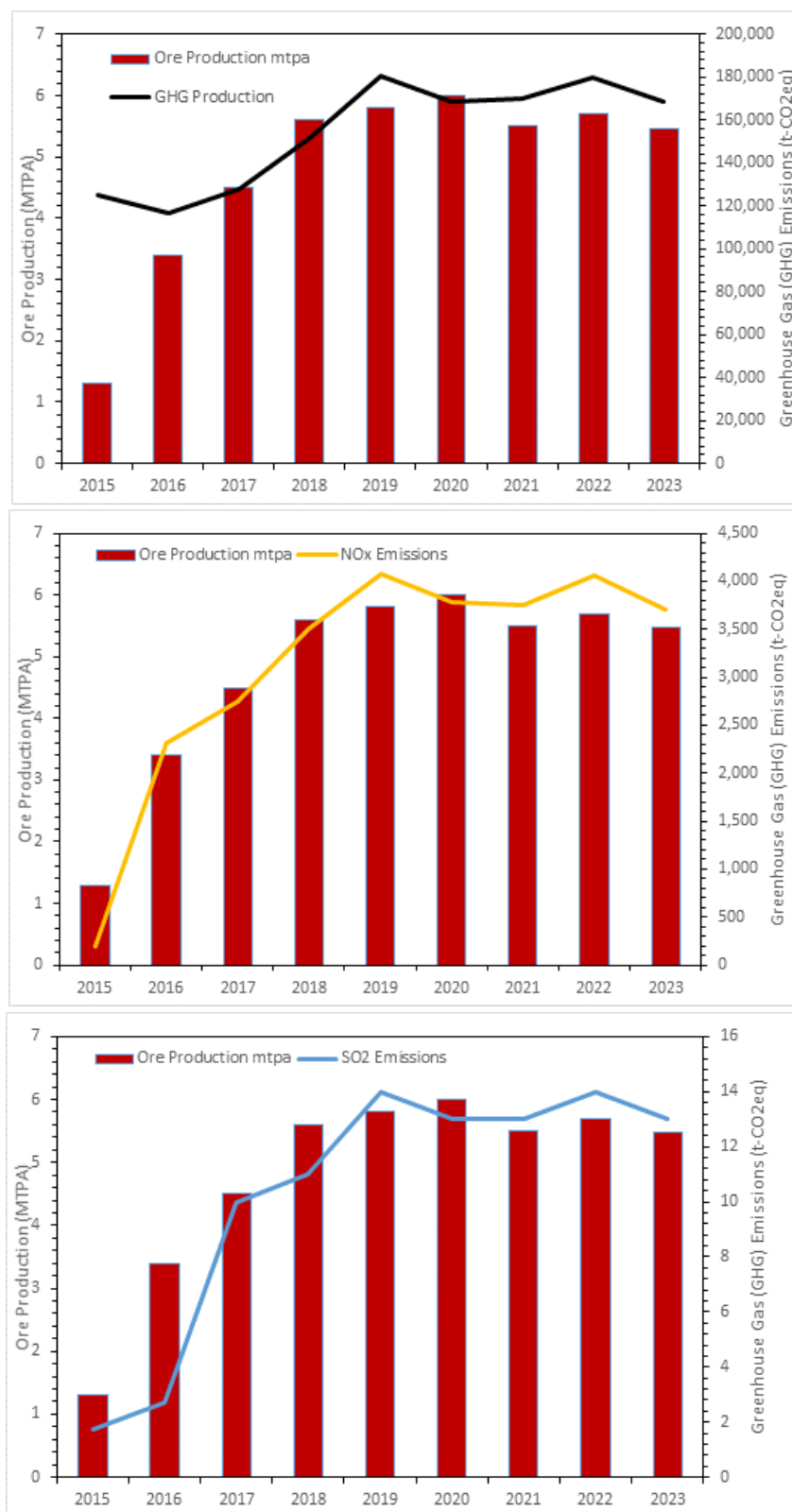


Figure 4.3: Greenhouse Gas (GHG), SO₂ and NO_x Emissions relative to Ore Production

4.6.2 Air Quality (PC Terms and Conditions 7 through 12)

Six (6) PC Terms and Conditions relate to the potential impacts of the Project on air quality, including calculations of total Project emissions from fuel consumption and gaseous monitoring.

Inuit & Stakeholder Feedback

During review of the FEIS and FEIS Addendum, communities and regulators expressed concerns focused on dust, including dustfall and potential impacts to soil, vegetation and forage to caribou. The focus of stakeholder feedback on dustfall and potential impacts on soil, vegetation and wildlife, along with several years of exceedances of the predicted levels for dustfall presented in the FEIS, has prompted Baffinland to implement additional dust mitigation measures described in the updates to PC Term and Condition No. 10 and 58c. Concerns about dust were expressed several times during 2023 consultation activities, mostly in relation to the Sustaining Operations Proposal process, with regards to current operations (Appendix B.1). As a direct result of concerns regarding the extent of dust, particularly at Milne Port, Baffinland began an investigation to evaluate additional mitigation measures that could be implemented at the ore stockpiles and identified a crusting agent (DusTreat®) for trial implementation in 2020, with the objective of reducing the generation of wind blown fugitive dust. In 2022, Baffinland moved forward with a third-party audit of current and future dust sources across the Project with the intent to evaluate and propose control improvements. The third party auditor worked directly with a Dust Audit Committee, formed by Inuit representatives from the five (5) North Baffin communities, who are both guiding and contributing to the audit. A final report from the Dust Audit Committee was received in February 2023. During 2023, Baffinland undertook several initiatives, including the implementation of additional dust monitoring, conducting quantitative assessments of dust mitigations, and completing feasibility studies with a goal of addressing the recommendations from the Dust Audit Committee.

Monitoring Activities

Table 4.6 provides a summary of air quality effects, monitoring completed in 2023, and an evaluation of impacts relative to the predictions presented in the FEIS and FEIS Addendum (Baffinland, 2012; 2013a).

Table 4.6: Air Quality Impact Evaluation

Component	Effect	Monitoring Program	Impact Evaluation
Incineration of combustible non-hazardous wastes	Release of air contaminants, including particulate matter, carbon monoxide (CO), mercury, dioxins, furans	Results of stack testing completed in 2023 demonstrated exceedances of the in-stack standards for dioxin/furan parameters compared to the Canadian Council of Ministers of the Environment (CCME) Canada-Wide Standards (CWS) at one (1) of the two (2) operating incineration units at the Project; likely due to test waste load composition, while commissioning of the units in 2013 demonstrated compliance with the applicable standards. Regular stack testing of operating incineration	Air quality limits should be met under normal operating conditions and appropriate use of incineration units. Corrective actions include emphasis on ensuring incinerator waste loads for future test burns are constructed as per design for each incineration unit to ensure representative test conditions.

Component	Effect	Monitoring Program	Impact Evaluation
		units is required to demonstrate and confirm emissions standards are met.	
Release of air contaminants from mobile and stationary equipment due to fuel combustion	Increased concentrations of total suspended particulate (TSP), sulphur dioxide (SO ₂), nitrogen dioxide (NO ₂), carbon monoxide (CO) and Potential Acidic Input (PAI)	Continuous NO ₂ and SO ₂ monitoring was conducted at Milne Port and the Mine Site throughout 2023.	2023 air quality monitoring for SO ₂ and NO ₂ were within Nunavut Ambient Air Quality Standards (NAAQS) and FEIS predictions.
Earthworks, mining, hauling, stockpiling and transfer of ore	Ore handling and transport, including wheel entrainment from haulage of ore	Monitoring showed that although dustfall exceeded FEIS predictions at select locations, in general, total annual dustfall across the Project area in 2023 was lower than observed in previous years. These results demonstrate the ongoing effectiveness of reducing dust generation from crushing and ore stockpiling, and Tote Road traffic, despite increases in the production level at the Project and the volume of Tote Road traffic.	Monitoring showed that although dustfall exceeded FEIS predictions at select locations, in general, total annual dustfall across the Project area in 2023 was lower than observed in previous years. Dust does not appear to be having measurable impacts in other environmental media (freshwater quality, vegetation, etc.)
Haulage of ore and other traffic on the Tote Road	Particulate matter emissions and dustfall from wheel entrainment	Monitoring showed that although dustfall exceeded FEIS predictions at select locations, in general, total annual dustfall across the Project area in 2023 was within the ranges observed in previous years. These results demonstrate the ongoing effectiveness of reducing dust generation from crushing and ore stockpiling, and Tote Road traffic, despite increases in the production level at the Project and the volume of Tote Road traffic.	Monitoring showed that although dustfall exceeded FEIS predictions at select locations, in general, total annual dustfall across the Project area in 2023 was within the ranges observed in previous years. Dust does not appear to be having measurable impacts in other environmental media (freshwater quality, vegetation, etc.)

Baffinland continues to evaluate and report on dustfall through its approved dustfall monitoring program at the Mine Site, Milne Port, and Tote Road, including at additional monitoring stations deployed in 2019 and 2021. In 2021, fourteen (14) new dustfall monitoring stations were installed: four (4) additional monitors at Milne Port to better characterize dustfall near Milne Port. Following the rejection of the Phase 2 application and associated

railway, and the completion of a Passive Dustfall Sample Height Pilot Study (Appendix F of EDI, 2024a) four (4) monitors along the section of the proposed Phase 2 railway that departs the Tote Road (approximately between KM 63-80) and six (6) dustfall monitors installed to collect dust at 0.5 m — ‘short’ monitors were recommended for removal from the monitoring program in 2023. Baffinland did not receive any feedback from the TEWG with regards to removing the 0.5m monitors and therefore has removed these from the program.

- Baffinland has worked diligently towards decreasing dust generated by wheel entrainment across the Project Sites, specifically reducing dust generation from ground surfaces by applying water and/or chemical suppressants such as calcium chloride to road surfaces and site layouts during summer conditions. In 2023, Baffinland conducted a detailed evaluation of the efficacy of calcium chloride and DUST/BLOKR®. The results of this focused evaluation determined that DUST/BLOKR®, when applied as per the manufacturer’s recommendations is not suitable for use on the Tote Road as it did not perform well in terms of dust reduction even after repeated maintenance applications, and caused rapid degradation of the road’s running surface as compared to the calcium chloride treated section of road. Baffinland will continue to investigate alternative methods for dust suppression on the Tote Road. Baffinland’s effort with respect to the application of dust suppressants on the Tote Road are documented in the 2024 Terrestrial Environment Annual Monitoring Report (EDI, 2024a).

Path Forward

The company will also continue to evaluate opportunities to further mitigate dustfall on the Project and implement adaptive management that considers feedback from communities, monitoring data, and available and novel mitigation measures. Baffinland is placing focus on additional methods to address dustfall concerns following review of the results of the third-party, community-driven Dust Audit and look to continue to implement preliminary and final recommendations from the Audit throughout 2024, as applicable. As per the amended Project Certificate issued by the NIRB in 2023 (NIRB, 2023b), Baffinland is committed to resourcing this third party dust audit annually and is responsible for sharing the results of the dust audit with the NIRB by January 31st of each calendar year, in accordance with Term and Condition No. 187. Additionally, Baffinland has worked jointly with QIA to establish a program to identify high risk conditions for dust dispersal and plan for additional mitigation measures in order to satisfy the requirements of PC Term and Condition No. 188. Additionally, commitments related to dust mitigation efforts are outlined in Appendix B of the amended Project Certificate No. 005 (NIRB, 2023b). Required reporting on each PC Term and Condition related to air quality is presented in the next several pages. Dustfall monitoring is described in more detail in Section 4.6.8 (PC Term and Condition No. 58, Item c).

Project Certificate Term and Condition No. 7

Category	Air Quality – Monitoring
Responsible Parties	The Proponent
Project Phase(s)	Construction and Operations
Objective	To provide feedback on the Project's emissions.
Term or Condition	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 SO ₂ and NO ₂ 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.
Relevant Baffinland Commitment	57, 61, 62
Reporting Requirement	The updated plan shall be provided to the NIRB for review and comment at least 60 days prior to commencement of construction activities.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	Not applicable
Reference	Air Quality and Noise Abatement Management Plan (AQNAMP; Baffinland, 2021a) 2023 Air Quality, Dustfall and Meteorology Report (Stantec, 2024)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.2.1

METHODS

Continuous ambient air quality monitoring equipment was set up at Milne Port and the Mine Site to monitor sulphur dioxide (SO₂) and nitrogen oxides (NO_x) levels at Project sites in 2014. Continuous ambient air quality monitoring commenced in November 2014 and continued throughout 2015. Monitoring throughout 2015 concluded that all results were well below the Government of Nunavut (2011a) Nunavut Ambient Air Quality Standards (NAAQS), resulting in the discontinuation of the monitoring program in 2016. To ensure compliance with Project Certificate Term and Condition No. 7 and collect additional data over multiple shipping seasons, the monitoring program resumed at Milne Port in March 2017 and at the Mine Site in November 2017; both programs are still in place. Results of the monitoring conducted in 2023 were compared to the NAAQS (Government of Nunavut, 2011a).

The Air Quality and Noise Abatement Management Plan (AQNAMP) was updated in April 2021 (Baffinland, 2021a). An update to the AQNAMP was submitted to the NIRB in Q2 of 2023 in draft, for public comment prior to finalization (Baffinland, 2023d).

RESULTS

Results of the monitoring conducted in 2023 are presented in the 2023 Annual Air Quality, Dustfall and Meteorology Report (Stantec, 2024) in Appendix G.2.1. The measured concentrations of NO₂ and SO₂ at the Mine Site Complex and Port Site Complex were below the NAAQS for 2023.

TRENDS

Ambient air quality data were collected at two (2) Baffinland sites (Mine Site Complex and Port Site Complex). NO₂ and SO₂ data were compared to previous years' data as provided by Stantec in the 2023 Annual Air Quality, Dustfall and Meteorology Report (Stantec, 2024; Appendix G.2.1). Consistent with historical trends, the 2023 measured concentrations of NO₂ and SO₂ at Mine Site Complex and Port Site Complex were highest in the winter and lowest in the summer.

Refer to the 2023 Annual Air Quality, Dustfall and Meteorology Report (Stantec, 2024; Appendix G.2.1) for a complete discussion of monitoring information and associated trends.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to monitor SO₂ and NO₂ levels at Milne Port and the Mine Site during 2023. Air quality monitoring at Steensby Port will be implemented when Steensby Port is developed and shipping activities commence.

Project Certificate Term and Condition No. 8

Category	Air Quality - Greenhouse Gas Emissions
Responsible Parties	The Proponent
Project Phase(s)	Construction and Operations
Objective	To provide feedback on the Project's emissions.
Term or Condition	The Proponent shall demonstrate through monitoring of air quality at the mine site and at the Steensby Inlet and Milne Inlet port sites that SO ₂ and NO ₂ 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.
Relevant Baffinland Commitment	61
Reporting Requirement	To be included in the Proponent's annual reporting to the NIRB.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	None
Reference	Air Quality and Noise Abatement Management Plan (AQNAMP; Baffinland, 2021a) 2023 Air Quality, Dustfall and Meteorology Report (Stantec, 2024)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.2.1

METHODS

Continuous ambient air quality monitoring equipment was set up at Milne Port and the Mine Site to monitor sulphur dioxide (SO₂) and nitrogen oxides (NO_x) levels at Project sites in 2014. Continuous ambient air quality monitoring commenced in November 2014 and continued throughout 2015. Monitoring throughout 2015 concluded that all results were well below the Government of Nunavut (2011a) Nunavut Ambient Air Quality Standards (NAAQS), resulting in the discontinuation of the monitoring program in 2016. To ensure compliance with related Project Certificate Term and Condition No. 7 and collect additional data over multiple shipping seasons, the monitoring program resumed at Milne Port in March 2017 and at the Mine Site in November 2017; both programs are still in place. Results of the monitoring conducted in 2023 were compared to the NAAQS. Results were also compared to the Canadian Ambient Air Quality Standards (CAAQS, 2020) for comparison purposes only. The CAAQS were developed by the Canadian Council for the Ministers of the Environment (CCME) to manage air emissions and ambient air quality concentrations in a regional air shed; CAAQS are not intended to determine ambient air quality compliance at the fence line (i.e. at the Project Development Area (PDA) boundary) for an industrial facility.

RESULTS

Results of the monitoring conducted in 2023 are presented in the 2023 Annual Air Quality, Dustfall and Meteorology Report (Stantec, 2024) in Appendix G.2.1. The measured concentrations of NO₂ and SO₂ at the Mine Site Complex and Port Site Complex were below the Nunavut Ambient Air Quality Standards (NAAQS) for 2023.

TRENDS

Ambient air quality data were collected at two (2) Baffinland sites (Mine Site Complex and Port Site Complex). NO₂ and SO₂ data were compared to previous years' data as provided by Stantec in the 2023 Annual Air Quality, Dustfall and Meteorology Report (Stantec, 2024; Appendix G.2.1). Consistent with historical trends, the 2023 measured concentrations of NO₂ and SO₂ at Mine Site Complex and Port Site Complex were highest in the winter and lowest in the summer.

Refer to the 2023 Air Quality, Dustfall and Meteorology Report (Stantec, 2024; Appendix G.2.1) for a complete discussion of monitoring information and associated trends.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to monitor SO₂ and NO₂ levels at Milne Port and the Mine Site during 2023. Air quality monitoring at Steensby Port will be implemented when Steensby Port is developed and shipping activities commence.

Project Certificate Term and Condition No. 9

Category	Air Quality - Greenhouse Gas Emissions
Responsible Parties	The Proponent
Project Phase(s)	Construction and Operations
Objective	To provide feedback on the Project's emissions.
Term or Condition	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.
Relevant Baffinland Commitment	57
Reporting Requirement	To be included in the Proponent's annual reporting to the NIRB.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	Not applicable
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Refer to PC Term and Condition No. 6. Reporting on PC Term and Condition No. 6 provides information on calculations of greenhouse gas emissions as required under PC Term and Condition No. 9."

RESULTS

Refer to PC Term and Condition No. 6. Reporting on PC Term and Condition No. 6 provides information on calculations of greenhouse gas emissions as required under PC Term and Condition No. 9."

Table 4.7: Calculated 2023 Project Greenhouse Gas Emissions

Gaseous Emission	Units	Calculated Emissions
GHG	t-CO ₂ eq	168,888

TRENDS

Refer to PC Term and Condition No. 6. Reporting on PC Term and Condition No. 6 provides information on calculations of greenhouse gas emissions as required under PC Term and Condition No. 9."

RECOMMENDATIONS / LESSONS LEARNED

Refer to PC Term and Condition No. 6. Reporting on PC Term and Condition No. 6 provides information on calculations of greenhouse gas emissions as required under PC Term and Condition No. 9.”

Project Certificate Term and Condition No. 10

Category	Air Quality - Dust Management and Monitoring Plan
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To prevent impacts to air quality from dust dispersion.
Term or Condition	<p>The Proponent shall update its Dust Management and Monitoring Plan to address and/or include the following additional items:</p> <ol style="list-style-type: none"> Outline the specific plans for monitoring dust along the first few kilometres of the rail corridor leaving the Mary River mine site. 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. 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. 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. The Proponent shall implement its Dust Management and Monitoring Plan, report all monitoring data to the NIRB annually, and take all adaptive management measures described in its Dust Management and Monitoring Plan if monitoring indicates that dust in the ambient air or dust deposition from the increased traffic associated with the increased volume of ore being shipped is greater than initially predicted.
Relevant Baffinland Commitment	2, 57
Reporting Requirement	To be provided to the NIRB for review and comment at least 60 days prior to commencement of construction activities.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Nunavut Water Board, Nunavut Impact Review Board, Qikiqtani Inuit Association, Indigenous and Northern Affairs Canada, Environment and Climate Change Canada
Reference	<p>Air Quality and Noise Abatement Management Plan (AQNAMP; Baffinland, 2021a)</p> <p>Roads Management Plan (Baffinland, 2020c)</p> <p>Dust Mitigation Action Plan (Golder, 2016a)</p> <p>2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)</p>
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

Dust management and monitoring were incorporated into the Air Quality and Noise Abatement Management Plan (AQNAMP) and the Roads Management Plan (RMP) before starting construction. Dust monitoring and mitigation measures continued to be implemented in 2023 at the Mine Site, Milne Port, and along the Tote Road. In 2021, fourteen (14) new dustfall monitoring stations were added to the existing monitoring program, four (4) additional monitors at Milne Port to better characterize dustfall near Milne Port; four (4) new monitors along the section of the proposed Phase 2 railway that departs the Tote Road right-of-way (ROW) to define baseline conditions; and, in response to a request from the QIA and the TEWG, six (6) dustfall monitors installed to collect dust at 0.5 m — ‘short’ monitors as a pilot study to investigate the variability between dustfall sampling at the standardized height of 2.0 m and that closer to ground level. The four (4) along the Phase 2 railway and the 6 “short” monitors were removed from the program in 2023.

The AQNAMP was last updated in April 2021, although an update was submitted to the NIRB in May, 2023 for public review. Following this public review period, Baffinland will present the revised version at the end of Q2 working with the QIA to address additional comments after which the will be finalized for submission. A high-level summary of modifications for each Management Plan is provided in Appendix G.8 – Management Plan Status.

Dust suppression activities occurred along the Tote Road from late June through early September when non-freezing conditions allowed the safe use of dust suppressants on the road. Suppression consisted of seasonal application of water, calcium chloride and DUST/BLOKR® to the road surface. Approximately 105,069 m³ of water and 154,400 kg of calcium chloride was applied to the Tote Road at various locations throughout the summer. Also, Baffinland conducted a detailed evaluation of the efficacy of calcium chloride and DUST/BLOKR® from July 15 to August 31, 2023. Calcium chloride was applied to a section of the Tote Road from KM 91 to KM 97, on July 20 and August 7, while DUST/BLOKR® was applied on a section of the Tote Road from KM 97 to KM 100 on July 15, 17, 19 and August 1. The results of this focused evaluation determined that DUST/BLOKR®, when applied as per the manufacturer’s recommendations is not suitable for use on the Tote Road as it did not perform well in terms of dust reduction even after repeated maintenance applications, and caused rapid degradation of the road’s running surface as compared to the calcium chloride treated section of road. Baffinland will continue to investigate alternative methods for dust suppression on the Tote Road. Baffinland’s effort with respect to the application of dust suppressants on the Tote Road are documented in the 2023 Terrestrial Environment Annual Monitoring Report (TEAMR; EDI, 2024a).

In November 2020, Baffinland began a pilot project to apply a crusting agent (DusTreat®) to stockpiles at Milne Port to address wind generated dust from the ore stockpiles. Baffinland continued to apply DusTreat® throughout 2021-2023, in addition to continuing other mitigation measures such as shroud covers and continuous monitoring of conveyor drop heights.

Baffinland is implementing mitigations to decrease dust associated with ore crushing and loading activities. In 2023, DusTreat® dust suppressant was applied to the ‘C’ ore feed on June 14, July 16 to 20, July 21 to 22, and December 3 to 15, 2023. Qualitative observations determined that applying DusTreat® to the crusher ore feed successfully decreased ambient dust in the crusher area up to and including loading the ore into B-trains for transport to Milne Port. Given the initial success of this trail, Baffinland intends to expand the treatment capacity at the crusher and will continue with observations on the effect of the application of DusTreat® on dust reduction across the material handling chain in 2024. The inspection, maintenance and monitoring of previously installed dust mitigation equipment (i.e. dust shrouds and hoods) at the Crusher Facility was integrated into the equipment inspection and maintenance planning process in 2020. The integration of dust mitigation equipment maintenance into the equipment inspection and maintenance planning process has improved the availability of that equipment.

Finally, to address concerns from the MHTO that passive dustfall sampling and reporting did not provide a visual of what the dustfall looks like on the ground, a satellite imagery analysis was conducted again in 2023 to assess winter dustfall extent around the Project from 2014 to 2023. Dustfall extent and relative magnitude were extracted from Landsat and Sentinel-2 satellite images collected between mid-March and mid-May using the reflective differences between dust and snow within an area greatly expanded from the 20 Km buffer of the Project Development Area (PDA) used in 2021 reporting.

RESULTS

Discussion on dustfall monitoring, including the analysis of satellite imagery and results are included in Section 8 of the 2023 TEAMR (EDI, 2024a).

TRENDS

Refer to Section 8 of the 2023 TEAMR (EDI, 2024a) for Project dustfall monitoring information and associated trends.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland is committed to continuous improvement in its work activities to reduce risks to the environment and improve operational effectiveness. The strategy employed by Baffinland is regular monitoring supported by operational change and the adoption of other mitigating measures as warranted. Baffinland regularly conducts and documents management reviews of the AQNAMP. Such reviews will ensure that monitoring results for the AQNAMP are integrated with other aspects of the Project, and that necessary adjustments are implemented as required.

During the 2024 dust suppression season, Baffinland will increase monitoring of effectiveness of dust mitigations, including the use of water trucks on the Tote Road dust suppression. Baffinland is reviewing monitoring systems to inform the timing and frequency of dust suppression application. Baffinland will be trialing different early notification methods to identify increasing dust levels on the Tote Road. Examples include establishing a communication protocol between drivers and Site Dispatch, and implementing a guideline for identifying high risk conditions for dust suppression, based on a variety of conditions, including weather.

- In 2023, Baffinland completed a trial of DUST/BLOKR®, monitoring its effectiveness and determined it is not suitable for continued use along haul roads on site. Baffinland determined that calcium chloride performs much better in terms of dust mitigation as well as road stability. Baffinland will also continue to apply DusTreat®, as per the application techniques and dosage calculations provided by the manufacturer, at sections of Milne Port stockpiles are formed throughout the year.

Baffinland is placing focus on additional methods to address dustfall concerns following review of the results of the third-party, community-driven Dust Audit, including:

- Reviewing dust mitigation options at all locations where ore is moving or being handled at the Mine Site and Milne Port to determine effectiveness and to establish operational targets for dust reduction (for example the use of DusTreat® during crushing to reduce dust emissions during multiple handling steps).
- Baffinland will continue with a number of projects to fully consider the 2023 Dust Audit Report (Nunami Stantec, 2023) suggestions with assessment/implementation of accepted recommendations from the independent Dust Audit at the earliest opportunity. As per the amended Project Certificate No. 005 issued by the NIRB in 2023 (NIRB, 2023a), Baffinland is committed to resourcing this third party dust audit annually

and is responsible for sharing the results of the dust audit with the NIRB no later than January 31st of each calendar year, in accordance with Term and Condition No. 187.

- Baffinland has provided a program to identify high risk conditions for dust dispersion, based on numerous site conditions, including weather. Baffinland has developed weather-specific measures after further review of 2023 independent Dust Audit Report (Nunami Stantec, 2023), and subsequent discussions with the TEWG. Baffinland worked jointly working with QIA to establish a program to identify high risk conditions for dust dispersal and plan for additional mitigation measures in order to satisfy the requirements of PC Term and Condition No. 188. This program is included in Appendix G.5.3. Additionally, commitments related to dust mitigation efforts are outlined in Appendix B of the amended Project Certificate No. 005 (NIRB, 2023a).

Project Certificate Term and Condition No. 11

Category	Air Quality - Incineration Management Plan
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate impacts to air quality from incineration activities.
Term or Condition	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 (EC, 2010).
Relevant Baffinland Commitment	57
Reporting Requirement	Updated Incineration Management Plan to be provided to the NIRB at least 60 days prior to the commencement of construction activities.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Nunavut Impact Review Board
Reference	Waste Management Plan (Baffinland, 2024d) Incinerator Operation Procedure (see Waste Management Plan)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.8.2

METHODS

An Incineration Management Plan is presented in Section 4.5 of the Waste Management Plan (Baffinland, 2024d). Environment Canada's (EC) Technical Document for Batch Waste Incineration (EC, 2010) was considered during the development of the Incineration Management Plan, which meets the recommendations outlined by ECCC.

RESULTS

Baffinland adheres to the six-step process for batch waste incineration as outlined in the EC's Technical Document (EC, 2010), including conducting periodic waste stream audits and waste sorting for the dual chamber incinerators, which are installed at both the Mine Site and Milne Port.

In addition to ongoing employee education, routine inspections of Project facilities operations are completed with a focus on waste volume, composition and overall conformance to the Project's Waste Sorting Guidelines which are regularly reviewed (Baffinland, 2021b).

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 12

Category	Air Quality – Incineration
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To mitigate impacts to air quality from incineration activities.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	Stack test results to be reported to the NIRB and Environment Canada annually as required.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Environment and Climate Change Canada, Nunavut Impact Review Board
Reference	Waste Management Plan (Baffinland, 2024d)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.8.2

METHODS

Stack testing was conducted on the Mine Site and Milne Port incinerators when commissioned in 2013, as required by PC Term and Condition No. 12. As part of ongoing operations, Baffinland conducts periodic monitoring of the dual chamber incinerator operation data. This data can be utilised to determine if the incinerators are operating to original specifications. Data includes operational temperature data, burn cycle times, and bottom residual ash composition results. In addition, consistent with the Canadian Council of Ministers of the Environment (CCME), Canada Wide Standards (CwS) for mercury emissions, and the CCME-CwS for dioxins and furans, follow up incinerator stack tests will be completed every year for dioxins, furans and mercury for all Project incinerator units incinerating more than 26 tonnes of waste per year to confirm Project incinerators continue to remain within the applicable air emission standards. Follow up stacks tests will be completed every five (5) years for dioxins, furans and mercury at Project incinerators that burn less than 26 tonnes of waste per year.

RESULTS

Confirmatory stack testing required to verify emissions standards continue to be met was completed in 2023 on the existing Mine Site and Milne Port incineration units. The Mine Site incineration unit test results showed emission concentrations below the CCME-CwS for dioxins and furans. The Milne Port incineration unit test results showed emission concentrations below the CCME-CwS for dioxins and furans for the first test but exceeded for the second and third tests and also exceeded the standard for the average of the three (3) tests. On the second test, a substantial quantity of oily rags was included in the waste added to the incineration unit which may have impacted the emissions for the second and third tests which exceeded the dioxin and furan criteria. Consistent with previous testing for

mercury, both the Mary River and Milne Port incineration units showed consistently low mercury emission concentrations below the CCME-CwS for mercury.

Baffinland updated the Project's Waste Management Plan (BAF-PH1-830-P16-0028) in 2022 for consistency with the CCME-CwS criteria for dioxins, furans, and mercury which require annual stack testing for incinerator units incinerating more than 26 tonnes of waste per year. Results of the incineration unit stack tests conducted in 2023 are presented in the 2023 Incinerator Stack Testing Report (WSP, 2023a) in Appendix G.2.2.

TRENDS

Baffinland has noted that the residual bottom ash generated by the dual chamber incineration process rarely exceeds the guidelines outlined in the Environmental Guideline for Industrial Waste Discharges into Municipal Solid Waste Facilities (GN, 2011b). Any exceedances are reported in the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024d). In 2023, all ash samples were below the threshold values for monitored parameters in sampling and/or confirmatory sampling with the exception of one (1) ash sample from Milne Port which was placed in temporary storage for subsequent offsite disposal. These results suggest that the incinerators are generally operating as commissioned.

It is noted that the results of stack testing completed in 2019 and 2020 demonstrated exceedances of the in-stack standards for dioxin/furan parameters, while commissioning of the units in 2013 demonstrated compliance with the applicable standards. Testing conducted in 2022 confirmed that corrective actions previously put in place have been effective for operating incineration units at the Mine Site and Milne Port. Testing conducted in 2023 continued to confirm effective performance of the operating incineration units at the Mine Site and Milne Port, with the exception of testing for dioxin and furan emissions concentrations at the Milne Port incineration unit, which exceeded the CCME-CwS in two (2) of the three (3) tests. These two (2) tests were likely affected by the addition of substantial oily rags to the waste load. Additional testing will continue to be conducted annually as required to demonstrate ongoing compliance with applicable emissions standards. Emphasis will be placed on ensuring test burns during future stack testing programs are constructed with the specific amounts of different wastes for the incineration unit design, and optimal waste quantity, as per Baffinland's Incinerator Operations Procedure to ensure test conditions are representative of typical incineration unit waste load design. An additional incinerator installed at Milne Port to support 380-Person Camp infrastructure has not been commissioned due to the results of initial and follow-up stack testing. There is no immediate need for the increased incineration capacity this incinerator would offer, however additional stack testing will be completed to confirm emissions standards are being met prior to operation of 380-Person Camp incinerator unit, if the additional capacity is required.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to conduct annual stack testing for all Project incinerators that incinerate more than 26 tonnes of waste per year and report results to demonstrate and confirm emissions standards are met. Future stack testing programs will continue to include testing for mercury emissions in addition to dioxins and furans and will be scheduled to be conducted prior to the onset of winter weather conditions to ensure favourable conditions for completion of testing requirements. Focus will be placed on ensuring incineration unit waste loads for test burns are constructed as per design for each incineration unit to ensure representative test conditions. Baffinland will also continue to monitor the incinerator operational and residual bottom ash data to identify changes in operational effectiveness

4.6.3 Noise & Vibration (PC Terms and Conditions 13 through 15)

Five (5) PC Terms and Conditions (including No. 13, 14, 14a, 14b and 15) relate to the potential impacts of the Project on noise and vibration.

Inuit & Stakeholder Feedback

Noise and vibration effects to fish and marine mammals as a result of site works was identified as a potential impact during the regulatory process. This was subsequently reflected in *Fisheries Act* Authorizations issued for the Project. Additionally, concern over noise and vibration levels at the accommodation facilities was identified as an issue for consideration for the health and safety of Project employees. Accordingly, Baffinland made several enhancements to improve noise levels near the accommodation facilities in 2018; a new 800-person camp (Sailivik Camp) was established at a different location, between the mine infrastructure area and Sheardown Lake. Additionally, through the TEWG, the potential for noise disturbance to impact wildlife interacting with the Project was raised as an issue that required monitoring to confirm FEIS predictions. A 2020 noise monitoring program was implemented in response to this, and subsequent monitoring was completed during the 2022 field season. The results of the 2022 noise monitoring program were outlined in Section 7 of the 2022 Terrestrial Environment Annual Monitoring Report (TEAMR; EDI, 2023).

Monitoring Activities

In August and November 2023, accommodations at the Mine Site Sailivik Camp (SC), Port Site Complex (PSC) Camp and 380-Person Camp were tested for ambient noise and vibration.

No in-water works that had the potential to create noise or vibratory impacts to fish or marine mammals were undertaken in 2023.

Table 4.8 provides a summary of noise effects monitored in 2023, and an evaluation of impacts relative to the predictions presented in the FEIS and FEIS Addendum.

Table 4.8: Noise and Vibration Impact Evaluation

Component	Effects	Monitoring Program	Impact Evaluation
Ambient Noise and Vibration	Disturbance of sleeping workers, affecting worker health and safety	Indoor noise and vibration levels were measured in August and November 2023. Occupational noise and vibration at Baffinland was assessed according to the <i>Mine Health and Safety Act</i> , Consolidation of Mine Health and Safety Regulation, R-125-95, Part IX and Schedule 5. Indoor noise measurements taken in the accommodation facilities at the Mine Site in 2023 averaged 37 (A-weighted Decibels; dBA) and therefore respected the 75 dBA exposure level. This is consistent with overall average noise levels recorded at the Mine Site in 2022 (average 45-47 dBA), 2021 (average 50.24 dBA) and 2020 (<65 dBA). In general, average noise levels have experienced an increase over average recorded noise levels in years prior to 2018 (28 dBA in 2017,	Effect within FEIS predictions

Component	Effects	Monitoring Program	Impact Evaluation
		30.6 dBA in 2016, and 34.8 in 2015); however, values remained below the 75 dBA exposure criteria. Potential causes of the trend are discussed further in relation to PC Term and Condition No. 14	
Noise and Vibration Levels	Increased noise or vibration levels from construction activities affecting fish or marine mammals	No construction activities occurred that required compliance monitoring for noise in 2023.	Not applicable in 2023.
Terrestrial Wildlife	Noise disturbance from the Project acting as a deterrent to wildlife	Environmental noise monitoring program not conducted in 2023.	Not applicable in 2023.

Path Forward

Baffinland will continue to implement noise and vibration monitoring in relation to human health and safety twice per year, at each receptor location (Milne Port and Mine Site). Should the data identify a need for noise or vibration reduction efforts, a plan will be formulated to address these concerns in consultation with stakeholders.

Reporting on each PC Term and Condition is provided in the pages that follow.

Project Certificate Term and Condition No. 13

Category	Noise and Vibration - Use of Explosives
Responsible Parties	The Proponent, Fisheries and Oceans Canada
Project Phase(s)	Construction
Objective	To determine appropriate protection of fish and aquatic life in the Arctic.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Fisheries and Oceans Canada, Nunavut Water Board, Crown-Indigenous Relations and Northern Affairs Canada, Nunavut Impact Review Board, Qikiqtani Inuit Association
Reference	Environmental Protection Plan (Baffinland, 2021c) Surface Water and Aquatic Ecosystem Management Plan (SWAEMP; Baffinland, 2021d) Quarry Blasting Operations Management Plan (Baffinland, 2013b)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Baffinland's Surface Water and Aquatic Ecosystem Management Plan (SWAEMP) states that work requiring the use of explosives (blasting) in or near water bodies shall be carried-out in accordance with Fisheries and Oceans Canada (DFO) guidance (Wright and Hopky, 1998) in order to mitigate possible effects on fish habitat and fish health. Blasting at the Project is conducted in accordance with Baffinland's Quarry Blasting Operations Management Plan and Environmental Protection Plan (EPP; Baffinland, 2013b; 2021c).

The aforementioned plans described above mitigate the possibility of an explosive to be detonated in or near fish habitat that produces, or is likely to produce, an instantaneous pressure change (i.e. overpressure) greater than 100 Kilopascals (kPa; 14.5 pounds per Square Inch [psi]) in the swim bladder of a fish.

RESULTS

Not applicable. No blasting occurred in 2023 within the required setback distances detailed in the DFO guidance document (Wright and Hopky, 1998).

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 14

Category	Noise and Vibration - Noise and Vibration Monitoring
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate noise and vibration at Project sites, especially living areas.
Term or Condition	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.
Relevant Baffinland Commitment	32
Reporting Requirement	To be included in the Annual Report submitted to the NIRB.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Nunavut Impact Review Board (NIRB)
Reference	Consolidation of Mine Health and Safety Regulation, R-125-95 (GN, 2011c) Noise and Vibration Surveys – Accommodation Facilities (HDS, 2023, 2024)
Ref. Document Link	Appendix G.2.3

METHODS

Noise and vibration monitoring at the Mine Site and Milne Port accommodations is scheduled annually by Baffinland Health and Safety staff. Monitoring uses a sound level meter (SLM) with microphone and a vibration pad with meter set-up in different rooms and wings of accommodation buildings at both sites. Monitoring is conducted in the summer and winter seasons. Noise or vibration concerns brought forth by employees are taken seriously and addressed on an as-needed basis. Occupational noise and vibration at Baffinland is assessed according to the *Mine Health and Safety Act, Consolidation of Mine Health and Safety Regulation*, R-125-95 (Part IX and Schedule 5; GN, 2011c).

The numerical thresholds from which protection is required include 8-hour equivalent sound exposures equal to or greater than 85 dBA, based on the expectation that a worker has a sound environment exposure limit (EL) of 75 dBA or less for the remainder of the day.

Since the *Mine Health and Safety Act* (GN, 2011c) does not provide specific numerical limits, 8-hour equivalent vibration criteria are taken from the European Physical Agents Vibration Directive 2002/44/EC. For whole body vibration, the directive provides an exposure action limit (AL) of 0.5 Meter per Second Squared (m/s^2), and an exposure limit (EL) of 1.15 m/s^2 . The action value provides the threshold for increased vigilance to prevent reaching the exposure limit.

In 2023, adaptive management continued to be employed to reduce noise and vibration near accommodation complexes, including:

- Quiet work hours continued to be implemented;

- Operation of equipment was limited in the vicinity of accommodation complexes, where practicable; and,
- Helicopter dedicated landing zones were located in a separate location from accommodations complexes, and flight paths were adjusted to ensure helicopters stayed clear of camps.

In August and November 2023, accommodations at the Sailivik Camp, Port Site Complex and 380-Person Camp were tested for noise and vibration. Noise and vibration testing was not conducted at the Mine Site Complex in 2023 as the building was not used for accommodations purposes in 2023.

Sleeping accommodation sound level measurements demonstrate levels that are well below the 75 dBA level for off-work hours that is associated with the 8-hour exposure criterion. Summary statistics of average noise measurements collected within sleeping accommodations are presented in Table 4.9.

Table 4.9: Summary Statistics of 2023 Noise Monitoring Results

Sampling Period	Average Noise Level (dBA)
August Monitoring	
Sailivik Camp	37.0
PSC	29.2
380-Person Camp	50.3, 42.5
November Monitoring	
Sailivik Camp	37.4
PSC	40.9
380-Person Camp	45.1

Vibration measurements taken in the accommodations were below the exposure AL and EL criteria of 0.5 m/s² and 1.15 m/s², respectively, for exposure to whole-body vibration during rest, and are presented in Table 4.10.

Table 4.10: Summary Statistics of 2023 Vibration Monitoring Results

Sampling Period	Average ¹ Vibration Exposure (m/s ²)	Peak ² Vibration Exposure (m/s ²)
Action Limit	0.5 m/s²	-
Exposure Limit	1.15 m/s²	-
Comfort Threshold		0.015 m/s²
August Monitoring		
Sailivik Camp	0.003	0.427
PSC	0.007	0.195
380-Person Camp	0.004, 0.006	0.255, 0.592
November Monitoring		
Sailivik Camp	0.006	0.183
PSC	0.003	0.042
380-Person Camp	0.003	0.515

Notes:

¹ Aeq: the frequency-weighted, time-weighted acceleration sum over the sampling period.

² Peak: the frequency-weighted, peak acceleration sum measured during the sampling period

Results of the noise and vibration monitoring at Project accommodation facilities are presented in the 2023 August and November Industrial Hygiene Monitoring reports in Appendix G.2.3 (HDS, 2023, 2024).

TRENDS

Indoor noise measurements taken in the accommodation facilities at the Mine Site in 2023 indicated average noise levels of 37 dBA in August and 37.4 dBA in November and therefore respected the 75 dBA exposure level for 16 hrs/day and 85 dBA exposure level for 8 hrs/day. This is lower than overall average noise levels recorded at the Mine Site in recent previous years (46.78 dBA in 2022, 50.24 dBA in 2021, <65 dBA in 2020¹, 43 dBA in 2019, 45 dBA in 2018). In general, average noise levels have experienced an increase over average recorded noise levels in years prior to 2018 (28 dBA in 2017, 30.6 dBA in 2016, and 34.8 in 2015); however, values have remained below the 75 dBA exposure criteria. The gradual increase in noise levels may have been the result of additional construction activities that have occurred since 2017 in comparison to previous years.

Indoor noise measurements taken in the accommodation facilities at Milne Port in 2023 indicated average noise levels ranged from 29.2 to 50.3 dBA in August and from 40.9 to 45.1 dBA in November and therefore respected the 75 dBA exposure level. This is consistent with overall average noise levels recorded at Milne Port in previous years (43.55 dBA in 2022, 50.17 dBA in 2021, <65 dBA in 2020¹, 46 dBA in 2019, 48 dBA in 2018, 43 dBA in 2017 and 50 dBA in 2016).

Average vibration levels measured in 2023 (0.003 to 0.007 m/s²) were consistent with previous years (0.003 to 0.011 m/s² in 2022, 0.003 to 0.007 m/s² in 2021, 0.003 to 0.004 m/s² in 2020, and 0.013 to 0.018 m/s² in 2019). All the whole-body vibration measurements taken in the accommodations respect the 8-hour action and exposure limits of 0.5 m/s² and 1.15 m/s², respectively, considered by the NIRB for exposure to whole-body vibration during rest. Peak vibration levels measured in 2023 (0.042 to 0.592 m/s²) exceeded the established comfort threshold of 0.015 m/s² at all sampling stations.

Additional information about the noise and vibration monitoring conducted at Project accommodation facilities in 2023 is provided in the 2023 August and November Industrial Hygiene Monitoring reports in Appendix G.2.3 (HDS, 2023, 2024).

RECOMMENDATIONS / LESSONS LEARNED

To ensure that noise and vibration at the accommodations within the Project Sites are not adversely affecting employees and contractors, Baffinland will continue to monitor noise and vibration levels in relation to human health and safety. Should the data identify a need for further noise and/or vibration reduction efforts, a plan will be formulated to address these concerns in consultation with stakeholders.

¹ Note, in 2020 the dosimeters were set on a dynamic sampling range of 70 dBA – 140 dBA for noise measurements. Therefore, specific measurements under 70 dBA were not recorded as they were outside of the instrument's sampling range.

Project Certificate Term and Condition No. 14 (a)

Erin Category	Noise and Vibration - Noise and Vibration Adaptive Management
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To mitigate potential impacts of noise to marine wildlife during project construction.
Term or Condition	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.
Relevant Baffinland Commitment	32
Reporting Requirement	To be included in the Annual Report submitted to the NIRB.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Not Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	Marine Environmental Working Group (MEWG)
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

In 2023, Baffinland replaced previously existing fenders on the ore dock above the water line with six (6) new Yokohama fenders, which are certified to berth Capesize vessels. Fenders are not a fixed part of the ore dock and can be removed seasonally, therefore this work is not considered 'construction'. Regardless, a detailed schedule outlining completed work related to dock fenders is available upon request. The aforementioned work did not require a permit and did not involve any under water construction activities that had the potential to disrupt marine mammal species. In the event that future construction activities are undertaken at Milne Inlet that have the potential to disturb marine mammal species, the Proponent will work with DFO to ensure the relevant permits are obtained and that appropriate adaptive management measures are put in place.

RESULTS

Not Applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

As part of any future authorization for construction in the marine environment, Baffinland will be required to develop an associated Construction Environmental Management Plan that would include mitigation and adaptive management measures to protect marine mammals during in-water and nearshore construction works including pile driving, infilling, dredging and other dock construction activities.

Project Certificate Term and Condition No. 14 (b)

Category	Noise and Vibration- Noise and Vibration Adaptive Management
Responsible Parties	The Proponent
Project Phase(s)	Operations
Objective	To mitigate potential impacts of noise to wildlife and people during project operations.
Term or Condition	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.
Relevant Baffinland Commitment	32
Reporting Requirement	To be included in the Annual Report submitted to the NIRB.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	2020 Terrestrial Environment Annual Monitoring Report (EDI, 2021) 2022 Terrestrial Environment Annual Monitoring Report (EDI, 2023) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

2020 Noise Monitoring Pilot Study

Noise monitoring stations were established to assess noise levels that may disturb wildlife. The monitoring program consisted of three (3) transects: at the Mine Site, Tote Road, and Milne Port. Along each of the three transects, a noise monitoring station was established at three (3) distance classes: Near (200 m from current Project infrastructure), Far (1.5 Km from the edge of the mapped PDA), and Reference (≥ 3 Km from the edge of the mapped PDA), for a total of nine (9) noise monitoring stations. Near sites were selected to capture a representative noise sample near Project activities. The 1.5 Km distance for Far sites was selected based on noise modelling completed by RWDI Air Inc. (2008), which predicted slightly elevated noise levels at this distance but approaching background levels. The ≥ 3 Km Reference distance was selected based on the same noise modelling, which predicted no elevated Project-related noise at this distance. Additional details on the methods are provided in the 2020 Terrestrial Environment Annual Monitoring Report (EDI, 2021; NIRB Registry No. 336729).

2022 Follow-Up Investigation

Based on comments received from the TEWG and results of the 2020 monitoring, a noise monitoring follow-up investigation was completed in 2022 to assess “how Project noise is perceived by wildlife and other users across the landscape” where noise monitoring focusing on the three (3) main areas: the Mine Site, the Tote Road, and Milne Port. A total of nine (9) noise monitoring stations were established with three sites each at the Mine Site, Tote Road, and Milne Port. Distance classes were at 1.5 Km and beyond to compare project noise with background noise.

Additional details on the methods are provided in the 2022 Terrestrial Environment Annual Monitoring Report (EDI, 2023).

RESULTS

2020 Noise Monitoring Pilot Study

As was predicted for areas directly near Project infrastructure, operational activities generate frequent and impulsive anthropogenic noise loud enough to elicit a wildlife response (i.e., continuous peak sound or impulsive sound events above 55 dBA). For example, both the Tote Road and Mine Site Near (200 m distance) stations (200 m from the Tote Road) had typical continuous Sound Pressure Levels (SPLs) above 55 dBA. However, over 90% of continuous sound at 1.5 Km from the PDA was below 55 dBA in all Project Areas (which would not be expected to illicit a wildlife response) and these were only detected 3% of the time. Furthermore, noise was below 40 dBA at 3 Km from all Project areas, and Project-related noise was typically not audible at 3 Km from the Project.

Impulsive anthropogenic sound events above 55 dBA were detected at all distance categories and all Project areas but, as expected, were more frequent and intense at Near stations. Although impulsive aircraft sounds (i.e., airplanes, helicopters) were consistently above 55 dBA in all distance categories, these sound events were rare, especially away from the Mine Site. Excluding the Mine Site Near site, no single site exceeded 1% frequency of impulsive aircraft noise, and the cumulative frequency of impulsive aircraft noise over these sites was less than 2%. Any disturbance to wildlife caused by aircraft noise would be infrequent and short in duration. Generally, impulsive machinery and vehicle sound events dissipated to the near-threshold of wildlife response (i.e., 55 dBA to 60 dBA) at 1.5 Km distance from the PDA. These occurred less than 3% of the time. Although the Project generates impulsive anthropogenic sound events in all Project areas that are loud enough to elicit a wildlife response, at 1.5 Km from the PDA (i.e., above 55 dB), these loud noises are infrequent and unlikely to cause significant wildlife disturbance.

2022 Follow-Up Investigation

At the Mine Site and Milne Port, average sound levels at 1.5 Km from the PDA were at or below the levels predicted in the FEIS (Table 4.11). In the FEIS modelling, the distribution of sound levels around the Project throughout the day was necessarily simplified due to the complex and unpredictable nature of the operations. The average sound level from the entire monitoring period is a useful comparator to the FEIS modelling because it similarly averages the noise from Project operations. The highest one-hour levels ranged from 1 dB below the FEIS modelled levels to 7 dB above the modelled FEIS levels.

Monitoring locations were chosen where sound levels were expected to be highest. Considering the sound levels measured in this program, and the FEIS modelling, it was likely that sound levels at other locations 1.5 Km from the PDA comply with the 40 dBA criterion.

The noise levels along the Tote Road were measured to be higher than the FEIS predicted (Table 4.11). Operational differences between the FEIS modelling scenario and the actual operations on the ground were the likely cause. The measured levels at 1.5 Km from the Tote Road's centre line were, on average, below the limits adopted from D038, although they exceeded these limits by up to 3 dB at some times. The weather from Milne Port was used to generate weather exclusions given it is the closest weather station. In addition to the measurement location at 1.5 Km from the centre line, a measurement was conducted at 3 Km from the road's centre line. These data were collected to show a reduction in sound level over distance and are helpful for validating the FEIS model results.

Table 4.11: Measured Equivalent Continuous Sound Levels (Leq) 1.5 Km From Mine Site, Milne Port And Tote Road Sites Within the Project Development Area (PDA)

Location	Distance from PDA	Measured 2023			FEIS Modelling Leq-1hr (dBA)
		Leq (dBA) All Valid Data	Number of Valid Hours	Highest Valid Leq-1hr (dBA)	
Mine Site South	1.5 Km	43	50	48	43
Mine Site East	1.5 Km	30	25	43	44
Milne Port West	1.5 Km	35	99	41	42
Milne Port East	1.5 Km	38	83	45	38
Tote Road	1.5 Km	37	122	43	29
Tote Road	3 Km	35	104	42	-

TRENDS

Overall, results show that all areas monitored for noise disturbance at the Project have remained in compliance with the criteria discussed in the FEIS. Exceedances of those criteria and of the FEIS predictions were observed, but did not occur continuously, and are not expected to occur in all directions from the Project.

RECOMMENDATIONS / LESSONS LEARNED

The noise created by the Project is generally within the modelled predictions of the FEIS, and meet relevant noise guidelines 1.5 Km from the Project. As identified in the Air Quality and Noise Abatement Management Plan (Baffinland, 2021a), the primary mitigations for the Project ensure all mobile equipment is equipped with mufflers and machinery is well-maintained. Supplemental investigations to the 2020 and 2022 noise monitoring surveys are not currently anticipated.

Whereas the above information pertains to noise monitoring intended to assess noise disturbance from the Project that could deter terrestrial wildlife, Baffinland also conducts ambient noise and vibration monitoring annually at accommodation complexes to ensure worker's health and safety. This monitoring occurred in 2023 and results are outlined in Section 4.6.3. Ambient noise and vibration monitoring will continue to occur on an annual basis.

Project Certificate Term and Condition No. 15

Category	Noise and Vibration - Noise and Vibration Monitoring
Responsible Parties	The Proponent, Qikiqtani Inuit Association, local Hamlet organizations
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To enhance public safety when travelling around the Project area.
Term or Condition	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.
Relevant Baffinland Commitment	32
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Not Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	Not applicable
Reference	2023 MEWG Meeting Minutes 2023 Shipping and Monitoring Program Meeting Records
Ref. Document Link	Appendix C.1 Appendix B.2.2

METHODS

Baffinland continues to work with local Hamlet organizations, Hunters and Trappers Organizations (e.g., MHTO) and the QIA regarding safety considerations for travel and interaction with the Project for those travelling in the area. In support of this, the QIA initially established the Mary River Community Group (which included representatives from the MHTO, the local Hamlet of Pond Inlet and Baffinland). In addition, the QIA and the MHTO are members of the Marine and Terrestrial Environment Working Groups (MEWG, TEWG), which are kept updated on relevant operations (marine and terrestrial transportation) and associated monitoring programs.

Baffinland has created full-time Baffinland Community Liaison Officer (BCLO) roles in each of the five (5) North Baffin communities. BCLOs provide for regular and ongoing opportunities for the dissemination of Project-related information and receipt of community-based input.

Through feedback obtained through various engagement activities such as pre- and end of shipping season meetings (see Table 2.2 and Appendix B.1 for summary of 2023 engagement activities), changes in communications have improved over time to better inform communities about Baffinland's operations. Specifically, shipping has evolved

and now includes a multi-pronged approach to communication, including an active Facebook page that is updated throughout each day during the shipping season. Over 340 posts were made in 2023.

Twelve (12) shipping monitors were hired in 2023 over the shipping season to track vessel movement and act as the primary liaison between Baffinland and the community. They communicate vessel movement over VHF, Radio, Facebook and answer calls. At the Pond Inlet Office, maps and other visual displays including a TV with live shipping tracks are available for community members to utilize.

Baffinland strives to provide information in a format that brings monitoring and results to life. Our presentations are full of pictures for example. At the May 2023, NIRB Marine Mitigation Workshop, held in Pond Inlet, Baffinland shared audio recording of marine mammals and ships from its 2022 acoustic monitoring program. These clips are frequently shared during workshops with community groups, where appropriate.

Throughout November and December 2023, Baffinland visited the communities of Arctic Bay, Clyde River, Igloolik, Pond Inlet, and Sanirajak and hosted workshops aimed to provide updates on the Steensby Component of the Project to the HTOs and Hamlets.

At these workshops bilingual multimedia workshop materials were utilized, including:

- Large 3D topographical models showing the planned 149 Km Steensby Railway and Steensby Port infrastructure;
- Small 3D models depicting a typical Steensby Railway bridge, tunnel, and land-user crossing;
- A video providing an overview of the Mary River Project with both real and animated components, voiced in Inuktitut with English and Inuktitut subtitles;
- Replicas of handmade tools found during archaeological surveys on Baffin Island;
- Printed poster-sized maps of the Steensby Railway alignment and Southern Shipping Route;
- Printed map booklets for participants to take home, showing the Southern Shipping Route, infrastructure changes at the Mary River Mine Site for the Steensby Component, Steensby Port infrastructure, locations of Steensby Railway bridges, tunnels, and land-user crossings, and key caribou movement locations along the railway alignment;
- Printed take-home booklets of the workshop presentation; and
- Workshop presentations emphasizing visual aids such as photographs and graphics, minimizing reliance on text.

The 3D models were also displayed at the December 2023 MEWG and TEWG meetings.

RESULTS

In 2023, to illustrate the railway, Tote Road and shipping activities planned for the Steensby Component, Baffinland generated 3D models that show the topography of the area and how the infrastructure is planned. These 3D models were used in the engagements described above. Additionally, audio recordings of marine mammals were provided at the NIRB Marine Mitigation Workshop but are also used at community meetings. Baffinland's presentation materials incorporate photographs of the environmental monitoring programs where possible.

TRENDS

Baffinland continues to build upon its foundation for increasing community awareness and understanding of Project operations and related activities by 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.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to work with the QIA, MHTO representatives and local Hamlet organizations through the working groups and/or other venues to further enhance the general public's understanding of the Project.

4.6.4 Hydrology and Hydrogeology (PC Terms and Conditions 16 through 19)

Four (4) PC Terms and Conditions relate to the potential effects of the Project on hydrology and hydrogeology. These conditions relate to aspects of the project that are regulated under Baffinland's Type 'A' Water Licence (for mining; NWB, 2015) and Type 'B' Water Licence (for mineral exploration; NWB, 2021b).

Inuit & Stakeholder Feedback

The NWB is the primary stakeholder regulating water use and waste disposal through its issuance of water licences. The QIA is also a key stakeholder, and has a Water Compensation Agreement in place with Baffinland, pursuant to Article 20 of the Nunavut Agreement (CIRNAC and Nunavut Tunngavik, 2018). Water diversions have the potential to impact fish and fish habitat, and DFO administers the fish and fish habitat sections of the *Fisheries Act*.

Monitoring Activities

Hydrology monitoring is undertaken by recording water use and reporting this information to the NWB under the Type 'A' Water Licence (NWB, 2015), and by operating a hydrometric monitoring network, currently consisting of nine (9) long-term seasonal hydrometric stations. Visual monitoring is conducted of water conveyance structures, including bridges and culverts.

The mining footprint remains small relative to the fully developed Project, and hence water diversions associated with the Project footprint are minor in scale.

The Type 'A' Water Licence specifies water withdrawal limits (NWB, 2015). Under the authorization of the Type 'A' Water Licence, freshwater was withdrawn during 2023 to sustain three (3) key activities at the Project: potable water supply (domestic), dust suppression, and other industrial purposes. During 2023, daily water volume withdrawal limits, stipulated in the Type 'A' Water Licence (NWB, 2015), for domestic and industrial purposes were not exceeded at Approved Project water sources. Daily water volume withdrawal limits for dust suppression purposes were also not exceeded at Approved Project water sources in 2023, with the exception of two (2) exceedances at approved Project water source BG50. This is a >90% decrease and a significant improvement over 2022, when thirty (30) exceedances of the daily water volume for dust suppression use exceeded the dust suppression daily withdrawal limits, and is attributed to improved procedural controls including tracking daily water use at the individual water sources across shifts (day and night) with respect to the daily limits. In 2022, a third party consultant reviewed the dust suppression water withdrawals to assess the effects of the daily water withdrawal exceedances on instantaneous flows of streams and lake outflows at the five (5) locations where the daily water withdrawal limits were exceeded in 2022, which included the BG50 location, using estimated mean monthly and 10-year low flows, and concluded that the exceedances in 2022 were not environmentally significant and are not expected to adversely affect stream flows, lake flows, fish, or fish habitat (Knight Piésold, 2023a). The water withdrawal exceedances of the daily limit in 2023 at BG50 are considered to not be environmentally significant and are not expected to adversely effect stream flows, fish or fish habitat since they were of significantly less volume when compared to the maximum water withdrawal exceedance at that location in 2022. The two (2) exceedances in 2023 occurred at the same location and, upon review of the results of an investigation into the cause, were a result of technological issues with the electronic system that was implemented early in 2023. As a result of the exceedances, tracking of water for dust suppression in 2023 returned to manual tracking with a strong focus on procedural and administrative controls.

Further discussion on the water withdrawals at the Project, including all supporting daily and monthly volumes, are provided in the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a).

Table 4.12 provides an evaluation of the Project's impacts on hydrology and hydrogeology based on monitoring activities completed in 2023, relative to predictions presented in the FEIS and FEIS Addendum (Baffinland. 2012; 2013a.

Table 4.12: Hydrology and Hydrogeology Impact Evaluation

Component	Effects	Monitoring Program	Impact Evaluation
Water Usage	Water usage exceeding thresholds and affecting the aquatic environment	Measure/monitor and report water usage in accordance with water licence limits	Water usage generally within water licence limits; effect within FEIS predictions
Water Diversions	Reductions or increases in water flow due to diversions	None; this is primarily a function of the growing Project footprint, particularly the open pit and waste rock stockpile	Minor; within FEIS predictions

Path Forward

Baffinland will continue to operate its long-term hydrometric network, and will monitor and report water use to the NWB under applicable water licences.

In 2022, Baffinland automated the system at the Camp Lake water jetty by connecting the flow meter to the site Programmable Logic Controller (PLC) and implemented logic coded programming to improve characterization of domestic and industrial daily water volumes withdrawn at the jetty by multiple users. The automated system was monitored throughout 2023 and procedures for withdrawing water at the water jetty were updated to ensure accuracy of water use accounting.

Further actions that Baffinland is taking to prevent an over withdrawal of water for dust suppression purposes include development and updating of an Standard Operating Procedure specific to the dust suppression water log tracking process, assigning additional resources (supervisors) to Road Maintenance to oversee dust suppression activities in general which include water withdrawal tracking, and maximizing opportunities to use recycled water for dust suppression. Baffinland is also further investigating the potential improvement of a tablet system connected to the local LTE network for real-time tracking of individual water withdrawals to supplement the manual tracking system, and modified dust suppression techniques implemented to enhance dust suppression efforts on the Tote Road.

Project Certificate Term and Condition No. 16

Category	Hydrology and Hydrogeology - Water Infrastructure
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To provide assurance that the potential impacts to flow and quantity of water in the Project area are minimized.
Term or Condition	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 Inlet 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 in advance of constructing those facilities.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), Environment and Climate Change Canada (ECCC), Fisheries and Oceans Canada (DFO), Nunavut Impact Review Board (NIRB), Nunavut Water Board (NWB), Qikiqtani Inuit Association (QIA)
Reference	Final Environmental Impact Statement (FEIS; Baffinland, 2012) FEIS Addendum - Early Revenue Phase (Baffinland, 2013a)
Ref. Document Link	Not applicable

METHODS

Baffinland ensures that the water related infrastructure and facilities constructed at the Project are consistent with those proposed in the FEIS (Baffinland, 2012) and FEIS Addendum (Baffinland, 2013a), and associated Type 'A' Water License Amendments. Minor modifications to the Type 'A' Water License (NWB, 2015) are submitted from time to time consistent with the processes provided under the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*, as well as the Type 'A' Water License.

RESULTS

During 2023, the following work was completed on water related infrastructure and facilities at the Project. Note that all are consistent with the broad descriptions of works described in EIS documents, but may have been further evaluated with respect to more detailed environmental permitting requirements by NWB (water license modification) or DFO (request for review):

- Maintenance of site surface water drainage infrastructure (i.e. culverts) to address sedimentation concerns and improve surface water drainage;

- Continued implementation of the Ore Crusher Pad Regrading Strategy to prevent the pooling of water on and around the Crusher Facility pad and continued use of a pumping system to transfer collected water to Crusher Facility Pond MS-06, due to identified integrity issues with the perimeter ditch network;
- Continued implementation of the Ore Stockpile Pad Regrading strategy to prevent the pooling of water on and around the Ore Stockpile Pad;
- Baffinland is continuing to work with Fisheries and Oceans Canada (DFO) to address fish passage issues along the Tote Road at specific locations. A Request for Review was submitted to DFO in May 2022, and DFO staff subsequently visited the Mary River Project in June 2022 to inspect the fish-bearing crossing locations along the Tote Road. Throughout 2023, Baffinland continued to develop a plan to address culverts and fish passage issues and to work with DFO as the plan developed. In January 2024, DFO issued a Letter of Advice (LOA) for Baffinland's Tote Road Culvert Remediation proposal to implement a permanent crossing solution for ten (10) corrugated steel pipe (CSP) crossings along the Tote Road (DFO, 2024). Tote Road Culvert Upgrades work under the Type 'A' Water Licence is planned to commence in early 2024. Note that no in-water culvert crossing work or other in-water work was conducted along the Tote Road during the open water period in 2023. Baffinland will continue to work with DFO to ensure planned modifications to fish bearing crossings are in compliance of the *Fisheries Act*;
- Erosion and sediment control (ESC) measures, which did not involve in-stream work, was also conducted on multiple culverts on the Tote Road in 2023 to: stabilize road embankments, remediate erosion zones, remove sediment deposits at silt fencing and swales, add rip rap stone to swales with check dams, and install ESC, where required, was completed and monitored;
- Implementation of preventative and corrective measures along the Tote Road (i.e. check dams, silt fences, excavating culverts of snow and ice, etc.) to address sedimentation concerns during high flow periods; and
- Continued remedial works to the surface water management pond (MS-11) at KM 105, and completion of a geotechnical drilling program to obtain subsurface conditions data to develop a comprehensive remediation plan to reduce seepage through the dam foundation at the KM 105 Pond constructed in 2021-2022.

Prior to the commencement of construction, the applicable regulatory approvals were obtained by Baffinland for the works listed above. Future construction activities are planned around the QMR2 and Sheardown Lake areas in 2024, as part of the Long Term Water Management Plan under Modification No. 13 submitted to the NWB (NWB, 2021a), to reduce potential erosion and sedimentation and minimize releases of TSS to Camp Lake and Sheardown Lake and their tributaries (Baffinland, 2021e).

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Water related infrastructure and facilities constructed to date are consistent with those proposed in the FEIS (Baffinland, 2012) and FEIS Addendum (Baffinland, 2013a) in terms of type, location, and scope. Baffinland will continue to monitor water retention structures across the Project and complete ongoing routine maintenance as necessary. Should surveillance observations indicate seepage or deviations from an Issued for Construction (IFC) design, Operations will implement structure specific remedial measures to capture/recover seepage as applicable in conjunction with water quality monitoring, or maintenance repairs to re-establish design criteria as necessary to correct any issue that might undermine infrastructure integrity. Any adjustments to water related infrastructure that

occur under the broad descriptions contained in Environmental Impact Statement (EIS) documentation have been and will continue to be subject to permitting administered by the NWB (water license modifications) and DFO (request for reviews).

Project Certificate Term and Condition No. 17

Category	Hydrology and Hydrogeology - Effluent Management
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent impacts to waterbodies from effluent.
Term or Condition	The Proponent shall develop and implement effective 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.
Relevant Baffinland Commitment	6
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Progress
Stakeholder Review	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), Environment and Climate Change Canada (ECCC), Nunavut Impact Review Board (NIRB), Nunavut Water Board (NWB), Qikiqtani Inuit Association (QIA)
Reference	Fresh Water Supply, Sewage and Wastewater Management Plan (FWSSWMP; Baffinland, 2024e) Metals and Diamond Mining Effluent Regulations (MDMER; Minister of Justice, 2023) Sampling Program - Quality Assurance and Quality Control Plan (Baffinland, 2024f) Surface Water and Aquatic Ecosystem Management Plan (Baffinland, 2021d) 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.8.3

METHODS

Wastewater and effluent management practices are outlined in the Project's Fresh Water Supply, Sewage and Wastewater Management Plan (FWSSWMP) (Baffinland, 2024e) and the Metal and Diamond Mining Effluent Regulations – Early Response Plan (MDMER ERP), which is appended to the FWSSWMP (Baffinland, 2024e). Surface water monitoring, management practices and procedures are outlined in the Project's Surface Water and Aquatic Ecosystem Management Plan (SWAEMP; Baffinland, 2021d). Water quality discharge criteria (discharge criteria) for effluent generated by the Project are stipulated in the Type 'A' Water Licence issued by the NWB, and Schedule 4 and Schedule 5 of the MDMER (Minister of Justice, 2023).

Consistent with the FWSSWMP (Baffinland, 2024e), prior to discharge, wastewater (e.g. treated sewage, treated contact water, oily water, etc.) is sampled to ensure water quality meets the applicable discharge criteria. Wastewater that meets the applicable discharge criteria is discharged to the receiving environment. Water samples are routinely taken prior to and during wastewater discharges to ensure the water quality remains in compliance with the applicable discharge criteria. In the event that water quality sampling during a discharge indicates that the

water quality has changed and is no longer in compliance with the applicable discharge criteria, the discharge of the non-compliant wastewater is halted.

Wastewater that does not meet the applicable discharge criteria is treated on-site using approved treatment methods (e.g. sewage treatment plants, mobile oily water treatment systems, Waste Rock Facility (WRF) treatment plant, etc.) and is not discharged to the receiving environment until it has been confirmed by water quality analysis that the treated wastewater meets the applicable discharge criteria.

All water sampling at the Project is conducted in accordance with the Project's Sampling Program - Quality Assurance and Quality Control Plan (QA/QC; Baffinland; 2024f).

As required by the Type 'A' Water Licence (NWB, 2015), volumes and water quality analysis of all wastewater discharged to the receiving environment are reported to regulators (CIRNAC, NWB) on a monthly and annual basis. As a requirement of MDMER, volume and water quality results for discharges from the surface water management ponds associated with the Crusher Facility (CF), KM 106 ROM Ore Stockpile Facility, KM 105 Sedimentation Pond, and WRF at the Mine Site are reported to ECCC on a quarterly and annual basis.

RESULTS

Effluents generated and managed by the Project in 2023 included: sewage; contact water retained in surface water management ponds associated with ore and waste rock facilities; and oily water containment areas, such as bulk fuel facilities.

All effluent discharges were compliant with the applicable discharge criteria with the exception of four. The events occurred at Milne Port Bulk Fuel Storage Facility MP-03, and at the Contaminated Snow Containment Berm (MP-04A), and at the Mine Site at the Waste Rock Facility Surface Water Management Pond (MS-08), and the KM 105 Surface Water Management Pond (MS-11). These events are outlined as follows:

- On June 12, 2023, a controlled discharge from the MP-03 bulk fuel storage facility exceeded water license criteria for total lead. Following internal water quality analysis indicating compliant results for TSS and Total Oil and Grease (TOG), discharge from the MP-03 bulk fuel storage facility was initiated on June 12. Laboratory results received on June 21 showed total lead concentration of 0.00292mg/L, exceeding water license criteria of 0.0010mg/L. At the time the laboratory results were received, the discharge from the MP-03 bulk fuel storage facility was complete for June. Prior to resumption of discharge from the facility, additional pre-discharge sampling was conducted to ensure compliance with the full suite of relevant water license criteria.
- On September 5, 2023, a controlled discharge from the MP-04A Contaminated Snow Containment Berm exceeded water license criteria for TSS and total lead. Following internal water quality analysis indicating compliant results for pH, ammonia (NH₃), TSS and Total Oil and Grease (TOG), discharge from the MP-04A Contaminated Snow Containment Berm was initiated on September 5, 2023. Laboratory results for the discharge sample collected on September 5 showed a TSS concentration of 141 mg/L and a total lead concentration of 0.014 mg/L, exceeding water license criteria of 15 mg/L and 0.001 mg/L, respectively, for parameter grab sample concentrations. The exceedances were observed in laboratory results on September 9, and the MP-04A facility discharge was stopped. The total volume discharged was very low at 5.3 m³ and was discharged to land, via a constructed ditch; indicating that environmental impacts would be negligible. Upon review of the exceedance, it is thought that the elevated TSS was due to high algae growth

in the pond. All data will be reviewed in 2024 and a discharge plan for this facility will be developed that takes into consideration the receiving environment (land) and treatment systems in place (OWTS).

- Analytical results of the sample collected at MS-08 on September 3 indicated a TSS concentration of 33.3 mg/L; exceeding the maximum water licence limit of 15 mg/ for TSS grab sample concentrations, but only marginally exceeding the Maximum Acceptable Concentration of 30.0 mg/L TSS under the MDMER. Subsequent resampling as per Baffinland's Spill Contingency Plan (BAF-PH1-830-P16-003) could not be attempted, as September 3 was also the final day of discharge for the year due to freezing conditions. However, field measurements of pH and turbidity, taken by the WTP operators to ensure that parameters remain within specified limits, indicated that results were within acceptable limits; thus this exceedance may have been the result of a sampling error. Environmental effects are thought to be minimal.
- On May 20, 2023, prior to initiation of controlled discharge of effluent from the KM 105 Pond, an uncontrolled release from the KM 105 Surface Water Management Pond (KM 105 Pond) was confirmed through testing and observations conducted in response to an unexpected decrease in the KM 105 Pond water level. The initial event resulted in elevated TSS concentrations of 200 mg/L; above the water licence criteria of 30 mg/L for TSS concentrations in a grab sample in water quality samples collected from a newly established water quality monitoring station; KM105-SWMP-SEEP-02, at the seepage location. Acute lethality samples collected at KM105-SWMP-SEEP-02 on May 20 were not acutely toxic. Seepage samples were collected at water quality monitoring station KM105-SWMP-SEEP-02 when there was flowing water present and a representative sample could be collected for the duration of the 2023 flowing water season. Seepage monitoring showed a gradual reduction in TSS over the summer; however, the water quality was subject to fluctuations in sediment suspension observationally correlated with heavy rainfall events throughout the month of August. Note that some TSS results may not be representative of water quality at the seepage location due to periodic low flow conditions and substrate of the tundra at the sample location, which can result in poor sampling conditions and elevated TSS measurements from disturbance of the substrate during sampling that can not be mitigated by sampling technique.

2023 water quality exceedances for effluents monitored under the Type 'A' Water Licence (NWB ,2015) were reported to CIRNAC, the NWB and the QIA in the monthly monitoring reports prescribed by the Type 'A' Water Licence. A full discussion of the Project's 2023 monitoring results under the Type 'A' Water Licence is provided in the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a).

During 2023, operation of the WRF WTP was effective at mitigating any water quality concerns for the effluent to be compliant with the applicable criteria. Beginning in July 2023, controlled discharges of effluent from the WRF Pond were conducted. During periods of discharge, water quality monitoring was conducted to ensure compliance with applicable water quality discharge criteria stipulated in the water licence and MDMER. Water quality of the WRF Pond (MS 08) was found to be compliant with all applicable Type 'A' Water Licence water quality effluent criteria in 2023 with one (1) exception, as outlined above. Analytical results of the sample collected at MS-08 on September 3 indicated a TSS concentration of 33.3 mg/L; exceeding the maximum water licence limit of 15 mg/ for TSS grab sample concentrations, but only marginally exceeding the Maximum Acceptable Concentration of 30.0 mg/l TSS under the MDMER. Subsequent resampling as per Baffinland's Spill Contingency Plan (BAF PH1-830-P16-003, Baffinland, 2021h) could not be attempted, as September 3 was also the final day of discharge for the year due to freezing conditions. However, field measurements of pH and turbidity, taken by the WTP operators to ensure that parameters remain within specified limits, indicated that results were within acceptable limits; thus this exceedance

may have been the result of a sampling error. Environmental effects are thought to be minimal. Additional effluent discharge sampling was completed to satisfy the requirements of the MDMER. The results of sampling completed to satisfy MDMER requirements are detailed in Baffinland's 2023 MDMER annual effluent monitoring report for the Mine Site (Appendix E.13 in Baffinland, 2024a). The September 2023 TSS exceedance event was reported by Baffinland to relevant regulators and is documented in the NT-NU Spill Report No. 2023-456.

On July 8, 2023, water was observed in the east ditch of the WRF flowing under damaged liner at the inlet culvert to the water management pond structure. Immediately upon discovery, a temporary repair was made to allow water to flow into the pond, and a permanent repair was initiated. Subsequent water samples collected from the spill location to characterize the water quality of the release were compliant with all applicable water licence and MDMER criteria, except for TSS with a concentration of 70.9 mg/L. Modifications were made to the culvert and the liner was permanently repaired, restoring effective run-off conveyance to the pond. The event was reported to relevant regulators and is documented in the NT-NT Spill Report No. 2023-297.

Periodic controlled discharges of the treated effluent from the CF Pond occurred between June 6 to September 8, 2023. Controlled effluent discharges from the CF in 2023 involved pumping retained surface water runoff from the CF Pond through a direct-discharge pipeline shared with the Mine Site STPs and releasing the effluent at an approved discharge point near the Mary River. During periods of discharge, water quality monitoring was conducted to ensure compliance with the applicable water quality discharge criteria outlined in the MDMER and the Type 'A' Water Licence (NWB, 2015). No exceedances of the applicable water quality discharge criteria were observed during the 2023 CF effluent discharges. The results of sampling completed to satisfy MDMER requirements are detailed in Baffinland's 2023 MDMER annual effluent monitoring report for the Mary River Project (Appendix E.13 in Baffinland, 2024a).

A localized seepage event, unrelated to the integrity issues with the perimeter ditch network identified in previous years, was observed on August 27, 2023, from the crusher pad drainage ditch that conveys water to the CF pond. Water released was contained to the immediate vicinity of the CF, and pumped into the CF pond. The event was reported to relevant regulators and is documented in the NT-NT Spill Report No. 2023-366. Corrective actions were implemented including re-grading the slope of the crusher pad drainage ditch and re-lining the drainage ditch with appropriate material to re-establish positive flow from the culvert to the inflow of the MS-06 pond; restoring conveyance of water flows from the crusher pad drainage ditch to the CF pond as designed. The August 27, 2023 seepage event was reported by Baffinland to relevant regulators and is documented in the NT-NU Spill Report No. 2023-366.

Periodic controlled discharges of the treated effluent from the KM 106 Pond occurred during June and September 2023. Controlled discharges of the treated effluent from the KM 106 Pond in 2023 involved pumping retained surface water runoff from the KM 106 Pond to an approved discharge point near the Mary River. During periods of discharge, water quality monitoring was conducted to ensure compliance with the applicable water quality discharge criteria outlined in the MDMER and the Type 'A' Water Licence (NWB, 2015). No exceedances of the applicable water quality discharge criteria were observed during the 2023 KM 106 Pond effluent discharges. The results of sampling completed to satisfy MDMER requirements are detailed in Baffinland's 2023 MDMER annual effluent monitoring report for the Mine Site (Appendix E.13 in Baffinland, 2024a).

The KM 105 Surface Water Management Pond (KM 105 Pond), which collects surface water runoff from the Mine Haul Road and surrounding hillside, experienced an uncontrolled release on May 20, 2023; prior to initiation of

controlled discharge of effluent. As described above, the initial event resulted in elevated TSS concentrations of 200 mg/L; above the water licence criteria of 30 mg/L for TSS concentrations in a grab sample in water quality samples collected from a newly established water quality monitoring station; KM105-SWMP-SEEP-02, at the seepage location. Acute lethality samples collected at KM105-SWMP-SEEP-02 on May 20 were not acutely toxic.

Seepage samples were collected at water quality monitoring station KM105-SWMP-SEEP-02 when there was flowing water present and a representative sample could be collected for the duration of the 2023 flowing water season. Seepage monitoring showed a gradual reduction in TSS over the summer; however, the water quality was subject to fluctuations in sediment suspension observationally correlated with heavy rainfall events throughout the month of August. Note that some TSS results may not be representative of water quality at the seepage location due to periodic low flow conditions and substrate of the tundra at the sample location, which can result in poor sampling conditions and elevated TSS measurements from disturbance of the substrate during sampling that can not be mitigated by sampling technique.

At the direction of the Engineer of Record (EOR), multiple bentonite plugs were attempted to seal the seepage in the base of the KM 105 Pond; however, the attempts were unsuccessful. Manual pre-dosing coagulant/flocculent treatment of run-off inflow to the pond was initiated to accelerate settling along the flow path of the run-off through the structure to reduce seepage TSS levels. Mitigation measures were implemented upstream and downstream of KM 105 Pond, including temporary check dam installations and ditch regrading, in accordance with Baffinland's Surface Water and Aquatic Ecosystem Management Plan (SWAEMP; BAF-PH1-830-P16-0026) for sediment control. A geotube filtration system was installed as a mitigation measure at the KM 105 Pond and briefly tested prior to winter conditions for pump operations. Construction of the permanent water treatment (WTP) facility at the KM 105 Pond is in progress; a Construction Summary Report (CSR) will be submitted following completion of the work.

Monitoring under the water licence as follow up to the initial spill report was continued at seepage location KM105-SWMP-SEEP-02 for the duration of the 2023 flowing water season. The May 2023 seepage event identified at the KM 105 facility was reported by Baffinland to relevant regulators via the NT-NU Spill Reporting Line and is documented in NT NU Spill Report No. 2023-208.

TRENDS

Overall, the frequency of incidents involving the discharge of effluents to the receiving environment that exceed the applicable discharge criteria have remained low and incidental since the start of operations in 2014.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland continues to conduct robust incident investigations to identify root causes of water quality discharge incidents so that effective long-term corrective actions can be developed and implemented.

Following an investigation into MS-01 and MS-01B sewage effluent exceedances that occurred in December 2022, Baffinland improved the preventative maintenance (PM) plan for the Project's wastewater treatment facilities in 2023 to properly coordinate the timely inspection, cleaning, repair and replacement of system components to mitigate equipment failures. PM is now completed through workflow planning; managed through a Computerized Maintenance Management System (CMMS). Additionally, a Standard Operating Procedure was developed in 2023 to outline regulatory requirements for Project water and wastewater treatment facilities.

EQulS implementation in 2023, including automation of the Chain of Custody, has eliminated any errors in the potential use of an incorrect bottle set; a corrective action identified in 2022 to address a missed analysis which occurred in 2022 as a result of the use of an incorrect bottle set during collection of a sample at MS-03B.

All data will be reviewed for the Milne Port Contaminated Snow Containment Berm (MP-04A) and a discharge plan for this facility will be developed that takes into consideration the receiving environment (land) and treatment systems in place (OWTS), prior to initiating discharge from the facility in 2024.

An internal investigation of the TSS exceedance at MS-08 on September 3, 2023, was completed to identify the controls and any potential corrective actions that could be implemented to prevent a similar incident. It was found that the internal notification system, established to notify the Environment Department of laboratory results exceeding criteria when the results are uploaded to Baffinland's new environmental data management system (EQulS), was not functioning for a short period, including at the time of the exceedance, and therefore did not provide the notification of an exceedance in a timely manner. As an additional control, Baffinland is establishing an automated notification system with the third party analytical laboratory; once an analysis is completed by the external laboratory, it will be screened against applicable criteria and Baffinland will be immediately notified automatically of any exceedances.

The development and implementation of long-term remedial measures at the KM 105 Pond was extensive in 2023 and is ongoing. A geotechnical drilling program was completed to obtain detailed data relating to the subsurface conditions. This information has been used to develop a comprehensive remediation plan. It is important to note that based on observations to date, this seepage was flowing through the porous geologic structures adjacent to and below the dam structure, and these events have had no impact on the dam integrity. An engineered grout curtain barrier is currently being installed up-stream of the dam structure to permanently address the seepage. In addition to the grout curtain installation, Baffinland has inquired with the Engineer of Record to investigate the addition of a seepage collection system to capture any potential residual seepage at the toe of the dam, with the intent to redirect non compliant water back to the dam. The grout curtain project is scheduled to be completed prior to freshet 2024. In addition, a water treatment system will be operational by freshet 2024. Construction activities for the seepage repair will be detailed in a Construction Summary Report (CSR), and submitted in accordance with water licence requirements following completion of the work.

Water management measures for the CF are being addressed as part of the ongoing implementation of Baffinland's Long Term Water Management Plan (LTWMP). As part of the LTWMP, Baffinland plans to construct a new surface water management pond downstream of the CF to collect runoff from a large portion of the mine infrastructure area including the existing Crusher Facility. The pond will be formed by constructing perimeter berms along the northwest (Tote Road) and laydown to the west. In 2023, a geotechnical drilling program was conducted to support engineering design for the pond; SDLT-1 Sedimentation Pond, planned for construction in winter 2024/2025. In accordance with the Type 'A' Water Licence, Part D (NWB, 2015), Baffinland will submit Issued for Construction drawings for any new structures designed to contain or divert water from the CF pad that were included in Modification No. 13 (NWB, 2021a).

The LTWMP for the Mine Site was developed with Knight Piésold in 2021 to address erosion and sedimentation at the Mine Site. In 2021, construction of the MS-11 Surface Water Management Pond began, as part of the first phase of the implementation of the LTWMP at the Mine Site, and the construction was completed in 2022. Construction activities were also completed in the Camp Lake area in 2022 to reduce potential erosion and sedimentation in the

area and minimize releases of TSS to Camp Lake and its tributaries. The LTWMP continued to be implemented in 2023 with a geotechnical drilling program conducted to support engineering design work for future planned construction activities. An implementation schedule for the remainder of LTWMP infrastructure is provided in the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a).

Baffinland will continue to train all personnel involved with sampling effluents at the Project in the proper sampling practices and procedures, as outlined in the Project's Sampling Program - Quality Assurance and Quality Control Plan (Baffinland, 2024f), to ensure the accuracy of water quality sampling results.

Overall, the low frequency of non-compliant discharges involving effluents generated and managed by the Project is evidence of the effectiveness of the Project's wastewater/effluent management practices and procedures. Baffinland will continue to update the Project's management practices and procedures and implement new mitigation measures as required to ensure effluent discharges to the receiving environment are in compliance with applicable water quality discharge criteria.

Project Certificate Term and Condition No. 18

Category	Hydrology and Hydrogeology - Pit Lake Monitoring
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To enhance predictions for mine site closure conditions.
Term or Condition	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.
Relevant Baffinland Commitment	42
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), Nunavut Impact Review Board (NIRB), Nunavut Water Board (NWB), Qikiqtani Inuit Association (QIA)
Reference	Interim Closure and Reclamation Plan (Baffinland, 2018b)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

The latest revision of the Interim Closure and Reclamation Plan (ICRP; Baffinland, 2018b) discusses the estimated fill time for the mine pit lake. In order to address uncertainty in the estimated fill times and pit lake conditions at closure, reclamation research programs to evaluate the Open Pit flooding timeline are outlined in Appendix D.2 of the ICRP (Baffinland, 2018b).

RESULTS

Current mining activities have not yet created a pit at Deposit No. 1, the active mining area remains a hilltop outcrop. No additional information is available at this time to update the estimated fill time of the Mine Pit Lake. A reclamation research program to evaluate the Open Pit flooding timeline is outlined in Appendix D.2 of the ICRP, however Tasks 1 and 2 under this program cannot be completed until an Open Pit has formed and active dewatering is occurring (Baffinland, 2018b).

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will update the estimated mine pit lake fill time in the ICRP as additional information becomes available through monitoring and implementation of the reclamation research program for Open Pit flooding.

Project Certificate Term and Condition No. 19

Category	Hydrology and Hydrogeology - Water Infrastructure Monitoring
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate impacts to natural water flow.
Term or Condition	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.
Relevant Baffinland Commitment	57
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), Fisheries and Oceans Canada (DFO), Nunavut Water Board (NWB), Qikiqtani Inuit Association (QIA)
Reference	Environnemental Protection Plan (EPP ; Baffinland, 2021c) Fish Habitat Monitoring – 2021 Annual Report - Early Revenue Phase - Tote Road Upgrades (Baffinland, 2021f) Fisheries Authorization No. NU-06-0084 (For Tote Road Crossings; DFO, 2007) Roads Management Plan (Baffinland, 2020c) Surface Water and Aquatic Ecosystem Management Plan (Baffinland, 2021d) 2023 QIA and NWB Annual Report for Geotechnical Activities (Baffinland, 2024b) 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a) Updated Review of 2022 Dust Suppression Water Withdrawals, Mary River Project. (Knight Piésold, 2023a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Routine inspections of water crossings (i.e. culverts, bridges) at the Project are conducted throughout the year by the Project's Road Maintenance Department and environmental monitoring personnel, to ensure water crossings are not obstructed and are working as designed. Monitoring and routine maintenance activities completed for Project water crossings are outlined in the Project's Surface Water and Aquatic Ecosystem Management Plan (SWAEMP; Baffinland, 2021d), Roads Management Plan (Baffinland, 2020c) and EPP (Baffinland, 2021c).

Baffinland inspects fish bearing water crossings at the Project, at a minimum, annually by a third-party Professional Fisheries Biologist. The assessment focuses on ensuring that surface water flows and fish passage is not being hindered or altered at Project fish bearing water crossings. Baffinland continues to work with DFO to address fish passage issues along the Tote Road at specific locations. Throughout 2023, Baffinland continued to develop a plan

to address culverts and fish passage issues and to engage with DFO as the plan developed. In January 2024, DFO issued a Letter of Advice (LOA) for Baffinland's Tote Road Culvert Remediation proposal to implement a permanent crossing solution for ten (10) corrugated steel pipe (CSP) crossings along the Tote Road (DFO, 2024). Tote Road Culvert Upgrades work under the Type 'A' Water Licence commenced in early 2024 (NWB, 2015). Baffinland will continue to work with DFO to ensure planned modifications to fish bearing crossings are in compliance with the *Fisheries Act*.

As stipulated by the Project's Type 'A' and 'B' water licences, the Project is required to monitor, document and report the Project's water withdrawal rates from approved water sources. This information is submitted to the CIRNAC, the NWB and the QIA on a monthly basis for the Type 'A' Water Licence, and compiled and presented annually in the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a). Water withdrawal under the Type 'B' Water Licence is presented annually in the 2023 QIA and NWB Annual Report for Geotechnical Drilling (Baffinland, 2024b).

RESULTS

During 2023, Baffinland continued to monitor Project water crossings to ensure surface water flows were not being hindered or altered. Routine preventative maintenance conducted at Project water crossings in 2023 included the clearing of snow and ice at the inlets and outlets of culverts prior to and during freshet.

Water withdrawal rates in 2023 for approved water sources under the Type 'A' and 'B' water licences are presented in the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a) and the 2023 QIA and NWB Annual Report for Geotechnical Activities (Baffinland, 2024b), respectively.

Under Table 3 of the Type 'A' Water Licence (NWB, 2015), source specific water withdrawal limits are specified for both domestic and industrial purposes for each approved water source. During 2023, there were no exceedances of the daily water volume withdrawal limits, stipulated in the Type 'A' Water Licence, for domestic and industrial water uses. In 2022, Baffinland automated the system at the Camp Lake water jetty by connecting the flow meter to the site Programmable Logic Controller (PLC) and implemented logic coded programming to improve characterization of domestic and industrial daily water volumes withdrawn at the jetty by multiple users. The automated system was monitored throughout 2023 and procedures for withdrawing water at the water jetty were updated to ensure accuracy of water use accounting.

Under Table 2-3 of the Type 'A' Water Licence (NWB, 2015), source specific water withdrawal limits are specified for dust suppression purposes. During 2023, daily water volume withdrawal limits for dust suppression purposes were not exceeded at Approved Project water source, with the exception of two (2) exceedances at approved Project water source BG50. This is a >90% decrease and a significant improvement over 2022, when thirty (30) exceedances of the daily water volume for dust suppression use exceeded the dust suppression daily withdrawal limits, and is attributed to improved procedural controls including tracking daily water use at the individual water sources across shifts (day and night) with respect to the daily limits. In 2022, a third party consultant reviewed the dust suppression water withdrawals to assess the effects of the daily water withdrawal exceedances on instantaneous flows of streams and lake outflows at the five (5) locations where the daily water withdrawal limits were exceeded in 2022, which included the BG50 location, using estimated mean monthly and 10-year low flows, and concluded that the exceedances in 2022 were not environmentally significant and are not expected to adversely affect stream flows, lake flows, fish, or fish habitat (Knight Piésold, 2023a). The water withdrawal exceedances of the daily limit in 2023 at BG50 are considered to not be environmentally significant and are not expected to adversely effect stream flows,

fish or fish habitat since they were of significantly less volume when compared to the maximum water withdrawal exceedance at that location in 2022.

The two (2) exceedances in 2023 occurred at the same location and, upon review of the results of an investigation into the cause, were a result of technological issues with the electronic system that was implemented early in 2023. As a result of the exceedances, tracking of water for dust suppression in 2023 returned to manual tracking with a strong focus on procedural and administrative controls.

Further discussion on the water withdrawals at the Project, including all supporting daily and monthly volumes, are provided in the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a).

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to monitor Project water crossings and conduits to ensure that surface water flows are not being significantly hindered or altered.

Corrective actions that Baffinland is taking to prevent similar water withdrawal exceedances from occurring in the future include:

- Development and updating of an Standard Operating Procedure specific to the dust suppression water log tracking process;
- Assigning additional resources (supervisors) to Road Maintenance to oversee dust suppression activities in general which include water withdrawal tracking;
- Maximizing opportunities to use recycled water for dust suppression; and
- Further investigating the potential improvement of a tablet system connected to the local LTE network for real-time tracking of individual water withdrawals to supplement the manual tracking system and modified dust suppression techniques implemented to enhance dust suppression efforts on the Tote Road.

Training for operators, supervisors and environmental staff will occur prior to 2024 use of water for dust suppression and will be ongoing throughout 2024.

Tote Road Culvert Upgrades work under the Type 'A' Water Licence commenced in early 2024. Baffinland will continue to work with DFO to ensure planned modifications to fish bearing crossings are in compliance with the *Fisheries Act*.

As required by the Type 'A' and 'B' Water Licences (NWB, 2015; 2021b), Baffinland will continue to monitor, document and report water withdrawal rates from approved water sources to the appropriate agencies.

4.6.5 Groundwater & Surface Water (PC Terms and Conditions 20 through 30)

Eleven (11) PC Terms and Conditions relate to the potential impacts of the Project on groundwater and surface water. There is overlap in the scope of these PC Terms and Conditions with PC Terms and Conditions No. 16 to 19 for hydrology and hydrogeology. Several of the Terms and Conditions require the development of management plans. These Terms and Conditions also overlap with aspects of the Project that are regulated under Baffinland's Type 'A' Water Licence (for mining; NWB, 2015) and Type 'B' Water Licence (for mineral exploration). PC Term and Condition No. 29 and No. 30 require Baffinland to submit construction designs, as-built drawings and site-specific management plans to the relevant regulatory agency, as required under Part D of the Type 'A' Water Licence (NWB, 2015).

Inuit & Stakeholder Feedback

As described in Section 4.6.4 (Hydrology and Hydrogeology), the NWB is the primary stakeholder regulating water use and waste disposal through its issuance of water licences. The QIA is also a key stakeholder; the QIA and Baffinland have a Water Compensation Agreement should the Project substantially affect the quality, quantity or flow of water through Inuit Owned Land (IOL). ECCC is a key regulator administering the section of the *Fisheries Act* regarding the prohibition on the release of deleterious substances to fish-bearing waters. Groundwater is limited to minor seepage through the active layer during the brief snow-free period. Surface water quality, however, is a key resource to Inuit and to regulatory agencies, and it is among the most closely regulated aspects of the environment through effluent and aquatic effects monitoring required under the Project's project certificate, water licences and other federal regulations.

Monitoring Activities

Throughout 2023, Baffinland continued to implement the Surveillance Network Program (SNP) outlined in Schedule I of the Type 'A' Water Licence, analyzing effluents (i.e., treated sewage, treated oily stormwater) discharged to the receiving environment and monitoring surface water quality within specific Project areas (i.e., surface water runoff downstream of Project areas; NWB, 2015). Based on a review of 2023 SNP results reported to the NWB, CIRNAC and the QIA, exceedances of applicable discharge criteria in 2023 involved mainly surface water runoff and effluents with elevated Total Suspended Solids (TSS). In each case, appropriate control measures were implemented to restore TSS levels below applicable discharge criteria. Baffinland continues to assess and implement the appropriate corrective and mitigation measures to address ongoing sedimentation concerns at the Project.

Baffinland continued to implement the Tote Road Monitoring Program (TRMP) to assess Project-related impacts to surface water resulting from sedimentation and erosion events. The program, jointly developed with the QIA, evaluates upstream and downstream concentrations of total suspended solids in surface water proximal to the Tote Road at select crossings considered representative of the respective catchment areas, where fisheries crossings have been identified, and other sources of sedimentation such as snow stockpiles and historic borrow sources.

In addition to the above monitoring programs, Baffinland implements ongoing environmental monitoring and effects studies, including the Project's Aquatic Effects Monitoring Plan (AEMP), in accordance with the Type 'A' Water Licence and PC Terms and Conditions (NWB, 2015).

Table 4.13 provides an evaluation of the Project's impacts on groundwater and surface water, based on monitoring activities completed in 2023, relative to predictions presented in the FEIS and FEIS Addendum (Baffinland, 2012; 2013a).

Table 4.13: Groundwater and Surface Water Impact Evaluation

Component	Effects	Monitoring Program	Impact Evaluation
Groundwater Quality	Adverse seepage from project areas (landfill, landfarm, waste rock stockpile) affecting groundwater quality	A groundwater monitoring program was continued at the landfill and Mine Site Hazardous Waste Berm areas in 2023. Risk-based screening criteria have been developed for evaluating whether groundwater monitoring should be conducted at other Mine Site facilities	Groundwater monitoring identified the potential for mine related influence from the landfill. Further monitoring is required to understand extent, and the applicable criteria as there are no established groundwater criteria in Nunavut. A conceptual contaminant transport model for the Landfill Facility will be populated as data is collected in future years to quantify contaminant transport occurring at the Landfill Facility.
Surface Water Quality	Releases of TSS or other changes in water quality due to point-source discharges (i.e., stormwater and sewage effluents)	Effluents are monitored prior to discharge under the SNP; the receiving aquatic environment is monitored in accordance with the AEMP.	Discharges of effluent at the Project met the applicable discharge criteria, with the exception of four (4) events involving water quality exceedances of discharge criteria outlined in the Type 'A' Water Licence.
	Releases of TSS or other changes in water quality due to non-point source releases (i.e., erosion and sedimentation)	Runoff from ground disturbance areas (construction areas, quarries) are monitored for TSS; site is inspected visually for evidence of erosion and sedimentation, with follow-up sampling if required.	Short term TSS exceedances occurred at the Mine Site, Milne Port, and along the Tote Road corridor. Erosion and sedimentation impacts were within FEIS predictions.
	Releases of TSS or other changes in water quality due to airborne emissions	Site is inspected visually for evidence of erosion and sedimentation, with follow-up sampling if required. Lake sedimentation monitored under the AEMP.	Site runoff did not exceed FEIS predictions.

Path Forward

Baffinland will continue to implement the Long Term Water Management Plan (Baffinland, 2021e) for the Mine Site and other sedimentation and erosion mitigation measures in 2024, and will monitor effluents and receiving waters in accordance with Type 'A' Water Licence and AEMP.

Baffinland will continue the groundwater monitoring program in 2024, and will continue to retain consultants to execute the program which will be implemented based on the assessment and recommendations from the 2023 Groundwater Monitoring Report and 2023 Groundwater Monitoring Program Memorandum (Knight Piésold, 2024a; 2024b). Due to the challenges associated with sampling methodologies for groundwater data collection in a

permafrost environment and the challenges in interpreting this data, further statistical trend analysis is recommended to evaluate the significance of changes in water quality between up-gradient and down-gradient monitoring locations as additional water quality data is collected in future years. Given the challenges described above, however, long-term trends may not be identified even with an expanded dataset. Despite these fundamental structural challenges, Baffinland is committed to continuing to advance the groundwater monitoring program in 2024 to gain a better understanding of natural groundwater chemistry at the Project site.

Project Certificate Term and Condition No. 20

Category	Groundwater/Surface Waters - Explosives
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To ensure that the effects associated with the manufacturing, storage, transportation and use of explosives do not negatively impact the areas surrounding the Project.
Term or Condition	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.
Relevant Baffinland Commitment	57, 65
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), Nunavut Water Board (NWB), Qikiqtani Inuit Association (QIA)
Reference	Aquatic Effects Monitoring Plan (Baffinland, 2024g) Canadian Water Quality Guidelines for the Protection of Aquatic Life - Nitrate Ion (CCME, 2012) Canadian Water Quality Guidelines for the Protection of Aquatic Life - Ammonia (CCME, 2010) Sampling Program - Quality Assurance and Quality Control Plan (Baffinland, 2024f) 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a) 2023 CREMP Report (Minnow, 2024a).
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.4.1 Appendix G.8.4 Appendix G.8.7

METHODS

Surface water runoff downstream of Project mining areas and quarries is monitored as prescribed by the Type 'A' Water Licence, with water quality results reported to CIRNAC, the NWB and the QIA on a monthly and annual basis. Water samples are collected using the practices and procedures described in Baffinland's Sampling Program - Quality Assurance and Quality Control Plan (QA/QC Plan; Baffinland, 2024f), which is an approved plan under the Type 'A' Water Licence (NWB, 2015).

In addition, the Aquatic Effects Monitoring Plan (AEMP; Baffinland, 2024g), a follow-up monitoring program identified in Baffinland's FEIS (Baffinland, 2012) and prescribed by the Baffinland's Type 'A' Water Licence (NWB, 2015), monitors the receiving aquatic environment downstream of Project activities at the Mine Site.

RESULTS

During 2023, surface water runoff downstream of active quarries and mining areas was monitored for the water quality parameters outlined by the Type 'A' Water Licence (NWB, 2015), including parameters related to explosives residue, such as ammonia and nitrate. Of the Project's two (2) quarries, only one (1); the Milne Port Q1 quarry, was active during the 2023 open water season. Un-ionized ammonia and nitrate levels were below the CCME water quality guidelines (CCME, 2010) of 19 ug/L for un-ionized ammonia, and 3 mg NO₃-N/L for long-term exposure for nitrate, in freshwater systems for all samples downstream of the Milne Port Q1 quarry with the exception of select samples at one (1) of the Q1 quarry monitoring sites; MP-Q1-02 (CCME; 2010, 2012). MP-Q1-02 is a monitoring station located within the constructed drainage ditch that collects surface water runoff from the Q1 quarry and is not located within a natural waterbody. Surface flows from the drainage ditch discharge north of the q1 Quarry onto the tundra. The concentration of both ammonia and nitrate in the surface water sampling site MP-C-H; downstream of MP-Q1-02, was below CCME guidelines for all samples in 2023, and therefore within FEIS predictions (Baffinland, 2012). At the Mine Site, un-ionized ammonia and nitrate levels were below their respective CCME water quality guidelines for un-ionized ammonia and nitrate in freshwater systems for all samples downstream of the QMR2 quarry. All acute toxicity water samples collected in 2023 downstream of Project quarries and mining areas were demonstrated to be acutely non-lethal. A complete discussion of the 2023 water quality monitoring results collected under the Type 'A' Water Licence (NWB, 2015) is provided in the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a).

Monitoring under the AEMP in 2023 included the Core Receiving Environment Monitoring Program (CREMP), a key component of the AEMP used to detect Project-related changes in water quality, sediment quality, and aquatic biota including phytoplankton (chlorophyll a), benthic invertebrate community metrics, and Arctic char (*Salvelinus alpinus*) populations in lakes and streams near the Mine Site. Results of the 2023 CREMP indicate mine-related influences on water and sediment quality at some of the primary receiving systems, but no ecologically significant, adverse, mine-related effects to biota were identified at any of the receiving waterbodies based on comparisons to applicable reference and/or baseline conditions. Evidence of Project-related change was observed in Camp Lake and Sheardown Lake systems. Within the Sheardown Lake system, elevated levels of total ammonia, nitrate and total Kjeldahl nitrogen (TKN) were observed in 2023 when compared to both reference and baseline conditions, however, no adverse effects on the aquatic biota were indicated. Trend analysis of aqueous concentrations of total ammonia, nitrate and nitrite in the affected tributary; Sheardown Lake Tributary 9 (SDLT9), in 2023 indicated mine-related influences on water quality at SDLT9 in 2023 that was also observed in 2022. a special investigation will be conducted in 2024 including implementation of an expanded spatial water quality program to identify the source(s) of ammonia, nitrate, and TKN to SDLT9.

Reports discussing the 2023 results for the CREMP and Lake Sedimentation Monitoring Program including comparison to FEIS predictions are provided in Appendix G.4.1 and Appendix G.4.2 and as appendices to the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a).

TRENDS

Overall, 2023 monitoring results for surface water runoff and aquatic environments downstream of Project mining areas and quarries were generally consistent with monitoring results observed in prior years.

Trends associated with water quality, sediment quality, and biological monitoring under the CREMP are presented in the 2023 CREMP Report (Appendix G.4.1; Minnow, 2024a).

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to monitor surface water runoff and aquatic environments downstream of Project mining areas and quarries as outlined in the Type 'A' Water Licence (NWB, 2015) and the Project's AEMP (Baffinland, 2024g).

Project Certificate Term and Condition No. 21

Category	Groundwater/Surface Waters - Aquatic Effects Monitoring Plan and Dustfall Monitoring
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations
Objective	To mitigate potential impacts to surface and ground waters.
Term or Condition	<p>The Proponent shall ensure that the scope of the Aquatic Effects Monitoring Plan (AEMP) includes, at a minimum:</p> <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> a. Measures for dustfall monitoring designed as follows: <ul style="list-style-type: none"> ii. To establish a pre-trucking baseline and collect data during Project operation for comparison iii. 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) iv. 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.
Relevant Baffinland Commitment	2
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Crown-Indigenous and Northern Affairs Canada (CIRNAC), Nunavut Impact Review Board (NIRB), Nunavut Water Board (NWB), Qikiqtani Inuit Association (QIA)
Reference	<p>Aquatic Effects Monitoring Plan (Baffinland, 2024g)</p> <p>Final Environmental Impact Statement (FEIS; Baffinland, 2012)</p> <p>2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)</p> <p>2021 QIA and NWB Annual Report for Operations (Baffinland, 2022a)</p> <p>2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a)</p> <p>2023 CREMP (Minnow, 2024a)</p> <p>2023 Lake Sedimentation Monitoring Report (Minnow, 2024b)</p>
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.8.4 Appendix G.4.1 Appendix G.4.2

METHODS

The Aquatic Effects Monitoring Plan (AEMP) was initially submitted to the NWB on June 27, 2014 (Baffinland, 2014d), as required by the Type 'A' Water Licence (NWB, 2015), and was subsequently approved by the NWB. On November 8 and 9, 2017, Baffinland chaired the 2017 Freshwater Workshop in Iqaluit, Nunavut with regulators and stakeholders (ECCC, CIRNAC, GN, NWB, QIA) to discuss the Project's freshwater monitoring programs and the proposed changes to the Project's CREMP, included in Revision 2 of the AEMP (Baffinland, 2016b); submitted to regulators in April 2016. Taking into account discussions and feedback received at the 2017 Freshwater Workshop, Baffinland resubmitted a modified Revision 2 of the AEMP to regulators and stakeholders through the Phase 2 Proposal water licence amendment (Baffinland, 2018c), for review and approval. Additionally, in 2021 Baffinland submitted an updated application package through the water licence amendment process to various regulatory agencies for technical review and comment. Baffinland subsequently hosted a workshop in February 2022 to discuss any remaining outstanding technical comments. Baffinland updated the AEMP incorporating feedback from various regulators and QIA. That revision; revision 2, was included as an appendix in the 2021 QIA and NWB Annual Report for Operations (Baffinland, 2022a) submission. Further updates were subsequently completed to AEMP revision 2 to reflect the responses that Baffinland provided to comments from various regulators and QIA for the AEMP and related programs following the 2021 reporting year, and for inclusion of adaptive management mechanisms and Trigger Action Response Plan (TARP) tables relevant to the AEMP program. That updated revision was submitted to the NWB with the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a) for approval.

The AEMP has been structured to serve as an overarching 'umbrella' that conceptually provides an opportunity to integrate results of individual, but related aquatic monitoring programs, including water and sediment quality, dustfall monitoring, and freshwater biota and fish health. Key component studies of the AEMP that were conducted in 2023 included the CREMP, Lake Sedimentation Monitoring Program, and Dustfall Monitoring Program.

The CREMP evaluates potential mine-related influences on water quality, sediment quality, and/or biota (including phytoplankton, benthic invertebrates and fish) within aquatic environments near the Mine Site. Under the CREMP, receiving aquatic environments near the Mine Site are monitored during several periods throughout the year and include the Camp Lake, Sheardown Lake, and Mary Lake Systems as well as Reference Lake 3 and several reference tributaries. The AEMP includes benchmarks and an action framework to evaluate monitoring data and determine next steps and/or corrective actions, if required.

The Lake Sedimentation Monitoring Program monitors dust and sediment deposition rates in Sheardown Lake NW in an effort to better understand and evaluate potential mine-related influences on biota (e.g. fish larvae hatching success). Currently, the Lake Sedimentation Monitoring Program is conducted annually and involves the deployment and retrieval of submerged sediment traps to determine sediment deposition rates, density, and thickness during ice-cover and open water periods.

Annual monitoring reports for both the CREMP and Lake Sedimentation Monitoring Program provide further discussion of the methods used and annual monitoring results, and are provided in Appendix G.4.1 and Appendix G.4.2, respectively, and as appendices to the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a).

The Dustfall Monitoring Program is performed annually with sampling stations established at the Mine Site, Milne Port, along the Tote Road, and at reference sites located at various distances from Project operations.

The three (3) main objectives of the Dustfall Monitoring Program are as follows:

1. To quantify the extent, magnitude and composition of dustfall generated by Project activities;
2. To determine seasonal variations in dustfall; and
3. To assess annual changes in dustfall at sampling locations relative to thresholds associated with the models and assessments performed in the FEIS (Baffinland, 2012).

Results collected under the dustfall monitoring program are provided on an annual basis to NIRB and other relevant regulatory agencies and stakeholders in the 2023 Terrestrial Environment Annual Monitoring Report (TEAMR; EDI, 2024a).

RESULTS

Reports discussing the 2023 results for the CREMP and Lake Sedimentation Monitoring Program are provided in Appendix G.4.1 and Appendix G.4.2 and as appendices to the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a). The 2023 results of the Dustfall Monitoring Program are presented in the 2023 TEAMR (Appendix G.5.1; EDI, 2024a).

The current Revision 2 of the Project's AEMP (Baffinland, 2024g) meets the requirements and intended scope outlined in PC Term and Condition No. 21 and has been submitted to the NWB with the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a) for approval. The latest Revision 2 reflects the responses that Baffinland provided to comments from various regulators and QIA for the AEMP and related programs following the 2021 reporting year, and for inclusion of adaptive management mechanisms and TARP tables relevant to the AEMP program.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to work with appropriate stakeholders and regulatory agencies to identify required revisions to the AEMP and associated environmental monitoring programs. Baffinland submitted the current Revision 2 of the AEMP (Baffinland, 2024g) with the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a) that captures current operational activities and monitoring requirements.

Project Certificate Term and Condition No. 22

Category	Groundwater/Surface Waters - Sediment and Erosion Management Plan
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To develop appropriate sediment and erosion controls to prevent impacts to surface waters.
Term or Condition	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.
Relevant Baffinland Commitment	57
Reporting Requirement	Plan to be provided to the NIRB for review and comment at least 60 days prior to commencement of construction activities.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), Nunavut Impact Review Board (NIRB), Nunavut Water Board (NWB), Qikiqtani Inuit Association (QIA)
Reference	Surface Water and Aquatic Ecosystem Management Plan (Baffinland, 2021d)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

A comprehensive sediment and erosion management plan is incorporated into Baffinland's Surface Water and Aquatic Ecosystem Management Plan (SWAEMP; Baffinland, 2021d). An earlier revision of the SWAEMP was submitted to and approved by the NWB prior to the commencement of Early Revenue Phase construction.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 23

Category	Groundwater / Surface Waters - Groundwater Monitoring
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To prevent impacts to groundwater quality.
Term or Condition	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.
Relevant Baffinland Commitment	57
Reporting Requirement	Plan to be provided to the NIRB for review and comment at least 60 days prior to commencement of construction activities.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), Nunavut Impact Review Board (NIRB), Nunavut Water Board (NWB), Qikiqtani Inuit Association (QIA)
Reference	Surface Water and Aquatic Ecosystem Management Plan (SWAEMP; Baffinland, 2021d) 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a) 2023 Groundwater Monitoring Program Memorandum (Knight Piésold, 2024a) Groundwater Monitoring Program Review and Assessment (Knight Piésold, 2023c) Development of a Conceptual Contaminant Transport Model for the Landfill at the Mary River Mine Site (Knight Piésold, 2023b)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.3.1

METHODS

A groundwater monitoring program, involving the installation of shallow groundwater wells downstream of Project infrastructure, is discussed in Baffinland's SWAEMP (Baffinland, 2021d).

Baffinland continued to advance the groundwater monitoring program, as outlined in the 2023 Groundwater Monitoring Program Memorandum in Appendix G.3.1 (Knight Piésold, 2024a), at the Project in 2023. Groundwater consultants, specialized in Arctic environments were retained in 2023 to execute the 2023 groundwater monitoring program activities at the Mine Site Non-Hazardous Waste Landfill Facility (Landfill Facility) and Mine Site Hazardous Waste Berm (HWB) Facility, and provide additional recommendations for the program for future years. The 2023 groundwater monitoring program involved the installation of several new groundwater monitoring locations at the Landfill Facility and the HWB Facility. The well installations included the installation of a 0.06 m diameter perforated casing extending 0.5 m to 1 m into permafrost, where possible, and a 0.025 m diameter pre-pack monitoring well within the casing. The new well locations are intended to address some of the historical sampling issues associated with small diameter drive point piezometers, including often frozen conditions, and low sampling volumes. During the field work for the 2023 groundwater monitoring program, several limitations occurred resulting in issues that

may have impacted the results of the data collected and its subsequent interpretation. Additional work is planned in 2024 to implement recommendations from the 2023 groundwater monitoring program and any ongoing recommendations from the 2022 annual groundwater report.

The methodology for the 2023 groundwater monitoring program is detailed in the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a). The 2023 Groundwater Monitoring Program Memorandum is provided in Appendix G.3.1 (Knight Piésold, 2024a).

RESULTS

Results of the groundwater program conducted in 2023 are presented in the 2023 Groundwater Monitoring Program Memorandum (Knight Piésold, 2024a) in Appendix G.3.1. The Milne Port Groundwater Assessment is provided as a memorandum in Appendix G.3.2 (Knight Piésold, 2024b).

TRENDS

Refer to the 2023 Groundwater Monitoring Program Memorandum (Knight Piésold, 2024a) for Project groundwater monitoring information and associated trends.

On-going groundwater monitoring is required to gain a better understanding of natural groundwater chemistry and any impacts at the Project site. As additional monitoring is conducted in future years, Baffinland will be able to better characterize natural groundwater chemistry at the Project and identify and confirm any potential trends, including potential impacts from Project activities or infrastructure.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue the groundwater monitoring program in 2024, and will continue to retain consultants to execute the program which will be implemented based on the assessment and recommendations from the 2023 Groundwater Monitoring Report and 2023 Groundwater Monitoring Program Memorandum (Knight Piésold, 2024a; 2024b).

In 2022, following a desktop review of the key components of the Mine Site, the third-party consultant developed risk-based screening criteria for evaluating whether groundwater monitoring should be conducted at other Mine Site facilities. In 2023, the risk assessment was expanded to include Milne Port Sites. Based on the screening criteria, expansion of the current groundwater monitoring program to include the Milne Port area was not recommended. The third-party consultant noted, however, that should the risk level of a Project facility increase in the future due to changing site conditions, groundwater monitoring at the facility may become warranted; therefore, the facility will require re-evaluation against the screening criteria should site condition change.

The third-party consultant is also developing a conceptual contaminant transport assessment model for the Landfill Facility to quantify contaminant transport occurring at the Landfill Facility. Work planned for 2024 will include collection of additional groundwater data down-gradient of the Landfill Facility to assist in further developing the Contaminate Transport Model to quantify contaminant transport occurring at the Landfill Facility. Currently, only limited data is available, however, additional data collected in future years will be used to inform the analytical model with the goal of developing a fully realistic model, which will continue to be further refined over time as data continues to be collected in future years.

Implementing a groundwater program in a permafrost-rich environment presents significant methodological challenges including quantifying groundwater direction, flow and interpretation of groundwater quality.

Additionally, groundwater flow dynamics are driven primarily by the permafrost table elevations rather than soil stratigraphy, resulting in significant challenges to determine flow direction and gradient. Due to the challenges associated with sampling methodologies for groundwater data collection in a permafrost environment and the challenges in interpreting this data, further statistical trend analysis is recommended to evaluate the significance of changes in water quality between up-gradient and down-gradient monitoring locations as additional water quality data is collected in future years. Given the challenges associated with sampling methodologies for groundwater data collection in a permafrost environment and the challenges in interpreting this data, however, long-term trends may not be identified even with an expanded dataset. Despite these operational challenges, Baffinland is committed to continuing to advance the groundwater monitoring program in 2024 to gain a better understanding of natural groundwater chemistry at the Project site.

Project Certificate Term and Condition No. 24

Category	Groundwater/Surface Waters - Effluent Management
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate impacts to groundwater and surface waters from effluent discharge.
Term or Condition	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.
Relevant Baffinland Commitment	6
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Progress
Stakeholder Review	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), Environment and Climate Change Canada (ECCC), Nunavut Impact Review Board (NIRB), Nunavut Water Board (NWB), Qikiqtani Inuit Association (QIA)
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Methods for monitoring and reporting on Project Certification Condition No. 24 are discussed in the response to Project Certificate Term and Condition No. 17.

RESULTS

Results are discussed in Project Certificate Term and Condition No. 17.

TRENDS

Trends are discussed in Project Certificate Term and Condition No. 17.

RECOMMENDATIONS / LESSONS LEARNED

Recommendations/lessons learned are discussed in Project Certificate Term and Condition No. 17.

Project Certificate Term and Condition No. 25

Category	Landforms - Additional Geotechnical Investigations
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To mitigate impacts to sensitive landforms.
Term or Condition	The Proponent shall undertake 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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	Plan to be provided to the NIRB for review and comment at least 60 days prior to commencement of construction activities.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Nunavut Water Board, Indigenous and Northern Affairs Canada, Qikiqtani Inuit Association
Reference	Annual Geotechnical Inspections – 2023 Annual Geotechnical Inspection Report 1 (WSP, 2023b) 2023 Annual Geotechnical Inspection Report 2 (WSP, 2023c) 2019 Inspection of the Milne Inlet Tote Road and Associated Borrow Sources (See Appendix G.15 in Baffinland, 2020e) Borrow Source Management Plan - Kilometre 97 (Baffinland, 2014b) 2023 QIA and NWB Annual Report for Geotechnical Activities (Baffinland, 2024b) 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.2.4.1 Appendix G.2.4.2

METHODS

In 2023, WSP Environment and Infrastructure Canada Limited (WSP) completed two (2) geotechnical inspections of the following Project facilities and infrastructure:

- Bulk fuel and waste storage facilities;
- Water management ponds and associated surface water drainage infrastructure;
- Polishing and Waste Stabilization Ponds (PWSPs);
- Non-hazardous Landfill Facility;
- Landfarm Facility;
- Existing rock quarries;
- Former borrow areas (4);

- Bridges (4) and former borrow areas (4) along the Tote Road; and
- The Mine Haul Road between the Mine Site Crusher Pad and Deposit No. 1.

The inspections took place from June 21 to 27, 2023 and from August 30 to September 5, 2023 (see Appendix G.2.4).

The inspections primarily focused on the following aspects:

- The structures were inspected for conformance with the design basis as presented in "as constructed" and "as-built" drawings (provided in the first and subsequent reports);
- The structures were specifically inspected for settlement, cracking, and seepage through the berms;
- The areas around the structures were examined for evidence of seepage;
- Quarry walls were reviewed for relative stability;
- New structures under construction were reviewed for conformity with design drawings; and
- The berms of the containment structures were examined with respect to possible tears in liner membranes.

Geotechnical investigations continued to be conducted at Project sites to support engineering studies for future Project infrastructure.

Geotechnical inspections completed by WSP can be found in Appendix G.2.4.

RESULTS

Results from the geotechnical inspections indicate the lined waste storage cells and surface water management ponds are in good condition, and no seepage from currently operating ponds and cells was noted. The berms enclosing these cells and ponds show no signs of instability, there are no tension cracks or excessive settlements, and no detrimental slope erosion is visible on the berms.

Open drainage ditches and culverts are generally in good condition, with some erosion and sloughing of slopes visible at a few locations, to be repaired/reggraded as part of Baffinland's regular maintenance program. It was recommended that one drainage ditch at Milne Port (P-SWD-3) may require a redesign to facilitate efficient drainage of surface water. Ponding water was noted at the lower levels of the Q1 quarry at Milne Port and the QMR2 quarry at the Mine Site, improvements to surface water control at these quarries was recommended.

Along the Tote Road, the abutments at the four (4) inspected bridges were observed to be stable and no scour around the abutments was observed.

As identified in previous years, Project activities have led to localized permafrost degradation along the Tote Road. Baffinland has engaged a third-party consultant to conduct a full review of the current status of all historic borrow sources.

Minor repairs and actions were recommended such as repairs to pond liners, removal of pallets and debris on or around lined areas, and discharging stormwater retained within lined hazardous waste berms. Baffinland's covering letter included with each geotechnical inspection report summarizes completed actions from the previous geotechnical inspection, and Baffinland's plan for implementing the recommendations identified in the geotechnical inspection report.

Details of the geotechnical investigations (e.g., drilling) completed in 2023 are discussed in the 2023 QIA and NWB Annual Report for Geotechnical Activities (Baffinland, 2024b). The 2023 Geotechnical inspections reports, along with Baffinland's plans to address any identified concerns, are included in Appendix G.2.4.

TRENDS

All water retention structures have continued to remain stable, with minor settling.

Tetra Tech assessed the Tote Road and associated borrow sources in 2009, 2014 and 2019. The observations have established that there are clear links between some borrow pit locations adjacent to the road and thaw settlement observed on the road embankment. Changes to the thermal regime of sensitive landforms is limited to these locations, which are within the Project Development Area (PDA). Outside of this, there were no distinguishable Project-related effects on permafrost or sensitive landforms. These results are consistent with the FEIS prediction of no significant impact.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland is currently developing a multi-year Execution Plan to address locations identified as high-priority in the Tetra Tech assessment of the Tote Road and associated borrow sources completed in 2019. Implementation of the multi-year Execution Plan was initiated in 2019 with significant efforts executed between 2020 and 2023. This was reflected in an action plan that was submitted to the NWB and QIA to address priority locations, and was included in the 2019 NIRB Annual Report (Baffinland, 2020b).

Results from geotechnical investigations conducted in 2023 will be used to support the design of future Project infrastructure. Recommendations outlined in the 2023 geotechnical inspections reports (WSP, 2023b; 2023c) relating to existing infrastructure will be included in Baffinland's ongoing sustaining capital program.

Baffinland plans to continue implementing the borrow source's progressive reclamation and rehabilitation plan outlined in Appendix B of the borrow source's approved management plan titled Borrow Source Management Plan - Kilometre 97 (Baffinland, 2014b).

Project Certificate Term and Condition No. 26

Category	Landforms and Soils - Erosion Management Plan
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To develop appropriate measures for preventing destabilization and erosion.
Term or Condition	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.
Relevant Baffinland Commitment	57
Reporting Requirement	Plan to be provided to the NIRB for review and comment at least 60 days prior to commencement of construction activities.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), Nunavut Water Board (NWB), Qikiqtani Inuit Association (QIA)
Reference	Environmental Protection Plan (Baffinland, 2021c) Surface Water and Aquatic Ecosystem Management Plan (Baffinland, 2021d) Roads Management Plan (Baffinland, 2020c)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

A comprehensive erosion management plan is included in the Project's Surface Water and Aquatic Ecosystem Management Plan (SWAEMP; Baffinland, 2021d). An earlier revision of the SWAEMP was approved by the NWB prior to the commencement of Early Revenue Phase construction.

Activity specific sediment and erosion control measures and procedures used at the Project are also discussed within Section 3.4.5 of the Project's Roads Management Plan (Baffinland, 2020c) and in the following sections of the Environmental Protection Plan (Baffinland, 2021c):

- Section 4.03 Land Disturbance;
- Section 4.09 Sediment and Erosion Control;
- Section 4.17 Road Construction and Borrow Development;
- Section 4.18 Tote Road Watercourse Crossing Installation;
- Section 4.25 Quarry and Borrow Pit Operation; and
- Section 2.27 Excavations and Foundations.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 27

Category	Landforms, Geology and Geomorphology - Natural Aesthetics
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate impacts to natural aesthetics.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	The Communities of: Arctic Bay, Clyde River, Sanirajak, Igloolik and Pond Inlet
Reference	2023 Engagement Records 2020 TEWG Meeting Records (Appendix C.2 in Baffinland, 2021g)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix B.1

METHODS

Please see Section 2 for engagement methods.

RESULTS

Public consultation and community feedback did not reveal any significant concerns about specific impacts that changes to the topography and landscape have had on the aesthetic value of the Project area. Most comments about changes to the land and sea continue to focus on ensuring the effects of the Project are being monitored and mitigated, and concerns with potential Project related effects on land use (hunting and harvesting). Concerns related to dust (specifically on snow), which may be visible on the landscape depending on distance from the Project, continue to be voiced, particularly around Milne Port and along the Tote Road and with respect to current and future operations. Aesthetic concerns related to the use of dust-laden snow to make tea by land users traveling near Project sites (e.g., see February 2020 TEWG Meeting Records; Appendix C.2 in Baffinland, 2021g). Baffinland takes the concerns provided by community members on the generation of dust by Baffinland activities seriously. Accordingly, Baffinland undertakes annual dust monitoring throughout Project areas, and has modified its operations and incorporated changes through the years to minimize dust generation (for additional details, refer to PC Term and Condition No. 10). In 2021, an independently-led Dust Audit Committee was initiated, and continued throughout 2023, to further investigate dust concerns related to Baffinland's operations. The third-party auditors work with a Dust Audit committee composed of representatives from each of the five (5) North Baffin communities including Arctic Bay, Clyde River, Igloolik, Pond Inlet, and Sanirajak. Committee members were nominated by Hamlet and

Hunters and Trappers Organizations to participate in the Audit. The third-party auditors completed two (2) field investigations with the support of the Dust Audit Committee, in 2021 (September 30 to October 5) and 2023 (June 8 to 14). A Baffinland Dust Audit - Final Recommendations Report was released publically in February 2023, following this reporting period (Nunami Stantec, 2023). The final report evaluated the effectiveness of the current measures and put forward recommendations and options to reduce the spread and impacts of dust from the project activities. In August, 2023, Baffinland provided a response to the Dust Audit Committee final report. After some delay in getting community members to site, the follow-up report will be issued to the NIRB in Q2 of 2024 after a successful site visit in April.

Other discussions on aesthetic values as they relate to mine closure and the final state of the mine following reclamation were initiated by Baffinland during the May 7, 2019 Community Risk Workshop at the Mine Site. While limited direct feedback on aesthetic values was gained during the workshop discussion, Baffinland will continue to engage with Inuit to identify closure objectives and criteria that respect the aesthetic values and end land use, while incorporating and respecting Inuit Qaujimajatuqangit (IQ).

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to track and report on comments made regarding the aesthetic value of the Project area and engage with communities. Baffinland will continue to jointly work with QIA, the GoC and the Dust Audit Committee to refine its mitigations and improve the aesthetic value of the Project area.

Project Certificate Term and Condition No. 28

Category	Landforms, Geology and Geomorphology - Permafrost
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To ensure that permafrost integrity is maintained.
Term or Condition	The Proponent shall monitor the effects of the Project on the permafrost along the railway and all other Project affected areas, including the Tote Road and must implement effective preventative measures to ensure that the integrity of the permafrost is maintained.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	During construction and operations, the Proponent shall on an annual basis, provide information regarding the results of monitoring and identifying any mitigation measures undertaken in fulfillment of this Term and Condition in the Proponent's annual report to the Nunavut Impact Review Board. Subsequently, once monitoring has demonstrated that the area(s) assessed are stable, the Proponent shall provide information regarding monitoring results and any updates to mitigation measures every two (2) years in the Proponent's annual report.
Status of PC Term and Condition	Active
Status of Compliance	In Progress
Stakeholder Review	Environment Climate Change Canada, Qikiqtani Inuit Association, Nunavut Water Board, Indigenous and Northern Affairs Canada, Nunavut Impact Review Board.
Reference	Annual Geotechnical Inspections – 2023 Annual Geotechnical Inspection Report 1 (WSP, 2023b) 2023 Annual Geotechnical Inspection Report 2 (WSP, 2023c) 2019 Inspection of the Milne Inlet Tote Road and Associated Borrow Sources (See Appendix G.15 in Baffinland, 2020e) Environmental Protection Plan (Baffinland, 2021c)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.2.4.1 Appendix G.2.4.2

METHODS

Bi-annual geotechnical inspections were completed by WSP Environment and Infrastructure Limited (WSP) in 2023, as required by the NWB Type 'A' Water Licence No. 2AM-MRY1325 (NWB, 2015), for the following on-site engineered Project facilities and infrastructure:

- Bulk fuel and waste storage facilities;
- Water management ponds and associated surface water drainage infrastructure;
- Polishing and Waste Stabilization Ponds (PWSPs);
- Non-hazardous Landfill Facility;

- Landfarm Facility;
- Existing rock quarries;
- Former borrow areas (4);
- Bridges (4) and former borrow areas (4) along the Tote Road; and
- The Mine Haul Road between the Mine Site Crusher Pad and Deposit No. 1.

Inspections took place from June 21 to 27, 2023 and from August 30 to September 5, 2023.

The inspections primarily focused on the following aspects:

- The structures were inspected for conformance with the design basis as presented in "as constructed" and "as-built" drawings (provided in the first and subsequent reports);
- The structures were specifically inspected for settlement, cracking, and seepage through the berms;
- The areas around the structures were examined for evidence of seepage;
- Quarry walls were reviewed for relative stability; and
- New structures under construction were reviewed for conformity with design drawings.

Geotechnical investigations continued to be conducted at Project sites to support engineering studies for future Project infrastructure. Additionally, in 2019 Baffinland retained Tetra Tech to complete an evaluation of the stability and condition of the Tote Road and the historic borrow sources within the Tote Road corridor. The investigation completed by Tetra Tech was included in the 2019 Annual Report to the NIRB (See Appendix G.15 in Baffinland, 2020e).

Bi-annual geotechnical inspections completed by WSP can be found in Appendix G.2.4.

RESULTS

As identified in previous years, Project activities have led to localized permafrost degradation issues along the Tote Road and Mine Haul Road. It is noted in Inspection Report 2 (WSP, 2023a) that the impact of the Tote Road on permafrost was generally limited and mostly occurred during construction of the road, but that there are a few visible deficiencies that could have an adverse effect on the condition of the active layer locally. The most visible deficiencies are poor drainage/erosion control along sections of the road embankment, including ponding water immediately next to the embankment, and short culverts present at some locations of the Tote Road. Baffinland is continuing to address these deficiencies as part of ongoing maintenance on the Tote Road. For further details on the results of the 2023 geotechnical investigations, please see Term and Condition No. 27.

TRENDS

Baffinland continues to monitor, research strategies and remediate identified locations as required. Tetra Tech assessed the Tote Road and associated borrow sources in 2009, 2014 and most recently in 2019. The observations have established that there are clear links between some borrow pit locations adjacent to the road and thaw settlement observed on the road embankment. Changes to the thermal regime of sensitive landforms is limited to these locations, which are within the PDA. Outside of this, there were no distinguishable Project-related effects on permafrost or sensitive landforms. These results are consistent with the FEIS prediction of no significant impact.

RECOMMENDATIONS / LESSONS LEARNED

Project designs and the placement of infrastructure consider sensitive landforms and permafrost. Baffinland continues to have a third-party conduct bi-annual geotechnical inspections.

To improve historical permafrost degradation issues along the Tote Road, Baffinland will continue to develop and prioritize preventative and mitigation measures to minimize the impacts of the Project's activities and infrastructure on landforms along the Tote Road. To address recommendations from the Tetra Tech inspection, Baffinland is currently developing an Execution Plan for locations identified as high-priority. Implementation of the multi-year Execution Plan was initiated in 2019 with significant efforts executed in 2020 and 2021, and additional works in 2022 and 2023. Culvert remediation works at selected locations along the Tote Road began in 2024 to improve fish passage that will also improve surface water drainage and erosion control in these areas.

Project Certificate Term and Condition No. 29

Category	Landforms, Geology and Geomorphology - Design Plans
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations
Objective	To confirm constructed components meet design as assessed.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), Fisheries and Oceans Canada (DFO), Nunavut Impact Review Board (NIRB), Nunavut Water Board (NWB), Qikiqtani Inuit Association (QIA)
Reference	2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a)
Ref. Document Link	Not applicable

METHODS

Not applicable.

RESULTS

As required by the Project's Type 'A' Water Licence and Commercial Lease with QIA, two (2) engineering submissions were provided to regulatory agencies and stakeholders in 2023, comprising Issued-for-Construction (IFC) Drawings, as summarized in Table 4.14.

Table 4.14: 2023 Submissions to Regulatory Agencies and Stakeholders

Date of Submission	Regulatory Agencies and Stakeholders	Content
June 2, 2023	NWB, CIRNAC, QIA	IFC Drawings Submission – KM 105 Pond Water Treatment Facility
October 20, 2023	NWB, CIRNAC, QIA, DFO	Baffinland Response to Technical Comments - 2022/2023 Tote Road Culvert Upgrades, revised Tote Road Permanent Crossing Plan – Round CSP Culvert Installations, Tote Road Crossing Alternatives Review

No as-built documentation was submitted for infrastructure completed in 2023. Works undertaken in 2023 remain in-progress and as-built documentation will be prepared and submitted once they are complete.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to provide the appropriate regulatory agencies and stakeholders, for review and acceptance, design and engineering documentation, drawings and construction summary reports (inclusive of as-built drawings) for Project infrastructure.

Project Certificate Term and Condition No. 30

Category	Landforms, Geology and Geomorphology - Quarries
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To provide oversight on quarry design and management.
Term or Condition	The Proponent shall develop site-specific quarry operation and management plans in advance of the development of any potential quarry site or borrow pit.
Relevant Baffinland Commitment	65
Reporting Requirement	Plans to be provided to the NIRB for review and comment at least 30 days prior to commencement of construction activities.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Not applicable
Reference	Q1 Quarry Management Plan (Baffinland, 2022b) Quarry Blasting Operations Management Plan (Baffinland, 2013b) Borrow Source Management Plan – KM 97 (Baffinland, 2014b) Borrow Pit and Quarry Management Plan (Baffinland, 2014c)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

To date, site-specific management plans for quarries and borrow sources have been developed and provided to the relevant agencies prior to development, for active quarry sources. No new management plans were submitted to the NIRB for review and comment in 2023.

RESULTS

During 2023, Baffinland operated one (1) quarry, the Q1 Quarry at Milne Port, and one borrow source, the KM 97 Borrow Source near the Mine Site to support Project road maintenance and infrastructure construction.

TRENDS

None.

RECOMMENDATIONS / LESSONS LEARNED

Site-specific management plans for new quarries and borrow sources will be developed and provided to the relevant agencies prior to development.

4.6.6 Vegetation (PC Terms and Conditions 31 through 40)

Ten (10) PC Terms and Conditions relate to the potential impacts of the Project on vegetation and several of the conditions require the development of vegetation monitoring plans within the revised draft Terrestrial Environment Mitigation and Monitoring Plan (TEMMP; Baffinland, 2023e).

Inuit & Stakeholder Feedback

Key stakeholders who have expressed concern regarding vegetation include local land users, the QIA, ECCC and the Government of Nunavut (GN). Comments have focused on the need to minimize the Project's overall footprint, concerns related to the potential introduction of invasive plants, and the potential for ore dust deposited on vegetation and soil to be taken up by plants, which could lead to potential uptake effects on wildlife such as caribou through consumption of forage near the Project area. Stakeholders have also expressed an interest in revegetation being incorporated into reclamation plans. Responses to these issues are reflected in PC Terms and Conditions No. 31 through 40. A common concern expressed by community members directly is whether or not the dust that falls on vegetation is a health issue for Inuit that harvest the terrestrial wildlife that consume that vegetation. There is no indication in recent community engagements that vegetation itself is consumed in the Project area or a concern to Inuit.

Monitoring Activities

Baffinland's vegetation monitoring programs include the following components:

- Vegetation abundance monitoring;
- Vegetation and soil base metals sampling;
- Exotic invasive plant species monitoring program; and
- Dustfall monitoring and dustfall extent analysis.

The objectives of the vegetation and soil base metals monitoring program are to monitor metal concentrations in vegetation and soil, particularly caribou forage (i.e., lichen) near Project infrastructure and verify that metal concentrations are below or within the acceptable range for established soil quality guidelines and relevant vegetation indicator values. Given that dustfall deposition is the primary source of anthropogenic metals at the Project, the vegetation and soil base metals monitoring program has been designed to align and facilitate comparisons with the dustfall monitoring program to assess metals uptake in vegetation and soil related to Project activities.

The vegetation monitoring program in 2023 focused on potential changes to vegetation abundance and composition over time and at varying distances from the PDA. Potential Project-related effects on total vegetation cover were evaluated in relation to distance class and compared with previously collected data (i.e., 2017 to 2019). No evidence of changes in percent plant cover and plant group composition with distance from the PDA were identified. Statistical data trends were primarily attributed to inter-annual variation (i.e., yearly differences in vegetation growth throughout the region). No measurable grazing effect was detected. Although soil moisture regime appeared wetter in 2019 compared to 2023, no differences were identified among distance classes and years. Trends between plant group composition and soil moisture regime appeared indicative of micro-site preferences by different plant groups for different soil moisture conditions.

The vegetation and soil base metals sampling program was not carried out in the 2023 season, consistent with its 3 to 5-year schedule. The last sampling year was 2022 and the next proposed sampling year will be between 2025-2027. The 2022 program included a total of 61 sites conducted at three distances from the PDA (Near: 0–100 m, Far: >100–1,000 m, and Reference: >1,000 m). Soil-metal concentrations at the Project predominantly indicated no significant change or were significantly lower in relation to baseline values. Values were below or within an acceptable range for soil-metal concentrations. Many mean lichen-metals concentrations across Project areas and sample distances showed no significant changes in relation to baseline values. However, some discrete increases in contaminants of potential concern (CoPCs) in soil (i.e., copper, zinc) and lichen (i.e., arsenic, cadmium, copper, lead, selenium) were recorded at the Mine Site, Milne Port and along the Tote Road, with some individual values at or above indicator values. Whereas some increases and exceedances were attributed to occasional ‘spikes’ in metal concentration and sample variability, other increases in CoPCs appear to be due to proximity to Project operations. Concentrations of dust-deposited metals on lichen did not differ for any Project area-sampling distance combinations for any CoPCs, except for As near the Mine Site.

Given that year-over-year trends have shown that invasive plants do not appear to be a significant potential effect of concern, no targeted exotic invasive plant monitoring was conducted in 2023. During opportunistic incidental monitoring opportunities, no exotic invasive plants were identified. An exotic invasive plant species monitoring program will be completed in 2024.

The revegetation research program was initiated in 2019, establishing test plots to monitor for post-disturbance natural revegetation. Follow-up monitoring continued in 2021, which included an exception of survey location and reclamation trial sites. Revegetation plots were not visited in 2023. Study plots were established at four (4) locations selected to represent different revegetation timeframes, from 1-Year Post-Disturbance up to >60 Years Post-Disturbance. A key observation of the revegetation survey is that natural/unassisted revegetation does occur at the Project.

Table 4.15 provides an evaluation of the Project’s impacts on vegetation.

Table 4.15: Vegetation Impact Evaluation

Component	Effects	Monitoring Program	Impact Evaluation
Vegetation Health	Ore dust emissions result in an increase in concentrations of contaminants of potential concern in soils and vegetation	Vegetation and soil base metals sampling was last completed in 2022. Consistent with the monitoring program schedule outlined in the TEMMP (Baffinland, 2023e), this program will be completed next between 2025-2027 (every 3-5 years).	Soil-metal concentrations at the Project generally indicated no significant increases compared with baseline values. Some discrete increases in CoPC lichen-metal concentrations have been identified, with some values at or above indicator values. Soil-metal and lichen-metal concentrations presently represent a low risk to environmental and human health. Results within FEIS predictions.

Component	Effects	Monitoring Program	Impact Evaluation
Vegetation Abundance	Dustfall results in changes in species composition and vegetation abundance	Vegetation abundance monitoring was completed in 2023. Consistent with the monitoring program schedule outlined in the TEMMP (Baffinland, 2023e), this program will be completed next between 2026-2028 (every 3-5 years).	No Project-related effects on vegetation ground cover, canopy cover or plant group composition. Results within FEIS predictions.
Invasive Species	Invasive species introduction to North Baffin Island	Exotic Invasive Vegetation Targeted Monitoring was last completed in 2020, and is next scheduled for 2024. Incidental monitoring continued in 2023.	No new exotic invasive vegetation was identified during incidental sampling in 2023. Results within FEIS predictions.

Path Forward

In 2023, potential Project-related effects on total vegetation cover were evaluated in relation to distance class and compared with previously collected data (i.e., 2017 to 2019). No evidence of changes in percent plant cover and plant group composition with distance from the PDA were identified. Statistical data trends were primarily attributed to inter-annual variation (i.e., yearly differences in vegetation growth throughout the region). No measurable grazing effect was detected. As such, results for this monitoring program are within FEIS predictions and monitoring will continue as scheduled in the TEMMP (Baffinland, 2023e).

Project Certificate Term and Condition No. 31

Category	Vegetation - Construction and Operations
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations
Objective	To minimize impacts to vegetation.
Term or Condition	The Proponent shall ensure that Project activities are planned and conducted in such a way as to minimize the Project footprint.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtani Inuit Association, Indigenous and Northern Affairs Canada, Nunavut Impact Review Board
Reference	Environmental Protection Plan (Baffinland, 2021c) Terrestrial Environment Mitigation and Monitoring Plan (TEMMP; Baffinland, 2016a) 2022 Terrestrial Environment Annual Monitoring Report (EDI, 2023) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

Baffinland's Project design focuses on minimizing earthworks and 'new cut' disturbances (if/where possible) by siting features on within existing facilities and established laydowns/project area and relying on pre-assembled infrastructures to minimize construction activities in the Project area. Design activities undertaken to minimize the Project footprint include:

- Using pre-cast concrete where feasible, including the use of integrated module foundations;
- Using pre-assembled material packages, such as building wall and roof panels, ground conveyors, elevated conveyors, conveyor belts, fuel tanks etc.;
- Conducting Environmental Protection Plan training, which outlines the importance of minimizing disturbed land at the Project and the process that must be followed before construction on undisturbed ground;
- Ensuring appropriate approvals are met with applicable stakeholders and land lease agreement; and
- Documenting and tracking land disturbance approvals associated with the Project.

RESULTS

As of the end of 2023, the total Project footprint as confirmed through the annual disturbed areas analysis was 613 ha — significantly less than the area assessed in the FEIS (7,618 ha) based on the assumption that the entire PDA would be disturbed/developed. Overburden that is removed from an area to be disturbed is stockpiled for the remediation of the area, wherever possible, and materials are suitable for re-use. No unauthorized land disturbance

occurred in 2023, and all disturbed land is reported in the 2023 Terrestrial Environment Annual Monitoring Report (TEAMR; EDI, 2024a).

TRENDS

The Project footprint has increased modestly during operations to facilitate maintenance activities and support production increases (e.g., expanding equipment laydowns and mine footprint). Initial direct habitat loss occurred primarily due to surface disturbance during construction activities, including compaction, burial, and removal. During operations, vegetation loss occurs mainly as ore extraction expands within Deposit No. 1, laydowns are constructed for material storage and infrastructure development, and quarries expand to support ongoing maintenance. The Project footprint impacts on vegetation have not exceeded FEIS predictions. Terrestrial vegetation studies have not detected significant vegetation abundance trends and diversity within the RSA associated with Project's footprint.

RECOMMENDATIONS / LESSONS LEARNED

Long-term vegetation surveys will continue to determine if vegetation is impacted outside the PDA. The Project footprint will continue to be minimized wherever possible to limit land disturbance and associated impacts. Disturbed land and Project footprint will continue to be reported in the TEAMR on a yearly basis.

Project Certificate Term and Condition No. 32

Category	Vegetation - Construction and Operations
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent the introduction of invasive species.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtani Inuit Association, Nunavut Water Board, Indigenous and Northern Affairs Canada, Nunavut Impact Review Board
Reference	2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

Since 2018, service agreements and contracts for suppliers stipulate that “All equipment delivered to site must be free and clear of soils that may contain seeds of invasive species.” Baffinland staff conduct visual inspections of equipment and supplies during offloading to verify compliance with these contract conditions.

RESULTS

No exotic invasive plant species have been introduced via equipment or supplies brought to the Project sites. Refer to PC Term and Condition No. 37 for additional information about site surveys for exotic invasive species, to which the next comprehensive exotic invasive species monitoring campaign at the Project is scheduled to occur in Summer 2024.

TRENDS

No trends. Current management practices are deemed to be appropriate and adequate.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland staff, contractors and suppliers will continue to clean, inspect, and monitor all equipment and supplies before loading at source and offloading at Milne Port and Mine Site, as applicable. If multiple non-compliance events were to occur, Baffinland will consider using a third-party auditor to monitor compliance for better enforcement of contractual policies.

Project Certificate Term and Condition No. 33

Category	Vegetation – Monitoring
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To facilitate monitoring.
Term or Condition	The Proponent shall include relevant Monitoring and Management Plans within its Environmental Management System, Terrestrial Environment Management and Monitoring Plan (TEMMP).
Relevant Baffinland Commitments	57
Reporting Requirement	To be included in the Annual Report submitted to the NIRB.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a) Draft Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2023e) Air Quality and Noise Abatement Management Plan (Baffinland, 2023d) 2021 TEWG Meeting Records (Appendix C.2 in Baffinland, 2021g) 2023 TEWG Meeting Records
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/Appendix C.2

METHODS

Components of the Terrestrial Environment Mitigation and Monitoring Plan (TEMMP) are reviewed, revised and further developed as needed. Updates are informed by data analysis, logistical feasibility and feedback/dialogue from the Terrestrial Environment Working Group (TEWG) to enhance the robustness of survey design and data capture. The TEWG is engaged regularly to discuss annual monitoring programs for the terrestrial environment. Feedback received from TEWG members is incorporated into annual monitoring reports and updates to the TEMMP where needed.

RESULTS

Baffinland updated the TEMMP and AQNAMP in May 2023 (Baffinland, 2023e; 2023d). Updated draft management plans were circulated to the TEWG for review and uploaded to the NIRB public registry for comments. The draft 2023 TEMMP and AQNAMP will be finalized in Q2 of 2024 to incorporate feedback. Modifications to terrestrial monitoring programs that have occurred since 2016 are all captured in the revision of the TEMMP (Baffinland, 2016a; 2023e). A more detailed description of the updated dustfall monitoring program is provided in the draft revision of the AQNAMP (Baffinland, 2023e). Management plans will continue to be updated as terrestrial monitoring programs are expanded and/or modified.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 34

Category	Vegetation – Monitoring
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations
Objective	Monitor metals concentrations in both soils and vegetation, particularly caribou forage (i.e., lichen) at varying distances from the PDA to compare metal concentrations in soil and vegetation between near (impacted) and far (control) sites. Determine if metal concentrations in soil and vegetation exceed CCME and relevant available threshold levels provided in the literature.
Term or Condition	The Proponent shall conduct soil sampling to determine metal levels of soils in areas with berry-producing plants near any of the project development areas, prior to commencing operations.
Relevant Baffinland Commitments	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2023) 2021 TEWG Meeting Records (Baffinland, 2021g) 2023 TEWG Meeting Records
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.2

METHODS

This Project condition is addressed through implementation of a long-term vegetation and soil base metals monitoring program. Dustfall deposition is considered the primary source of anthropogenic metals at the Project. Therefore, the vegetation and soil base metals monitoring program was designed to align and facilitate comparisons with the dustfall monitoring program to cross-reference potential trends in relation to Project activities.

Study approach examines the spatiotemporal trends in soil metals and lichen metals based on a Before-After-Control Impact experimental design. The study area is divided into three Project areas (Milne Port, Tote Road, Mine Site), and sampling is conducted at three (3) distances from the PDA (Near: 0–100 m, Far: 101–1,000 m, and Reference: >1,000 m). Sampling distances are informed based on the dustfall monitoring program results; vegetation and soil sample sites were paired in proximity to permanent dustfall locations.

Soil and vegetation samples are analyzed for a total of 36 elements. Reporting and interpretation of data trends focuses on six (6) Contaminants of Potential Concerns (CoPCs): arsenic (As), cadmium (Cd), copper (Cu), lead (Pb), selenium (Se), and zinc (Zn). Base metal concentration thresholds and indicator values were informed by soil quality standards in Canada (CCME, 2006) and values drawn from peer-reviewed literature relevant to the Canadian Arctic (Folkesson and Andersson-Bringmark, 1988; Kinalioglu et al., 2010; Nash, 1975; Nieboer et al., 1978;

Tomassini et al., 1976). All soil-metals and lichen-metals sample data were vetted and compared with available CCME soil quality guidelines and lichen indicator values. Any aberrant values or potential exceedances (i.e., above CCME threshold or lichen indicator values) were flagged and communicated to Baffinland personnel. Data trends and statistical relationships were then examined according to the project area and sampling distances (listed above) to identify tendencies that could warrant further investigation.

RESULTS

Soil and lichen-metals sampling is conducted in three-to-five-year intervals, typically during the summer (late July to early August). Data has been collected in 2012-2014, 2016, 2019-2022. No sampling was completed in 2023 as the Project met its assessment frequency. Consistent with the monitoring program schedule outlined in the revised draft TEMMP (Baffinland, 2023e), the next proposed soil and lichen-metals sampling program is expected to occur between 2025-2027.

TRENDS

No trend(s) have been identified for soil and lichen-metals concentrations at the Project. Based on outcomes from the 2012-2014, 2016, 2019-2022 sampling campaigns, soil-metal concentrations at the Project predominantly indicated no net change (i.e., significant increases) from the baseline values. Values are below or within an acceptable range for soil-metal concentrations. Lichen-metal concentrations demonstrate some discrete increases at the Project. Still, all sample locations were below or within an acceptable range for lichen-metal concentrations. Soil-metal and lichen-metal concentrations present a low risk to environmental and human health and safety. These results are consistent with the FEIS prediction of no significant impact.

RECOMMENDATIONS / LESSONS LEARNED

Presently, soil-metal and lichen-metal concentrations represent a low risk to environmental and human health and safety. Monitoring will continue as outlined in the TEMMP schedule (Baffinland, 2023e).

Project Certificate Term and Condition No. 35

Category	Vegetation – Monitoring
Responsible Parties	The Proponent, local Hunters and Trappers Organizations, Terrestrial Environmental Working Group
Project Phase(s)	Construction, Operations
Objective	To determine baseline and monitor metal levels in foraging caribou or other terrestrial wildlife species (selected by the Proponent in consultation with the Terrestrial Environment Working Group).
Term or Condition	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. By one (1) year of issuance of the Project Certificate, the Proponent shall develop and implement an updated monitoring plan to identify metal levels in caribou or other terrestrial wildlife species (selected by the Proponent in consultation with the Terrestrial Environment Working Group).
Relevant Baffinland Commitments	Not applicable
Reporting Requirement	The Proponent shall provide a summary discussion of its implementation of this term and condition (including the results of monitoring, adaptive management strategies, and contribution efforts undertaken) to the NIRB through the Proponent's annual monitoring report. Updated plans are expected to be submitted to the NIRB throughout the monitoring year as they are finalized.
Status of PC Term and Condition	Active
Status of Compliance	In Progress
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	2023 TEWG Meeting Records 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.2 Appendix G.5.1

METHODS

As part of the approved Northern Contaminants Program (NCP) project funding for the Caribou Contaminant Monitoring Program, of which Baffinland is a collaborator, tissue samples of caribou harvested by hunters will be analyzed for metals, in addition to other potential contaminants. NCP project co-leads are working with the GN and the Mittimatalik Hunters and Trapper Organization (MHTO) to secure samples for analysis.

In consultation with the GN Regional Wildlife Biologist regarding Caribou Health Monitoring (August 2021), it was determined that implementation of separate/parallel GN-led and Baffinland-led programs could result in potential conflicts. It was resolved that the best approach was to defer to data made publically available to meet our

requirements for PC Term and Condition No. 35. Once the GN program is complete, and depending on the results, Baffinland may put in a separate permit application to extend this type of research.

In Q4-2023 and Q1-2024, Baffinland re-visited its consultations with the GN and NCP representatives to discuss the feasibility of launching a tissue sampling program based out of the Mine Site and Milne Port, commencing as early as July 2024. The proposed program would involve analyzing kidney, muscle and liver samples for a full metals suite, moisture content, and mercury. Central (I1) incisors would also be collected for caribou aging. Liver, kidney, and muscle samples would be processed by Mary Gamberg Consultants in Whitehorse, who is an active member of the NCP. Teeth aging would be completed at Matson's Lab in Montana, USA, as no Canadian facilities currently offer this analysis. This proposed program is still under discussion and requires agreement amongst NCP and the GN prior to review by the TEWG.

RESULTS

The GN provided an update on the health monitoring program for caribou on Baffin Island at the February 2023 TEWG meeting, which started in the 2020/2021 harvest season and intended to capture harvest samples from community members. It was highlighted that the COVID-19 Pandemic placed limitations on this program and the GN was only able to collect samples from Pond Inlet. With regards to the NCP, there were very few samples collected from Pond Inlet—a total of two (2) blood samples, two (2) skin and hair samples, one (1) liver sample, and one (1) kidney sample. During the 2021/2023 harvest season, the GN was able to collect samples in other regions of Baffin Island, including Iqaluit, but was not able to obtain any samples from Pond Inlet.

The Manager for Wildlife Research with the Department of Environment at the GN provided an additional update on the GN's caribou health monitoring at the December 2023 TEWG meeting (Appendix C.2). It was indicated that the program continued from July 1, 2022 until June, 2023 and that collected samples included hair, blood, jaw, and meat with fat. Preliminary results for the samples collected in 2022 indicated kidney and liver elemental concentrations were consistent with the Qamanirjuaq herd, which has been monitored since the 1990's. Notable changes to the program included hair samples being collected from the tail instead of the rump.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

An HTO representative suggested increasing the payment that GN provides to hunters for each sample to further encourage sample collection. The GN representative stated that sample payments are currently set at \$60 for four (4) samples through the GN, whereas an additional \$60 was provided for samples collected through the NCP, totalling \$120 per kit. QIA recommended Baffinland contribute funding to the GN's health monitoring program for caribou to increase the amount to \$120. Baffinland will consider it in its ongoing collaboration with the GN on caribou monitoring. The Manager for Wildlife Research with the Department of Environment at the GN indicated at the December 2023 TEWG meeting that compensation will not be increased for this program. Through Q4 2023 and Q1 2024 discussions, Baffinland confirms that it does not intend to offer increased compensation for the proposed on site caribou tissue sampling program under discussion, as this may deter participation from other regional monitoring programs.

Project Certificate Term and Condition No. 36

Category	Vegetation – Monitoring
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations
Objective	Measure percent plant cover and plant group composition of available caribou forage within the RSA to track potential changes at varying distances from the edge of the PDA through long-term monitoring.
Term or Condition	The Proponent shall establish an ongoing monitoring program for vegetation species used as caribou forage (such as lichens) near Project development areas, prior to commencing operations.
Relevant Baffinland Commitments	67
Reporting Requirement	To be included in the Annual Report submitted to the NIRB.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	2023 Terrestrial Environment Annual Monitoring Report (TEAMR; EDI, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

This Project condition is addressed through implementation of a long-term vegetation abundance monitoring program. Study approach examines spatiotemporal trends in vegetation abundance and composition at varying distances from the PDA (Near: 30 m, 100m; Far: 750 m, 1,250 m; Reference: ~20 Km). The study area is divided into three Project areas (Milne Port, Tote Road, Mine Site), and sampling is conducted at three distances from the PDA (Near: 0–100 m, Far: 101–1,000 m, and Reference: >1,000 m). Sampling distances are informed based on the dustfall monitoring program results; vegetation sample sites are paired (to the extent possible) in proximity to permanent dustfall locations. Sampling methods align with standard procedures for Arctic vegetation. Vegetation abundance monitoring is conducted in three-to-five-year intervals, typically during the summer (late July to early August).

RESULTS

Data has been collected in 2014-2019 and 2023. Outcomes of the 2023 field campaign are reported in the 2023 TEAMR (EDI, 2024a). No evidence of changes in percent plant cover and plant group composition in relation to distance from the PDA was identified. Inter-annual trends were primarily attributed to weather-related factors (i.e., wetter vs. drier seasons). These results are consistent with the FEIS prediction of no significant impact.

TRENDS

No trend(s). No evidence of changes in percent plant cover and plant group composition in relation to distance from the PDA was identified. Inter-annual trends were primarily attributed to weather-related factors (i.e., wetter vs. drier seasons).

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue with the scheduled vegetation abundance and diversity monitoring program per the updated revision of the TEMMP (Baffinland, 2023e). The next scheduled assessment year will be 2026.

Project Certificate Term and Condition No. 37

Category	Vegetation – Monitoring
Responsible Parties	The Proponent, Government of Nunavut Department of Environment
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent the establishment of invasive species.
Term or Condition	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.
Relevant Baffinland Commitments	43, 68
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

This Project condition is addressed through (1) ongoing/opportunistic invasive vegetation monitoring at the Project and (2) implementation of a formal exotic invasive vegetation monitoring program:

- (1) Opportunistic invasive vegetation monitoring is conducted through staff observations (presence/absence of vegetation) within disturbed areas within and adjacent to the Project footprint prone to recolonization by volunteers. (e.g., disturbed area areas along buildings, infrastructure, road ditches, and pullouts). Areas were primarily surveyed on foot, and occasionally via vehicle travelling at slow speeds (~25 km/h) along the Tote Road. Each of the three focal areas (Mine Site, Milne Port, and Tote Road) were surveyed to the extent permitted to walk or drive in the Project footprint safely.
- (2) As outlined in the updated revision of the draft Terrestrial Environment Mitigation and Monitoring Plan (TEMMP; Baffinland, 2023e), exotic invasive vegetation and natural regeneration monitoring are scheduled every 3 to 5 years or triggered by observations of exotic invasive plant species. Exotic invasive species monitoring occurred in 2014 and 2019. In 2020, follow-up targeted exotic invasive species monitoring focused on one location where an exotic plant was located during the 2019 survey (Mary River Mine Site accommodations effluent end pipe). Exotic invasive vegetation and natural regeneration monitoring is scheduled to occur next in 2024.

RESULTS

Not applicable. Comprehensive invasive vegetation survey scheduled during 2024 field monitoring campaign.

TRENDS

No trend(s). One (1) exotic invasive species was found in 2019, associated with sewage/effluent infrastructure.

RECOMMENDATIONS / LESSONS LEARNED

Exotic invasive plant monitoring is effective in the identification and management of exotic invasive vegetation at the Project. The program will continue to monitor for the occurrence of exotic invasive plants (per current protocols) in disturbed areas following the methods outlined in the draft revision of the TEMMP (Baffinland, 2023e).

Project Certificate Term and Condition No. 38

Category	Vegetation - Adaptive Management
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate impacts to vegetation abundance, diversity, and health.
Term or Condition	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.
Relevant Baffinland Commitments	Not applicable
Reporting Requirement	To be included in the Annual Report submitted to the NIRB
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Nunavut Impact Review Board, Terrestrial Environment Working Group (TEWG)
Reference	Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a) DRAFT Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2023e) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

The vegetation monitoring program findings are summarized in the Terrestrial Environment Annual Monitoring Report (TEAMR) for the given assessment year. As part of an adaptive management approach, these findings are carefully reviewed by Baffinland and presented to the TEWG to discuss study design and data capture. Recommendations to modify the vegetation monitoring programs are evaluated and implemented based on the appropriate rationale supported by data trends, interpretations, and statistical analyses. Changes to assessment objectives and protocols are documented in the TEAMRs.

RESULTS

The Terrestrial Environment Mitigation and Monitoring Plan (TEMMP) is to be updated when changes to monitoring program study designs occur. The TEMMP was revised in May 2023 to reflect program changes that had occurred since 2016 (Baffinland, 2023e). This draft revision will be finalized in Q2 of 2024 to incorporate feedback received from the NIRB registry since May 2023.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

The current adaptive management approach (i.e., integrated questions/comments from engagement with the Working Groups) has led to modifications to study design and data capture methods as supported by data trends, interpretations, and statistical analyses. Baffinland will continue with this approach. Noting anticipated 2024 revisions to the TEWG ToR, members will be able to submit formal recommendations for program-related modifications and this process will be streamlined for all personnel. See also summary for PC Term and Condition No. 49.

Project Certificate Term and Condition No. 39

Category	Vegetation - Reclamation and Revegetation
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent erosion and promote progressive revegetation of disturbed areas.
Term or Condition	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.
Relevant Baffinland Commitment	39
Reporting Requirement	To be provided to the NIRB for review and comment at least 60 days prior to commencement of construction activities.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Nunavut Impact Review Board
Reference	Interim Closure and Reclamation Plan (Baffinland, 2018b) Research Review: Advances in Arctic Reclamation —Implications for Reclamation Practices & Trials at the Mary River Project (EDI, 2019) Reclamation Pilot Study: Revegetation Survey & Preliminary Reclamation Trial, 2023 Project Update (EDI, 2024b).
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.2

METHODS

Building from a desktop research review, a field-based Reclamation Pilot Study was initiated (Winter 2018-2019) that was intended to enhance reclamation success at the Project and guide future reclamation activities that support the environmental compliance and sustainability of the Project. The first field component of this reclamation pilot study (Summer 2019) focused on surveying natural/unassisted revegetation at the Project and establishing a preliminary trial design. The second field component (Summer 2021) expanded the number of survey locations and reclamation trial sites. Periodic follow-up monitoring occurred in Summer 2020-2023.

RESULTS

Baseline Survey

Study sites were established at four (4) locations along the Tote Road at KM 16, KM 18, KM 52 and within an abandoned airstrip near KM 58. Reclamation trials were established at three (3) locations (KM 16, KM 18, KM 52). These sites were selected to represent different revegetation timeframes, from 1-Year Post-Disturbance to >40 Years Post-Disturbance. A key observation of the revegetation survey is that natural/unassisted revegetation does occur at the Project. Revegetation following disturbance appeared to be shaped by initial starting conditions, such as the

level of landscape disturbance (i.e., status of landscape form and function), soil characteristics (i.e., nutrient availability and organic matter content), and integrity of nearby 'undisturbed' vegetation.

Reclamation Trials

The purpose of the reclamation trial was to apply and adapt reclamation site/surface preparations to the Project setting. Reclamation earthworks at KM 16 and KM 52 were completed in Summer 2019; reclamation earthworks at KM 18 were completed in Summer 2021; no reclamation trials were established at KM 58 (i.e., being located outside of the approved PDA). Two (2) surface configurations were applied: 'rough and loose' and 'track-packing'. Based on the most recent follow-up monitoring (2022), all sites were stable and deemed low erosion potential; but wind erosion and 'wind-swept' surface soil (i.e., due to saltation and sediment creep) were apparent. That said, an increasing number of small volunteer forbs and graminoids were found to have colonized all sites (KM 16, KM 18, KM 52). The highest levels of revegetation (i.e., based on visual assessment) were observed at KM 18 and KM 16 (both characterized as subxeric), whereas KM 52 (characterized as xeric) had the lowest levels of revegetation.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Findings provide insight into some of the conditions, challenges and opportunities at the Project. However, the Pilot Study is currently based on a small sample size (n=3, 4). During appropriate phases of the Life-of-Mine cycle, Baffinland will consider evaluating Project features that could be decommissioned and/or reclaimed to reduce the Project's disturbance footprint.

Project Certificate Term and Condition No. 40

Category	Vegetation - Reclamation and Revegetation
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent erosion and promote progressive revegetation of disturbed areas.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	QIA
Reference	Interim Closure and Reclamation Plan (Baffinland, 2018b) Revegetation Survey & Preliminary Reclamation Trial - 2023 Project Update (EDI, 2024b) Implications for Reclamation Practices & Trials at the Mary River Project (EDI, 2019)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.2

METHODS

As described in the Interim Closure Reclamation Plan (ICRP), a Reclamation Research program was proposed to identify best practices for promoting natural revegetation that will inform the progressive revegetation program for disturbed areas that are no longer required for operations. Due to limited research for mines in the Canadian Arctic, the research will focus on developing methods to successfully achieve sustainable vegetation cover that meets the desired land use for the Project sites post-closure, in the shortest duration possible. These sites include gravel roads, gravel pads, waste rock, stockpiles, and waste dumps. The objective of the Reclamation Research Program is to identify methods to successfully achieve a sustainable vegetation cover, and the ability of a vegetation cover to enhance physical stability and the desired aesthetic conditions for the Project site at closure.

In 2019, Baffinland retained Environmental Dynamics Inc. (EDI) to complete a desktop review of available practices and recent advances from Arctic mine reclamation in Canada's northern territories and Alaska, USA (EDI, 2019). Following this, a field program to assess current conditions and establish test plots was implemented in 2019. The first field component (summer 2019) focused on surveying natural/unassisted revegetation at the Project and establishing a preliminary trial design. The second field component (summer 2021) expanded the number of survey locations and reclamation trial sites. Periodic follow-up monitoring occurred in summer 2020-2023.

The reclamation pilot study involved the establishment of reclamation plots to assess methods for surface preparation. Two surface configurations were applied: (1) 'rough and loose' and (2) 'track packing'. Periodic follow-up monitoring (summer 2020-2023) documented site revegetation status and related observations (EDI, 2024b).

RESULTS

Test plot locations were re-evaluated in 2020, 2021, 2022 and 2023. A general observation was that surface preparations (i.e., rough-and-loose and track-packing) had been 'washed out' due to weathering and were no longer apparent at any trial sites. The surface preparations are intended to create surface heterogeneity and micro-site conditions favourable to seed establishment and germination while reducing erosion potential and enhancing surface stability. All sites were stable and deemed low erosion potential; but wind erosion and 'wind-swept' surface soil (i.e., due to saltation and sediment creep) were apparent. Evidently, given the Project setting being prone to prolonged periods of high wind, these surface preparations should represent a short-term mitigation and reclamation strategy.

Moreover, an increasing number of small forbs and graminoids had colonized all sites (KM 16, KM 18, KM 52). The highest levels of revegetation (i.e., based on a visual assessment) were observed at KM 18 and KM 16 (both characterized as subxeric), whereas KM 52 (characterized as xeric) had the lowest levels of revegetation. Notably, the status of volunteer colonization and revegetation at KM18 was more advanced than expected, given only 1-year post-disturbance. In this case, adjacent land vegetation cover remained intact and viable. Following 2021 surface preparations, this species is suspected to have quickly adapted to site conditions leading to its predominance within the disturbed landscape. A similar observation regarding the proximity and viability of adjacent vegetation cover was made with respect to the vegetation cover conditions at KM 16 during the 2019 assessment.

TRENDS

Rates of natural revegetation in the Arctic are characteristically slow due to the region's climate, narrow growing season, and challenging site conditions and terrain. A key observation of the revegetation survey is that natural/unassisted revegetation does occur at the Project. Revegetation following disturbance appeared to be shaped by initial starting conditions, such as the level of landscape disturbance (i.e., landscape form and function), soil characteristics (i.e., nutrient availability and organic matter content), and integrity of nearby 'undisturbed' vegetation (i.e., as a source of native seed).

RECOMMENDATIONS / LESSONS LEARNED

So far, study findings provide insight into some of the conditions, challenges and opportunities at the Project. Baffinland will continue to review locations for new test sites, intending to establish test plots across various landscapes intersected by the Project. Medium-scale sites may be reviewed where mine-disturbed areas are no longer required for operations and can be set aside for reclamation trials.

4.6.7 Freshwater Environment (PC Terms and Conditions 41 through 48a)

Nine (9) PC Terms and Conditions (includes No. 48 and 48a) relate to the potential impacts of the Project on the freshwater environment, focused on fish and other freshwater biota. Several of the conditions recommend environmental protection measures, such as setbacks from watercourses and meeting blasting thresholds, or relate to meeting discharge requirements for effluents and runoff (the latter is evaluated in Section 4.6.5).

Inuit & Stakeholder Feedback

Fisheries and Oceans Canada (DFO) administers the fish and fish habitat sections of the *Fisheries Act* and is therefore the primary stakeholder with respect to freshwater biota. The Nunavut Water Board (NWB) also regulates in-water structures such as bridges and culverts. In previous environmental reviews, the QIA has also provided valuable feedback for freshwater biota. Community members have previously raised concerns regarding Arctic char abundance and health in the Milne Inlet and Eclipse Sound area in general, however, these comments have not identified any specific freshwater bodies that the Project interacts with. It is worth noting that the Project does not interact with freshwater bodies containing anadromous (sea run) Arctic char.

Monitoring Activities

Monitoring activities undertaken in relation to the freshwater environment include:

- Due diligence monitoring of fish habitat offsetting measures completed under the 2007 Authorization (DFO, 2007) under the *Fisheries Act* for water crossings along the Tote Road as a consequence of a letter of authorization issued by DFO to complete remediation of culverts along the Tote Road (DFO, 2024);
- Monitoring of the freshwater environment as part of the Aquatic Effects Monitoring Program (AEMP), including water and sediment quality, and aquatic biota (including phytoplankton, benthic invertebrates and fish), as well as sedimentation rates;
- Monitoring of the water quality at representative water crossings under the Tote Road Monitoring Program (TRMP) to assess the potential for Project-related effects as a result of sedimentation and erosion; and
- Engagements with the local communities relating to monitoring of fish health in Qurluktuk, Tugaat and Ikaluit River systems.

2023 assessments of Project fish bearing water crossings were completed by a third-party Professional Fisheries Biologist in June/July of 2023. The emphasis of the 2023 spring monitoring program was to assess the presence of fish, habitat quality, and upstream accessibility through installed culverts at fish-bearing sites and identify crossings requiring remediation to allow for fish passage. Fish habitat monitoring of compensation works completed under the 2007 Tote Road *Fisheries Act* Authorization (DFO, 2007) verified that fish use of the rustic fishway installed at BG-30 continued to be successful in 2023. There was no in-stream construction work at fish-bearing stream crossings along the Tote Road during the open water period in 2023. However, culvert maintenance was conducted on multiple culverts on the Tote Road in 2023 to: stabilize road embankments, remediate erosional zones, remove sediment deposits at silt fencing and swales, add riprap stone to swales with check dams, and install erosion and sediment controls were required, in accordance with the SWAEMP (BAF PH1 830 P16 0026; Baffinland, 2021d).

Baffinland is continuing to work with DFO to address fish passage issues along the Tote Road at specific locations. A Request for Review was submitted to DFO in June 2022 (Baffinland, 2022c), and DFO staff subsequently visited the Mary River Project site in June 2022 to inspect the fish-bearing crossing locations along the Tote Road. Throughout

2023, Baffinland continued to develop a plan to address culverts and fish passage issues and to work with DFO as the plan developed. In January 2024, DFO issued a Letter of Advice (LOA) for Baffinland's Tote Road Culvert Remediation proposal to implement a permanent crossing solution for ten (10) corrugated steel pipe (CSP) crossings along the Tote Road (DFO, 2024). The NWB subsequently issued approval in their February 7, 2024 correspondence for this scope of work (NWB, 2024). Tote Road Culvert Upgrades work under the LOA and Type 'A' Water Licence (NWB, 2015) commenced in Q1 2024. Baffinland will continue to work with DFO to ensure planned modifications to fish bearing crossings are in compliance of the *Fisheries Act* (Ministry of Justice, 2019). Additional information regarding the culvert remediation works and 2023 culvert maintenance is provided in the 2023 Tote Road Annual Monitoring Report in Appendix G.2.6.

The AEMP encompasses several component studies, including the Core Receiving Environment Monitoring Program (CREMP). The results of the 2023 CREMP indicate mine-related influences on water and sediment quality at some of the primary receiving systems, but no ecologically significant, adverse, mine-related effects to biota were identified at any of the receiving waterbodies based on comparisons to applicable reference and/or baseline conditions. Response actions under the AEMP Management Response Framework were triggered in some instances to better understand and potentially mitigate identified Project-related effects.

Another key component of the AEMP is the Lake Sedimentation Monitoring Program, which monitors dust and sediment deposition rates in Sheardown Lake NW in an effort to better understand and evaluate potential mine-related influences on biota (e.g. fish larvae hatching success). Currently, the Lake Sedimentation Monitoring Program is conducted annually and involves the deployment and retrieval of submerged sediment traps to determine sediment deposition rates, density, and thickness during ice-cover and open water periods

After further engagement with the MHTO regarding monitoring Arctic char in freshwater bodies near Milne Inlet, Baffinland implemented a monitoring program in 2021 and 2022 to survey the Tugaat, Qurluktuk and Ikaluit freshwater systems. Ikaluit Lake was sampled for the first time in 2022, while Tugaat and Qurluktuk lakes were sampled a second year in a row. Following the completion of the field component, Baffinland met with the MHTO representatives to discuss the final 2021 and preliminary 2022 results of the monitoring program. Details of this monitoring program and results can be found in the 2023 Milne Inlet Freshwater Fish Health Program Report (Minnow, 2023).

To date, the main objectives of this program have focused on health endpoints for Arctic char such as survival (age), growth (size relative to age), condition (length relative to weight), and tissue quality as it relates to consumption. Inuit Qaujimajatuqangit has helped to define these objectives. There were challenges in 2023 with the coordination of a monitoring program for the field season and subsequently, the Milne Inlet Freshwater Fish program was deferred until 2024. Baffinland has reengaged MHTO in Q1 of 2024 to confirm locations where the 2024 monitoring should occur. Baffinland will continue to engage MHTO in Q2 to set-up a sampling program.

Table 4.16 provides an evaluation of the Project's impacts on the freshwater environment, based on monitoring activities completed in 2023, relative to predictions presented in the FEIS and FEIS Addendum (Baffinland 2012; 2013a).

Path Forward

Ongoing maintenance of the Tote Road to maintain effective surface water drainage and support safety and operational requirements for ongoing operations will continue to follow the Tote Road Earthworks Execution Plan

(TREP; Golder, 2017) and the Hatch Ltd. (Hatch, 2013) design. Tote Road culvert upgrades associated with the permanent crossing remediation work under the Type 'A' Water Licence and DFO LOA commenced in Q1 2024 (NWB, 2015, DFO, 2024). Baffinland will continue to work with DFO on the permanent crossing plans to ensure planned modifications to fish bearing crossings are in compliance with the *Fisheries Act*, and associated authorizations are in place. Baffinland will continue implementing the CREMP in 2024, and will work with the MHTO to develop a Milne Inlet Freshwater Fish Health program for the 2024 monitoring season. Monitoring will continue in 2024 to assess fish passage at crossings on fish-bearing streams, to assess the condition and performance of the crossings, and to evaluate the effectiveness and performance of remediation works conducted.

Table 4.16: Freshwater Environment Impact Evaluation

Component	Effects	Monitoring Program	Impact Evaluation
Freshwater Biota	Culvert replacements or extensions; sea container crossings were removed	Due diligence monitoring of compensation works completed under the 2007 authorization under the <i>Fisheries Act</i>	All compensation works are effective and within FEIS predictions
	Culvert perching	Due diligence monitoring of culvert perching consistent with the requirements of the 2007 authorization under the <i>Fisheries Act</i>	Where culvert perching has occurred appropriate remedial measures are being planned and implemented under the Type 'A' Water Licence and DFO LOA to address fish passage issues. This remedial work is ongoing and will continue to be reported on via annual reporting.
	Water withdrawals from lakes affecting nearshore fish habitat	Measure/monitor and report water usage in accordance with water licence limits	Water usage generally within water licence limits; effects are within FEIS predictions
	Fish impingements at camp and dust suppression water takes	No monitoring; appropriate screens are used on all intakes	Within FEIS predictions

Project Certificate Term and Condition No. 41

Category	Freshwater Aquatic Environment - Setbacks
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate impacts of runoff into freshwater aquatic habitat.
Term or Condition	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.
Relevant Baffinland Commitment	64, 65
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtani Inuit Association, Nunavut Water Board, Crown-Indigenous Relations and Northern Affairs Canada, Nunavut Impact Review Board
Reference	Borrow Pit and Quarry Management Plan (Baffinland, 2014c) Q1 Quarry Management Plan (Baffinland, 2020f) QMR2 Quarry Management Plan (Baffinland, 2021i) 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Baffinland maintains the 100 metre (m) naturally vegetated buffer from the high water mark to any fish bearing waterbodies during the development and operation of the quarries at the Project. Baffinland continues to evaluate active quarries to assess the potential for generating Acid Rock Drainage (ARD) or Metal Leaching prior to and during development. Geochemical investigations have been carried out at the proposed sites, and ARD sources are avoided to the extent practicable. Additionally, Baffinland maintains specific quarry management plans that outline testing requirements to identify potential acid rock drainage material encountered during quarry operation and maintains appropriate buffers to fish bearing waters.

RESULTS

No new quarries were developed in 2023. Existing quarries maintained the 100 m buffer from the high water mark to any fish bearing waterbodies. A discussion of geochemistry sampling of quarry rock and surface water runoff monitoring downstream of Project areas and quarries is provided in Section 9.5 and Section 7.4, respectively, of the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a).

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

New quarry developments will continue to be tested for ARD and Metal Leaching using the Protocol for the Assessment for the Potential for ARD (Borrow Pit and Quarry Management Plan, Baffinland, 2014c; Appendix 2) and the 100 m buffer from the high water mark to any fish bearing water bodies will be maintained.

Project Certificate Term and Condition No. 42

Category	Freshwater Aquatic Environment - Setbacks
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate impacts of runoff into freshwater aquatic habitat.
Term or Condition	The Proponent shall maintain minimum a 30-metre naturally-vegetated buffer between the mining operation and adjacent water bodies.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtani Inuit Association, Crown-Indigenous Relations and Northern Affairs Canada, Nunavut Impact Review Board
Reference	Surface Water and Aquatic Ecosystems Management Plan (Baffinland, 2021d) Environmental Protection Plan (EPP ; Baffinland, 2021c) Draft Terrestrial Environmental Management and Monitoring Plan (TEMMP; Baffinland, 2023e) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

Baffinland continues to perform regular inspections during construction activities to ensure all Project-related operations are at a distance greater than 31 m from any waterbody, except where authorized under the Type 'A' Water License and DFO Letter of Advice (LOA; DFO, 2024). If infractions are discovered, responsible departments for development areas are actioned to remove materials or infrastructure, and to reclaim the developed area. New proposed development areas must be approved by the Baffinland Site Environment Department to ensure the area has a setback of 31 m from the high water mark of natural waterbodies, or is otherwise approved by the NWB. Consultants preparing design drawings for new infrastructure are also made aware of the requirement. Baffinland conducts orientation training on the Environmental Protection Plan (EPP; Baffinland, 2021c) for new contractors. The presentation provides an overview of key Project activities and the required natural vegetation buffers to any waterbodies. Additionally, site environmental technicians are required to monitor all Project infrastructure during routine bi-weekly compliance inspections to ensure that the 31 m distance from the high water mark is being maintained.

RESULTS

No permanent or temporary Project-related operations were sited within 31 metre of a waterbody during 2023, unless authorized under the Type 'A' Water License and DFO LOA (NWB, 2015; DFO, 2024).

TRENDS

Project operations have maintained the 31 m buffer between waterbodies, except where authorized under the Type 'A' or 'B' Water License and DFO LOA, and the condition continues to be enforced (NWB, 2015; DFO, 2024).

RECOMMENDATIONS / LESSONS LEARNED

Baffinland personnel continue to monitor all new Project developments to ensure the 31 m buffer condition is adhered to, unless authorized under the Type 'A' Water License and DFO LOA (NWB, 2015; DFO, 2024). Baffinland will ensure all requirements and mitigation measures continue to be clearly communicated to Baffinland staff and contractors.

Project Certificate Term and Condition No. 43

Category	Freshwater Aquatic Environment - Drainage
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To mitigate impacts of runoff into freshwater aquatic habitat.
Term or Condition	Prior to the start of construction, the Proponent must submit a Site Drainage and Silt Control Plan to the appropriate regulatory authorities for approval.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), Nunavut Impact Review Board (NIRB), Nunavut Water Board (NWB), Qikiqtani Inuit Association (QIA)
Reference	Surface Water and Aquatic Ecosystem Management Plan (Baffinland, 2021d) Long Term Water Management Plan (Baffinland, 2021e)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Drainage plans for Project sites and silt/sediment control measures used at the Project are outlined in the Project's Surface Water and Aquatic Ecosystem Management Plan (SWAEMP; Baffinland, 2021d). A modification to the Type 'A' Water Licence for the implementation of the Milne Port Surface Water Management Plan was approved in 2018. A modification to the Type 'A' Water License for the implementation of the Mary River Long Term Water Management Plan was approved in 2021 (Baffinland, 2021e). These plans were developed to manage surface water at Milne Port and Mine Site and reduce the volume of surface water in contact with project infrastructure by diverting surface flow using berms, ditching and culverts around and through developed areas of the Project and constructing surface water management ponds as required.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

The SWAEMP will continue to be followed and enforced at the Project. Baffinland will continue to implement the approved Long Term Water Management Plan for the Mine Site, to address areas where sedimentation and erosion issues have been identified through Project monitoring. An implementation schedule for the remainder of Long Term Water Management Plan infrastructure is provided in the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a).

Project Certificate Term and Condition No. 44

Category	Freshwater Aquatic Environment - Explosives
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate impacts of explosives on freshwater aquatic habitat.
Term or Condition	The Proponent shall meet or exceed the guidelines set by Fisheries and Oceans Canada for blasting thresholds and implement practical and effective measures to ensure that residue and by-products of blasting do not negatively affect fish and fish habitat.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Not applicable
Reference	Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters (Wright and Hopky, 1998) Environmental Protection Plan (EPP; Baffinland, 2021c)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Baffinland implements the management practices for blasting in or near water as outlined in Section 4.24 of the Environmental Protection Plan (EPP; Baffinland, 2021c).

RESULTS

No blasting occurred in 2023 within the required setback distances detailed in the DFO guidance document titled *"Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters"* (Wright and Hopky, 1998).

TRENDS

Not applicable. To date, no blasting has occurred within the required setback distances at the Project.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 45

Category	Freshwater Aquatic Environment - General
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate impacts to freshwater aquatic habitat.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Fisheries and Oceans Canada (DFO)
Reference	Fisheries Authorization No. 18-HCAA-00160 (For Freight Dock; DFO, 2019) No Net Loss and Monitoring Plan (Knight Piésold, 2007) Code of Practice, Culvert Maintenance (DFO, 2022)
Ref. Document Link	Not applicable

METHODS

In 2023, no in-water construction works requiring a *Fisheries Act Authorization* were completed that required adherence to the No-Net-Loss principle.

Milne Port Freight Dock

Monitoring of habitat offsetting works associated with the Milne Port Freight Dock were not planned for in 2023 under the frequency of monitoring set out in the DFO approved monitoring plan. The next year of monitoring is scheduled for 2024.

Baffinland is awaiting an amendment to its Freight Dock *Fisheries Act Authorization* to construct rocky reef habitat in proximity to the Freight Dock to satisfy offset requirements related to the final surveys of the Freight Dock footprint in 2019.

Milne Inlet Tote Road Water Crossings

From June 30 to July 10, 2023, assessments of freshwater fish-bearing water crossings were completed by a third-party Professional Fisheries Biologist. The emphasis of the 2023 spring monitoring program was to assess the presence of fish, habitat quality, and upstream accessibility through installed culverts at fish-bearing sites and identify crossings requiring remediation to allow for fish passage.

Baffinland implements a proactive approach to prevent the onset of reduced fish passage in watercourse crossing infrastructure by installing, inspecting, and maintaining crossings in adherence with the approved Hatch (2013) design. Measures that Baffinland follows include the following:

- Install at least one (1) culvert at each fish bearing crossing with an embedment depth in the streambed that is 10% of the culvert diameter (i.e., a 2,000 mm diameter culvert requires an embedment depth of 200 mm);
- Install rip rap erosion protections at culvert outlets to prevent scour that can result in perched or hanging culverts;
- Inspect culverts to verify inlets and outlets are free of debris and sediment and there are no signs of erosion;
- Inspect culverts in fish bearing crossings to verify they are embedded in the streambed (i.e., not perched or hanging);
- Inspect culverts to verify they are free draining;
- Inspect culverts to verify they are in good structural condition (i.e., ends are not damaged, no buckling, etc.); and
- Complete mitigations at the first sign of potential for reductions in fish passage, in consultation with DFO personnel and in compliance with the Code of Practice for culvert maintenance (DFO, 2022).

RESULTS

Milne Port Freight Dock (Fisheries Act Authorization No. 18-HCAA-00160)

Monitoring of habitat offsetting works associated with the Milne Port Freight Dock were not planned for in 2023 under the frequency of monitoring set out in the DFO approved monitoring plan. The next year of monitoring is scheduled for 2024.

Milne Inlet Tote Road Water Crossings (Fisheries Act Authorization No. NU-06-0084)

Fish use assessments were completed at forty-nine (49) fish-bearing crossings during the spring of 2023. Overall, catch totals in 2023 were low relative to surveys in previous years at many crossings. These reduced catch rates were attributed to high flows and low water temperatures at the time of the survey (i.e., fish movements from overwintering habitat into tributary streams were likely limited at the time of the 2023 survey). Spring 2023 electrofishing surveys captured or observed one hundred and nine (109) juvenile Arctic char at nineteen (19) crossings and seventeen (17) Ninespine Stickleback at nine (9) of the crossings. It was also noted that the fish ladder installed at BG-30 remained successful in 2022.

No fish passage or habitat issues were documented at 28 of the 49 fish bearing water crossings. Potential issues with fish passage and/or habitat were observed at seventeen (17) fish-bearing crossings.

TRENDS

Current monitoring and assessment of project watercourses is sufficiently robust to identify fish passage issues. There have been recurring perches observed at several culverts (CV-129, CV-114, CV-111, BG-50, CV-106, CV-225 and CV-216), and recurring sedimentation issues at culverts CV-057, BG-01 and CV-186. Remedial work began in February 2024 to address fish passage issues at CV-114, CV-112, CV-106, CV-102, CV-059, CV-057, CV-216, BG-27, BG-04 and CV-001. Baffinland is working with DFO to establish remedial plans for other crossing locations.

Overall, Year 2 of habitat offset monitoring at the Freight Dock completed in 2021 indicated that the three-dimensional structure of the introduced habitat is providing a suitable and stable substrate for colonization and growth of marine organisms, as evidenced by the presence of macroalgae, motile invertebrate, and fish taxa. Post-construction monitoring is required in years 1, 2, 5, 8 and 10, and therefore was not conducted in 2023. The next monitoring year will be 2024.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland continues to routinely inspect fish bearing water crossings at the Project and address identified concerns. Remedying fish passage concerns at water crossings remains a top priority for Baffinland to ensure compliance with the Project's Tote Road *Fisheries Act Authorization* (NU-06-0084; DFO, 2007) and the No Net Loss and Monitoring Plan (Knight Piésold, 2007). Assessments of fish bearing water crossings will be continued in 2024 as part of the Project's fish habitat monitoring program.

Future Tote Road remedial works/improvements/realignments required in support of on-going operations and future expansion projects will either follow the Code of Practice for culvert maintenance or a request for review will be submitted to DFO with the approved designs prepared by qualified consultants. Baffinland will continue to work with DFO to ensure planned modifications to fish bearing crossings are in compliance with the *Fisheries Act*.

Monitoring will continue in 2024 to assess fish passage at crossings on fish-bearing streams, to continue to assess the condition and performance of crossings, and to evaluate the effectiveness and performance of remediation works conducted. Similarly, monitoring of the Freight Dock offsetting habitat will be subject to monitoring to confirm effectiveness.

Project Certificate Term and Condition No. 46

Category	Freshwater Aquatic Environment – Drainage
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate impacts to freshwater aquatic habitat.
Term or Condition	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.
Relevant Baffinland Commitment	64
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Progress
Stakeholder Review	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), Environment and Climate Change Canada (ECCC), Nunavut Impact Review Board (NIRB), Nunavut Water Board (NWB), Qikiqtani Inuit Association (QIA)
Reference	Fresh Water Supply, Sewage and Wastewater Management Plan (FWSSWMP; Baffinland, 2024e) Metals and Diamond Mining Effluent Regulations (MDMER; Minister of Justice, 2023) Surface Water and Aquatic Ecosystem Management Plan (Baffinland, 2021d) Sampling Program - Quality Assurance and Quality Control Plan (Baffinland, 2024f) 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a) Dust Mitigation Action Plan (Golder, 2016a) Sedimentation Mitigation Action Plan (Golder, 2016b) Snow Management Plan (Baffinland, 2024h) Long Term Water Management Plan (Baffinland, 2021e)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.8.3 Appendix G.8.7 Appendix G.8.8

METHODS

Consistent with the FWSSWMP (Baffinland, 2023e), prior to discharge, wastewater (e.g. treated sewage, treated contact water, oily water, etc.) is sampled to ensure water quality meets the applicable discharge criteria. Wastewater that meets the applicable discharge criteria is discharged to the receiving environment. Water samples are routinely taken prior to and during wastewater discharges to ensure the water quality remains in compliance with the applicable discharge criteria. In the event that water quality sampling during a discharge indicates that the water quality has changed and is no longer in compliance with the applicable discharge criteria, the discharge of the non-compliant wastewater is halted.

Wastewater that does not meet the applicable discharge criteria is treated on-site using approved treatment methods (e.g. sewage treatment plants, mobile oily water treatment systems, WRF treatment plant, etc.) and is not discharged to the receiving environment until it has been confirmed by water quality analysis that the treated wastewater meets the applicable discharge criteria.

All water sampling at the Project is conducted in accordance with the Project's Sampling Program - Quality Assurance and Quality Control Plan (Baffinland, 2024f; Appendix G.8.7).

As required by the Type 'A' Water Licence (NWB, 2015), volumes and water quality analysis of all wastewater discharged to the receiving environment are reported to regulators (CIRNAC, NWB) on a monthly and annual basis. As a requirement of MDMER, volume and water quality results for discharges from the surface water management ponds associated with the Crusher Facility (CF), KM 106 Run of Mine Ore Stockpile Facility, KM 105 Sedimentation Pond, and Waste Rock Facility (WRF) at the Mine Site are reported to ECCC on a quarterly and annual basis.

Methodology for effluent discharges in 2023 are discussed in the Project Certificate Term and Condition No. 17.

RESULTS

Results from effluent discharges in 2023 from sewage treatment plants (STPs), surface water management ponds associated with ore and waste rock facilities, and oily water retained in containment areas, such as bulk fuel facilities, are discussed in Project Certificate Term and Condition No. 17. The effluent treatment systems operated at the Project in 2023 include:

- Sewage Treatment Plants (STPs) at Milne Port (MP-01, MP-01B) and the Mine Site (MS-01B) (Mine Site STP MS-01 was shut-down for the duration of 2023 as sufficient treatment capacity for sewage wastes generated at the Mine Site was achieved via STP MS-01B);
- Mobile Oily Water Treatment System (OWTS), at the Mine Site and Milne Port; and
- Waste Rock Facility Water Treatment Plant (WRF WTP) at the Waste Rock Facility (MS 08).

TRENDS

Trends from effluent discharges in 2023 are discussed in the Project Certificate Term and Condition No. 17. Overall, the frequency of incidents involving the discharge of effluents to the receiving environment that exceed the applicable discharge criteria remained low in 2023, which has been consistent since the start of operations 2014.

RECOMMENDATIONS / LESSONS LEARNED

Recommendations and lessons learned from effluent discharges in 2023 are discussed in the Project Certificate Term and Condition No. 17.

Project Certificate Term and Condition No. 47

Category	Freshwater Aquatic Environment – Watercourses
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To prevent blockages or restrictions to fish passage.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), Fisheries and Oceans Canada (DFO), Nunavut Water Board (NWB), Qikiqtani Inuit Association (QIA)
Reference	Fish Habitat No Net Loss and Monitoring Plan (Knight Piésold, 2007) <i>Fisheries Act</i> Authorization No. NU-06-0084 (For Tote Road Crossings; DFO, 2007)
Ref. Document Link	Not applicable

METHODS

A fish habitat monitoring plan was developed by Baffinland to ensure that all measures and works specified in the No Net Loss and Monitoring Plan (Knight Piésold, 2007), as well as the *Fisheries Act* Authorization (NU-06-0084; DFO, 2007) and amendments, are implemented and are functioning as intended. Under Baffinland's Tote Road *Fisheries Act* Authorization, annual assessments of watercourse crossing infrastructure are conducted by qualified professionals at all fish bearing crossings with the objective of maintaining connectivity for fish species and verifying the functionality of all existing culverts. In 2023, monitoring was conducted at fish bearing water crossings at the Project. The methodology of the 2023 program is discussed in Project Certificate Term and Condition No. 45.

Baffinland is continuing to work with Fisheries and Oceans Canada (DFO) to address fish passage issues along the Tote Road at specific locations. Throughout 2023, Baffinland continued to develop a plan to address culverts and fish passage issues and to work with DFO as the plan developed. In January 2024, DFO issued a Letter of Advice (LOA) for Baffinland's Tote Road Culvert Remediation proposal to implement a permanent crossing solution for ten (10) corrugated steel pipe (CSP) crossings along the Tote Road. Tote Road Culvert Upgrades work commenced in early 2024. Baffinland will continue to work with DFO to ensure planned modifications to fish bearing crossings are in compliance of the *Fisheries Act*.

RESULTS

2023 assessments of Project fish bearing water crossings were completed by a third-party Professional Fisheries Biologist in June of 2023. Results of this assessment are discussed in Project Certificate Term and Condition No. 45.

TRENDS

Trends are discussed in the Project Certificate Term and Condition No. 45.

RECOMMENDATIONS / LESSONS LEARNED

Recommendations and lessons learned are discussed in Project Certificate Term and Condition No. 45.

Project Certificate Term and Condition No. 48

Category	Freshwater Aquatic Environment – Explosives
Responsible Parties	The Proponent, Qikiqtani Inuit Association, Fisheries and Oceans Canada
Project Phase(s)	Construction, Operations
Objective	To mitigate impacts to freshwater aquatic habitat.
Term or Condition	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 (Wright and Hopky, 1998).
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Not Active
Status of Compliance	In Compliance
Stakeholder Review	Not applicable
Reference	Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters (Wright and Hopky, 1998) Environmental Protection Plan (Baffinland, 2021c)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

To date there has been no requirement to undertake blasting in or near water, and as such, there has been no requirement to discuss blasting near water with DFO and the QIA. Baffinland implements the management practices for blasting in or near water as outlined in Section 4.24 the Environmental Protection Plan (Baffinland, 2021c).

RESULTS

No blasting occurred in 2023 within the required setback distances detailed in the DFO Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters (Wright and Hopky, 1998).

TRENDS

Not applicable. To date, no blasting has occurred within the required setback distances at the Project.

RECOMMENDATIONS / LESSONS LEARNED

To date there has been no requirement to undertake blasting in or near water and as such there has been no requirement to discuss blasting near water with DFO and the QIA. Baffinland will discuss Project specific blasting thresholds with the appropriate parties if required in the future.

Project Certificate Term and Condition No. 48 (a)

Category	Freshwater Aquatic Environment - Arctic char
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations
Objective	To determine presence and health of Arctic char in freshwater aquatic habitat.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In progress
Stakeholder Review	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), Fisheries and Oceans Canada (DFO), Nunavut Impact Review Board (NIRB), Nunavut Water Board (NWB), Qikiqtani Inuit Association (QIA)
Reference	2022 Milne Inlet Freshwater Fish Health Program Report (Minnow, 2023) 2023 CREMP Report (Minnow, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.4.1

METHODS

In addition to the annual fish use assessments completed near Project water crossings, as discussed in PC Term and Condition No. 45 and PC Term and Condition No. 47, Baffinland conducts annual fish population assessments for Arctic char in Camp Lake, Sheardown Lake, Mary Lake and Reference Lake 3 near the Mine Site as part of the Project's Core Receiving Environment Monitoring Program (CREMP). The CREMP is an aquatic monitoring program conducted annually that focuses on evaluating mine-related influences on water quality, sediment quality and/or biota, including Arctic char, within aquatic environments located near the Mine Site. Under the CREMP, condition of Arctic char populations within monitored lakes are assessed using a non-lethal sampling program that involves capturing and assessing 100 Arctic char from nearshore lake habitat via electrofishing and 100 Arctic char from littoral/profundal lake habitat via gill netting in each monitored lake.

In 2021, Baffinland implemented a Milne Inlet Freshwater Fish Health Assessment program. This program was initiated following discussions with the Mittimatalik Hunters and Trappers Organization (MHTO) about the potential effects of the Milne Port facility operations on anadromous Arctic char (*Salvelinus alpinus*) health and PC metal concentrations in tissues. The design for the study was developed following consultation with the MHTO from a teleconference meeting held during February 2021 in which the MHTO provided information regarding sampling locations, timing, and techniques for the study. Based on discussions from this meeting, Arctic char from three (3)

river systems that flow into Milne Inlet, including the Tugaat, Qurluktuk, and Ikaluit river systems, were to be targeted for sampling in mid- to late August 2021 following an approach comparable to that used for Environmental Effects Monitoring (EEM) under the Metal and Diamond Mining Effluent Regulations (MDMER) for evaluating effects on fish health.

The overall objective of the study was to evaluate the effects of the Project on anadromous Arctic char health and tissue metal concentrations in freshwater systems located near the Milne Inlet. Given the timing suggested by the MHTO, the field study was conducted between August 12 and 19, 2021. Due to unsafe helicopter travel conditions related to weather, the Ikaluit river system was not able to be accessed for sampling in 2021. The field crew included representatives from the MHTO/community of Pond Inlet, and the QIA. For the assessment; age, body length, body weight, reproductive organ weight, and liver weight measurements were collected from adult female and male Arctic char collected at each freshwater system as the basis for assessing growth and condition in fish captured in 2021 compared to historical information, as well as the basis of future tracking changes in fish health over time. The historical data were collected at Tugaat Lake in 1992 and 1995, and at the Robertson River (Qurluktuk system) in 1979 by Department of Fisheries and Oceans (DFO), well prior to the commencement of Baffinland Milne Inlet port operations, and thus serve as a strong basis for evaluating potential changes in Arctic char health since the operations were initiated. Assessment of metal concentrations in Arctic char muscle and liver tissues sampled from the Tugaat and Qurluktuk river systems focussed on comparison of mercury concentrations to applicable consumption guidelines and iron concentrations to amounts recommended for daily dietary intake in humans.

A second year of monitoring was completed in 2022 as part of the Milne Inlet Freshwater Fish Health Assessment program. In 2022, the field fish health assessment program ran from August 17 to 26, along with one individual representative for each of the Hamlet of Pond Inlet, the MHTO and QIA. Ikaluit Lake was sampled for the first time in 2022, while Tugaat and Qurluktuk lakes were sampled a second year in a row. Following the completion of the field component, Baffinland met with the MHTO representatives to discuss 2021 and preliminary 2022 results, and gathered feedback on the type of data and results in support of 2023 reporting efforts.

Baffinland met with MHTO in February and July of 2023 to discuss the program and worked to find a time where a decision could be made on timing and locations for a 2023 sampling program. Unfortunately, the field season passed before there was consensus on approach. However, Baffinland met with MHTO in Q1 of 2024 and has a plan in place to resume monitoring in Tugaat and Qurluktuk lakes with the support of the new MHTO Board.

RESULTS

As documented in the 2023 CREMP Monitoring Report, monitoring data collected to date suggest no adverse mine-related effects on Arctic char populations within monitored lakes under the CREMP. The 2023 CREMP Monitoring Report, which provides a complete analysis and discussion of 2023 monitoring results, is provided in Appendix G.4.1 and in the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a).

TRENDS

No adverse mine-related effects on Arctic char populations within monitored lakes under the CREMP or the Milne Inlet Freshwater Fish Assessment have been observed to date. Trends associated with Arctic char populations within lakes monitored under the CREMP are presented in the 2023 CREMP Monitoring Report (Minnow, 2024a; Appendix G.4.1). Trends are not applicable currently for the Milne Inlet Freshwater Fish Health Assessment program.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland plans to continue the CREMP and the Milne Inlet Freshwater Fish Health Assessment, described above, to assess the condition of Arctic char populations within aquatic environments near the Mine Site and Milne Inlet.

Baffinland will work with MHTO to design the Freshwater Fish Health Program and sampling efforts for 2024.

4.6.8 Terrestrial Environment (PC Terms and Conditions 49 through 64)

Sixteen (16) PC Terms and Conditions relate to the potential impacts of the Project on the terrestrial environment, focusing primarily on caribou, carnivores, and terrestrial wildlife habitat. Within these conditions, the importance of collaboration on regional wildlife monitoring and management initiatives was stressed by the NIRB, the GN, and other parties.

Inuit & Stakeholder Feedback

During the environmental review process for the FEIS and FEIS addendum, the potential for sensory disturbance on caribou resulting from the Project was a key issue. Concerns were related to potential sensory disturbance and the potential for mortalities due to collisions with trains on the south railway and truck traffic along the Tote Road. Communities were initially very concerned that the railway would interrupt the typical northward movement of caribou into the North Baffin Region. Another concern identified was that caribou are particularly sensitive to disturbance at their current low abundance state within their natural population cycle. Effects to terrestrial wildlife, and in particular key issues such as the current low numbers of caribou in the area, potential impacts to calving areas, movement and migration, as well as potential effects of caribou eating vegetation with dust, continue to be expressed in 2023 consultation activities.

Monitoring

Baffinland completes several monitoring programs on the terrestrial environment, some of which are conducted in collaboration with government agencies. The TEWG members, consisting of government agencies, the QIA, technical experts, and the MHTO, provide recommendations and guidance on Baffinland's terrestrial monitoring programs. The TEWG provides review and comment on the Terrestrial Environment Annual Monitoring Report (TEAMR) and provides comments and recommendations for future updates and revisions to the monitoring program.

Baffinland's routine terrestrial monitoring programs include the following components:

- Vegetation abundance monitoring
- Trace metals monitoring (soils and lichen)
- Exotic invasive vegetation monitoring and natural revegetation
- Snow track surveys
- Snowbank height monitoring
- Height of Land Surveys and Wildlife Monitoring via Remote Cameras (Paired with Certain Height of Land (HOL) Survey Locations)
- Active Migratory Bird Nest Surveys (AMBNS)
- Noise monitoring
- Tote Road Traffic Analysis
- Incidental Observations and Wildlife Interaction (Incidental Mortalities) Tracking
- Helicopter Overflight Compliance Tracking

The objectives of the terrestrial monitoring programs are to monitor for mitigations put in place to minimize effects of the Project and the residual effects of the Project after the application of mitigation. Additionally, effects on terrestrial wildlife are assessed by looking at effects of the Project on other components of the environment,

including dust on vegetation, which could impact caribou forage, or noise impacts to understand potential disturbances wildlife may be exposed to as a result of the Project.

Table 4.17 provides an evaluation of the Project's impacts on the terrestrial environment, based on monitoring activities completed in 2023, relative to predictions presented in the FEIS and FEIS Addendum.

Table 4.17: Terrestrial Environment Impact Evaluation

Component	Effects	Monitoring Program	Impact Evaluation
Habitat Loss	Direct habitat loss due to the Project footprint, and indirect habitat loss due to sensory disturbances	Height of Land monitoring; snow track and snow bank monitoring; incidental observations.	The regional caribou population is currently too low to confidently assess potential effects; assessment will gain confidence when the caribou population increases.
Restriction of Movement	Project infrastructure and the Tote Road act as a barrier to the movement of caribou		
Mortality	Mortality resulting from vehicle collisions or project-induced hunting	Incidental observations; biologists and other staff on-site	Within FEIS predictions

Path Forward

Baffinland will remain vigilant about implementing the mitigation and monitoring activities that are in place to minimize and monitor any potential effects of the Project on the terrestrial environment and wildlife resources. Baffinland will continue to seek input and review monitoring results trends from technical members of the TEWG and other interested stakeholders.

Project Certificate Term and Condition No. 49

Category	Terrestrial Wildlife and Wildlife Habitat - Terrestrial Environment Working Group
Responsible Parties	The Proponent, Qikiqtani Inuit Association, Government of Nunavut, Government of Canada, Hunters and Trappers Organizations of the Impacted Communities (Pond Inlet, Arctic Bay, Clyde River, Sanirajak, Igloodik).
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	<p>The Terrestrial Environmental Working Group (TEWG) will provide advice, guidance and enforceable recommendations regarding: adding to and improving baseline information, mitigation measures for the protection of the terrestrial environment, monitoring of effects on the terrestrial environment, assessing the accuracy of impact predictions, the development and implementation of adaptive management plans, sharing of relevant Inuit Qaujimajatuqangit, scientific and/or technical knowledge and industry best practice, and, consideration of project changes that may be required to make sure the management of negative impacts is effective and that lasting damage to the terrestrial environment is prevented.</p> <p>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.</p> <p>The Terms of Reference (ToR) for the TEWG shall be revised to include the following requirements:</p> <ol style="list-style-type: none"> That an independent chair be appointed for TEWG and that this independent Chair be responsible for scheduling and administering meetings including circulating meeting invitations, agendas and documentation. That the Working Group's decision-making process be amended to provide that it must occur on a consensus basis between all working group member parties, with all votes and decisions in writing and recorded by the chair. That the Working Group's recommendations be recognized as enforceable recommendations (i.e., will be implemented by the Proponent), with provision that the Proponent may request not to enforce the recommendation at which point the matter shall go to an independent third party (agreed upon by the Proponent, QIA, and the Government of Canada) for dispute resolution. That the Working Group will include all Responsible Parties as member parties. The Proponent may be required to facilitate the participation of Hunters and Trappers Organizations through payment of honoraria and other participation costs in accordance with the Commitment List appended at Appendix B. That Working Group materials and records of decisions become public information with the independent chair responsible for keeping and circulating minutes which shall be posted to the Baffinland website and the NIRB public registry including all meeting minutes once finalized and provided to Baffinland by the independent chair.

Term or Condition	<p>A Terrestrial Environment Working Group (TEWG) shall be established as an advisory oversight body, providing advice, guidance and enforceable recommendations to fulfill the intended objectives. The operation of the TEWG shall not duplicate or impede the exercise of regulatory authority of authorizing agencies or government. The TEWG shall have the following permanent members: The Proponent, the Qikiqtani Inuit Association, the Government of Nunavut, the Government of Canada, the Mittimatalik HTO, and the Hunters and Trappers Organizations of the other Impacted Communities (Arctic Bay, Clyde River, Sanirajak, Igloolik), should they wish to participate. A Terms of Reference shall be established that guides additional participation in the TEWG by observers. The TEWG shall be chaired by an independent third party as chosen by the permanent members. A revised Terms of Reference shall be presented to NIRB no later than December 15th, 2023, or at another date on consent of the Proponent, Canada, and the Qikiqtani Inuit Association.</p> <p>Project monitoring reports and relevant data to be considered by the TEWG will be provided to members not less than ten (10) working days prior to a scheduled meeting, or as otherwise described in the Terms of Reference.</p> <p>Draft meeting minutes of the TEWG shall be filed by the independent chair with working group members within fifteen (15) working days following a meeting for review by TEWG working group members, or as otherwise described in the Terms of Reference.</p> <p>All final meeting minutes shall be submitted to the NIRB registry by the Proponent for circulation to NIRB's distribution list not more than thirty (30) working days following receipt from the independent chair. All final meeting minutes shall be included in the Annual Report to the NIRB.</p>
Relevant Baffinland Commitment	46, 47, 49, 50
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	2023 TEWG Meeting Records
Ref. Document Link	Appendix C.2

METHODS

Baffinland established the Terrestrial Environment Working Group (TEWG) in 2013. Members of the TEWG include the Mittimatalik Hunters and Trappers Organization (MHTO), the Government of Nunavut (GN), the Qikiqtani Inuit Association (QIA), Environment and Climate Change Canada (ECCC), Parks Canada (PCa), and Baffinland, with technical experts as required. The MHTO joined as a member in 2016. The Igloolik Hunters and Trappers Organization (IHTO), Arctic Bay (Ikajutit) Hunters and Trappers Organization (IHTA), Hall Beach (Sanirajak) Hunters and Trappers Organization (HB HTA), and Clyde River (Nangmautuuq) Hunters and Trappers Organization (NHTO) have also been acting as members since February 2023. The revised Terms of Reference (ToR) includes these HTA's as members should they wish to participate. Natural Resources Canada (NRCan), the NIRB, and the Canadian Northern Economic Development Agency (CANNOR) also participate as observers on the TEWG. Baffinland provided all costs for

administration of all Working Group meetings in 2023, including simultaneous translation, translation of materials, and funding for participation of all HTO representatives. Refer to Appendix C.2 for 2023 Terrestrial Working Group minutes for meetings held in February, April, and December.

Generally, the Working Group meetings are structured in such a way to include:

- Baffinland to provide a Project update to the members (e.g., includes mining and shipping-related activities such as ore production, and vehicular and vessel traffic);
- Discussion of monitoring program planning including sampling approach (e.g., sampling variables, sites, and data collection methods) in advance of field programs to obtain feedback by TEWG members;
- Discussion of results of monitoring programs to obtain feedback by TEWG members; and
- Various research presentations (given by Baffinland, Baffinland technical consultants and other members).

Baffinland has been working in good faith with the TEWG to draft an update to the ToR that reflects inclusion of all items in this term and condition including appointment of an Independent Chair, amendments to the decision making process and the inclusion of new members (namely the HTOs from Arctic Bay, Clyde River, Igloolik and Sanirajak). The ToR update process is occurring simultaneously and in tandem with the ToR for the Marine Environmental Working Group (MEWG). Baffinland has circulated iterations of the draft ToR to Working Group members incorporating feedback as received. At the close of 2023, the most recent draft that had been reviewed by the Working Group was the April 2023 version. This draft has since been revised again following the April 19th joint MEWG/TEWG meeting and will be finalized in 2024.

The group typically schedules two (2) yearly in-person meetings, in addition to hosting two (2) interim teleconferences per year. This is subject to change based on the most recent draft of the ToR, which proposes that three regular meetings and up to three touchpoint meetings will be held, in addition to ad hoc meetings at the request of members. Technical annual reports and other documentation are provided to the TEWG in advance of meetings to the extent possible and on an on-going basis to allow for review, comment and advice to be provided by all members. Baffinland reviews all comments received on reports, makes effort to provide meaningful responses to each comment, and in so doing, takes into consideration the suggestions for improvement of the report and advice provided by TEWG. This mechanism allows TEWG members to provide constructive feedback on annual reporting efforts.

RESULT

In 2023, the TEWG met on February 14th and 16th, April 19th, December 13th and 14th. Details pertaining to each meeting, including meeting location and topics of discussion, can be found in Table 2.7 of Section 2.5.2.

As a result of inputs from the TEWG, numerous program modifications have been made since 2015. When suggestions have been made by Working Group members on specific programs, Baffinland has made the effort in considering these requests in the most expedited and feasible manner. When a change is not implemented, Baffinland has provided rationale as to why the modification cannot immediately be implemented and/or that additional information is required before it can make an informed decision and/or has provided its reasoning for not pursuing specific requests and requesting that alternative methods be suggested. Key actions from the TEWG in 2023 included: (1) a commitment for the GN to provide a summary of the caribou health monitoring program, inclusive of program year, number of samples collected, location of each collected sample, and summary of any available analytical results; (2) a commitment for Baffinland and the GN to jointly determine how to increase uptake

with the caribou health monitoring program; (3) an evaluation of non-compliant helicopter flights and a commitment to improving compliance; (4) a discussion related to 2023 preliminary caribou aerial survey program results to determine what additional monitoring could/should be enforced for northern and southern Project components; (5) a commitment for Baffinland and QIA to correspond about the development of a draft study design for the Tote Road streams program that is designed to monitor for rubber particulates. Responses to key action items and initiatives for the TEWG are captured in the summary of action items table at the start of each meeting minutes, which can be found in Appendix C.2 of this report.

Many of the members that participate in the Working Groups also represent regulatory bodies that have the ability to issue directions to Baffinland in accordance with their jurisdiction, mandate or issued permits. As has always been the intention of the Working Groups, they should not duplicate or fetter regulatory obligations, and rather remain focused on the enhancement of Baffinland's monitoring programs and providing advice on best practices or new research they are aware of to inform the ongoing development and implementation of Baffinland's comprehensive environmental management system.

Despite Baffinland's demonstrated record of recommendation implementation, from time to time Baffinland struggles to reconcile recommendations from the Working Groups that do not properly appreciate the dimensions of feasibility related to health and safety, costs, logistics and other operational constraints. In many cases, despite Baffinland's efforts to specifically and clearly communicate these considerations to the Working Groups, members continue to advocate for research studies that are not reasonably feasible. In all cases, it is important to distinguish between initiatives that may fill a regional or general information gap, and those that have a reasonable link to the Mary River Project's activities and are a requirement to fulfill the proponent's obligations under its Project Certificate and monitoring program requirements.

The draft of the ToR updated and shared with Members in April 2024, outlines a formal recommendation process. This process would require members to send draft recommendations to the independent chair for review, who would then distribute the recommendation to the Working Group, followed by a 30-day period for members to provide comment on the recommendation. The sponsoring member would then submit a final proposed recommendation to the independent chair within 30 days of receiving member feedback. Subsequently, Baffinland would have 60 days following the receipt of the final recommendation to accept the recommendation or provide a response with supporting evidence (i.e., financial and operational limitations), should Baffinland disagree with the recommendation. The chair would then circulate Baffinland's response to the Working Group to be put to vote. While the ToR has not been finalized by the time of this submission, Baffinland is confident that the process will allow for more enforceable recommendations to be put forward. Additional details related to the most recent ToR are outlined in Section 2.5.2.1. The majority of members on the TEWG are also members of the MEWG, as highlighted in Section 2.5.2, and all TEWG and MEWG members were invited to a ToR discussion at both the February 2023 in person meetings and virtual April 2023 meeting.

RECOMMENDATIONS / LESSONS LEARNED

The Working Groups are a tool that can be used by the proponent and working group participants to discuss, debate and continuously improve monitoring programs and outcomes. It is imperative that all participants participate in good faith, be forthright in providing the appropriate expertise and knowledge relevant to their organizations and participation and contribute collaboratively with a mind to problem solving where issues or concerns are brought forward. In its most recent draft ToR for the Working Groups Baffinland presented a reasonable path forward that

would result in meaningful changes to the Groups' current structure, operational schedule, and ability to influence the Project. It is expected that this should improve Members' expectations, communication within the Group and outcomes.

Project Certificate Term and Condition No. 50

Category	Terrestrial Wildlife and Habitat – General
Responsible Parties	The Proponent and other Parties as appropriate
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To ensure appropriate and responsive adaptive management.
Term or Condition	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).
Relevant Baffinland Commitments	40, 70
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	Draft Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2023e) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a) 2022 Terrestrial Environment Annual Monitoring Report (EDI, 2023)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

The draft Terrestrial Environment Mitigation and Monitoring Plan (TEMMP; Baffinland, 2023e) outlines Baffinland's monitoring programs for terrestrial wildlife and habitat. Terrestrial environment monitoring programs are discussed annually during TEWG. Cumulative effects and long-term trends assessments are incorporated into various aspects of the monitoring programs outlined in the TEMMP.

The TEMMP is supplemented by Baffinland's contributions to information gathered from region-wide monitoring for caribou conducted by the GN, Program for Regional and International Shorebird Monitoring (PRISM) plot surveys, seabird research by ECCC, and previous research on cliff-nesting raptor ecology by Arctic Raptors Inc.

RESULTS

Changes to experimental design (e.g., in response to reported trends and/or discussions with the TEWG) are documented chronologically in the respective Terrestrial Environment Annual Monitoring Report (TEAMR). To date, updates have been commonly related to statistical analysis and sampling design to improve robustness of the data capture and interpretations. The TEWG is engaged regularly to discuss annual monitoring programs for the terrestrial

environment. Feedback received from TEWG members is incorporated into annual monitoring reports and updates to the TEMMP where relevant.

As listed in the 2022 TEAMR (EDI, 2023) and 2023 TEAMR (EDI, 2024a), chronological changes to monitoring programs include:

Helicopter Overflights

2015 — Start of helicopter overflight analysis. Compliance is determined based on the elevation above the ground of points using data from helicopter flight logs.

2017 — Pilot rationale for low-level flights were included in flight logs and used in compliance evaluation.

2020 — Additional reporting on helicopter pilot rationale and flight time was requested during the 2020 TEWG meeting (Appendix C.2 in Baffinland, 2021g). Recommendations led to re-analyzing the 2017 to 2019 helicopter flight data to align with updated (2020) standards.

2021 — The GN requested—in commentary on the 2020 TEAMR (refer to comment GN AR#02; NIRB, 2021a)—re-analysis of 2015 to 2016 helicopter overflight data to align with 2020 standards using the methods described in this section.

2023 — The GN requested -- *Amendments to the helicopter overflight rationale definitions that were addressed through ancillary consultations and discussions. The 2023 helicopter overflight data were collected using the amended list of rationale from 2022. The 2017 to 2022 helicopter data were recategorized into the new rationale to compare with the 2023 helicopter data.*

Dustfall

2013 — The dustfall monitoring program was initiated in August 2013. A total of 26 monitoring stations were established near Project infrastructure at the Mine Site, Milne Port, along the Tote Road, and reference sites (located 14 Km from the Project).

2014 — First full year of monitoring, which includes Project activities during the Construction Phase. Based on preliminary analysis, the program was expanded in September 2014 to increase the number of monitoring stations at the Mine Site and Milne Port. Additional stations were intended to improve understanding of ‘how dustfall pattern may change with distance from Project infrastructure’.

2015 — First full year of monitoring during Mine Operations. One additional monitoring site was added at the Mine Site to address a gap in the program.

2019 — Data collection at 1,000 m distance from the Tote Road was increased in response to a request from the QIA and the MHTO. Six (6) additional dustfall monitors were installed (three paired monitoring stations, one of each on the east and west sides of the Tote Road at KM 25, KM 56, and KM 75). Sites selected for the monitoring stations was done in conjunction with input from the MHTO and QIA. Additionally, dustfall data collection at other 1,000 m distant sites was changed to year-round, where data were only collected during the summer months from 2013 to 2018. This brought the total number of dustfall monitors at the 1,000 m PDA boundary to 12.

A monitor at Milne Port (DF-P-01) was relocated and was renamed (DF-P-08) to allow for the expansion of an ore stockpile.

2020 — Satellite imagery analysis of dustfall extent was conducted to address concerns from the MTHO that the past dustfall monitoring data and analyses did not reflect what hunters saw on the ground. The analysis included Landsat and Sentinel-2 imagery from 2004 to 2020 between March 15 and May 15.

2021 — Reported quantitative measurements from the dustfall satellite imagery analysis as requested from the NIRB, including dustfall concentrations and area using the Snow Darkening Index, a measure of mineral dust on snow. Data from Steensby Inlet was included as a reference area for comparison.

2021 — A total of fourteen (14) new dustfall monitoring stations were installed, including:

- a. four additional monitors at Milne Port to better characterize dustfall moving off the Milne Port site;
- b. four new monitors along the section of Phase 2 railway that departs the Tote Road right-of-way (ROW). These monitors are to define baseline conditions; and,
- c. six dustfall monitors installed to collect dust at a height of 0.5 m. These ‘short’ monitors were part of a pilot study to investigate the variability between dustfall sampling at the standardized height of 2.0 m and closer to ground level. This program was implemented in response to specific requests from the impacted communities and QIA.

As of the end-of-year 2021, a total of 53 dustfall monitors (including the six ‘short’ monitors as part of the trial) have been installed at defined/pre-existing monitoring locations.

2023 — Dustfall deposition remained relatively constant at most year-round sampling locations throughout the Project area in 2023. Wet conditions, particularly in August, likely contributed to decreases in dustfall across the Project area. The following bullet points provide a summary of passive dustfall monitoring in 2023.

- The 2023 dustfall spatial extents increased compared to 2022, primarily in the concentration classes between 1 and 10 g/m² but were similar to 2020 and 2021.
- Satellite-derived mean dustfall concentrations across all areas generally increased from 2014 to 2020 in line with the increase in total ore hauled to Milne Port over the same period.
- Dustfall deposition generally plateaued and sometimes decreased across all Project areas, despite increased total ore hauled from 2016 to 2021, and steady total ore hauled from 2021 through 2023. Further analysis on dustfall concentration estimation from satellite imagery will be conducted, including an explicit comparison of inter-annual trends determined by passive dustfall monitoring and satellite imagery analysis in subsequent annual reports.

Vegetation Abundance

2014— Assessment of transects 1 to 8 and Reference sites 1 to 3. Per TEWG dialogue, experimental design adapted to account for and compare the potential effects of herbivory (exclusion fencing).

2016— Increased number of transects; assessment of transects 1 to 15 and Reference sites 1 to 6. Per TEWG dialogue, sample size informed by statistical power analysis.

2017— Assessment of transects 1 to 15 and Reference sites 1 to 6.

2018— Assessment of transects 1 to 15 and Reference sites 1 to 6.

2019— Increased number of Reference sites; assessment of transects 1 to 15 and Reference sites 1 to 15. Per TEWG dialogue, timing of survey verified and informed by remote sensing (historical ‘green-up’ period).

2023— Assessment of transects 1 to 15 and Reference sites 1 to 15.

In 2023, a multi-year trend analysis was conducted using data from all available monitoring campaigns (i.e., 2014, 2016 to 2019, and 2023) to evaluate year-over-year trend comparisons. Analysis of vegetation abundance data was also evaluated and interpreted in relation to soil moisture characterization.

Vegetation and Soil Base Metals Monitoring

2008 — Pre-construction baseline data on vegetation and soil base metal concentrations were first collected for the Project in 2008; however, these data were not used due to sampling and analytical discrepancies. At that time, collection methods were not effectively documented and did not facilitate data continuity or comparability.

2012-2013 — Additional baseline sampling was conducted within the RSA in 2012 and 2013. Vegetation sampling targeted three focal groups: lichen (*Flavocetraria cucullata*, *F. nivalis*, *Cladonia arbuscula*, and *C. rangiferina*), willow (*Salix* spp.), and blueberry (*Vaccinium uliginosum*). The analysis focused on seven metals/metalloids selected as contaminants of potential concern (CoPCs): aluminum (Al), arsenic (As), cadmium (Cd), copper (Cu), lead (Pb), selenium (Se), and zinc (Zn). The selection of CoPCs considered chemical composition of the ore and construction material (i.e., road cover/capping material and road-generated dust) and use of similar indicators at other projects to evaluate potential risk to humans and wildlife (Baffinland, 2012; EDI, 2014). Standardized sampling procedures and soil quality guidelines from the CCME were used as threshold values for soil. Peer-reviewed literature sources were used in the absence of explicit quality guidelines for lichen. Monitoring design and key findings are presented in the 2013 TEAMR (EDI, 2014).

2014 — Sampling intensity was increased in 2014 to improve data capture and analysis. Lichen —recognized as an indicator of environmental conditions and accumulator of atmospheric pollutants (Naeth and Wilkinson 2008, Aslan et al. 2011)— was selected as the key indicator and focal group for metals uptake. Blueberry and willow were removed as assessment targets due to their limited abundance or lack of reference guidelines (EDI, 2015). Aluminum was removed as a CoPC due to its high variability, ubiquitous nature, and lack of CCME and United States Environment Protection Agency soil quality guidelines to protect environmental and human health.

2015 — In 2015, the TEWG recommended further increasing sampling and data capture. Before implementing any modifications, Baffinland evaluated the program’s experimental design—especially concerning statistical power and the ability to detect Project-related effects—to optimize sampling intensity and distribution. Ultimately, the study design was expanded to facilitate ‘Near’, ‘Far’, and ‘Reference’ locations; the procedures were then aligned with the dustfall monitoring program, where feasible. Monitoring design and key findings are presented in the 2017 and 2018 TEAMRs (EDI, 2017, 2018).

2016 — Additional ‘Reference’ sites were added to the sample design to increase regional data capture.

2019 — The vegetation and soil base metals monitoring program was formalized in 2019 (using the present methods) with considerations and inclusions per the NIRB and GN recommendations (EDI, 2017). The analysis focused on six (6) CoPCs in soil and lichen: As, Cd, Cu, Pb, Se, and Zn (i.e., selected in 2012-2013). Soil and lichen CoPC concentrations were compared between the ‘Before’ and ‘After’ periods and the distance from the PDA.

2020 — Ten (10) additional sample sites were added in 2020 to the Far distance category. Since most Project-emitted dust is deposited within 1,000 m of the PDA, increasing sample size in this range is intended to improve data capture and resolution within a targeted survey area. This modification to the study design was implemented in response to TEWG reviewer comments in 2019 (QIA, 2018; TEAMR comments; T-24042019).

2021 — In 2021, the soil and vegetation metals monitoring sampling program met its five-year monitoring commitment. For logistical reasons, timing and access, sampling (12 sites) primarily focused on Milne Port and the Tote Road, resulting in a reduced sample size; sampling of Far/Reference sites were less represented in the data capture.

2022 — In 2022, a full review of the vegetation and soil base metals analysis was conducted, including historic reference standards and indicator values. Notably, a central database was created to consolidate all vegetation and soil base metals (from 2012 to the present); statistical analysis has been updated to account for improvements in analytical methods, and appropriate p-value adjustments for multiple pairwise comparisons have been applied. Concentration thresholds for soil and indicator values for lichen were reviewed and updated (if/where applicable).

Height-of-land

2016— Viewshed modelling and mapping were completed to determine the amount of viewable area at each HOL survey station.

2020— Survey intensity was increased (as it is presently) by conducting at least two (2) station visits and increasing survey observations from 20 to 40 minutes.

2021— Implementation of a remote camera monitoring program.

Birds

Refer to Section 4.6.9 for Terms and Conditions related to monitoring potential Project impacts on birds, including active migratory birds nest surveys, helicopter overflight compliance tracking, incidental wildlife observations, and monitoring of land disturbance/habitat loss.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland continues to refine monitoring programs design, methodologies, indicators and thresholds over time in response to input from the TEWG. Constructive dialogue through the TEWG has led to continuous refinements and improvements in the terrestrial monitoring programs design and outcomes.

Project Certificate Term and Condition No. 51

Category	Terrestrial Wildlife and Habitat – General
Responsible Parties	The Proponent and/or TWEW
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To promote coordination of monitoring efforts.
Term or Condition	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.
Relevant Baffinland Commitments	58
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a) Caribou Monitoring – Triggers and Recommendations (EDI, 2022a) 2023 TEWG Meeting Records 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a) Aerial abundance estimates, seasonal range use, and spatial affiliations of the barren-ground caribou (<i>Rangifer tarandus groenlandicus</i>) on Baffin Island — March 2014 (Campbell et. al 2015)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.2 Appendix G.5.1

METHODS

Baffinland has provided financial and logistical support for the Government of Nunavut's (GN's) North Baffin Island caribou survey research on several occasions since 2009. Baffinland will continue to support relevant GN caribou surveys to enhance Baffinland's understanding of potential Project-related effects and regional knowledge about wildlife distribution and abundance.

For example, Baffinland presented options for larger-scale caribou surveys to the TEWG during the June 2021 meeting, including aerial surveys and a collaring program as monitoring options, ideally collaborating with GN. During the June and December 2021 TEWG meetings, discussions surrounded planning for aerial caribou survey of the regional study area (proposed between 2023 and 2024).

A fixed-wing aerial survey took place in March 2023, flying along 8 Km spaced transects across the Project's wildlife RSA. The Caribou Monitoring: Triggers and Recommendations report (EDI, 2022a) further identifies a northern

subregion (11,706 km², corresponding with the active Project area) and a southern subregion (15,735 km², corresponding with the planned/future Project area) that are considered in further analyses and future monitoring activities, as discussed in that report. For continuity and alignment with previous aerial surveys, the survey design used methods that the Government of Nunavut applied during the March 2014 regional survey of the North Baffin strata (including the Mary River stratum, Campbell et al. 2015). The survey timeframe was also applied so that observations were made before calving (i.e., to minimize disturbance) and while snow cover was more extensive on the landscape (thereby standardizing the observational setting and improving the detection of caribou on the landscape).

Discussions during TEWG meetings resulted in deploying wildlife cameras to enhance wildlife monitoring at the Project (i.e., in addition to existing and ongoing height of land monitoring). Twelve cameras were deployed at six (6) HOL locations in 2021 with input from the TEWG. Remote cameras are presently (and will continue to be) deployed year-round; service visits occur twice yearly (minimum) to verify camera function and swap in/out SD memory cards and batteries.

RESULTS

In 2018, Baffinland provided financial and logistical support for the North Baffin Island spring caribou population survey conducted by the GN. The GN has not conducted regional caribou population surveys in 2019 or 2020. In 2021, the GN undertook a collaring program and completed composition surveys. The GN made no requests for support from Baffinland, likely because of the need to maintain separation between Nunavummiut and site-based employees due to COVID-19. In addition, the GN continued their collaborative research program with the MHTO and Northern Contaminants Program (NCP) to understand the composition of metals in caribou tissues. Baffinland is a Party to the agreement with the Northern Contaminants Program and has provided financial resources for this work. Baffinland has regularly engaged with several Federal, Territorial, and Non-Government Organizations, including the MHTO, through TEWG meetings.

As described in the 2023 TEAMR (EDI, 2024a), an aerial survey occurred in late March 2023. During the survey, 112 caribou and 36 groups were observed. All observed caribou occurred in the southern subregion of the Wildlife Regional Study Area (RSA), and only two groups (nine individuals total) occurred in an overlapping portion of the northern subregion. The application of Mark-Recapture Distance Sampling (MRDS) methods led to estimates of approximately 44 caribou (3.74 caribou/1,000 km²) in the northern subregion and 613 caribou (38.94 caribou/1,000 km²) in the southern subregion of the RSA during the survey period.

Statistical modeling was conducted to determine the required caribou densities to trigger a robust collaring program (EDI, 2022a). The threshold was set at ~350 caribou per study area (northern and southern halves of the terrestrial RSA). The 2023 caribou aerial survey confirmed that a collaring program would now be feasible within the southern subregion of the RSA. Ideally, this program would run concurrently with GN-led regional caribou surveys to better understand caribou distribution and behaviour in the Mary River stratum compared to the larger regional scale.

As per the response to Term and Condition No. 35, it was determined — in consultation with the GN Regional Wildlife Biologist regarding Caribou Health Monitoring (August 2021) — that implementation of separate/parallel GN-led and Baffinland-led programs could result in potential conflicts. It was then resolved that the best approach was to defer to data made publically available to meet our requirements. Once the GN program is complete (pending study findings), Baffinland may put in a separate permit application to extend this type of research.

In Q4-2023 and Q1-2024, Baffinland re-visited the topic with the GN and NCP representatives to discuss the feasibility of launching a caribou tissue sampling program based out of the Mine Site and Milne Port, commencing as early as July 2024. The proposed program would involve analyzing kidney, muscle and liver samples for a full metals suite, moisture content, and mercury. Central (I1) incisors would also be collected for caribou aging. Liver, kidney, and muscle samples would be processed by Mary Gamberg Consultants in Whitehorse, who is an active member of the NCP. Teeth aging would be completed at Matson's Lab in Montana, USA, as no Canadian facilities currently offer this analysis. This proposed program is still under discussion and requires agreement amongst NCP and the GN prior to review by the TEWG.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

In 2016, the MHTO became a member of the TEWG, adding a community perspective to decisions and discussions within the group. In August 2022 and April 2023, Baffinland released draft Terms of Reference to the Marine Environment Working Group, which are still under review. Once finalized, these Terms of Reference will be used as a draft Terms of Reference for the TEWG and will involve the addition of Nangmautuuq Hunters and Trappers Organization (NHTO), Igloodik Hunters and Trappers Organization (IHTO), Sanirajak (Hall Beach) Hunters and Trappers Organization (HBHTA), and Ikajutit Hunters and Trappers Organization (IHTO) to both the Marine and Terrestrial Environment Working Groups.

Refer to Term and Condition No. 50 for modifications to terrestrial monitoring programs that have occurred over time based on feedback from the TEWG.

Project Certificate Term and Condition No. 52

Category	Terrestrial Wildlife and Habitat – Caribou
Responsible Parties	The Proponent, TEWG
Project Phase(s)	Construction
Objective	To ensure best practices are used for caribou protection.
Term or Condition	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, Inuksuk's, or fencing and subsequent monitoring for effectiveness. These activities shall be reported back to the Terrestrial Environment Working Group.
Relevant Baffinland Commitments	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister; results to be reported back to the Terrestrial Environment Working Group.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a) 2023 TEWG Meeting Records 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.2 Appendix G.5.1

METHODS

The issues of caribou protection measures and caribou deterrents were discussed with the TEWG in December 2013. Several techniques were considered, including inuksuk's, electric fences, wildlife fencing, and berms. It was suggested within the TEWG that caribou deterrents be considered “step-wise” mitigation to be addressed if a conflict between caribou and the pit or other hazardous areas ever occurs, or is likely to occur, based on regional caribou abundance. Given the low regional population numbers of the North Baffin caribou herd, there has not yet been a need to implement caribou deterrent measures from hazardous areas.

As a preventative caribou protection measure, Baffinland requires all employees to adhere to a stop-work policy when wildlife is at risk of injury or death within the PDA, which reduces hazardous conditions. Baffinland has created guidelines (the Caribou Decision Tree; Figure 3-2 in the TEMMP - Baffinland, 2016a) for driver response to caribou near roads based on distance and behaviour to reduce hazardous conditions further.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Caribou abundance is relatively low on Baffin Island, and only a few incidental caribou sightings have been made in the Project area (see Section 9.6 in the 2023 TEAMR; EDI, 2024a). Baffinland will continue to monitor caribou within the Project sites and RSA, support regional caribou monitoring conducted by the GN, and identify appropriate caribou deterrents from Deposit No. 1 and hazardous areas in conjunction with the TEWG as necessary.

Project Certificate Term and Condition No. 53

Category	Terrestrial Wildlife and Habitat – Caribou
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To mitigate impacts to caribou from Project-related traffic.
Term or Condition	<p>The Proponent shall demonstrate consideration for the following:</p> <ol style="list-style-type: none"> 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. <ol style="list-style-type: none"> 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. 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 (TEWG). Evaluation of the effectiveness of proposed caribou crossings over the railway, Milne Inlet Tote Road and access roads as well as the appropriate number. 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. 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.
Relevant Baffinland Commitments	15, 71, 73
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Steensby Rail Corridor – Not Active Milne Inlet Tote Road – Active
Status of Compliance	Steensby Rail Corridor – Not Applicable Milne Inlet Tote Road – In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	Terrestrial Environment Mitigation and Monitoring Plan (TEMMP; Baffinland, 2016a) 2023 TEWG Meeting Records 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a) Aerial abundance estimates, seasonal range use, and spatial affiliations of the barren-ground caribou (<i>Rangifer tarandus groenlandicus</i>) on Baffin Island — March 2014 (Campbell et. al 2015)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.2 Appendix G.5.1

METHODS

a. Prevention of Caribou Mortality and Injury as a Result of Vehicular Traffic

- The Caribou Decision Tree presented in the TEMMP (Figure 3-2 in the TEMMP, Baffinland, 2016a) directs driver responses when caribou are near or crossing the Tote Road to minimize the chance of collision or disturbance;
- Snowbank heights and slopes were managed throughout the winter season to decrease potential barriers to caribou movement across the Tote Road, and compliance of snow management to a 1 m height limit was monitored at least once per month during winter months by Baffinland Site Environment staff; and
- Snow track surveys were used to monitor caribou interaction with the Tote Road to determine if they cross the road or deflect their movement paths away from the road. They were conducted between March and November 2023 when snow and daylight conditions allowed.

Detailed methods are identified in the TEMMP (Baffinland, 2016a, Sections 3.3.3 and 4.5.2, and Figure 3-2) and the 2023 TEAMR (Sections 9.1 and 9.2; EDI, 2024a).

b. Monitoring and Mitigation Measures

In 2023, all twenty-four (24) Height of Land (HOL) survey stations were visited annually during the caribou calving period to monitor caribou distribution, abundance, and behaviour.

Observations were completed for a minimum of 40 minutes per visit. The landscape was scanned using binoculars and a spotting scope to detect caribou presence and their proximity to Project infrastructure. More detailed documentation of caribou behaviour and interaction with Project infrastructure and vehicles were completed if/when caribou were observed. Monitoring data is intended to inform mitigation measures.

Detailed methods are identified in the TEMMP (Section 4.5, Appendix 4-8, Baffinland, 2016a) and the 2023 TEAMR (Section 9.3, EDI, 2024a).

In 2020, Baffinland explored numerous options for larger-scale caribou monitoring with input from the TEWG during 2020 meetings. This was done in response to TEWG concerns that HOL surveys may be too focused on local caribou detections. Aerial surveys, Global Positioning System (GPS) collaring, and remote camera monitoring were discussed as potential methods for monitoring caribou distribution, movement, and behaviour at the RSA scale (including known calving areas) with a focus on the Tote Road and proposed railway acting as potential barriers to movement. Remote cameras were initially deployed in 2021 at six (6) HOL sites to expand caribou detection efforts. A fixed-wing aerial survey occurred in late winter 2023. For continuity and alignment with previous aerial surveys, the survey design used methods that the Government of Nunavut applied during the March 2014 regional survey of the North Baffin strata (including the Mary River stratum, Campbell et al. 2015). See also Summary for Term and Condition No. 51.

c. Evaluation of Effectiveness of Caribou Crossings

Snow track surveys were used to collect data on caribou response to Project activities based on movement patterns. The surveys were conducted by driving slowly (30 km/hr) from the Mine Site to Milne Port on the Tote Road in late winter. When wildlife tracks were observed, surveyors stopped and walked to the tracks to confirm species and then followed the tracks to observe behaviour, habitat use, and possible divergence of travel paths. When tracks were near or intersected the Tote Road, surveyors recorded the location, species that produced the tracks, number of

sets of tracks counted (i.e., group size), travel path in relation to the road (e.g., deflected, travelled along, or crossing the Tote Road) and the height of the snowbank measured at either the crossing point or likely point of deflection.

Detailed methods are identified in the TEMMP (Sections 4.5.2, Appendix 4-9) and the 2023 TEAMR (Section 9, EDI, 2024a).

In 2023, snow track surveys were conducted in March, May, October and November by two or three Baffinland Site Environment employees using the methods described above.

Due to low embankments and existing low profile road conditions, no designated caribou crossings are required for the Tote Road. To date, monitoring has focused on managing snowbank heights to minimize barriers to movement.

The RSA-scale caribou monitoring methods discussed with the TEWG during meetings (i.e., aerial surveys, GPS collaring, and remote camera monitoring), if implemented, can be used to evaluate caribou movement in response to the Tote Road and proposed railway at a larger scale than snow track surveys to assess potential population-level effects.

d. Surveillance System

Not applicable in 2023 as the railway has not yet been constructed. The TEMMP (Sections 3.3.1, 3.3.2, 3.3.3, and 4.5.2, Baffinland 2016a) will include an updated surveillance system once the railway becomes viable.

e. Documentation and Reporting

The TEMMP (Sections 3.3.3 and 3.3.4, Baffinland 2016a) details the protocol for documenting and reporting caribou collisions and mortalities. Although caribou numbers are very low and the risks of vehicle-caribou collisions are low, ongoing mitigation such as using the Caribou Decision Tree is occurring to prevent caribou mortalities.

RESULTS

a. Prevention of Caribou Mortality and Injury as a Result of Vehicular Traffic

- Caribou numbers remained low in 2023, and therefore interactions with the Tote Road and vehicles have not occurred;
 - A total of 103 caribou were reported as incidental observations in 2023, of which 98 were outside the PDA.
- A stop-work policy is implemented when wildlife in the area could be endangered by work being conducted, including truck driver responses when caribou are near or crossing the Tote Road using the Caribou Decision Tree;
- Continued snowbank height management in 2023 resulted in 88% compliance to the 1 m height limit, ensuring the barrier-free movement of caribou; and
- Snow tracking surveys did not observe caribou tracks in 2023, consistent with the low regional caribou numbers.

b. Monitoring and Mitigation Measures

- A total of 16 hours and 51 minutes of HOL survey effort was conducted during the calving period in 2023;
- A single caribou track was observed during the 2023 HOL surveys;

- Details of previous surveys dating back to 2013 are provided in the previous Terrestrial Environment Annual Monitoring Reports;
- A total of 103 caribou from 22 separate groups were reported from incidental observations in 2023. Five (5) of the caribou were observed within the PDA; and
- Remote Wildlife Camera Monitoring also did not identify any caribou, supporting findings of HOL data that has been collected to date.

c. Evaluation of Effectiveness of Caribou Crossings

Caribou have only been incidentally and sporadically detected in or near the PDA since 2013 (see the 2023 TEAMR, EDI, 2024a). However, ongoing snowbank height management and wildlife response monitoring continues. In 2020, caribou were confirmed to have crossed the Tote Road in three of the four incidental observations in January, suggesting that the road did not act as a barrier to movement in those instances.

d. Surveillance System

Not applicable in 2023 as the south railway has not been constructed.

e. Documentation and Reporting

All documentation and reporting protocols have been developed. Baffinland maintains records of all wildlife interactions and mortalities via mandatory reporting protocols. Neither caribou collisions nor caribou mortalities occurred in 2023, nor any other year of Project operation.

TRENDS

a. Prevention of Caribou Mortality and Injury as a Result of Vehicular Traffic

Training on using the Caribou Decision Tree, snowbank height management, and snow tracking surveys continue. No interaction with vehicles occurred.

Annual monitoring of snowbank heights along the Tote Road since 2014 indicates a compliance rate between 66% and 97% (Figure 4.4), with the highest level of compliance achieved in 2019 (97%).

b. Monitoring and Mitigation Measures

Based on caribou observed per hours of survey effort, there was a decrease in caribou observations during Height of Land surveys from 2013, when the surveys began (Figure 4.5). There have been no caribou sightings during HOL surveys since 2013, when one caribou was observed. These data reflect the low regional caribou numbers of the North Baffin Island herd.

c. Evaluation of Effectiveness of Caribou Crossings

No caribou or wolf tracks have been detected during snow tracking surveys along the Tote Road between 2014 and 2023. However, Arctic fox and Arctic hare tracks were observed during all survey years (Figure 4.6). A single caribou track was also observed in 2023, but this was during a HOL survey rather than a snow track survey. Additional details pertaining to the single set of caribou tracks observed in 2023 can be found in Section 9.3.2. of the 2023 TEAMR (EDI, 2024a).

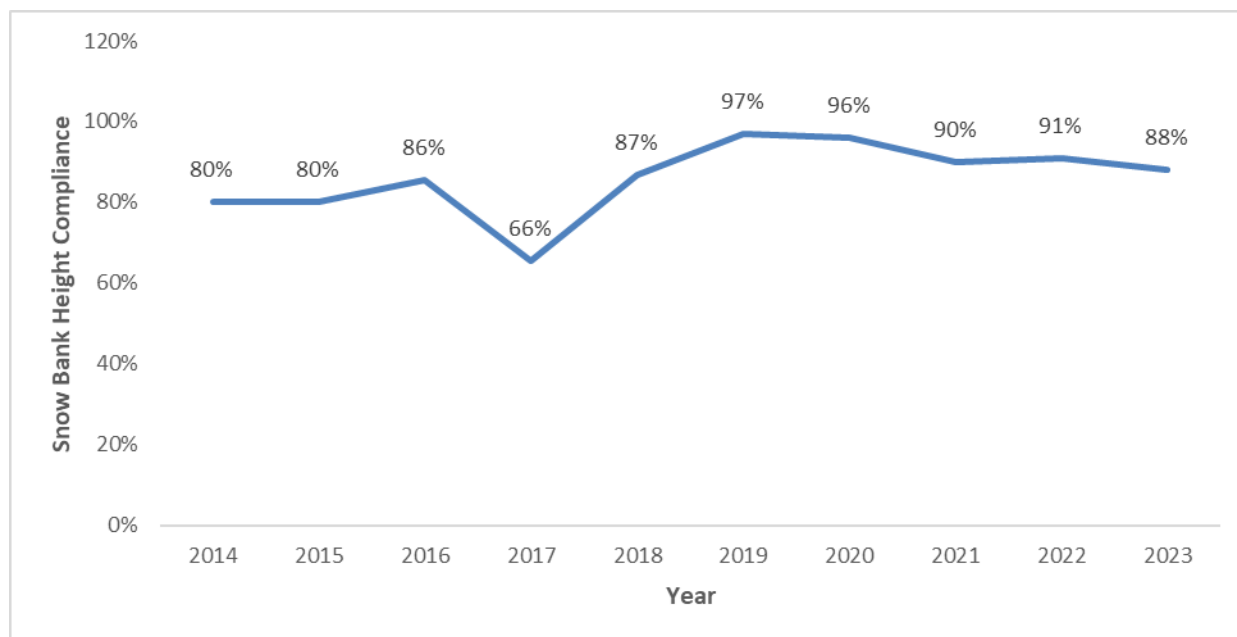


Figure 4.4: Snowbank Height Compliance Monitoring Results from 2014 to 2023 on the Tote Road

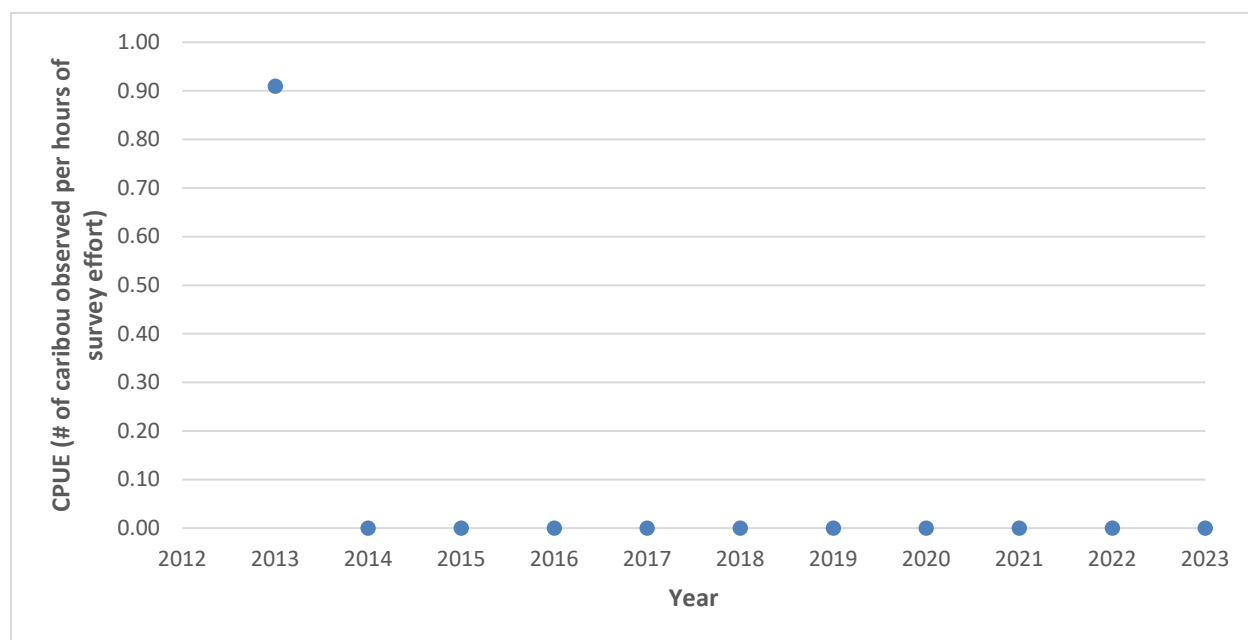


Figure 4.5: Caribou Observations from Height of Land Surveys from 2013 to 2023

Note:

CPUE = Catch per Unit Effort.

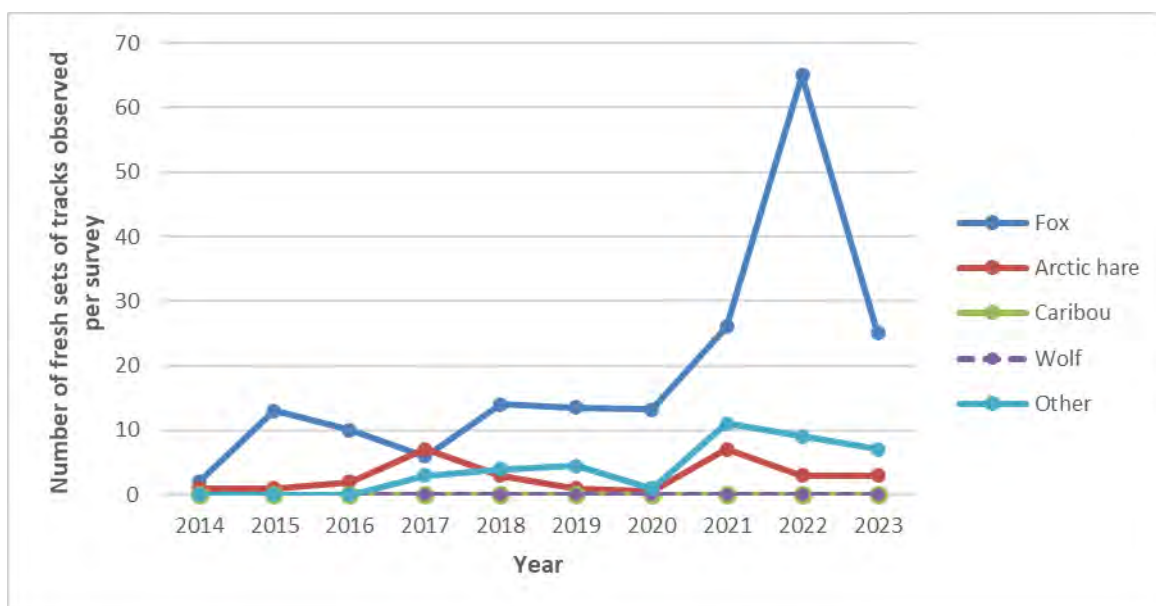


Figure 4.6: Snow Track Survey Trends from 2014 to 2023

RECOMMENDATIONS / LESSONS LEARNED

Snowbank height, snow track, and HOL surveys will continue to evaluate potential Project effects on caribou and terrestrial wildlife annually. As per the commitment in Appendix D of PC No. 005 Amendment No. 05 (NIRB, 2023a), in response to technical comment GN-FWS-03, Baffinland will make best efforts to conduct snow track surveys at a frequency of once per week along the Tote Road during months with snow cover. Note that this commitment is dependent on weather conditions and snow fall events, as surveys must be completed within 24-48 hours of a fresh snow fall. The use of remote wildlife cameras will also be implemented again in 2024. As regional caribou numbers increase and interact more frequently on or near the Tote Road, the Caribou Decision Tree will be reviewed for effectiveness.

The TEWG is engaged regularly to discuss annual monitoring programs for the terrestrial environment. Feedback from TEWG members is incorporated into annual monitoring reports and updates to the TEMMP where relevant.

Project Certificate Term and Condition No. 54

Category	Terrestrial Wildlife and Habitat – Caribou
Responsible Parties	The Proponent
Project Phase(s)	Construction - within six (6) months of issuance of Project Certificate
Objective	To Update the Terrestrial Environmental Management and Monitoring Plan.
Term or Condition	<p>The Proponent shall provide an updated Terrestrial Environmental Management and Monitoring Plan which shall include, but not be limited to the following:</p> <ul style="list-style-type: none"> a. Details of the methods and rationale for conducting monitoring prior to the commencement of construction; b. Monitoring for caribou presence and behaviour 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: <ul style="list-style-type: none"> v. Dustfall (fugitive and Total Suspended Particulates), that addresses methods to reduce risk to caribou forage from dustfall; vi. 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. vii. Details of monitoring thresholds related to level of mitigation and management; and viii. 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.
Relevant Baffinland Commitments	Not applicable
Reporting Requirement	Plan to be submitted to the NIRB and the TEWG within 6 months of issuance of a Project Certificate.
Status of PC Term and Condition	Steensby Rail Corridor – Not Active Milne Inlet Tote Road – Active
Status of Compliance	Steensby Rail Corridor – Not Applicable Milne Inlet Tote Road – In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG), Nunavut Impact Review Board
Reference	Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a) 2023 TEWG Meeting Records
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.2

METHODS

The Terrestrial Environment Mitigation and Monitoring Plan (TEMMP) (Baffinland, 2016a) directly addresses PC Term and Condition No. 54. The TEMMP outlines a detailed rationale and methodology for Baffinland's monitoring and mitigation programs. It is reviewed and updated as required based on changes to the terrestrial monitoring programs. Baffinland's draft Adaptive Management Plan (AMP) incorporates an annual review cycle for all Management Plans, which would require updates to be made to the TEMMP each calendar year. The TEMMP is currently under revision and will be circulated upon finalization, which is anticipated in Q2 2024. Changes may be implemented in advance of formal updates as the need arises. Regarding PC Term and Condition No. 54c, the programs are revised based on statistical analyses of annual data, as reported in the annual reports.

RESULTS

Specific items outlined in this Project Condition can be found in the following sections in the TEMMP (Baffinland, 2016a):

PC Term and Condition No. 54a.

- Section 4 – Monitoring Framework

PC Term and Condition No. 54b.

- Section 4.5.1 – Caribou Habitat Monitoring
- Section 4.5.2 – Caribou Movement

PC Term and Condition No. 54c.

- Appendix B – Monitoring Methods and Details

PC Term and Condition No. 54d.i.

- Section 3.1 – Mitigation Measures: Vegetation
- Appendix B, Section 4-2 – Vegetation Monitoring: Vegetation Health
- Appendix B, Section 4-3 – Vegetation Monitoring: Dustfall

PC Term and Condition No. 54d.ii.

- Section 4.5.2 – Caribou Movement
 - This section outlines Baffinland's plan to use remote motion-sensing cameras to observe caribou behaviour at crossing points at or along the PDA. This program will be revisited when caribou population density increases to a level that allows robust experimental design and statistical analysis.
- Appendix B, Section 4-9 – Caribou Monitoring: Movement

PC Term and Condition No. 54e.

- Thresholds are described throughout Section 4 – Monitoring Framework and Appendix B – Monitoring Methods and Details

PC Term and Condition 54f.

- Section 4.5.3 – Caribou Mortality
- Section 4.5.4 – Caribou Health

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 55

Category	Terrestrial Wildlife and Habitat – Wolves
Responsible Parties	The Proponent, Government of Nunavut Department of Environment
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate potential impacts to wolves.
Term or Condition	<p>The Proponent shall develop an adaptive management plan applicable to wolves and wolf habitat in collaboration with the Government of Nunavut - Department of Environment (GN-DOE) to ensure compliance with the <i>Nunavut Wildlife Act</i>. Consideration must be given to the following:</p> <ul style="list-style-type: none"> a. Monitoring for active wolf dens within a 10 Km radius from the mine site, under the direction and prior approval of the GN DOE, and reporting the results through NIRB's Annual Reports on terrestrial wildlife in the Project Development Area (PDA); b. Estimating the available (glacio-fluvial materials) esker habitat within the Regional Study Area/PDA and identifying such habitat as ecologically sensitive; c. Developing "wolf indices" for presence/abundance of wolves (by conducting studies) to set a baseline pre-construction baseline; and d. Ensuring that wolf monitoring is capable of determining the relative abundance and distribution of wolves in the PDA over time.
Relevant Baffinland Commitments	57, 74
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	Not applicable
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	Draft Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2023e) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

As a result of low caribou numbers, wolf numbers in the region have also declined (i.e., only five (5) incidental wolf sightings in or around the PDA throughout 2023; three (3) of which were an individual wolf recorded on the same day by separate observers. Wolf monitoring programs will be re-initiated when wolves and/or caribou are consistently observed near the Project area (e.g., based on trends observed from the Height of Land (HOL) monitoring data or incidental monitoring data) or on observations of local harvesters and as reported to Baffinland or the TEWG. Monitoring of carnivore dens will continue to be discussed within the TEWG based on discussions within the group. When and if deemed necessary, Baffinland will re-initiate carnivore den monitoring.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 56

Category	Terrestrial Wildlife and Habitat - Wildlife Habitat
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To ensure progressive reclamation of disturbed wildlife habitat.
Term or Condition	The Proponent shall develop a strategy for the recovery of terrestrial wildlife habitat in a progressive manner that is consistent with the <i>Nunavut Wildlife Act</i> . Overall, this will require the integration of a decision-making process and the identification of mitigation responses to cumulative impacts on caribou survival, breeding propensity, and population dynamics.
Relevant Baffinland Commitments	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtani Inuit Association, Nunavut Water Board, Indigenous and Northern Affairs Canada
Reference	Interim Closure and Reclamation Plan (Baffinland, 2018b) Research Review: Advances in Arctic Reclamation —Implications for Reclamation Practices & Trials at the Mary River Project (EDI, 2019) Reclamation Pilot Study: Revegetation Survey & Preliminary Reclamation Trial, 2023 Project Update (EDI, 2024b).
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.2

METHODS

As described in the Interim Closure and Reclamation plan (ICRP; Baffinland, 2018b), a Reclamation Research program was proposed to identify best practices for promoting natural revegetation that will inform the progressive revegetation program for disturbed areas no longer required for operations. The objective is to achieve both sustainable vegetation cover, and enhance physical stability and achieve the desired aesthetic conditions for the Project site at closure. Refer to PC Term and Condition No. 39 for further details.

RESULTS

Refer to PC Term and Condition No. 39 for further details.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 57

Category	Terrestrial Wildlife and Habitat – Reporting
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate and monitor for impacts to wildlife.
Term or Condition	<p>The Proponent shall report annually regarding its terrestrial environment monitoring efforts, with inclusion of the following information:</p> <ol style="list-style-type: none"> Description of all updates to terrestrial ecosystem baseline data; A description of the involvement of Inuit in the monitoring program; 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; 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; Results of the annual monitoring program, including field methodologies and statistical approaches used to support conclusions drawn; A summary of the chronology and level of mine activities (such as vehicle frequency and type); An assessment and presentation of annual environmental conditions including timing of snowmelt, green-up, as well as standard weather summaries; 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.
Relevant Baffinland Commitments	Not applicable
Reporting Requirement	To be included in the Annual Report submitted to the NIRB.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Nunavut Impact Review Board, Terrestrial Environment Working Group (TEWG)
Reference	<p>Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a)</p> <p>2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)</p> <p>2023 TEWG Meeting Records</p>
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.2 Appendix G.5.1

METHODS AND RESULTS

The Terrestrial Environment Mitigation and Monitoring Plan (TEMMP; Baffinland, 2016a) is the primary guidance document for mitigation and monitoring at the Mary River Project the Terrestrial Environment Annual Monitoring Report (TEAMR) is the primary source for terrestrial environment reporting. For brevity, the following responses highlight summary findings and notable outcomes drawn from the 2023 TEAMR (EDI, 2024a) applicable to PC Terms

and Conditions. Comprehensive descriptions of study design, data capture, analytical methods (including assessment limitations and assumptions), and key findings are provided, respectively, in the TEMMP and TEAMR for the given assessment/monitoring campaign.

- a. Updates and descriptions of all baseline data are summarized annually in the TEAMR.
- b. Baffinland considers engagement and consultation with Inuit, and the incorporation of Inuit in field monitoring, as important aspects of the programs. Inuit have been involved in various components of the terrestrial environment monitoring program, including: hiring and training Inuit to work on terrestrial monitoring programs; supporting the participation of the MHTO, NHTO, IHTO, IHTA, HBHTA in the TEWG; and funding three full-time on-site Environmental Monitors that are appointed and solely employed by QIA, but fully integrated into the Site Environment team. Inuit are involved in all terrestrial environment annual monitoring programs conducted by Baffinland's Site Environment team and consultants when possible. This has included participation in snow track surveys, snowbank height surveys, HOL surveys, vegetation monitoring, caribou aerial surveys, and raptor monitoring. Eight local Inuit residents assisted with the aerial caribou survey, HOL caribou surveys, and/or soil and vegetation surveys, for a combined total of 916.5 hours during the 2023 field season.
- c. Where relevant, the TEAMR discusses near-site wildlife observations concerning available knowledge about regional populations. It compares measured wildlife data (e.g., vegetation abundance data, cliff-nesting raptor data, caribou observations) to previous years' data and baseline data to indicate natural variability. Bird monitoring survey data that derived density estimates were compared to regionally available density values. Where applicable, inter-annual trends are provided in the TEAMR for a given assessment/monitoring campaign.
- d. A total of 103 caribou from 22 separate groups were reported from incidental observations in 2023. Two (2) of the observations of caribou were made near the Mary River Project and the remainder were observed outside of the PDA. No caribou were identified during the HOL surveys. Caribou have not been observed directly in the PDA during HOL surveys between 2014 and 2023. Caribou abundance surveys conducted in 2014 and 2018 by the GN also reported low abundance throughout Baffin Island. During the 2023 caribou aerial survey conducted by EDI, 112 caribou and 36 groups were observed. All observed caribou occurred in the southern subregion of the Wildlife RSA, and only two groups (nine individuals total) occurred in an overlapping portion of the northern subregion. The application of Mark-Recapture Distance Sampling (MRDS) methods led to estimates of approximately 44 caribou (3.74 caribou/1,000 km²) in the northern subregion and 613 caribou (38.94 caribou/1,000 km²) in the southern subregion of the RSA during the survey period. PC Term and Condition No. 57(d) is addressed in the TEAMR by reporting the results of the HOL surveys, snow track surveys, incidental observation logs, wildlife mortalities log, and reference to regional conditions from other publications and documents.
- e. All results of the monitoring programs, including methods and approaches to statistics, are included in the 2023 TEAMR (EDI, 2024a).
- f. In 2023, approximately 5.4 Mt of iron ore was hauled from the Mine Site to the Milne Port stockpile. Construction in 2023 was limited to continued development and construction of infrastructure and laydowns required at the Mine Site and Milne Port to support operations for additional supplies and equipment occurred. At the end of 2023, the total project footprint was 612 ha. The 2023 TEAMR

(EDI, 2024a) summarizes mine traffic activity as it correlates to dustfall monitoring. All non-haul vehicle traffic on the Tote Road is recorded by Baffinland security. This type of vehicle traffic includes road maintenance mobile equipment, mechanical maintenance/fueling trucks, pick-up trucks, etc. Mine Operations Dispatch tracks the number of trucks hauling ore on the Tote Road each day. The mean number of ore haul transits from January 1 to December 31, 2023, was 234.2 transits per day; this represents a slight decrease in the average daily number of ore haul transits in 2023 compared with 2022 (243.6 ore haul transits per day). As seen in previous years, there were periodic full or partial closures of the Tote Road associated with adverse weather conditions (freeze/thaw, poor visibility, etc.). However, these closures and corresponding decreases in ore haul transits were short-lived. The average daily number of transits was steady through the 2023 calendar year with the exception of December, which had less traffic. Other non-haul truck traffic had an annual average of 24.4 vehicle transits per day, which was slightly lower than the 2022 average of 26.7 transits per day. The average daily total vehicle transits (haul and other) on the Tote Road in 2023 was 258.7 vehicle transits per day, slightly below the 2022 average of 269.7 transits per day. Ore haul transits are depicted below in Figure 4.7 and Figure 4.8.

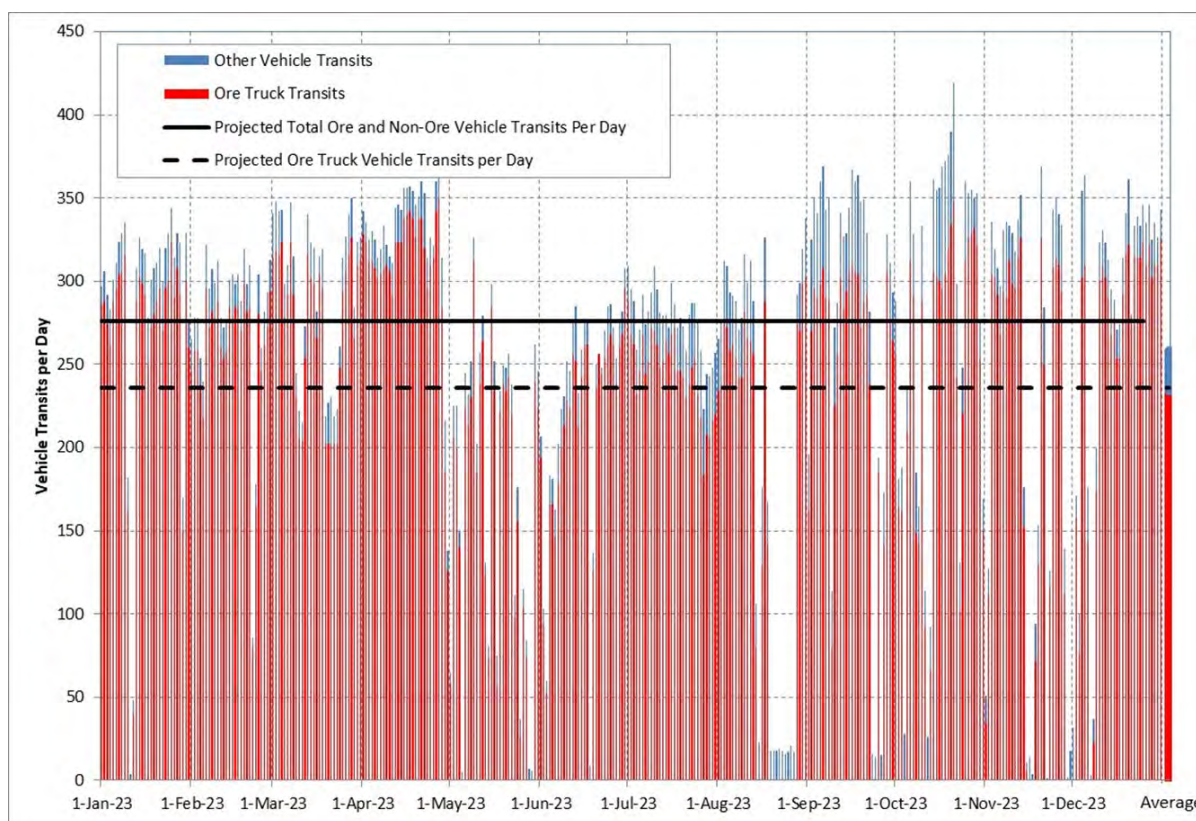


Figure 4.7: Vehicle Transits Per Day On the Tote Road, Including Ore Trucks (Red) And All Other Traffic (Blue), January 1 To December 31, 2023

Note:

Also included are the projected maximum number of vehicle transits per day and the projected maximum number of ore haul trucks per day on the Tote Road.

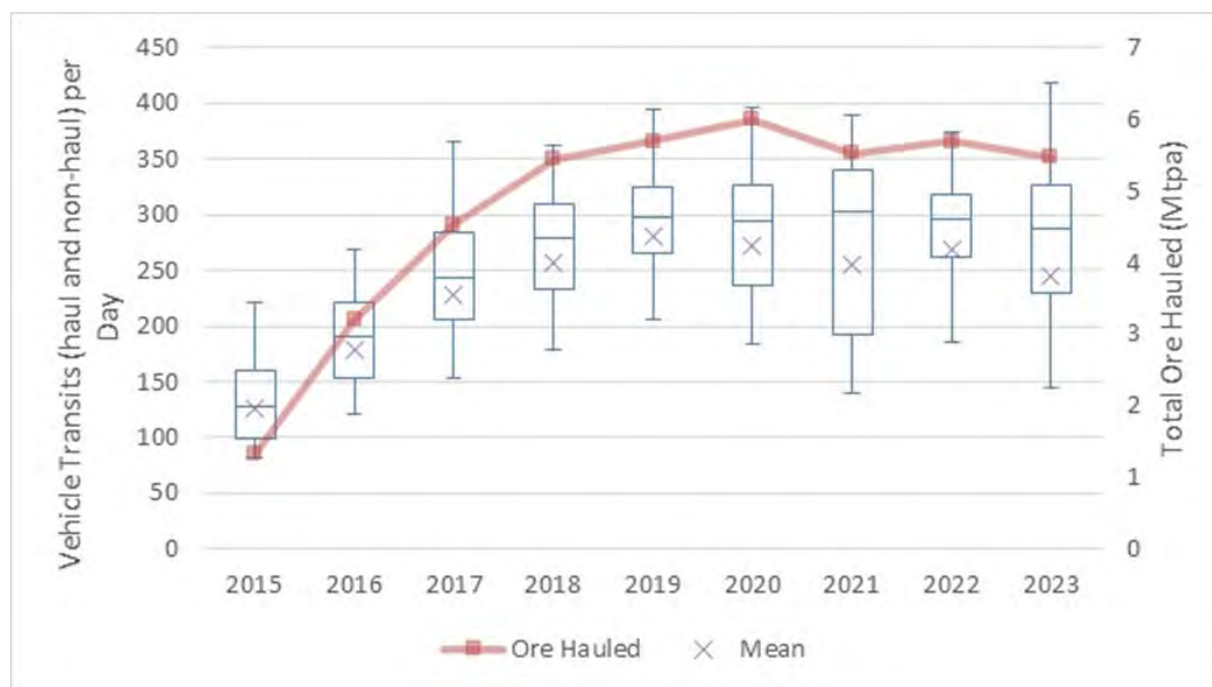


Figure 4.8: Trends in Vehicle Transits on the Tote Road and Total Ore Shipped from 2015 to 2023

Notes:

1. Includes ore haul traffic and other traffic combined.
2. The 'x' in the centre of each box marks the annual mean value, the box displays median, 25th and 75th quartiles, and the whiskers represent the minimum and maximum values.
3. The red square indicates the total annual amount of ore shipped.

- g. A summary of annual weather conditions is included in Section 4 of the 2023 TEAMR (EDI, 2024a). Minimum and maximum temperatures for the Mine Site in 2023 lie within the recorded historical range. 2023 temperatures at Milne Port closely resembled baseline temperatures throughout the spring, fall and summer, with a colder January and February and a warmer November and December. Both the Mine Site and Milne Port recorded August as unusually rainy by both precipitation measures. The wind blows predominately along a northwest-southeast axis at the Mine Site, although uncommon easterly winds tend to be the highest wind speeds recorded the MET station. The 2023 wind records at Milne Inlet varied notably from baseline (2005 to 2010) and post-baseline (2013 to 2022) wind directions and speeds. The pattern observed in 2023, which has been consistent since at least 2021 and possibly earlier, has winds blowing predominately from the southwest (onshore winds blowing down the inlet) and north-northwest (onshore winds blowing across the inlet).
- h. Periodic changes to TEMMP have been documented for version control. The chronology of these changes is also report in the TEAMR and TEWG meetings.

TRENDS

- a. Annual monitoring programs continue to increase knowledge of the terrestrial environment, in addition to knowledge gathered vis-à-vis support to regional monitoring programs.

- b. Inuit participants in the terrestrial monitoring programs continue to provide valuable knowledge and skill sets to implement the program. Additionally, Baffinland will continue to support community-based monitoring programs through Inuit Impact Benefit Agreement (IIBA) requirements, and/or other collaborative opportunities should they arise.
- c. Overall, results for the terrestrial environment monitoring are consistent with FEIS predictions.
- d. Wolf and caribou observations on-site follow the trends of regional observations; very low abundance. Sightings of other terrestrial animals (i.e., arctic hare) have remained consistent with previous years.
- e. Overall, results for the terrestrial environment monitoring are consistent with FEIS predictions.
- f. Production levels and ore transportation have remained relatively consistent since 2018 when the NIRB initially approved the Production Increase Proposal (PIP). Results of monitoring to-date do not indicate that effects of the Project on the terrestrial environment increased significantly, or in parallel with the increase in operations from 4.2 to 6 Mtpa (Figure 4.8).
- g. Minimum and maximum temperatures in 2023 at the Mine Site were recorded on February 20 (-48.9°C) and July 30 (21.3°C), respectively. These extremes lie within the recorded historical range. Comparable historical data (1963 to 1965) in winter months are lacking, but the lowest temperature recorded in late winter/spring was -40.6°C in April 1964. The highest temperatures previously registered at the Mine Site during the baseline and post-baseline periods were 22.8°C in July 2009 and 24.5°C in July 2016 (Figure 4.9). June through August tend to be the wettest months for North Baffin Island, as presented in historical data trends from the Mine Site. Based on precipitation frequency and total precipitation, 2023 appears comparable to previously recorded means (Figure 4.10).

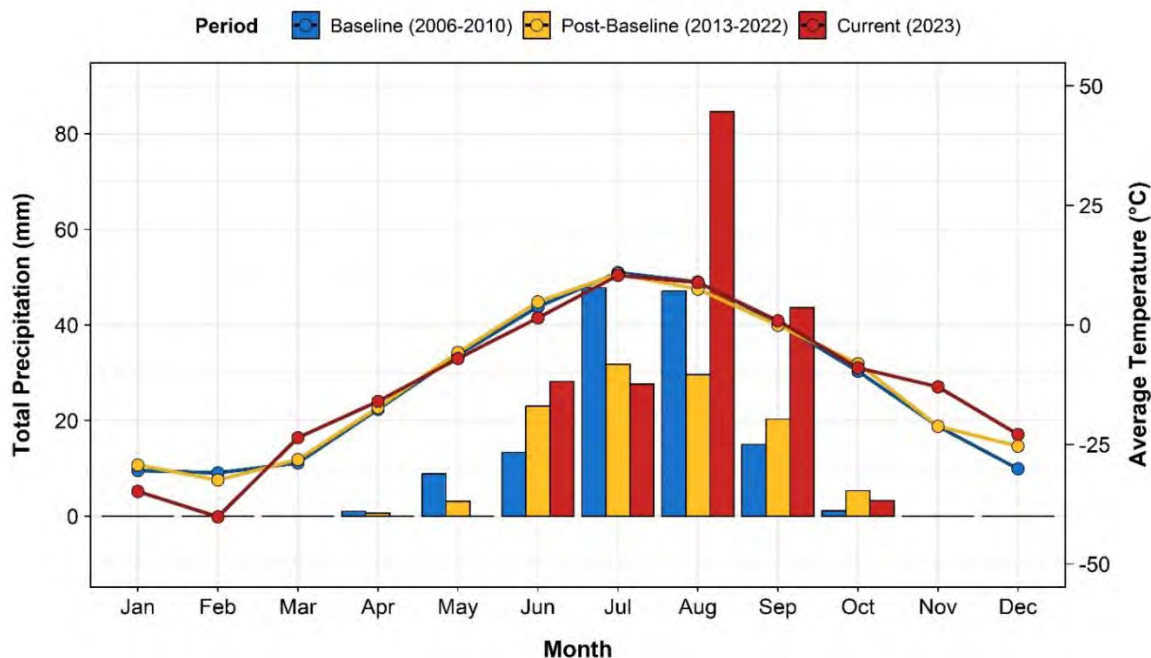


Figure 4.9: Mine Site Monthly Average Air Temperatures (Lines) And Total Precipitation (Bars) During The Baseline Period (2005 To 2010), Post-Baseline Period (2013 To 2023) And Most Recent Year (2023)

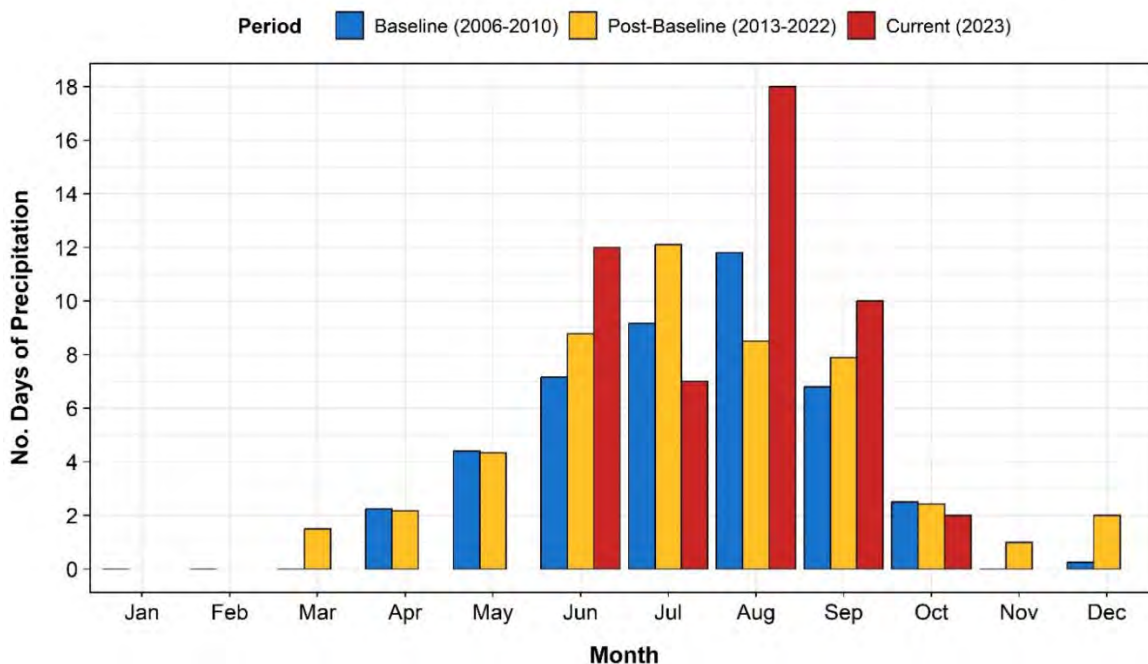


Figure 4.10: Mine Site Monthly Precipitation Frequency (Number of Days Experiencing Precipitation) During The Baseline Period (2005 To 2010), Post-Baseline Period (2013 To 2023) And Most Recent Year (2023)

RECOMMENDATIONS / LESSONS LEARNED

The TEWG is engaged regularly to discuss annual monitoring programs for the terrestrial environment. Feedback from TEWG members is incorporated into annual monitoring reports and updates to the TEMMP where relevant.

Project Certificate Term and Condition No. 58

Category	Terrestrial Wildlife and Habitat – Reporting
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate and monitor for impacts to wildlife.
Term or Condition	<p>Within its annual report to the NIRB, the Proponent shall incorporate a review section which includes:</p> <ul style="list-style-type: none"> 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 dustfall based on measured levels of dustfall (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.
Relevant Baffinland Commitments	60, 71
Reporting Requirement	To be included in the Annual Report submitted to the NIRB.
Status of PC Term and Condition	Steensby Rail Corridor – Not Active Milne Inlet Tote Road – Active
Status of Compliance	Steensby Rail Corridor – Not Applicable Milne Inlet Tote Road – In Compliance
Stakeholder Review	Nunavut Impact Review Board, Terrestrial Environment Working Group (TEWG)
Reference	Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a) 2023 TEWG Meeting Records
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.2 Appendix G.5.1

METHODS AND RESULTS

The Terrestrial Environment Mitigation and Monitoring Plan (TEMMP) is the primary guidance document for environmental mitigation and monitoring at the Mary River Project; the Terrestrial Environment Annual Monitoring Report (TEAMR) is the primary source for terrestrial environment summary reporting. For brevity, the following are references to related PC Terms and Conditions that address the subcomponents (a-f) of PC Term and Condition No. 58. Note that the TEMMP and TEAMR should also be referenced for comprehensive descriptions of study design, data capture, analytical methods (including assessment limitations and assumptions), and monitoring results.

- a. Refer to Summary for Term and Condition No. 57
- b. A total of 103 caribou from 22 separate groups were reported from incidental observations in 2023. Two (2) of the observations of caribou were made near the Mary River Project and the remainder were observed outside of the PDA. No caribou were identified during the Height of Land surveys. Caribou were not observed directly in the PDA during HOL surveys between 2014 and 2023. Caribou abundance surveys conducted in 2014 and 2018 by the GN also reported low abundance throughout Baffin Island. During the 2023 caribou aerial survey, 112 caribou and 36 groups were observed. All observed caribou occurred in the southern subregion of the Wildlife RSA, and only two groups (nine individuals total) occurred in an overlapping portion of the northern subregion. The application of the Mark-Capture Distance Sampling (MRDS) methods led to estimates of approximately 44 caribou (3.74 caribou/1,000 km²) in the northern subregion and 613 caribou (38.94 caribou/1,000 km²) in the southern subregion of the RSA during the survey period. PC Term and Condition No. 57(d) is addressed in the TEAMR by reporting the results of the HOL surveys, snow track surveys, incidental observation logs, wildlife mortalities log, and reference to regional conditions from other publications and documents. Refer to Summary for Term and Condition No. 53, 54 and 57.
- c. Refer to Summary for Term and Condition No. 10, 34, and 54.
- d. Refer to Summary for Term and Condition No. 57.
- e. Refer to Summary for Term and Condition No. 10, 34, 50, 54 and 57.
- f. There is no new information on caribou migration trails since the data collection for the FEIS baseline report was completed in 2012. In 2021, Baffinland explored options for regional-scale caribou monitoring. Aerial surveys, GPS collaring, and remote camera monitoring were discussed as potential methods for monitoring caribou distribution, movement, and behaviour at the RSA scale, including in calving areas, with a focus on the Tote Road and proposed railway acting as barriers to movement. Collectively, these data would further contribute to identifying caribou migration patterns and trails. Remote camera monitoring was conducted again in 2023, but consistent with the HOL survey results, no caribou were detected using this method. Relevant collar data were not available to Baffinland again this year. These results are reviewed with the TEWG, within which the QIA participates. There was a conversation regarding caribou collaring at the February 2023 TEWG meeting where an MHTO representative clarified that the MHTO did not support a collaring program in 2023. A GN representative stressed the importance of a caribou collaring program, but questioned the viability of implementing a program in 2023 (i.e., given logistics and planning implementations). This was again raised at the December 2023 TEWG meeting by QIA. In Q1 2024, the QIA

submitted a formal recommendation to the TEWG to implement a caribou collaring program in the southern subregion. This recommendation will be discussed at the May 22, 2024 TEWG meeting.

TRENDS

- a. Refer to PC Condition No. 53 for trends related to wildlife response (as indicated by outcomes from HOL surveys, snow track surveys, and incidental observations).
- b. Refer to PC Condition No. 53, and 57 for trends related to wildlife response (as indicated by outcomes from HOL surveys, snow track surveys, and incidental observations).
- c. Refer to PC Condition No. 34 for trends related to vegetation and soil base metals monitoring.
- d. From 2014 to 2016, dustfall across the PDA increased commensurately with mine production. From 2016 to 2020, dustfall generally plateaued, with only modest increases in some Project areas. Trends since 2014 at each Project site are summarized below and are presented in Figure 4.11.
 - o The magnitude of annual dustfall deposition at Mine Site sample locations was lower than measured in recent years. The highest dustfall deposition at the Mine Site was associated with the mine haul road. While the airstrip has consistently had the highest dustfall deposition in the Mine Site area in all years except 2019, total dustfall was lowest at this location in 2023.
 - o The magnitude of dustfall deposition at Milne Port has remained constant or, in some cases, has slightly decreased, a trend that began in 2018. The highest dustfall deposition in the Milne Port area was associated with the ore stockpiles, with lesser amounts generated by the sealift staging area.
 - o Dustfall deposition along the Tote Road was consistent at the north crossing and south crossing locations compared with recent years.

The 2023 spatial dustfall extents increased compared to 2022, primarily in the concentration classes between 1 and 10 g/m², but were similar to 2020 and 2021. Satellite-derived mean dustfall concentrations across all areas generally increased from 2014 to 2020, which is in line with increased ore production. Mean dustfall concentrations have increased since 2021 primarily within 1 Km of the PDA. Most Areas of Community Concern had mean dustfall concentrations <1 g/m² for all years, which is similar to the reference sites (one to the northeast and one to the south of the Project, at least 14, 000 m from Project infrastructure), except for 2019. The Quarnak, Ridge West and Eastern Channel sites had mean dustfall concentrations between 1 and 5.5 g/m² in three to five of the post-baseline years. The overall trends between the satellite-derived mean dustfall concentrations and the annual dustfall from the passive dustfall monitors were similar for the Tote Road, capturing most of the same fluctuations, and different for the Mine Site and Milne Port.

- e. The TEMMP addresses PC Condition No. 58(e). Periodic changes to TEMMP have been documented for version control. The chronology of these changes is also report in the Terrestrial Environment Annual Monitoring Reports and TEWG meetings.
- f. Not applicable

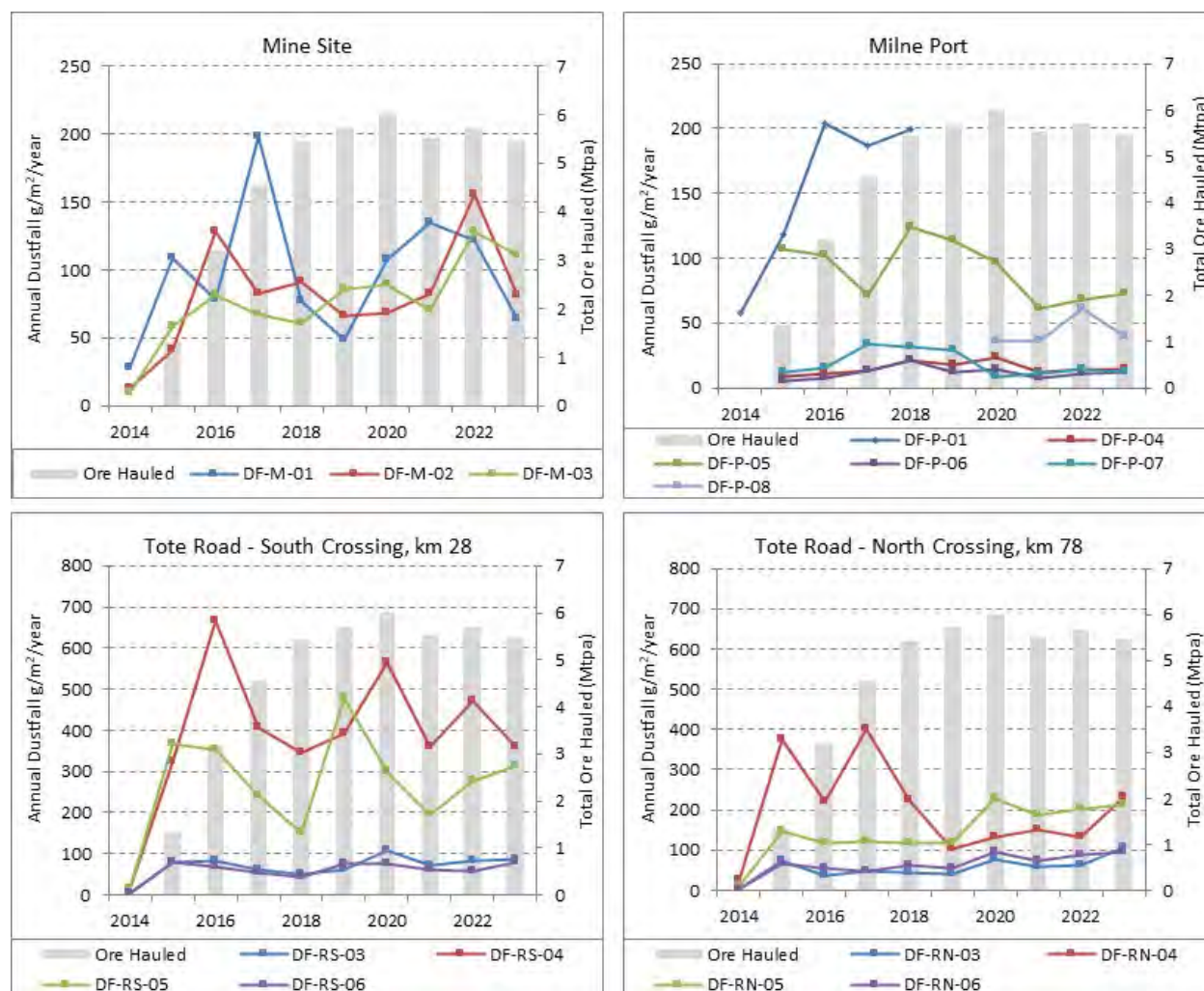


Figure 4.11: Annual Dustfall and Ore Shipping Trends from 2014 to 2023

RECOMMENDATIONS / LESSONS LEARNED

Refer to PC Term and Condition No. 53 for recommendations related to wildlife response (as indicated by outcomes from Height of Land surveys, snow track surveys, and incidental observations).

Refer to PC Term and Condition No. 34 for vegetation and soil base metals monitoring recommendations.

Recommendations for dustfall:

- Dustfall currently presents a low risk to environmental and human health and safety. As stated in the 2023 TEAMR (EDI, 2024a), CCME guidelines were consistent with the risk assessment and evaluation of exposure potential from ore dusting events in selected Valued Ecosystem Components.
- The TEWG and land users have raised concerns about dustfall extent on the landscape and impacts on vegetation and wildlife. To address the concerns, more in-depth data analyses were applied (including

spatiotemporal and inter-annual comparisons) to tease out potential trends and tendencies. Analyses of satellite imagery were also completed to further define spatial extents of dustfall.

- Baffinland is committed to mitigating dust generation at the Project by improving and refining its approaches to dust suppression, including applying dust suppressants on the Tote Road, Air Strip, and Milne Port Stockpile.
- Baffinland will continue to investigate controls that can be implemented at the Project to mitigate dustfall dispersion by helicopters and the project will continue to monitor the dustfall along the road in effort to determine if DUST/BLOKR® is resulting in a measurable effect.
- Subsequent annual reports will include an explicit comparison of inter-annual trends determined by passive dustfall monitoring and satellite imagery analysis.
- Baffinland developed the Dust Audit Committee in 2021, which is comprised of members from the QIA, Government of Nunavut, Government of Canada, Hamlets and Hunters and Trappers Organization of the impacted communities (Arctic Bay, Clyde River, Igloolik, Pond Inlet, and Sanirajak). PC Term and Condition No. 187 affiliated with Amendment No. 04 of PC No. 005 states that Baffinland will resource the Dust Audit Committee to conduct an annual audit of dust impacts and mitigations associated with Project activities. The Committee will evaluate the effectiveness of current dust mitigation measures and provide recommendations and options to reduce the spread and impacts of dust, if deemed necessary by participating members.
- PC Term and Condition No. 188 affiliated with Amendment No. 04 of PC No. 005 requires Baffinland to establish a program to identify high risk conditions for dust dispersal and plan for additional measures to be taken at the times the conditions are present, which may include the use of additional dust suppression and operational staged decreases in dust generating site activities.
- Appendix B of PC No. 005, Amendment No. 04 (NIRB, 2022a) and Appendix D of PC No. 005, Amendment No. 05 (NIRB, 2023a) has various commitments related to dust mitigation and monitoring efforts that Baffinland must complete. As per PC Term and Condition No. 189, Baffinland must report on the status of these commitments bi-annually to the NIRB.
- As of 2023, annual reports explicitly compare inter-annual trends determined by passive dustfall monitoring and satellite imagery analysis.

Project Certificate Term and Condition No. 59

Category	Terrestrial Wildlife and Habitat – Aircraft Disturbances
Responsible Parties	The Proponent
Project Phase(s)	Construction, Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate aircraft disturbance to wildlife and Inuit harvesting.
Term or Condition	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.
Relevant Baffinland Commitments	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a) Nunavut Impact Review Board's 2020-2021 Annual Monitoring Report (NIRB, 2021a) Nunavut Impact Review Board's 2022-2023 Annual Monitoring Report (NIRB, 2023c) 2023 TEWG Meeting Records
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.2 Appendix G.5.1

METHODS

There is a discrepancy between Project Certificate (PC) Term and Condition No. 59 and 71. PC Term and Condition No. 59, suggests that the minimum cruising altitude should be 610 metres above ground level (magl) in all areas, while PC Term and Condition No. 71 prescribes a minimum cruising altitude of 650 magl. Considering that most, if not all, areas where Baffinland operated in May through September were likely to have migratory birds, the default minimum cruising altitude for helicopter overflights was the more conservative 650 magl.

In consultation with the Terrestrial Environment Working Group (TEWG), Baffinland required all helicopter pilots to complete a daily pilot timesheet to track flight data, including rationale for low-level flights when required. Descriptions of the rationales recorded in the daily pilot timesheets are listed in Table 4.18. Baffinland worked with

the Government of Nunavut (GN) to jointly revise the list of acceptable rationale to better reflect feedback from the TEWG that had been received throughout the years. A revised list of rationale was developed in 2022 based on input from the GN.

Table 4.18: Descriptions of Pilot Rationales Given for Low-Level Flights

Rationale	Description
Slings	Helicopters slinging external loads fly low for safety purposes, so if there is an issue, the load can be quickly lowered to the ground in a controlled manner or dropped and maintain visual reference of the landing location.
Short Distance	At the discretion of the pilot who is operating the aircraft during the flight, by considering the distance travelled during a flight as well as other contributing factors, it is determined that gaining an altitude of 650 magl is unreasonable, unsafe, or impractical. These types of trips are generally associated with specific monitoring programs that are MANDATORY and there are no other practical ways of completing them (water sampling locations not accessible by foot or boat, dustfall sampling, wildlife observations, noise sampling, etc. also prospecting).
Weather	Poor visibility associated with low cloud restricts pilots to flying below the cloud line, which is under 650 magl; high winds and/or flat light conditions (reduces a pilot's depth-of-field causing poor ground reference) can make it difficult to maintain a consistent 650 magl flight height. Even if pilots have enough ceiling to reach the required altitude at take off, there could poor weather conditions along the route, or later in the day. Flights to return staff from remote work areas to camp are required regardless of the ceiling.
Search and Rescue	Flying the aircraft at low levels where Search and Rescue members have sufficient visual detail of the ground.
Inspection	Visual inspection of features of the ground (e.g., water bodies, site infrastructure) where low level flying is required for personnel to have sufficient visual detail.
Maintenance Flight	Flying the aircraft at low levels for purposes related to maintenance of the aircraft.
Medical Evacuation / Emergency Response	Flying the aircraft for purposes of a medical evacuation and/or Emergency Response where efficiency and/or other factors are of utmost importance.
Geophysical Survey	Low level flying is required as part of the survey methodology (e.g., flying a low-level grid pattern for a geophysical survey, keeping a sensor at a constant elevation relative to the ground). Length of survey is dependent on size of area to be surveyed. These surveys, if required, are conducted outside of bird nesting or moulting windows

Notes:

Descriptions are stated with a cruising altitude requirement of 650 magl and apply to a cruising altitude requirement of 1,100 magl in the Snow Geese area during the moulting season (July and August).

Please note that the pilot will have final authority for the disposition of the aircraft during the time in which they are in command.

Canadian Helicopters provided flight tracklog data (GPS points along the flight path at 2 minute intervals). Baffinland provided a compliance database using daily pilot timesheets (with flight details) from May to October 2023, when

the helicopters were active and on-site. The two datasets were combined and analyzed for cruising altitude compliance. The methods used to calculate flight altitudes above ground level and compliance are described in detail in the TEAMR.

Data were split into two categories: (1) data within the Snow Geese area during the moulting season (July and August) in relation to the 1,100 magl cruising altitude and 1,500 m horizontal distance requirement; and (2) data outside the Snow Geese area during the moulting season, and in all areas during all other months, in relation to the 650 magl cruising altitude requirement. The datasets were then analyzed separately to assess specific cruising altitude allowances using the different areas and minimum cruising altitude requirements. The first and last flight line segments of a flight as the helicopter takes off or lands were considered compliant, despite being below the cruising altitude requirement. Flight data with rationale for flying at lower elevations than required were deemed “compliant with rationale”. Based on these criteria, flight data were organized into eight categories described in Table 4.19.

Table 4.19: Helicopter overflight compliant categories

Compliant Category	Description
Compliant	Data within the Snow Geese area in July and August where the 1,100 magl cruising altitude requirement was achieved.
Compliant	Data outside the Snow Geese area in July and August, and in all areas during all other months, where the 650 magl cruising altitude requirement was achieved.
Compliant with rationale	Data within the Snow Geese area in July and August where the 1,100 magl cruising altitude requirement was not achieved, but a rationale for low-level flying was given.
Compliant with rationale	Data outside the Snow Geese area in July and August, and in all areas during all other months, where the 650 magl cruising altitude requirement was not achieved, but a rationale for low-level flying was given.
Non-compliant	Data within the Snow Geese area in July and August where the 1,100 magl cruising altitude requirement was not achieved and no rationale for low-level flying was given.
Non-compliant	Data outside the Snow Geese area in July and August, and in all areas during all other months, where the 650 magl cruising altitude requirement was not achieved and no rationale for low-level flying was given.

Additional details concerning helicopter pilot rationale and flight time were requested during 2020 TEWG meetings. Therefore, the helicopter flight database used for assessing compliance was re-analyzed from 2017 to 2019 and incorporated into the 2020 analysis to address this request and was presented in the 2020 TEAMR (EDI, 2021). A re-analysis by flight time of the 2015 and 2016 helicopter overflight data was requested in comments to the 2020 TEAMR and were presented in the 2021 TEAMR along with the 2021 analysis (EDI, 2022b). Analysis and reporting for 2023 (EDI, 2024a) continued to be based on flight time and incorporated pilot rationale. Compliant and compliant with rationale categories were reported separately, and flight time was reported for each pilot rationale in the compliance database.

RESULTS

No locations or boundaries of areas prescribed explicitly by the TEWG or of observed concentrations of migratory birds other than the Snow Goose key moulting area were identified in 2023 for avoidance. Except for the Snow Geese area, no analysis was required to determine compliance of 1,100 m vertical and 1,500 m horizontal distance of any other location. Pilots made efforts to avoid the Snow Geese area during the moulting season when possible in 2023.

A total of 1,799 transits were flown from May to September 2023, of which 335 (18.6%) intersected the Snow Geese area (key moulting area plus the 1,500 m horizontal buffer) during the moulting season (July and August), and 1,464 (81.4%) were outside the Snow Geese area and in all areas in other months. Flights within the Snow Geese area during the 2023 moulting season (July and August) increased compared with 2022, where 18.6% of all transits and 4.62% of total flight hours were flown within the Snow Geese area during this time. These flight hours' account for 3.23% of the total available hours during the two months of the moulting period (1,488 hours). Cruising altitude compliance within the Snow Geese area during the moulting season was 19.12% compliant, 74.26% compliant with rationale and 6.63% non-compliant. Combined compliance (compliant plus compliant with rationale) was 93.37% in 2023. Non-compliant flights were primarily related to transits to Steensby Inlet. All non-compliant flights (and most compliant or compliant with rationale flights) within the Snow Geese area during moulting season were along the eastern edge, away from the core of the Snow Geese area identified as having higher concentrations of geese.

Overall, compliance in all areas between May and September 2023 was 27.47% compliant, 67.99% compliant with rationale and 4.54% non-compliant. Combined compliance (compliant plus compliant with rationale) was between 94.54 and 99.34% for all months except June, which was 88.40%. Non-compliant flights tended to follow defined flight corridors to work areas and monitoring sites such as Brucehead, Steensby Inlet, surrounding lakes, and survey sites.

2023 was the seventh (7) consecutive year that flight height data were cross-referenced with compliance data from daily pilot timesheets. For analytical purposes, flight line segments and the associated flight time were designated "compliant" if/when cruising altitude requirements were followed, "compliant with rationale" if/when cruising altitude requirements were not met, but pilot discretionary rationale was provided, and "non-compliant", if/when cruising altitude requirements were not met and no explanation/rationale was provided. A summary of 2023 low-level flights and rationale is provided in Table 4.20.

Flights with justification from pilot daily timesheets accounted for 67.99% of the total flight hours, lower than in 2022 (70.64%). In 2023, the most common reasons for flying below the cruising altitude requirements was slinging (38.14% of the total flight hours), short distance flights (19.13%) and weather-related circumstances (9.34%). Low level flights in 2023 based on weather-related rationale flown within the Snow Geese area during moulting season were up to 6.58 hours — a marginal increase of 0.52 hours in 2022. This increase is contrary to the mitigation protocol implemented in 2021 (EDI, 2021) requiring helicopters to travel around the Snow Geese area during moulting season on poor weather days. Baffinland will further investigate the causes.

Overall, 2023 cruising altitude combined compliance was high (95.46%) and similar to 2022 (95.08%). The high percentage was due primarily to the inclusion of rationale provided by pilots for many of the transits flown below the cruising altitude requirements, as well as improved documentation (i.e., enhanced communications) of the rationale for low-level flights by pilots and Baffinland staff over the years.

Table 4.20: Helicopter Flight Hours Summarized According to the Pilot Rationale for Flights Within The $\geq 1,100$ magl and ≥ 650 magl Cruising Altitude Requirements, May 1 – September 30, 2023

Rationale	Total Hours	Flight Hours	% of Total Flight Hours ¹	$\geq 1,100$ magl Cruising Altitude Requirement		≥ 650 magl Cruising Altitude Requirement	
				Flight Hours	% of Total Flight Hours ¹	Flight Hours	% of Total Flight Hours ¹
Slinging	3,672	397.40	38.14	12.72	1.22	384.69	36.92
Short Distance	3,672	199.29	19.13	16.30	1.56	182.98	17.56
Weather	3,672	97.29	9.34	6.58	0.63	90.71	8.71
Search and Rescue	3,672	-	-	-	-	-	-
Inspection	3,672	12.56	1.21	0.08	0.01	12.49	1.20
Maintenance Flight	3,672	-	-	-	-	-	-
Medical Evacuation / Emergency Response	3,672	1.84	0.18	-	-	1.84	0.18
Geophysical Survey	3,672	-	-	-	-	-	-
Total	3,672	708.38	67.99	35.68	3.42	672.71	64.57

Notes:

Percentages are calculated from the Rationale flight hours divided by the total annual flight hours.

Non-compliant flight line segments were those that did not achieve cruising altitude requirements and where no rationale for low-level flying was provided. Some non-compliant flight line segments included the ferrying flights to and from the Project at the start and end of the season and approaches and departures. Only the first and last flight segments can be identified as takeoff or landing segments because the time and distance to reach the required cruising altitude (if reached at all) varies between flights. However, a helicopter may take multiple flight segments to reach or land from the required cruising altitude, resulting in non-compliance or compliance with rationale intermediary flight segments. Baffinland will continue to work with Canadian Helicopters to document cruising altitude compliance and communicate elevation requirements and protocols to pilots throughout the flying season.

Additional details and analysis concerning pilot rationale and flight time are included in the 2023 Terrestrial Environment Monitoring Annual Report (EDI, 2024a).

TRENDS

Helicopter cruising altitude combined compliance within the Snow Geese area during the moulting season was 93.37% (19.12% compliant and 74.26% compliant with rationale) in 2023. Compliance, including compliance with rationale, for 2023 was higher than the previous three years (ranging 60.06% to 89.00% from 2019 – 2023) and similar to 2019 (93.70%; Figure 4.12). However, 2023 had a higher number of flight hours at 48.04 hours, second only to 2015 at 50.84 hours. Helicopter cruising altitude combined compliance outside the Snow Geese area during the moulting season and in all areas during all other months for 2023 was 95.56%, similar to the past five (5) years, which were all between 91.54 and 96.35% (Figure 4.13).

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue working with their helicopter provider to improve cruising altitude compliance by communicating cruising altitude requirements and improving the rationale for not meeting them. Helicopter overflight analysis based on flight line segments and flight time, including rationale from pilot timesheets, will continue in 2024.



Figure 4.12: Percent compliance and total flight hours for flights within the Snow Geese (SNGO) area during the moulting season, 2015 to 2023

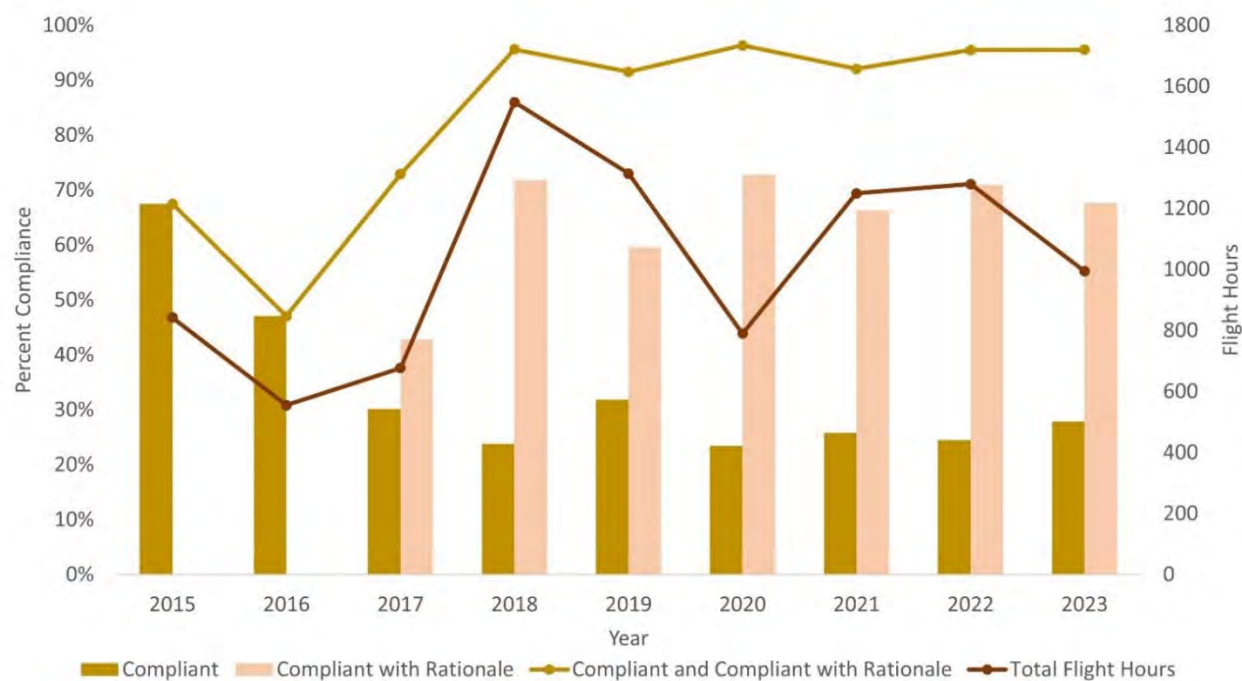


Figure 4.13: Percent compliance and total flight hours for flights outside the Snow Geese area during the moulting season and in all areas in all other months, 2015 to 2023

Project Certificate Term and Condition No. 60

Category	Terrestrial Wildlife and Habitat – Explosives
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To mitigate impacts to wildlife from explosives.
Term or Condition	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.
Relevant Baffinland Commitments	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Not applicable
Reference	Quarry Blasting Operations Management Plan (Baffinland, 2013b) Borrow Pit and Quarry Management Plan (Baffinland, 2014c) Environmental Protection Plan (Baffinland, 2021c)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Baffinland submitted a Quarry Blasting Operations Management Plan to the Nunavut Water Board (NWB) in 2013 (Baffinland, 2013b), as well as a Borrow Pit and Quarry Management Plan in 2014 (Baffinland, 2014c). That plan accompanied a broader Environmental Protection Plan (Baffinland, 2021c) that included the requirement to scan for and report wildlife presence on a wildlife sightings log. Blasting does not occur if wildlife is present and could be harmed by the activity.

RESULTS

No wildlife has been knowingly harmed or disturbed by blasting activities during construction.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 61

Category	Terrestrial Wildlife and Habitat - Operations (General)
Responsible Parties	The Proponent, TEWG
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate Project impacts to wildlife.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	Environmental Protection Plan (Baffinland, 2021c)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

The Environmental Protection Plan (EPP; Baffinland, 2021c) outlines the 'stop work' procedure when wildlife are in the area.

RESULTS

Whenever practical and not presenting a risk to human safety, a stop work policy shall be implemented when wildlife in the area may be endangered (at risk of immediate injury or death) by work being conducted.

The term "endangered" was defined by the Terrestrial Environment Working Group (TEWG) as: at risk of physical injury or death.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 62

Category	Terrestrial Wildlife and Habitat - Operations (General)
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent increased harvesting pressure on wildlife.
Term or Condition	The Proponent shall prohibit project employees from transporting firearms to site and from operating firearms in project areas for the purpose of wildlife harvesting.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Not applicable
Reference	Weapons on Site Policy (Baffinland, 2019c) Hunting and Fishing Policy (Baffinland, 2013c) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

Baffinland implements its Weapons on Site Policy (Baffinland, 2019c), which prohibits employees from transporting firearms to site. Site orientation includes cultural awareness and reviews the policies outlined in the Hunting and Fishing (Harvesting) Policy (Baffinland, 2013c). Baffinland does not interfere with rights of public hunting or fishing near or within the PDA. All visitors that check in with Site Security and reported visitor activities are tracked through a Hunter and Visitor log. Visitor logs for 2023 are included in Section 10.6 of the 2023 Terrestrial Environment Annual Monitoring Report (Appendix G.5.1; EDI, 2024a).

RESULTS

No incidences of Project personnel hunting or fishing within the Impact Area lands leased to Baffinland and/or the PDA occurred in 2023.

TRENDS

No Project personnel have participated in hunting or fishing on the PDA unless approved by scientific permit and Baffinland has not interfered with public rights to fish or hunt in or near the PDA.

Baffinland continues to accommodate all hunting parties and other visitors that travel to the Project.

RECOMMENDATIONS / LESSONS LEARNED

The Weapons on Site Policy (Baffinland, 2019c) has been successful in eliminating firearms from the workplace.

Baffinland continues to monitor and implement the policy banning all employees and contractors from hunting and fishing within the PDA and accommodating all hunting parties.

Project Certificate Term and Condition No. 63

Category	Terrestrial Wildlife and Habitat - Public Engagement
Responsible Parties	The Proponent, local Hunters and Trappers Organizations
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To keep communities up to date with Project operations.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG) and with local Hunter and Trappers Organizations (HTOs)
Reference	2023 Engagement Records 2023 Shipping Season Meeting Records 2023 TEWG Meeting Records
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix B.1 Appendix B.2.2 Appendix C.2

METHODS

The MHTO became a member of the TEWG in 2016. The other four (4) North Baffin HTOs (Arctic Bay, Clyde River, Igloolik, and Sanirajak) became members of the TEWG in 2022. The communities of Kimmirut and Kinngait will also be invited to join the TEWG in 2024 once the Terms of Reference (ToR) are finalized. The TEWG typically meets four (4) times a year, twice in-person, with the remaining regular and/or ad hoc meetings held via conference call. Baffinland facilitates these meetings through the provision of honoraria and meeting costs for MHTO members' participation, including airfare, transportation, accommodation and a per diem to cover other expenses.

In addition to the HTOs' participation in the Working Groups, Baffinland exchanged information with the HTOs on a number of occasions throughout the year to provide an update on the Project, discuss specific monitoring programs or mitigations and proposed Project amendments (e.g., Phase 2, PIPR, SOP, Steensby). These meetings are listed in Table 2.1.

RESULTS

Wildlife monitoring and mitigation programs and wildlife surveys are reviewed at the TEWG meetings, where HTOs are present (Appendix C.2). In addition, monitoring reports are released annually and shared directly with TEWG members and observers for review and comment so that feedback may be considered in future monitoring programs.

2023 monitoring for terrestrial mammals included a number of surveys designed to monitor caribou interactions with the Project. Relevant programs included:

- helicopter flight height analysis;
- vegetation and soil base metals monitoring;
- snow track surveys;
- snowbank height monitoring;
- Height of Land (HOL) caribou surveys;
- remote camera monitoring;
- hunter and visitor log summaries;
- incidental wildlife observations; and
- wildlife interactions and mortalities.

The 2023 surveys were informed by input previously received from HTO members who participated in the HOL surveys.

TRENDS

Baffinland regards engagement and consultation with Inuit, and incorporation of Inuit in field monitoring, as an important aspect of the programs. Inuit have been involved in various components of the terrestrial environment monitoring program, including: hiring and training Inuit to work on terrestrial monitoring programs; supporting the participation of the HTOs in the TEWG; funding for three (3) full-time on-site Environmental Monitors that are appointed and solely employed by QIA but fully integrated into the Site Environment team; and the implementation of a community-based monitoring program through the Mary River IIBA. Inuit are involved in all terrestrial environment annual monitoring programs conducted by Baffinland's consultant wherever possible. This has included participation in snow track surveys, HOL surveys, vegetation monitoring, and raptor monitoring.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to work with the HTOs at TEWG meetings and other in-community meetings. It is Baffinland's expectation that local Inuit, including representatives from the HTOs, will continue to play an important role in the terrestrial monitoring programs at Site. 2023 terrestrial monitoring programs had the highest number of Inuit participants in 2023 compared to previous year's terrestrial programs, at eight (8) participants and over 900 working hours. Additionally, Baffinland continues to provide support for community-based monitoring programs through IIBA requirements, and/or other collaborative opportunities should they arise in the future.

Project Certificate Term and Condition No. 64

Category	Terrestrial Wildlife and Habitat - Waste Management
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent human-carnivore interactions.
Term or Condition	<p>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:</p> <ul style="list-style-type: none"> 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).
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Environment Climate Change Canada, Qikiqtani Inuit Association, Crown-Indigenous Relations and Northern Affairs Canada, Nunavut Impact Review Board.
Reference	<p>Environmental Protection Plan (Baffinland, 2021c)</p> <p>Waste Management Plan (Baffinland, 2024d)</p> <p>2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)</p> <p>Hazardous Materials and Hazardous Waste Management Plan (Baffinland, 2024j)</p>
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1 Appendix G.8.2 Appendix G.8.9

METHODS

Waste management buildings are situated at both the Mine and Milne Port sites. The waste management buildings house a dual chamber incinerator designed for optimal incineration of approved specific wastes, including food wastes. Design constraints at the Project site limited the ability to situate the Waste Management Building(s) directly beside complex kitchens, however, Baffinland employs procedures to minimize animal attractants and interaction of carnivores with food or food wastes as described in the Environmental Protection Plan (EPP; Baffinland, 2021c) and the Waste Management Plan (Appendix G.8.2; Baffinland, 2024d), including the associated Incinerator Operation Procedure. Employees are trained on animal attractant policies upon arrival at Site.

The specific measures implemented to mitigate attractants and animal interactions include; double bagging food and food wastes, storage in closed top bins or sealed SeaCans, and prompt removal for incineration inside the enclosed Waste Management Building(s). Food wastes are incinerated under stipulated conditions, and ash is visually inspected and tested under applicable Government of Nunavut guidelines for landfilling. Ash deposited in the designated landfill is promptly covered with a layer of material to mitigate animal attraction. Prior to disposal of ash, the ash is tested using Toxicity Characteristic Leaching Procedure (TCLP) analysis in accordance with the Type 'A' Water Licence. Results are summarized in the 2023 QIA and NWB Annual Report for Operations (Baffinland, 2024a). Metal Skirting has also been installed on kitchen and accommodation buildings, including Sailivik camp, on the Project site to prevent carnivores accessing under buildings.

RESULTS

Both the Environmental Protection Plan and Waste Management Plan incorporate carnivore interaction and attractant mitigation measures and policies, which continued to be implemented in 2023 (Appendix G.8.2; Baffinland, 2021c; 2024d). Food and food wastes were stored as designated by the aforementioned plans, incinerated in the waste management buildings and ash promptly disposed of and covered in the designated landfill. The Mine Site Landfill Facility continued to only accept inert, non-hazardous waste materials in 2023, with all animal attractants (food scraps, wrappers, etc.) diverted to the incineration units. While landfill fencing completed in 2019 may result in some additional wildlife deterrence, the primary mitigation measure to reduce animal interactions at the landfill remains the diversion of all animal attractants from placement in the landfill.

Ongoing employee education around proper waste sorting continues to be conducted to ensure site-wide adherence to the Waste Management Plan (Appendix G.8.2; Baffinland, 2024d). In 2023, Baffinland established a Waste and Water Management Coordinator position to support the ongoing improvement of overall management, education and operational processes for waste generated and disposed of at the Project. Routine inspections of Landfill Facility operations also continue to be completed with a focus on waste volume, composition and overall conformance to the Project's Waste Sorting Guidelines (BAF-PH1-300-P25-002; Baffinland, 2021b). Any items requiring corrective actions identified during the routine inspections are addressed and follow up actions implemented.

Carnivore interactions on the Project remain relatively low. No carnivore interactions were attributed to waste management infrastructure in 2023. Animal interactions are documented and discussed in the 2023 Terrestrial Environment Annual Monitoring Report (TEAMR; EDI, 2024a; Appendix G.5.1).

TRENDS

Since 2014, there have been no noticeable trends in wildlife interactions and mortalities, with relatively stable low numbers given the size of the Project. In 2023, no interactions with carnivore and/or Arctic Fox were associated with waste management infrastructure; validating the continued success of ongoing waste management practices implemented on site. Incineration, employee training, animal attractant mitigation measures and metal skirting maintenance continue to be measures implemented to reduce wildlife interactions at the Project.

Refer to the 2023 TEAMR (EDI, 2024a; Appendix G.5.1) for additional trends associated with wildlife interactions on the Project.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland continues to mitigate wildlife interactions at the Project area by training, enforcing, and monitoring waste management practices and guidelines. Management attend mandatory EPP training, which is then passed on to all employees. Included in the EPP are wolf, polar bear, fox, and caribou protection measures and waste management guidelines that are continually updated and implemented. Incineration and proper waste sorting are the most prominent deterrents used. Wildlife attractants such as food scraps and human waste are sorted and sealed in animal proof containers and incinerated on site. Posted around each site are Waste Sorting Guidelines, which are reviewed regularly, that clearly define where food and other attractants should be placed for disposal. Another deterrent used is metal skirting to minimize wildlife entry under buildings. Wire skirting is used under the main camps at both sites to ensure no wildlife such as foxes or hares den underneath. Feeding of wildlife is strictly prohibited and non-compliance is dealt with accordingly.

4.6.9 Birds (PC Terms and Conditions 65 through 75)

Eleven (11) PC Terms and Conditions focus on the potential impacts of the Project on birds. Most of these conditions relate to the implementation of mitigation measures to protect birds in consultation with relevant organizations. Baffinland is also required to report on the amount of terrestrial habitat loss annually.

Inuit & Stakeholder Feedback

The Canadian Wildlife Service of Environment and Climate Change Canada (CWS-ECCC) has legislated responsibility for migratory birds under the *Migratory Birds Convention Act* and associated regulations. The Government of Nunavut (GN) is responsible for species at risk within Nunavut, pursuant to the *Wildlife Act* (GN, 2008). During the Project reviews, the focus was primarily on species at risk. Both agencies participate in the TEWG, and as such, Baffinland engages with these agencies multiple times per year on the mitigation and monitoring of Project effects on birds through the TEWG.

Monitoring

Baffinland's bird monitoring program included the following in 2023:

- Active migratory bird nest surveys (AMBNS);
- Helicopter Overflight Compliance Tracking;
- Calculating the amount of habitat lost annually; and
- Incidental Observation and Wildlife Interaction Tracking.

The CWS-ECCC has also conducted seabird monitoring programs and programs for regional and international shorebird monitoring (PRISM) that contribute to regional bird distribution data.

The objectives of Baffinland's bird monitoring programs are to monitor the effectiveness of mitigations put in place to minimize effects of the Project on birds (i.e., AMBNS and Helicopter Overflight Compliance Tracking), and the potential residual effects of the Project after the application of mitigations (i.e., Raptor and cliff nesting monitoring programs, calculating the amount of habitat within the Project that is lost annually and wildlife mortality tracking).

From 2011 to 2020, a raptor monitoring program was conducted in collaboration with Arctic Raptors Inc. As reported previously and discussed with the TEWG, the study design is statistically robust. It has provided trends in raptor occupancy and productivity for the Project. After several years of monitoring, a key finding is that occupancy and productivity appear to be stable, and there has been no evidence of Project-related effects on raptors. Therefore, raptor occupancy and productivity surveys were discontinued in 2021.

To the extent that Project impacts on the terrestrial environment can be evaluated, the Project's effects appear to be within FEIS predictions. Table 4.21 summarizes the main activities in 2023 in relation to birds and an impact evaluation compared to the predictions outlined in the FEIS and FEIS Addendum.

Table 4.21: Birds Impact Evaluation

Component	Effects	Monitoring Program	Impact Evaluation
Bird Indicator Species/Species at Risk	Destruction of active nests due to development in the project footprint	In 2023, one pre-clearing nest survey was completed during the bird breeding window (May 17 - August 19) at the Project and no nests were discovered.	The effect did not occur
	Habitat loss: direct habitat loss due to the Project footprint; and indirect habitat loss due to sensory disturbances	Cliff-nesting raptor occupancy and productivity survey; cliff-nesting raptor nest site management and effects monitoring. No effect on cliff-nesting raptor nest occupancy rates since 2011. Distance to disturbance analysis suggests there is no adverse effect on monitored raptor nesting. Additionally, as of the end of 2023, the total Project footprint was 612 ha, which is less than what was assessed in the FEIS (7,618 ha).	Effect negligible, within FEIS predictions
	Influences on health	In 2023, after incorporating pilot rationale, helicopter cruising altitude compliance within the Snow Geese area during the moulting season was Cruising altitude compliance within the Snow Geese area during the moulting season was 19.12% compliant, 74.26% compliant with rationale, and 6.63% non-compliant. Combined compliance (compliant plus compliant with rationale) was 93.37%. Overall combined compliance in all areas in all months was 95.46% in 2023, a slight increase from 95.08% in 2022.	Consistent with FEIS predictions
	Mortality	Fifteen (15) bird mortalities were observed in 2023: one unknown song bird, three snow buntings, and thirteen king eiders, all of which were associated with building or infrastructure collisions.	Fifteen (15) mortalities were observed, but this is within FEIS predictions

Path Forward

Baffinland will remain vigilant about the mitigation and monitoring activities that are in place to protect birds, including for species at risk. Baffinland will continue to seek input and review monitoring results trends from technical members of the TEWG. Baffinland will continue to support regional shorebird monitoring, including species at risk in conjunction with CWS-ECCC, as opportunities arise. Active migratory bird nest surveys will continue in future years prior to any proposed land disturbance and/or clearing during the breeding bird window, and raptor monitoring will continue to focus on multiple nesting territory visits in survey years. Baffinland also partnered on an initiative with CWS-ECCC and multiple universities (McGill, Windsor, and Carleton) entitled “Using cutting-edge biologging and physiological tools to map environmental sensitivities in the Arctic: application to shipping associated with Baffinland Iron Mines.” This partnership followed a successful Natural Sciences and Engineering Research Council of Canada (NSERC) Collaborative Research and Development (CRD) grant application in December 2019. This

initiative aims to develop innovative techniques to study the potential impacts of marine shipping on seabirds, and the effects of mining activities on terrestrial birds near the Project. Field work pertaining to seabird research was conducted at Cape Graham Moore during the 2023 season and a program overview was presented at the December 12th, 2023 MEWG meeting. PRISM studies also continued in 2023, for which methodology and preliminary results were shared at the December 13th TEWG meeting (Appendix C.2).

Project Certificate Term and Condition No. 65

Category	Birds – Awareness
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent disturbance to birds and bird habitat.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtani Inuit Association, Nunavut Impact Review Board, Terrestrial Environment Working Group (TEWG)
Reference	Environmental Protection Plan (Baffinland, 2021c) Terrestrial Environment Mitigation and Monitoring Plan (TEEMP; Baffinland, 2016a) 2023 TEWG Meeting Records
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.2

METHODS

Section 4.13 (Bird Protection Measures) of the Environmental Protection Plan (EPP; Baffinland, 2021c) is the relevant document that deals with Bird Awareness training delivered to employees.

In 2023, on-site training of pre-clearing Bird Nest Surveys was performed by Environmental Dynamics Inc. (EDI) to the Baffinland Site Environment Department. Training included nest searching methods and identification of common species known in the area.

Baffinland endeavours to perform construction activities outside of the bird nesting season. If construction activity is required in undisturbed areas during bird nesting seasons (e.g., between May 17 and August 19, 2023), active migratory bird nest surveys are conducted in accordance with the *Migratory Birds Convention Act, 1994* (Government of Canada, 1994). Construction has five (5) days to commence from the time that a migratory bird presence survey is conducted. A new survey is completed if construction does not commence in this five-day timeline. The results of these surveys are provided to the TEWG for review on a yearly basis.

Baffinland reviews the ECCC nesting calendar in advance of the nesting period each year and in consultation with external wildlife biologists to ensure Project land disturbance migratory bird nest surveys and mitigations apply to the appropriate nesting window, which changes periodically. This is an example of adaptive management by Baffinland whereby adoption of a regular review was implemented to ensure periodic changes to the nesting window are identified and captured throughout Project activities. Future revisions of the Terrestrial Environment Mitigation

and Monitoring Plan (TEEMP; Baffinland, 2016a) will reflect this process as opposed to providing the nesting window in place at the time of the revision; ensuring continual review and implementation of the applicable nesting window as it changes periodically over time.

RESULTS

In 2023, Baffinland continued to monitor all new construction activities around development areas prior to conducting any ground disturbance. Approximately 15,868 m² (1.5 ha) of land were disturbed through land clearing activities for Project infrastructure in 2023; all occurring within the disturbance window. During the breeding bird window, land was surveyed through active migratory bird nest surveys (AMBNS) prior to disturbance. Only one (1) AMBNS was completed in 2023 covering approximately 15,868 m² which was in a predisturbed area and no active or non-active nests were found.

TRENDS

Baffinland Site Environment Department employees have continued to receive annual training on performing bird surveys through its consultant, EDI. Baffinland Site Environment Department personnel have also continued to raise awareness of all Baffinland employees and contractors on the importance of preventing the disturbance of all wildlife and habitats at all Project sites through EPP training.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to minimize disturbance (clearing) or other industrial activities in previously undisturbed areas during the nesting season

Project Certificate Term and Condition No. 66

Category	Birds - Species at Risk
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent impacts to sensitive bird species.
Term or Condition	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.
Relevant Baffinland Commitments	75
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	DRAFT Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2023e) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

To the fullest extent possible, Baffinland plans for new ground disturbance outside of the breeding bird season and conducts active migratory bird nest surveys (AMBNS) in areas disturbed in the breeding season, before any activities proceed. Surveys are conducted a maximum of five (5) days before clearing using the rope-drag method, as recommended by CWS-ECCC. Surveys were conducted by at least two (2) Baffinland searchers/observers by walking slowly through the area with the rope-drag, looking for nests and potential breeding bird activities/birds displaying nesting behaviour. Baffinland establishes clear zones of avoidance when bird nests are found based on species-specific nest setback distances included in Table 3-1 in the draft Terrestrial Environment Mitigation and Monitoring Plan (TEMMP; Baffinland, 2023e).

RESULTS

No Species at Risk nests or eggs have been encountered during Project activities.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to avoid Species at Risk nests and eggs when encountered by conducting pre-clearing active migratory bird nest surveys and following established guidelines for setback distances

Project Certificate Term and Condition No. 67

Category	Birds - Species at Risk
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent impacts to sensitive bird species.
Term or Condition	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.
Relevant Baffinland Commitments	75
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG), Environment and Climate Change Canada (ECCC)
Reference	Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

Environment and Climate Change Canada (ECCC) provides input to develop mitigation and monitoring strategies for Species at Risk via participation in the TEWG. Section 3 of the Terrestrial Environment Mitigation and Monitoring Plan (TEMMP; Baffinland, 2016) identifies mitigation and monitoring strategies relevant to all wildlife that could interact with the Project, including Species at Risk. An update draft TEMMP was submitted to NIRB in May 2023 for public review (Baffinland, 2023e). We received comments from QIA and are working towards agreement on certain adaptive management elements of the TEMMP and will provide to NIRB once complete.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue coordinating with ECCC through the TEWG to address mitigation and monitoring strategies related to Species at Risk.

In 2019, Baffinland deployed nine (9) passive Autonomous Recording Units (ARUs) to detect Red Knot vocalizations in collaboration with CWS-ECCC. No Red Knot were detected during 2019, and in February 2020, CWS-ECCC concluded that Autonomous Recording Units (ARU) monitoring was not necessary for the 2020 season.

Project Certificate Term and Condition No. 68

Category	Birds - Project Infrastructure
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent potential injuries to birds.
Term or Condition	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.
Relevant Baffinland Commitments	Not applicable
Reporting Requirement	To be included in the Annual Report submitted to the NIRB.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Environment and Climate Change Canada (ECCC), Terrestrial Environment Working Group (TEWG)
Reference	Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Through discussions with ECCC in 2013, Baffinland installed reflectors on guy wires at the communication towers established for the Project and will continue to do so on any new infrastructure as required. It was determined that strobe lights were not a relevant mitigation measure as most birds are in the area during the summer when there is 24 hours of light. If it does not present any risks to operating the Project safely, consideration is given to reducing lighting where possible.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Strobe lights were not a relevant mitigation measure because birds are mostly present when the Project experiences 24 hours of daylight. Baffinland will maintain the reflectors installed on the guy wires of the Project's communication towers and continue using this method on any new infrastructure as required.

Project Certificate Term and Condition No. 69

Category	Birds - Construction/Clearing Activities
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent nesting by birds in active Project areas.
Term or Condition	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.
Relevant Baffinland Commitments	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

Baffinland prepared a bird deterrence review discussed at the TEWG meeting held on May 21, 2013. There was no feedback from the group on what would prove to be practical solutions before the 2014 construction season. Although active migratory bird nest surveys (AMBNS) were completed, deterrents were not erected. While not specific to land clearing activities, Baffinland has implemented the use of deterrents at waste water containment ponds, including both decoy birds of prey and scarecrows. During the open water season, routine bi-weekly compliance inspections are completed to ensure that these deterrents are still in place and not damaged. Baffinland conducts clearing activities outside of the breeding bird season whenever possible to discourage birds from nesting in these areas and minimize the potential for nests to be disturbed by clearing or construction.

RESULTS

In 2023, there were no apparent nesting attempts by birds in the previously cleared areas, and no nests were found in previously undisturbed areas.

Approximately 15,868 m² (1.5 ha) of land were disturbed through land clearing activities for Project infrastructure in 2023; all occurring within the disturbance window. One (1) AMBNS was completed in 2023 covering approximately 15,868 m² which was in a predisturbed area and no active or non-active nests were found.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Since the areas cleared during the breeding season are managed by active migratory bird nest surveys before disturbance, deterrents have not been required during land disturbance activities. Avoidance has been the primary method used to prevent disturbances to nesting birds. The TEWG has made no recommendations that an alternative approach would be more successful or necessary. Baffinland will continue to maintain bird deterrents at waste water ponds to discourage use by migratory birds.

Project Certificate Term and Condition No. 70

Category	Birds - Construction/Clearing Activities
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent impacts to birds and nesting areas.
Term or Condition	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.
Relevant Baffinland Commitments	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

Active migratory bird nest surveys (AMBNS) are conducted in areas scheduled for clearing disturbance during the breeding bird season (e.g. between May 17- August 19, 2023). Surveys are conducted a maximum of five (5) days prior to clearing; using the rope-drag method, as recommended by CWS-ECCC. Surveys were conducted by at least two (2) Baffinland searchers/observers by walking slowly through the area with the rope-drag, looking for nests and potential breeding bird activities/birds displaying nesting behaviour. When bird nests are found, Baffinland establishes clear zones of avoidance based on the species-specific nest setback distances included in Table 3-1 of the Terrestrial Environment Mitigation and Monitoring Plan (TEMMP; Baffinland, 2016a). An update to the TEMMP was submitted to NIRB in May 2023 for public review. We received comments from QIA and are working towards agreement on certain adaptive management elements of the TEMMP and will provide to NIRB once complete

RESULTS

Approximately 15,868 m² (1.5 ha) of land were disturbed through land clearing activities for Project infrastructure in 2023; all occurring within the disturbance window. Only one (1) AMBNS was completed in 2023 covering approximately 15,868 m² which was in a predisturbed area and no active or non-active nests were found. Baffinland Environmental staff did not observe any indications of nesting behavior (e.g., carrying food, carrying nesting material) while conducting this survey.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to avoid new ground disturbance during the nesting season where possible and continue to conduct AMBNS throughout the breeding bird season in areas that need to be cleared.

Project Certificate Term and Condition No. 71

Category	Birds - Flight Altitude Requirements
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate aircraft disturbance to birds.
Term or Condition	<p>Subject to safety requirements, the Proponent shall require all Project related aircraft to maintain a cruising altitude of at least:</p> <ul style="list-style-type: none"> • 650 m during point to point travel when in areas likely to have migratory birds; • 1,100 m vertical and 1,500 m horizontal distance from observed concentrations of migratory birds; and • 1,100 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 1,500 m from the boundary of this site.
Relevant Baffinland Commitments	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	<p>Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a)</p> <p>2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)</p> <p>2023 TEWG Meeting Records</p>
Ref. Document Link	<p>https://www.baffinland.com/media-centre/document-portal/</p> <p>Appendix C.2</p> <p>Appendix G.5.1</p>

METHODS / RESULTS

Refer to PC Term and Condition No. 59. Reporting on PC Term and Condition No. 71 is identical to that of PC Term and Condition No. 59.

Project Certificate Term and Condition No. 72

Category	Birds - Flight Altitude Requirements
Responsible Parties	The Proponent, Transport Canada
Project Phase(s)	Construction, Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate aircraft disturbance to birds.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtani Inuit Association, Nunavut Impact Review Board, Transport Canada, Terrestrial Environment Working Group (TEWG)
Reference	Environmental Protection Plan (Baffinland, 2021e) Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a) 2023 TEWG Meeting Records
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.2 Appendix G.5.1

METHODS

Flight height requirements are included in all aviation contracts, and flight paths are recorded using Skytracker. To comply with horizontal guidelines, pilots are given the spatial boundaries of any identified concentrations of migratory birds, which are buffered by the required 1,500 m horizontal avoidance distance. Pilots are then asked to avoid flying in these areas. Pilots are made aware of flight height requirements in 'toolbox' talks given at the beginning of each season and daily toolbox talks are held within each department. In addition, flight height compliance is incorporated into the helicopter contract Baffinland holds with Canadian Helicopters. Random audits of flight logs are also completed throughout the season to help ensure compliance with requirements.

RESULTS

Refer to PC Term and Condition No. 59.

TRENDS

Refer to PC Term and Condition No. 59.

RECOMMENDATIONS / LESSONS LEARNED

Refer to PC Term and Condition No. 59.

Project Certificate Term and Condition No. 73

Category	Birds
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To monitor Project-related effects on migratory birds.
Term or Condition	The Proponent shall develop detailed and robust mitigation and monitoring plans for migratory birds, reflecting input from relevant agencies, the Qikiqtani Inuit Organization and communities as part of the Terrestrial Environment Working Group and to the extent applicable the Marine Environment Working Group.
Relevant Baffinland Commitments	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG), Marine Environment Working Group (MEWG)
Reference	Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a) 2023 TEWG Meeting Records
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.2 Appendix G.5.1

METHODS

The Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2016a) describes the mitigations and monitoring approaches applicable to birds at the Project. Since 2011, Baffinland has conducted several collaborative research initiatives with relevant members (primarily Environment and Climate Change Canada; ECCC) of the Terrestrial and Marine Environment Working Groups (TEWG and MEWG, respectively) as detailed in the Summary for Term and Condition No. 74.

RESULTS

Following Canadian Wildlife Services (CWS) input provided in the 2015 TEWG meetings, Baffinland acquired two rope drags (for the Mine Site and Milne Port) to use during pre-clearing surveys to increase the likelihood of nest/nesting adult detection. Rope drags were constructed following the template provided by the CWS. With respect to mitigation, through discussions with ECCC in 2013, Baffinland installed reflectors on guy wires at the communication towers established for the Project and will continue to do so on any new infrastructure as required. It was determined that strobe lights were not a relevant mitigation measure as most birds are in the area during the summer when there are 24 hours of light. If it does not present any risks to operating the Project safely, consideration has been given to reducing lighting where possible. Baffinland also prepared a bird deterrence review, which was discussed at the TEWG meeting on May 21, 2013. There was no feedback from the group on what would

prove to be practical solutions before the 2014 construction season. Baffinland uses bird deterrents, including decoy birds of prey and scarecrows, at wastewater containment ponds throughout the open water season to discourage nesting birds. Active migratory bird nest surveys (AMBNS) are also completed annually during land-clearing activities within the bird breeding window (May 17 to August 19, 2023). One (1) AMBNS was conducted on July 28, 2023, and no nests were detected. Baffinland conducts clearing activities outside the breeding bird season whenever possible to discourage birds from nesting in these areas and minimize the potential for nests disturbed by clearing or construction.

TRENDS AND LESSONS LEARNED

Baffinland continues to benefit from the expertise of ECCC via the TEWG and MEWG. See Summary for Term and Condition No. 68, 69 and 74 for more details.

Project Certificate Term and Condition No. 74

Category	Birds – Monitoring
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To develop appropriate mitigation and monitoring of impacts on birds.
Term or Condition	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.
Relevant Baffinland Commitments	57, 77
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	Terrestrial Environment Mitigation and Monitoring Plan (TEMMP; Baffinland, 2016a) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a) 2023 TEWG Meeting Records 2023 MEWG Meeting Records
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.1 Appendix C.2 Appendix G.5.1

METHODS

Baffinland monitored cliff-nesting raptor site occupancy and productivity at the Project from 2011 to 2020. This was a monitoring program with the statistical power and robust design required to detect nesting raptor response to disturbances associated with the Project. That program evolved to accommodate statistical data requirements and is described in the TEMMP (Baffinland, 2016a) and terrestrial environment annual monitoring reports. From 2018 to 2020, small mammal monitoring was incorporated into the raptor monitoring program to address whether occupancy and reproductive success of rough-legged hawk cycles with small mammal abundance. This program involved conducting an aerial survey during the nesting period and before fledging for peregrine falcon and gyrfalcon, which are key indicators for cliff-nesting raptor species. Nest site occupancy and productivity relative to the distance of the nest site to project infrastructure were then modelled to determine potential Project-effects. Findings from this program showed that additional monitoring was not warranted, which led to the program's discontinuation in 2021.

Starting in 2012, Baffinland has provided financial support to Environment and Climate Change Canada's (ECCC) Program for Regional and International Shorebird Monitoring (PRISM) plot surveys. The primary objective of PRISM

is to monitor the status and trends of Arctic bird populations by estimating the population size at different intervals to determine changes over time. The research results of the PRISM program are reported separately by ECCC's National Research Centre. ECCC gave a presentation on PRISM at the December 13th, 2023 Terrestrial Environment Working Group (TEWG) meeting. Additionally, Baffinland contributes to an industry Natural Sciences and Engineering Research Council (NSERC) research program focused on studying seabirds in the shipping corridor, effective December 2019. Fieldwork for this was to begin in 2020, but was postponed due to COVID-19 travel restrictions. Researchers visited Cape Graham Moore on Bylot Island in the summer of 2022 to begin generating this baseline data and re-visited in 2023. This program uses biologging and physiological tools to map environmental sensitivities in the Arctic, applied to shipping associated with the Project. This collaborates with researchers from various universities, including McGill University, University of Windsor, Carleton University. The period the program was initially intended to occur will be extended into future years due to the delays associated with COVID-19 Pandemic restrictions. ECCC gave a presentation on the 2023 Cape Graham Moore research at the December 12th, 2023 Marine Environment Working Group (MEWG) meeting, which is captured in detail in the meeting minutes (Appendix C.1).

The Ship-based Observer (SBO) program was conducted in 2023 for the first time since 2019. The program could not be completed in 2020 or 2021 due to limitations for ship boarding associated with COVID-19 Pandemic public health restrictions, which were put in place to ensure the health and safety of Nunavummiut. Additionally, the program could not be completed in 2022 due to heavy ice conditions that led to an early termination of the shipping season. The program was originally scheduled for a 2-week duration from October 12 to 24, 2022, and was subsequently cancelled when conditions were deemed unsafe for vessel traffic, ultimately preventing the use of the MSV *Botnica* to conduct the program. The SBO program was conducted from October 21 to 30, 2023 onboard the icebreakers MSV *Botnica* and MSV *Fennica*, for which results are presented in the 2023 SBO Program Report (Appendix G.6.3). Seabird monitoring completed under the SBO program is captured in Section 3 of the 2023 SBO Program Report (Appendix G.6.3).

In 2019, Baffinland deployed nine passive Autonomous Recording Units (ARUs) to detect red knot vocalizations in collaboration with CWS and ECCC. No Red Knots were detected during 2019, and CWS-ECCC concluded that further ARU monitoring was unnecessary. Upon the recommendation of CWS-ECCC, Red Knot monitoring using ARUs will resume before increasing activities in the southern transportation corridor.

Since the start of the construction phase, Baffinland has conducted active migratory bird nest surveys (AMBNS) for areas of planned disturbance. Pre-clearing nest surveys were conducted by Baffinland Environment staff over the 2023 nesting season. At the beginning of the migratory bird nesting season, Baffinland Environment staff were trained on methods to conduct nest searching surveys and identify common species found in the area. In accordance with CWS input provided in 2015 at the TEWG meeting, Baffinland acquired two (2) rope drags (for the Mine Site and Milne Port) to use during pre-clearing surveys to increase the likelihood of nest/nesting adult detection. Rope drags were constructed per direction from the CWS. The 2023 TEAMR (EDI, 2024a; Section 10) details the active migratory bird nest surveys. Bird monitoring and survey programs by key indicators are conducted as follows:

Peregrine falcon, rough-legged hawk, and gyrfalcon

- Baseline data on cliff-nesting raptors began with exploratory surveys in 2006 and continued through to 2008.

- Known nest sites were surveyed annually from 2011 to 2020. As part of these surveys, crews also attempted to locate new nest sites in suitable areas. All nesting sites were categorized into distance bins from the Project infrastructure to assess the potential effects of disturbance.
- Spring occupancy surveys (indicates the number of pairs that attempt to breed) and summer productivity surveys (to measure nesting success by counting the number of young that reach fledging age) were used to collect demographic information on raptor populations.

Common and king eider as well as shorebird diversity

- Shoreline Surveys (2012 and 2013).
 - Shoreline surveys were conducted to detect which species were present in the area, locations of nests, and their proximity to the shoreline to assess potential effects of ship wakes. Surveys comprised beach sweeps scanning for birds, bird activity, and potential nest sites. All shore types were surveyed regardless of perceived shorebird and waterbird nesting potential.
 - In 2012, 104 Km of shoreline along Steensby Inlet were surveyed. Surveys were conducted north of the proposed Steensby Port area, the port area itself, and south of the port to the mainland area adjacent to the islets at the mouth of Steensby Inlet.
 - In 2013, 135 Km of shoreline along Milne Inlet were surveyed.
- Eider Duck Ecology on East Bay Island (2018 to 2020).
 - Research on eider duck ecology has been conducted on East Bay Island for the past 20 years in response to concerns regarding overharvesting of northern Common Eiders on their wintering range in west Greenland. This long-term dataset was expanded over the years and has been used as a baseline in response to various other concerns raised by northern communities and environmental assessments, including resource development in the region. This study examines the impacts of weather, harvest, Polar Bear predation, and physiology on eider reproductive decisions in the absence of shipping activity.

Songbird and shorebird diversity

- Baseline bird surveys were conducted from 2006 to 2008, resulting in 32 species being identified in the area.
- PRISM Plot Surveys (2012, 2013, 2018).
 - In 2012 and 2013, 80 and 13 (respectively), 300 m x 400 m PRISM plots were selected and surveyed. A total of 93 plots (11.2 Km²) were surveyed in the two years.
 - In 2018, CWS conducted 14 PRISM plot surveys within a 100 Km radius of the Mine Site and another 24 plots in other areas of North Baffin Island.
 - PRISM surveys were conducted using two or three crew members walking along north-south transects with a 25-metre spacing. The average survey intensity was 51 minutes per plot.
 - Each plot was ground-truthed and classified as having either good, medium or poor suitability based on the classification methods used for PRISM plots. Good plots are those containing greater than 50% of wetland habitat types; poor plots were those containing greater than 50% of sparsely vegetated uplands, barren areas, and bare gravel; and medium plots were those habitats containing a mix of vegetated uplands, heaths, and drier grasslands.

- Bird Encounter Transects (2013).
 - Bird encounter transects were conducted to monitor Project effects on tundra breeding songbirds and shorebirds.
 - Conducted 45 transects extending 1.5 Km perpendicular from the Project Development Area (PDA). Transects were divided into 100 m segments, and all birds seen or heard along a segment were recorded.

Red Knot

- Red Knot, a Species at Risk, were identified as a species that may be found on-site, and observers were aware of their potential presence during all surveys. Targeted red knot surveys were conducted in 2014 and 2015 along Phillips Creek and the shoreline around Milne Port.
- In 2019, Baffinland collaborated with CWS to deploy nine passive ARUs in suitable Red Knot habitat to detect Red Knot vocalizations throughout the summer and fall seasons. This program was discontinued in 2020 since no Red Knots were detected.

Seabird migration and wintering

- Staging Waterfowl and Waterbird Surveys at Milne Inlet (2015).
 - Staging surveys were conducted to determine species composition, abundance and use of river mouths by staging waterfowl and waterbirds.
 - Phillips Creek and Tugaat River are close to the shipping routes and were chosen as investigation sites, while Robertson River was selected as a control site since no shipping activity was proposed nearby.
 - Staging surveys involved three observers at each site using binoculars and spotting scopes to scan the water and nearby upland sites for birds and other wildlife.

Seabird research on shipping routes

- Marine habitat used by thick-billed murres on Coats Island (2018 to 2020) and Cape Graham Moore (2022-2023):
 - Long-term changes in the nesting, diet, growth, and population size of Coats Island murre colony has been recorded since the 1980s.
 - ECCC sampling in 2018 to 2019 included: breeding timing, reproductive success, and diet to assess future impacts of planned shipping activity and climate change.
 - All fieldwork was suspended in 2020 due to the COVID-19 Pandemic. Field work resumed in 2022 at Cape Graham Moore on Bylot Island to begin collecting baseline data for the abovementioned parameters (nesting, diet, growth, and population size).
- East Bay Island migratory bird research (2018 to 2020).
 - ECCC research included: investigating relationships between polar bears, eiders, and diminishing sea ice; identifying key seabird marine habitats, particularly in shipping areas; physiological mechanisms linking climate variability, reproduction, and survival of arctic-breeders; investigating effects on changing sea ice regimes on eider reproduction and population dynamics; and tracking bird migration patterns to better understand coastal and offshore marine habitat use.
 - Fieldwork was suspended in 2020 due to the COVID-19 Pandemic.

- SBO program (2013 to 2015, 2018, 2019, 2023).
 - SBO research included collecting observational data on seabirds using the CWS Eastern Canada Seabirds at Sea protocols while aboard the MSV *Botnica* (2013 to 2015, 2018, 2019, 2023) and MSV *Fennica* (2023) to document seabird abundance and distribution.

RESULTS

To date, bird densities of most species have been found to be insufficient to monitor project effects (i.e., songbirds, shorebirds, eiders, Red Knot, and Gyrfalcon). To date, trend analysis has only been conducted for cliff-nesting raptors. As populations of cliff-nesting raptors have appeared stable throughout multiple years of surveys with no evidence of Project-related effects, cliff-nesting raptor monitoring was paused in 2021 and efforts were put towards preparing a draft manuscript for a peer-reviewed publication.

TRENDS

Annual variation in productivity for Peregrine Falcons and Rough-legged Hawks has been apparent (Figure 4.14); however, this is most likely representative of natural variability associated with variation in prey availability and weather conditions rather than due to any influence of anthropogenic disturbance. This analysis is supported by a comparatively higher abundance of lemmings in 2020, coinciding with increased Rough-legged Hawk occupancy and productivity. The occupancy of potential nesting sites by Gyrfalcons in the Raptor Monitoring Area (RMA) has been too low to monitor annual trends. At the population level, ongoing monitoring suggests that distance to disturbance and distance to nearest neighbour (individually and as an interaction) have no adverse effect on occupancy or reproductive success for Peregrine Falcons and Rough-legged Hawks. Program results determined that additional monitoring was not warranted.

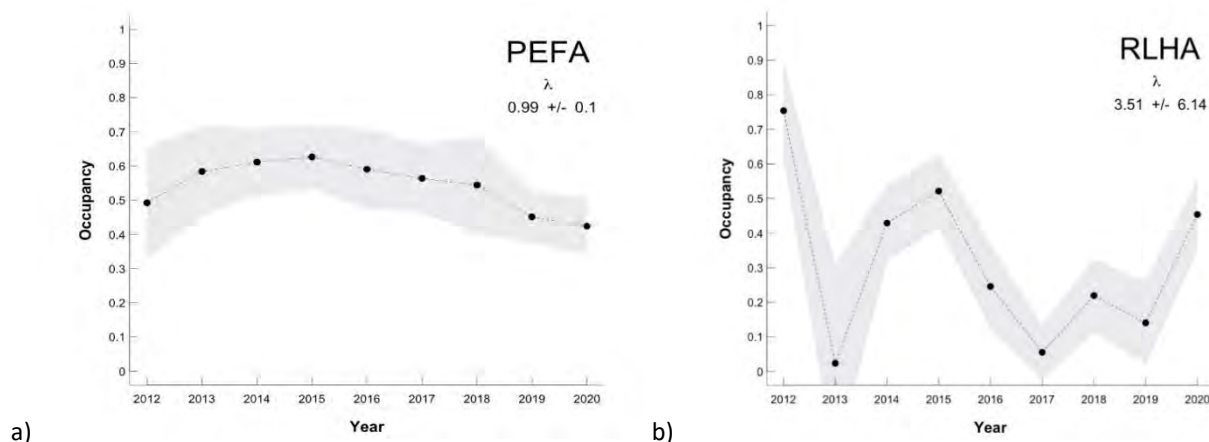


Figure 4.14: Annual Estimates of Peregrine Falcon (PEFA) and Rough-legged Hawk (RLHA) Nesting Territory Occupancy (2012 to 2020)

Notes:

Annual Estimates include \pm standard errors.

The analysis of all Round 1 PRISM data is complete, including the direct tests of mine impacts and the arctic-wide analyses. These results were presented by the ECCC to the TEWG at December 2022 and 2023 meetings. Round 2 PRISM studies, which includes re-visits to each plot, commenced in 2019 and is expected to continue for approximately a decade.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue monitoring programs described in the TEMMP and collect opportunistic information when qualified biologists are on site. Baffinland has previously contributed funds to marine seabird research conducted along on the proposed southern shipping route. Baffinland will continue to support marine bird research (thick-billed murre, common eider) conducted by ECCC in the northern (Cape Graham Moore) and southern shipping routes (Digges Sound, East Bay, and Hudson Strait).

Project Certificate Term and Condition No. 75

Category	Birds – Monitoring
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To assess the extent of terrestrial habitat loss.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be provided within the Annual Report to the NIRB.
Status of PC Term and Condition	Active
Status	In Compliance
Stakeholder Review	Qikiqtani Inuit Association, Nunavut Impact Review Board, Terrestrial Environment Working Group (TEWG)
Reference	Environmental Protection Plan (Baffinland, 2021c) 2023 Terrestrial Environment Annual Monitoring Report (TEAMR; EDI, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

Before construction on undisturbed land, the appropriate approvals must be obtained, and construction plans must adhere to the Environment Protection Plan (EPP; Baffinland, 2021c). Baffinland tracks the new land disturbance by maintaining construction and disturbance records and mapping spatial extent for cumulative totals.

RESULTS

As of the end of 2023, the total Project footprint was 613 ha, less than what was assessed/predicted in the FEIS (7,618 ha). Predictions were based on the assumption that the entire PDA would be disturbed. Overburden removed from an area to be disturbed is stockpiled for remediation, wherever possible, and materials are suitable for re-use. No unauthorized land disturbance occurred in 2023, and all disturbed land is reported in the 2023 TEAMR (EDI, 2024a).

TRENDS

The Project footprint has increased modestly during operations to facilitate maintenance activities and support production increases (e.g., expanding equipment laydowns and mine footprint). The total area of disturbed land has remained within the PDA and below FEIS predictions (Figure 4.15).

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to monitor terrestrial habitat loss due to disturbance and maintain the limits of the PDA, and restrict overland movement and traffic to existing roads, pads, and walkways.

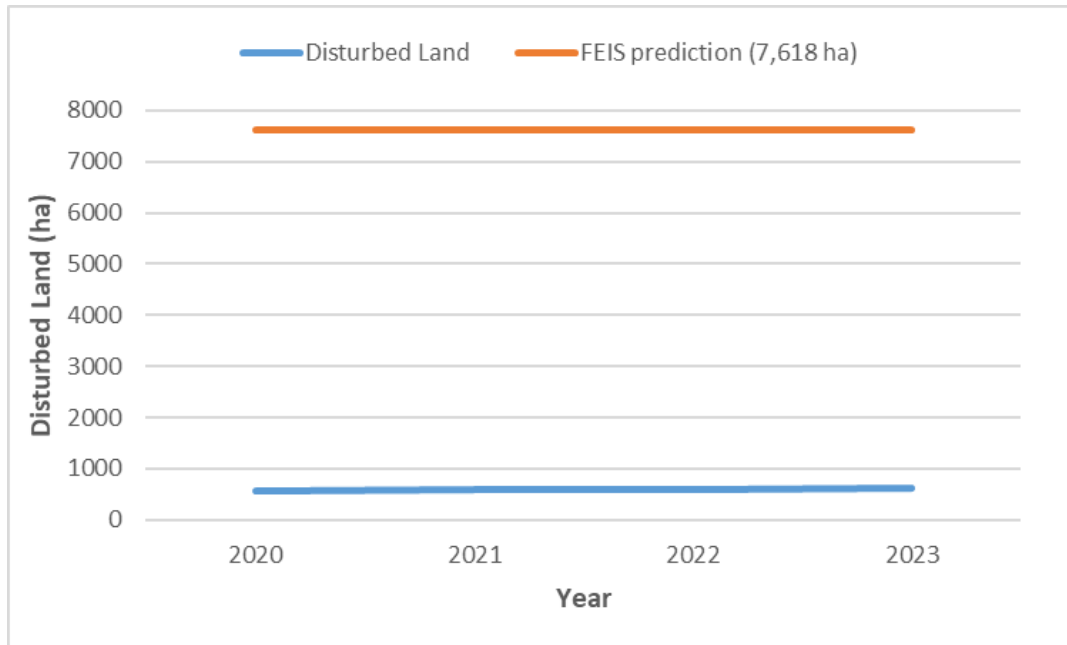


Figure 4.15: Annual Project Footprint Of Disturbed Land Trend For 2020 To 2023

4.6.10 Marine Environment (PC Terms and Conditions 76 through 98)

Twenty-four (24) PC Terms and Conditions relate to the potential impacts of the Project on the marine environment. These conditions encompass the development of a comprehensive environmental effects monitoring program and the establishment of the Marine Environment Working Group (MEWG).

Inuit & Stakeholder Feedback

The marine environment has been a key focus of Inuit and stakeholder interest and concern. Concerns have primarily been centred on the potential for impacts of Milne Port operations on the marine environment, including marine water quality, marine sediment quality, fish and fish habitat, the potential for introduction of non-indigenous species (NIS) and/or aquatic invasive species (AIS) as a result of ballast water discharge and hull fouling, and impacts on marine mammals. Baffinland has continued to engage regulators who have jurisdictional responsibilities and authorities over this component of the Project, including ECCC, DFO and TC on these issues, as well as the QIA and Inuit community members through regular engagement (Appendix B) and meetings of the MEWG (Appendix C.1).

Monitoring

Marine biota and the physical environment (marine water and sediment quality) is subject to a marine Environmental Effects Monitoring (EEM) program, which includes the following components:

Benthic Infauna – Sampling for benthic infauna to characterize benthic infauna communities and detect changes over time.

Marine Sediment Quality - Sampling sediment for particle size analysis (to detect changes in sediment composition), the presence of hydrocarbons, and metal concentrations as a function of distance from the ore dock over time.

Marine Water Quality - Sampling to measure total suspended solids (TSS), salinity, temperature, pH, metals, nutrients and hydrocarbon concentrations over time.

Substrate, Macroflora, Epifauna - Diver-based biophysical surveys in permanent quadrats to enumerate macroflora and benthic epifauna and compare changes over time.

Fish Community – Sampling to monitor the abundance and diversity of the fish community and compare changes over time and in relation to proximity to the ore dock and other port activities

Fish Health - Opportunistic sampling of contaminants in Arctic char, and targeted sampling of body condition and contaminants in Fourhorn Sculpin and *Hiatella arctica* (a shellfish species).

Non-indigenous Species (NIS)/Aquatic Invasive Species (AIS) - Sampling for the presence/absence of aquatic organisms (zooplankton, benthic infauna, benthic epifauna, macroflora, encrusting epifauna, fish) potentially introduced by Project activities.

Ballast Water Monitoring - Monitoring of salinity levels in ballast water to verify exchange of ballast in accordance with Ballast Water Regulations.

Table 4.22 provides an evaluation of the Project's potential impacts on the marine environment, based on monitoring activities completed at Milne Port up to 2023, relative to predictions presented in the Final Environmental Impact Statement (FEIS) (Baffinland, 2012) and subsequent Early Revenue Phase addenda (Baffinland, 2013a).

To the extent that potential Project impacts on the marine environment can be evaluated, the effects of the Project are within FEIS and subsequent Early Revenue Phase addenda predictions.

Table 4.22: Marine Environment Impact Evaluation

Component	Potential Effects	Monitoring Program	Impact Evaluation
Marine Water and Sediment Quality	Changes in marine water and sediment quality due to prop wash, ballast water discharge, and ore dust deposition	<p>The Marine Environmental Effects Monitoring Program (MEEMP) did not detect any meaningful changes in marine water quality. Analytical results for water quality parameters (i.e., major ions, nutrients, metals, hydrocarbons, and polycyclic aromatic hydrocarbons [PAHs]) were generally within ranges observed during previous MEEMP sampling programs (2015 to 2022). Consistent with previous programs, hydrocarbons and PAHs were not detected in the 2023 water samples. A substantial proportion of parameters analyzed in the water samples from Milne Inlet were not detected at all in downstream sampling stations. All parameters were below relevant water quality guidelines (i.e., CCME Water Quality Guidelines [WQGs]).</p> <p>In 2023, analyses of the physical and chemical composition of sediments were conducted on samples collected from a total of 45 stations for particle size, metals, and organic parameters. In general, concentrations of metals were determined to be less than applicable sediment quality guidelines, with few exceptions. Concentrations of organic parameters were largely not detected in the sediments sampled. Statistical spatial and temporal trend analyses did not suggest that sediment metal concentrations were accumulating at elevated levels in proximity to the Ore Dock relative to other locations sampled within Milne Inlet.</p> <p>Some minor exceedances of Interim Sediment Quality Guidelines (ISQGs) were noted for arsenic, nickel, and copper but are not considered to be Project-related, as these metals are not associated with ore processing at Mary River and tended to increase with greater distance away from the Ore Dock.</p> <p>Distribution of fine sediment (which is strongly related to sediment metals) in Milne Inlet is largely not influenced by Project activities but, rather by natural coastal processes that</p>	Effect within FEIS predictions

Component	Potential Effects	Monitoring Program	Impact Evaluation
		differed between the Northern Offshore Transects and the Coastal Transects. The exception is the finding of likely localized scouring effects (associated with propeller wash) in the immediate vicinity of the Ore Dock area on the coastal West Transect, as predicted in the Final Environmental Impact Statement (FEIS). These effects are expected to stabilize over time. Importantly, associated impairment of the benthic community was only documented in 2020 at one station in this area, with both density and richness continuing to rebound in 2023.	
Marine Water and Sediment Quality	Accidental fuel spill from marine shipping of fuel and other supplies	Inspections and visual monitoring during ship to land fuel transfers and sealift deliveries. No accidents or malfunctions occurred that had the potential for effects.	Effect did not occur
Marine Habitat	Disruption and loss of marine coastal habitat due to dock structure	Ore Dock and Freight Dock offset monitoring was not conducted in 2023 as it was not a scheduled monitoring year. Previous results of the Ore Dock and Freight Dock offset monitoring program indicate that offset habitat is functioning as intended.	Effect within FEIS predictions
Fish Health	Changes in fish health and tissue chemistry related to impacts on marine habitat	Differences in fish health endpoints were observed for female and male Fourhorn Sculpin between the Milne Port area and the Koluktoo Bay reference area. Females from the Milne Port area were significantly larger at age (i.e., greater size-at-age) and heavier at length (i.e., greater relative weight), but had significantly lower relative liver and relative gonad weights compared to female fish from Koluktoo Bay. Differences in size-at-age, relative weight, and relative gonad weight exceeded the Critical Effect Size (CES) for female fish. For male fish, mean age was significantly lower but size-at-age was significantly greater in Milne Port compared to Koluktoo Bay. Differences in fish health endpoints were also observed for female and male Fourhorn Sculpin among sampling years within Milne Port; age, relative weight, relative liver weight, and relative gonad weight differed among sampling years for female fish, and age, size-at-age, relative weight, relative liver weight, and relative gonad weight differed among sampling years for male fish.	Effects within FEIS predictions

Component	Potential Effects	Monitoring Program	Impact Evaluation
		<p>No differences in <i>Hiatella arctica</i> survival (as length-frequency distribution), growth (as whole animal wet weight), condition (as relative weight and relative shell weight), or reproduction (as mantle somatic index) were observed when comparing Milne Port with Tugaat River Estuary. When evaluating fish health endpoints for <i>H. arctica</i> within Milne Port among sampling years, differences were observed for whole animal wet weight, relative weight, relative shell weight, and mantle somatic index. No consistent trends in differences were observed for any endpoint, suggesting interannual variability was the main contributor to observed differences.</p> <p>When comparing Fourhorn Sculpin and <i>H. arctica</i> tissue chemistry between the Milne Port area and relevant reference areas, few differences were observed. Concentrations of most metals in Fourhorn Sculpin tissues were similar among sampling areas, although some metals exhibited greater spatial variability (e.g., arsenic, lead, manganese). Selenium concentrations were significantly lower in Milne Port compared to Koluktoo Bay. For <i>H. arctica</i>, concentrations of most metals were similar among sampling areas. Mean magnesium concentrations were significantly greater in samples from Milne Port compared to Tugaat River Estuary.</p> <p>Among sampling years at Milne Port, concentrations of most metals were similar within each species, although some metals exhibited greater interannual variability (e.g., copper, nickel, tin). For Arctic char, significant increasing trends in iron and magnesium concentrations were observed. Median concentrations of both metals exhibited appreciable interannual variability but were either stable or decreased in 2023 from previous years. For Fourhorn sculpin, no significant increasing trends were observed; significant decreasing trends were observed for aluminum and iron. These trends are considered not indicative of a Project-related effect and were not considered further. For <i>H. arctica</i>, significant increasing trends were observed for iron and selenium concentrations.</p>	

Component	Potential Effects	Monitoring Program	Impact Evaluation
		<p>Median concentrations of both metals exhibited relative stability from 2019 to 2023, with minor differences between years.</p> <p>Mercury and selenium concentrations in all Arctic Char and Fourhorn Sculpin samples were below Health Canada's Maximum Levels for Chemical Contaminants in Foods mercury consumption guideline of 0.5 mg/kg ww and the BC Ministry of Environment selenium concentration guidelines of 4 mg/kg dw, respectively.</p> <p>Concentrations of all polyaromatic hydrocarbons in all species were below reported detection limits (<0.050 mg/kg ww).</p>	
Marine Biota	Potential changes to marine biota due to discharges to the marine environment, propeller scour, installation of dock structure.	<p>Benthic infaunal communities in 2023 were diverse throughout the study area. There were no consistent differences between years (2023 vs. 2018, 2019, and 2020) in benthic community indicators along the four transects and, in isolated instances where indicators were significantly different between years, endpoints tended to be different only when comparing 2023 to 2019. Statistical differences also tended to occur at greater distances from the Ore Dock compared to closer to the dock. These results do not align with the community response pattern typical of a toxicological impairment due to contaminant exposure, which manifests as a significant decrease in both density and richness as contaminant-sensitive taxa disappear or numbers are diminished, leaving more tolerant taxa to dominate the community. Rather, the 2023 results are more consistent with expected natural variability for these benthic habitat types within Milne Inlet, as there appears to be no evidence to suggest impairment of benthic communities related to the Project.</p> <p>To date, station SW-2 in 2020 was the only instance where reduced fines content was accompanied by a substantial reduction in benthic density, richness and diversity. Data collected from 2021 through 2023 generally indicate that the benthic community at that station has since recovered, and that the effects were temporary and localized.</p>	Effect within FEIS predictions

Component	Potential Effects	Monitoring Program	Impact Evaluation
		<p>Macroflora and benthic epifaunal community assemblages were comparable between exposure and reference areas but varied interannually for some assemblage indicators which were likely driven by environmental factors. Monitoring efforts to date revealed no evidence of overarching spatial or temporal trends that might be associated with Project-induced effects from construction or operation activities and Milne Port.</p> <p>The composition and abundance of the fish community captured in 2023 was generally comparable to those of the 2020-2022 monitoring programs, however the species richness was the highest recorded since 2020. Statistical analyses of catch per unit effort (CPUE) of fish sampling methods indicated that current Project activities were not resulting in adverse effects on the local marine fish communities in Milne Port, as no reduction in fish abundance was associated with activities in the vicinity of the Ore Dock. For species such as Fourhorn Sculpin, CPUE was higher near the docks and may relate to use of the constructed rocky reef habitat.</p>	
Marine Biota	Potential changes to marine biota from the introduction of NIS/AIS due to shipping (ballast water discharges, etc.)	<p>In 2023, sampling was undertaken as part of the MEEMP and Aquatic Invasive Species/ Non-Indigenous Species (AIS/NIS) Monitoring Program and detected 31 taxa that had not been identified previously at Milne Port during baseline sampling. All new taxa had records of occurrence in the Canadian Arctic or described ranges that were likely to include the Project area. NIS/AIS monitoring in 2023 collected five taxa that were placed on the Watch List in previous years due to uncertainties in their natural range or because they were listed in an existing AIS database (the polychaetes <i>Marenzelleria</i> sp., <i>Hesperonoe</i> sp., <i>Sosane wireni</i>, and <i>Paramphitrite birulai</i>, as well as the amphipod <i>Crassikorophium</i> sp.). Specimens of <i>Hesperonoe</i> sp. were sent to taxonomic experts for independent verification along with specimens collected in 2022. Updates were provided for two algal specimens collected in 2022 that were identified as cf. <i>Punctaria latifolia</i> and cf. <i>Stictyosiphon soriferus</i> and were flagged for further review, as well as an</p>	Effect within FEIS predictions

Component	Potential Effects	Monitoring Program	Impact Evaluation
		<p>unidentified Bryophyta that was sent to an expert for further identification.</p> <p>No new taxa were added to the Watch List in 2023, while one taxon (<i>Sosane wireni</i>) was removed due to records indicating a probable range that extends to the Eastern Canadian Arctic. Following this change, the Watch List consisted of eight taxa. There are no species on the Trigger List.</p> <p>The Baffinland NIS/AIS monitoring program represents the most comprehensive monitoring program for NIS/AIS conducted by a marine port in Canada. Approximately 1,062 taxa have been identified in Milne Inlet through monitoring to date, which included 410 unique macroflora, zooplankton, benthic invertebrates, and fish species. The identification and risk assessment of individual taxa out of the hundreds identified in Milne Inlet indicated this surveillance program was effective and functioning as intended. The vast majority of these taxa have been designated as “No Risk” and are not considered to be of concern.</p>	

Path Forward

Baffinland will remain vigilant about the mitigation and monitoring activities that are in place to protect the marine environment. Baffinland will continue to seek input and review monitoring results trends from technical members of the MEWG, in addition to gathering feedback through separate forums such as annual community pre-shipping and post-shipping meetings led by Baffinland with relevant Inuit representatives (e.g., MHTO, Pond Inlet Hamlet) and QIA). Reporting on each PC Term and Condition follows.

Project Certificate Term and Condition No. 76

Category	Marine Environment – General
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To mitigate potential impacts to the marine environment from the Mary River Project, as modified by the Early Revenue Phase Project, Production Increase Proposal, Extension Request to the Production Increase Proposal, Production Increase Proposal Renewal and Sustaining Operations Proposal and any subsequent modifications to the Mary River Project.
Term or Condition	<p>The Proponent shall develop a comprehensive Marine Environmental Effects Monitoring Program to address concerns and identify potential impacts of the Project on the marine environment. The Marine Environmental Effects Monitoring Program shall include:</p> <ul style="list-style-type: none"> a) A summary of the monitoring conducted by the Proponent to identify potential project effects in the marine environment; b) The comparison of impact predictions provided by the Proponent in the Final Environmental Impact Assessment (FEIS), FEIS Addenda and/or other assessments provided to the Board; c) The identification of mitigation measures the Proponent has implemented to protect the marine environment; d) Any adaptive management plans developed/implemented to prevent, manage or mitigate effects in the marine environment; e) A discussion of how relevant Inuit Qaujimajatuqangit, scientific and/or technical knowledge and industry best practices have been incorporated into the Program and have informed the components of the Program; and f) The identification of changes to the Project that may be required to ensure that potential adverse effects to the marine environment are prevented, that adaptive management occurs, and that mitigation measures are effective.
Relevant Baffinland Commitment	40, 51, 84, 85, 79
Reporting Requirement	The Proponent shall provide a summary discussion of its implementation of this term and condition (including results of monitoring, adaptive management strategies, consultation, and contribution efforts) to the NIRB through the Proponent's annual monitoring report. Updates to the Program are expected to be submitted to the NIRB throughout the monitoring year as they are finalized.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Marine Environmental Working Group (MEWG)
Reference	<p>Marine Biological and Environmental Baseline Surveys Milne Inlet 2014 (SEM, 2015) 2020 and 2021 MEEMP and AIS Monitoring Program Reports (Golder, 2021a, 2022a) Metal Mining Technical Guidance for Aquatic EEM (EC, 2012) 2023 MEEMP and NIS/AIS Monitoring Report (WSP, 2024b) Marine Monitoring Plan (Baffinland, 2023f)</p>

Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.1 Appendix G.6.8
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METHODS

The Marine Environmental Effects Monitoring Program (MEEMP) was initially developed in 2015 following completion of marine biological baseline studies at Milne Port during 2010, 2013 and 2014. Monitoring has been conducted annually since 2015. The MEEMP sampling design is generally based on Environmental Effects Monitoring (EEM) guidance from Environment Canada (EC, 2012). The MEEMP includes annual monitoring to detect potential Project-related effects on marine water and sediment quality, benthic invertebrates, substrate and macroflora, fish communities, fish health, and fish tissue chemistry. MEEMP is combined with a Non-Indigenous Species/Aquatic Invasive Species (NIS/AIS) Monitoring Program, which, in addition to reviewing all taxa collected during MEEMP sampling, conducts surveillance of zooplankton, settlement substrates for fouling organisms, and targeted sampling for DNA or population analyses. Detailed information on study design and sampling methodology is available in the annual monitoring report for the MEEMP and NIS/AIS monitoring programs (WSP, 2024b).

RESULTS

A summary of the monitoring conducted in 2023 and detailed sampling results are available in Table 4.22 and are presented in the 2023 MEEMP and NIS/AIS report, along with comparisons to impact predictions where applicable (WSP, 2024b). Monitoring completed to date as part of the MEEMP reflects concordance with the applicable Terms and Conditions of PC No. 005, including PC Terms and Conditions No. 1, 76, 83, 83(a), 85, 87, 91, 99, 99(b), 113, 114 and 126. A summary of the 2023 NIS/AIS program will be provided in the response to PC Term and Condition No. 87 below, rather than duplicating content here.

Term and Condition No. 1 and No. 83, related to the operation of a tidal gauge to monitor relative sea levels, are currently under discussion with NIRB to clarify the objectives of these Conditions. Technical difficulties in collecting data with sufficient resolution to monitor sea level changes with adequate accuracy have been discussed with the MEWG and to date no solution has been identified. Baffinland is committed to fulfilling these Conditions, whether through continued monitoring of relative sea levels or through a different, more suitable indicator. Baffinland commits to discussing alternative climate change indicators with the MEWG to effectively address these PC Terms and Conditions.

Monitoring results are assessed against predictions of the FEIS and FEIS Addenda, and Trigger Action Response Plan (TARP) indicators and thresholds as outlined in Baffinland's Marine Monitoring Plan (MMP; Baffinland, 2023f).

Overall, MEEMP sampling results from 2023 do not suggest degradation or impairment of the marine physical or biological environment (i.e., water and sediment quality, benthic infaunal and macroflora/epibenthic communities, marine fish community, fish health and tissue chemistry, NIS/AIS) associated with the construction and operation of Milne Port; therefore, no additional mitigation measures or adaptive management plans are warranted at this time. Details on modifications to study components based on results from 2022 surveys as well as relevant Inuit Qaujimajatuqangit, scientific and/or technical knowledge and industry best practices in addition to recommendations by the MEWG for changes to be implemented for the 2024 program are outlined within the relevant chapters of the 2023 MEEMP and NIS/AIS report.

TRENDS

Overall, MEEMP sampling results from 2023 did not suggest degradation or impairment of the marine physical or biological environment (i.e., marine water quality, marine sediment quality, benthic infauna, macroflora and epibenthic communities, fish community, fish health and tissue chemistry, NIS/AIS) associated with the construction and operation of Milne Port.

RECOMMENDATIONS / LESSONS LEARNED

The MEEMP study design, data collection methodology and results are reviewed yearly with the MEWG. Recommendations from the MEWG inform refinements to the program, enhancement of existing mitigation measures, and development of adaptive management measures (when and where applicable). MEEMP results will continue to be presented to the MEWG on an annual basis, and recommended adjustments to the programs will be considered by Baffinland and implemented as deemed necessary and relevant for detecting potential Project-related impacts. An example of such a recommendation implemented in 2023 was the refocusing of effort to increase sample size of specific sampling methods (e.g., angling, gillnets, hoop nets) within the fish community monitoring component with the objective of increasing statistical power (WSP, 2024b).

Based on results collected to date, no additional mitigation measures are recommended at this time.

The following is a list of 2023 recommendations for the MEEMP and NIS/AIS Monitoring Program, presented by study component:

Marine Water Quality

Marine water quality monitoring at Milne Port is recommended to continue annually to enable evaluation of potential changes in downstream water chemistry from Site operations and to provide continuity in the established time series for the MEEMP.

Marine Sediment Quality

Sediment monitoring to date suggests that mitigation measures are functioning as intended and that Project activities are being managed in a way that has not adversely affected marine sediment within the Milne Inlet study area. Baffinland has committed to a frequency of annual sampling of the newly implemented Capesize monitoring stations for three years following the initial use of Babycap and Capesize vessels. The radial sampling program is conducted every three years to identify Project-related effects.

Benthic Infauna

Monitoring of benthic infaunal communities to date suggests that mitigation measures are functioning as intended and that Project activities are being managed in a way that has not adversely affected community composition or population parameters in the Milne Inlet study area. Baffinland has committed to a frequency of annual sampling of the newly implemented Capesize monitoring stations for three years following the initial use of Babycap and Capesize vessels. The radial sampling program is conducted every three years to identify Project-related effects.

Substrate, Macroflora, and Benthic Epifauna

Monitoring of macroflora and benthic epifauna should continue using the same sampling design. Additionally, it is recommended to continue to monitor for opportunistic observations of deceased bivalves (as seen in 2022) and unknown taxa and that samples should be collected, when possible, for analyses and identification.

Marine Fish Community

Recommendations for the 2024 MEEMP sampling program include maintaining standardized fishing efforts so significant changes in the Milne Port area fish community at Milne Port can be identified. Fishing gear efficiencies were also evaluated, with a recommendation to continue to utilize gill nets, angling-jigging, hoop nets, and trawls while discontinuing the use of Fukui traps and angling-trolling due to consistently low catch numbers over the past four years. With the removal of Fukui traps and angling-trolling from the program, it may be feasible to increase the number of efforts per area of the remaining fishing methods (i.e., angling-jigging, gill nets, hoop nets, and trawling) to increase the statistical power to detect effect sizes of interest.

Fish Health and Tissue Chemistry

Continued monitoring is recommended to maintain continuity in established time series data for Arctic char, and the ongoing collection of fish health and tissue chemistry data for Fourhorn Sculpin and *Hiatella arctica* from Milne Port and relevant reference areas.

Non-Indigenous Species/Aquatic Invasive Species Monitoring

Continue sampling across multiple trophic levels, including the expanded zooplankton sampling program. Continue expanding the Milne Inlet taxonomic inventory and screening all new observations in relation to geographic ranges and NIS/AIS status. Continue collecting and reviewing genetic evidence for *Marenzelleria* sp. and *Monocorophium* sp., in addition to macroflora, bryozoan, and tunicate taxa in general, including targeted sampling to obtain specimens for DNA barcoding to further resolve these taxonomic groups in Milne Port.

Project Certificate Term and Condition No. 77

Category	Marine Environment - Working Group
Responsible Parties	The Proponent, Qikiqtani Inuit Association, Government of Nunavut, Government of Canada, Hunters and Trappers Organizations of the Impacted Communities (Pond Inlet, Arctic Bay, Clyde River, Sanirajak, Igloolik).
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	<p>The Marine Environment Working Group (MEWG) will provide advice, guidance and enforceable recommendations regarding: adding to and improving baseline information, mitigation measures for the protection of the marine environment, monitoring of effects on the marine environment, assessing the accuracy of impact predictions, the development and implementation of adaptive management plans, sharing of relevant Inuit Qaujimajatuqangit, scientific and/or technical knowledge and industry best practice and, consideration of project changes that may be required to make sure the management of negative impacts is effective and that lasting damage to the marine environment is prevented.</p> <p>The role of the MEWG is not intended to either duplicate or to affect the exercise of regulatory authority by appropriate government agencies and departments.</p> <p>The Terms of Reference (ToR) for the MEWG shall be revised to include the following requirements: That an independent chair be appointed for MEWG and that this independent Chair be responsible for scheduling and administering meetings including circulating meeting invitations, agendas and documentation:</p> <ol style="list-style-type: none"> That the Working Group's decision-making process be amended to provide that it must occur on a consensus basis between all working group member parties, with all votes and decisions in writing and recorded by the chair. That the Working Group's recommendations be recognized as enforceable recommendations (i.e., will be implemented by the Proponent), with provision that the Proponent may request not to enforce the recommendation at which point the matter shall go to an independent third party (agreed upon by the Proponent, QIA, and the Government of Canada) for dispute resolution. That the Working Group will include all Responsible Parties as member parties, should they wish to participate. The Proponent may be required to facilitate the participation of Hunters and Trappers Organizations through payment of honoraria and other participation costs in accordance with the Commitment List appended at Appendix B. That Working Group materials and records of decisions become public information with the independent chair responsible for keeping and circulating minutes which shall be posted to the Baffinland website including all meeting minutes once finalized and provided to Baffinland by the independent chair.
Term or Condition	A Marine Environment Working Group (MEWG) shall be established as an advisory oversight body providing advice, guidance and enforceable recommendations to fulfill the intended objectives. The operation of the MEWG shall not duplicate or impede the exercise of regulatory authority of authorizing agencies or government. The MEWG shall have the following permanent members: The Proponent, the Qikiqtani Inuit Association, the Government of Nunavut, the Government of Canada, the Mittimatalik HTO, and the Hunters and Trappers Organizations of the other Impacted Communities (Arctic Bay, Clyde River, Sanirajak, Igloolik), should they wish to participate. Makivvik Corporation shall also be entitled to membership on the MEWG at its election.

	A Terms of Reference shall be established that guides the participation of observers. The MEWG shall be chaired by an independent third party as chosen by the permanent members. A revised Terms of Reference shall be presented to NIRB no later than December 15th, 2023, or at another date on consent of the Proponent, Canada, and the Qikiqtani Inuit Association.
Relevant Baffinland Commitment	46, 49, 51
Reporting Requirement	<p>Project monitoring reports and relevant data to be considered by the MEWG will be provided to members not less ten (10) working days prior to a scheduled meeting, or as otherwise described in the Terms of Reference.</p> <p>Draft meeting minutes of the MEWG shall be filed by the independent chair with working group members within fifteen (15) working days following a meeting for review by MEWG working group members, or as otherwise described in the Terms of Reference.</p> <p>All final meeting minutes shall be submitted to the NIRB registry by the Proponent for circulation to NIRB's distribution list not more than thirty (30) working days following receipt from the independent chair. All final meeting minutes shall be included in the Annual Report to the NIRB.</p>
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Marine Environment Working Group (MEWG)
Reference	2023 MEWG Meeting Records
Ref. Document Link	Appendix C.1

METHODS

Baffinland established a MEWG in 2013. Members include representatives from: The Mittimatalik Hunters and Trappers Organization (MHTO), the Government of Nunavut (GN), the Qikiqtani Inuit Association (QIA), Environment and Climate Change Canada (ECCC), Fisheries and Oceans Canada (DFO), Parks Canada (PCa), Makivvik Corporation, Baffinland, and technical experts as required. The Igloolik Hunters and Trappers Organization (IHTO), Arctic Bay (Ikajutit) Hunters and Trappers Organization (IHTA), Hall Beach (Sanirajak) Hunters and Trappers Organization (HB HTA), and Clyde River (Nangmautuuq) Hunters and Trappers Organization (NHTO) have also been acting as members since February 2023. The revised draft Terms of Reference (ToR) indicating their member status was circulated on April 4th, 2024, outside of this reporting period. Additionally, WWF, the NIRB, the CANNOR, and ON participate as observers on the group. TC has also been actively participating as an observer on the MEWG since June 14th, 2022.

Refer to Appendix C.1 for 2023 Marine Environment Working Group (MEWG) minutes for meetings held in February, April, July, and December. Baffinland covered all costs associated with the coordination of the 2023 MEWG meetings, including: arranging simultaneous translation, arranging all travel and accommodation for HTO representatives, ensuring adequate technical packages were in place for in person meetings, translating all supporting materials to Inuktitut, providing catering at in person meetings, and funding for participation of the five (5) HTOs, inclusive of

travel, accommodations, per diem, and meeting honoraria. Additionally, Baffinland representatives are responsible for compiling meeting minutes and ensuring prompt closure of action items following each meeting.

Generally, the Working Group meetings are structured in such a way to include:

- Baffinland to provide a Project update to the members (e.g., includes mining and shipping-related activities such as ore production, and vehicular and vessel traffic);
- Discussion of monitoring program planning including sampling approach (e.g., sampling variables, sites, and data collection methods) in advance of field programs to obtain feedback by MEWG members;
- Discussion of results of monitoring programs to obtain feedback by MEWG members; and
- Various research presentations (given by Baffinland, Baffinland technical consultants and other members).

The group typically schedules two (2) yearly in-person meetings, in addition to hosting two (2) interim teleconferences per year. This is subject to change based on the most recent draft of the ToR, which states that three regular meetings and up to three touchpoint meetings will be held, in addition to ad hoc meetings at the request of members.

Baffinland has been working in good faith with the MEWG to draft an update to the ToR that reflects inclusion of all items in this term and condition, including appointment of an Independent Chair, amendments to the decision making process and the inclusion of new members (namely the HTOs from Arctic Bay, Clyde River, Igloolik and Sanirajak). Baffinland has circulated iterations of the draft ToR to working group members, incorporating feedback as received. At the close of 2023, the most recent version reviewed by Working Group members and observers was the April 2023 draft. Baffinland held a joint meeting with the MEWG and TEWG in April of 2023 to discuss this draft, which resulted in an additional member review period by request. This review period was closed in May of 2023 and Baffinland announced at subsequent meetings that there would not be another comment/review period prior to submission to the NIRB. At the December 2023 MEWG meeting, members requested to discuss the ToR prior to Baffinland's submission. Baffinland honoured this request and committed to hosting a meeting in Q2 of 2024 with the MEWG to provide an overview of the ToR. This meeting will also include a discussion pertaining to the selection of an independent chair. In an effort to improve functionality, Baffinland committed to providing a two-year review of the TOR for members at the April 2023 meeting.

Technical annual reports, presentation materials, and other documentation are provided to the MEWG in advance of meetings to the extent possible and on an on-going basis to allow for review, comment and advice to be provided by all members. Baffinland reviews all comments received on technical reports and makes an effort to provide meaningful responses to each comment, ultimately allowing for MEWG feedback to be incorporated into future monitoring programs. Baffinland strives to hold a pre-shipping season in Q2 of each calendar year to review final results from the previous year's monitoring programs, while ensuring that all suggestions for improvement are considered for the upcoming field season.

RESULTS

In 2023, the MEWG met on six (6) occasions: February 15th, February 16th, April 19th, July 12th, December 11th, and December 12th. The February and December, 2023 meetings were held in person in Ottawa and Iqaluit, respectively. These were the first in person meetings to occur since the onset of COVID-19 in 2020. Both in person meetings included a virtual option for online participation in the event that members/observers could not attend.

A list of the meetings and topics discussed with the MEWG in 2023 is provided in Table 2.5 in Section 2.5.1 MEWG of this report.

As a result of inputs from the MEWG, numerous program modifications have been made since 2015, and additional mitigations have been adapted. When suggestions have been made by working group members on specific programs, Baffinland has made the effort in considering these requests in the most expedited and feasible manner. When a change is not implemented, Baffinland has provided rationale as to why the modification cannot immediately be implemented and/or that additional information is required before it can make an informed decision and/or has provided its reasoning for not pursuing specific requests and requesting that alternative methods be suggested.

Many of the members that participate in the Working Groups also represent regulatory bodies that have the ability to issue directions to Baffinland in accordance with their jurisdiction, mandate or issued permits. As has always been the intention of the Working Groups, they should not duplicate or fetter regulatory obligations, and rather remain focused on the enhancement of Baffinland's monitoring programs and providing advice on best practices or new research they are aware of to inform the ongoing development and implementation of Baffinland's comprehensive environmental management system.

See also summary for PC Term and Condition No. 183.

TRENDS

As the NIRB has previously been made aware, Baffinland has occasionally struggled to reconcile recommendations from the Working Groups that do not properly appreciate or weigh health and safety concerns, limitations, or operational constraints. Costs or logistics of implementing recommendations are rarely taken into account, despite this reasonably needing to be a consideration when weighing the value of a proposed program or activity. In many cases, despite Baffinland's efforts to specifically and clearly communicate these considerations to the Working Groups, members continue to advocate for research studies that are not feasible. In all cases, it is important to distinguish between initiatives that may be of personal interest or curiosity to individual Working Group members, and those that have a reasonable link to the Mary River Project's activities and are a requirement to fulfill the proponent's obligations under its Project Certificate and monitoring program requirements.

Some Working Group members have expertise conducting research on the marine or terrestrial environments or have extensive knowledge of the area, while others do not have that experience. Some participate solely in their capacity as a government regulator or as an interested Party. However, to Baffinland's knowledge, none of the other participants have significant experience operating industrial projects, particularly in the complex and challenging Arctic. While recommendations brought forward within these Working Groups must be subject to appropriate consideration and discussions taking into consideration IQ and western science, they must also be weighed against the practical operationalization of the recommendation along with a fulsome cost benefit analysis, which no other party is suited to do outside of Baffinland. To be clear, Baffinland accepts that some Working Group members wish to see a process inserted into the ToR to generate and record consensus-based recommendations and this has been reflected in the most recent drafts, however, Baffinland must stress the need to retain ultimate authority to reject recommendations that don't meet reasonable criteria for implementation. The draft of the ToR, released in April 2023, outlines a formal recommendation process. While the ToR is not yet finalized, Baffinland is confident that it will allow for more functionality and formality within the groups while continuing to provide valuable advice to Baffinland.

RECOMMENDATIONS / LESSONS LEARNED

The Working Groups are a tool that can be used by the proponent, members, and observers to discuss, debate and continuously improve monitoring programs and outcomes. It is imperative that all participants participate in good faith, be forthright in providing the appropriate expertise and knowledge relevant to their organizations, and contribute collaboratively in an effort to resolve issues or concerns that are brought forward. In its most recent draft ToR for the Working Groups, Baffinland presented a reasonable path forward that would result in meaningful changes to the Groups' current structure, operational schedule, and ability to influence the Project. It is expected that this should improve Members' expectations, communication within the Group, and general outcomes. Baffinland will continue to engage with the Working Groups on the development of a revised ToR throughout 2024..

Project Certificate Term and Condition No. 78

Category	Marine Environment - Ice Breaking and Shipping
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operation, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To obtain accurate and current ice information.
Term or Condition	The Proponent shall update the baseline information for land fast 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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – In Compliance Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	Not applicable
Reference	Ice and Marine Shipping Assessment - Mary River Iron Ore Project – North Baffin Island – Included in Baffinland 2012 Appendix 3 G (Ice and Marine Shipping Assessment; ENFOTEC Technical Services Inc. (ENFOTEC, 2011) Ice Conditions and Ship Access to the Milne Inlet Port Site – Mary River Iron Ore Project - Final Report. Amended in 2015 (ENFOTEC, 2015) Ice Conditions and ship access to the Milne Inlet port site – Update included in Technical Supporting Document (TSD) No. 16. – Ice Conditions Report (ENFOTEC, 2016) Baffinland Ice Concentrations – 1997-2020’ in Baffinland’s Response to Reviewer Comments on Golder’s Preliminary Summary of 2020 Narwhal Monitoring Programs (Appendix 2 of Attachment 1 in Baffinland, 2021j) Daily Ice Charts for Period of 12-22 July (2018, 2019 and 2020)’ in Golder’s Preliminary Summary of 2020 Narwhal Monitoring Programs (Attachment 1 in Golder, 2021b). 2022 Shipping and Marine Wildlife Management Plan (Baffinland, 2022d) Viking Ice Consultancy (VIC), Steensby Inlet Iron Ore Shipping Project. Fixed Wing Survey. June 2023 (VIC, 2023). Viking Ice Consultancy (VIC). Steensby Inlet Fast Ice Study. March, 2024 (VIC, 2024)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Ice conditions study reports have been commissioned by Baffinland for the Northern Shipping Route on several occasions, including 2011, 2015, 2016 and 2021 (ENFOTEC, 2011; 2015; 2016; Baffinland, 2022d; Golder, 2021b). Additionally, in support of previous amendment applications (e.g., Phase 2), updated information on the dates for break up and freeze up of landfast ice was provided in Table 1 of a July 2019 memo entitled “Impacts of Icebreaking

on Ice (ENFOTEC, 2019; NIRB Registry No. 325731). Ice charts and satellite imagery showing the presence and decay of landfast ice in 2020 were included in Baffinland's presentation during the 2020 NIRB Marine Workshop (Baffinland, 2020i; NIRB Registry No. 331227).

Ice information from the Canadian Ice Service (CIS) and satellite imagery is obtained by Fednav, on behalf of Baffinland's Shipping Department, on a daily basis before the start and at end of shipping season for the purposes of managing shipping operations safely and within the parameters of the commitments and mitigations made by the Company (i.e., commitment not to break landfast ice, delaying shipping until ice is no greater than 3/10ths along the nominal Northern Shipping Route). Ice conditions are also available in real-time from the icebreaker if utilized to escort vessels. In other words, it cannot be integrated into a management plan in advance of the season to inform planning of shipping operations. However, historical ice data has been integrated into relevant management plans for this purpose.

As part of the extended ice study conducted in 2023 for the Steensby Shipping Route, Baffinland conducted an overflight with fixed wing to observe ice and ice dynamics. Baffinland commissioned a fixed wing survey to gather high resolution data describing the ice conditions along the maritime route utilized to access Steensby Inlet. This work included gathering images, processing of images collected both pre and post survey, and particle analysis to generate statistical information on individual ice floes. Additionally, Baffinland obtained a better understanding of the governing factors for landfast ice regime in the port area and approaches to the undeveloped Steensby Port. This was obtained through updating the baseline ice and weather information for landfast ice using a long-term data set, (28 years) and with information on inter-annual variation (VIC, 2024).

RESULTS

Results were obtained through updating the baseline ice and weather information for landfast ice using a long-term data set, (28 years) and with information on inter-annual variation (VIC, 2024). The report concluded that ice edges start to develop in December and is well established by the first week of February (VIC, 2024). Additionally, the fixed wing survey provided good information about the conditions present along the proposed shipping route to Steensby Inlet. One thing to note from this survey was that ice concentrations observed were lower than the conditions indicated by the CIS ice charts (VIC, 2023).

TRENDS

Ice conditions have been quite variable from year to year, with no obvious trends apparent. For example, the decay of landfast ice has typically occurred within the same 1.5-week period beginning mid-to-end of July, with ice freeze occurring over a similar two-week time frame at the mid-to-end of October. However, in 2023, the ice was late to melt and there wasn't a continuous path of 3/10s ice concentrations until the second week of August. This delayed the start of shipping by almost two weeks.

RECOMMENDATIONS / LESSONS LEARNED

While Baffinland understands that PC Term and Condition No. 78 was intended for shipping operations along the Southern Shipping Route (Steensby Inlet) where Project shipping engages with landfast ice, the ice condition report for the Northern Shipping Route (where Project shipping does not engage with landfast ice) has been updated periodically as new data becomes available.

Project Certificate Term and Condition No. 79

Category	Marine Environment - Ice Breaking and Shipping
Responsible Parties	The Proponent, Canadian Hydrographic Services
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To assist in the development of nautical charts for Canadian waters.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – In Compliance Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Canadian Hydrographic Service (CHS)
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

The Canadian Hydrographic Service (CHS) collected detailed bathymetry around the existing ore dock at Milne Inlet in 2016. This year, Baffinland undertook a bathymetric survey at the Milne Inlet ore dock to determine subsea elevations and bottom type conditions. This work included a vessel mounted high resolution multibeam survey of approximately 0.05 Km² and included water depths ranging from 15-35 m. This information was contracted by Baffinland but the data was shared with CHS.

Additionally, Baffinland consulted CHS for their technical guidance on the methodology of bathymetric surveys for the Steensby Inlet to ensure alignment with best practices and to produce electronic navigational charts for this area. CHS provided a gap analysis to Baffinland in January 2024. Earlier in 2023, Baffinland contracted a multibeam bathymetric survey in the Steensby Inlet area to provide data capable of increasing the accuracy of existing navigational charts and environmental data within the area of interest. The data collected during this survey included multibeam bathymetry, backscatter data, and sound velocity profiles. CHS also undertook a gap analysis of existing data for Foxe Basin and Hudson Strait to identify gaps in data along Baffinland's proposed southern shipping corridor. This work is on-going.

RESULTS

Approximately 207 Km² of bathymetry data was collected across eleven (11) days of survey operations. The weather was extremely favourable during survey operations, with no weather days for the vessel and only two (2) days for the Survey Launch. The data collected was shared with CHS to provide navigational charts and to expand the data set to assist in the development of nautical charts for these waters.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 80

Category	Marine Environment - Ice Breaking and Shipping
Responsible Parties	The Proponent, Canadian Hydrographic Services
Project Phase(s)	Construction
Objective	To identify areas of risk along the shipping route.
Term or Condition	Prior to commercial shipping of iron ore, the Proponent shall conduct a detailed risk assessment for Project-related shipping accidents, noting areas along the ship tracks where vessels may be particularly vulnerable to environmental conditions such as sea ice, and any seasonal differences in risk. This assessment shall inform mitigation and adaptive management plans.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Not Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Not applicable
Reference	Emergency Response Plan (ERP; Baffinland, 2020j) Oil Pollution Emergency Plan – Milne Inlet (OPEP; Baffinland, 2022e) Oil Pollution Prevention Plan – Milne Inlet (OPPP; Baffinland, 2022f) Shipping and Marine Wildlife Management Plan (Baffinland, 2022d) Spill at Sea Response Plan (SSRP; Baffinland, 2023g) Spill Contingency Plan (Baffinland, 2021h) Diesel Environmental Emergency (E2) Plan - Milne Port (Baffinland, 2020k)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Applicable to the Construction phase only. Since start of operations, Baffinland has developed and maintained appropriate contingency plans to respond to spills on land, at the port, and at sea. The plans outline the equipment to be used in the event of a spill, as well as the roles and responsibilities and training necessary to maintain appropriately trained personnel.

See also summary for PC Term and Condition No. 78 and 92.

RESULTS

Emergency response plans outline the equipment to be used in the event of a spill, as well as the roles and responsibilities and training necessary to maintain appropriately trained personnel.

See also summary for PC Term and Condition No. 78 and 92.

TRENDS

Baffinland is committed to conducting regular and annual spill response exercises and training in known and effective techniques for responding to spills and any other Project-related shipping accidents.

See also summary for PC Term and Condition No. 78 and 92.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to conduct routine training exercises and strategically procure resources and equipment to respond to any Project-related shipping accidents in the unlikely event that these occur.

See also summary for PC Term and Condition No. 78 and 92.

Project Certificate Term and Condition No. 81

Category	Marine Environment - Shoreline Effects and Sediment Redistribution
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To mitigate potential shoreline effects from shipping.
Term or Condition	The Proponent shall reassess the potential for ship wake impacts to cause coastal change following any further changes to the proposed shipping routes.
Relevant Baffinland Commitment	84
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Marine Environmental Working Group (MEWG)
Reference	Mary River Project – FEIS (Baffinland, 2012) Mary River Project – Phase 2 Proposal – Technical Supporting Document (TSD) No. 22 - Ship Wake and Propeller Wash Assessment (Golder, 2018a) Ship Wake and Propeller Wash Assessment, Mary River Project, Sustaining Operations Proposal (WSP, 2023d)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.6.13

METHODS

The Project is not in Construction phase and no change in shipping routes has occurred, but an updated ship wake assessment was prepared in 2023 to determine the potential effects of larger ore carriers (Baby Cape and Capesize) for the SOP. Ship wakes were evaluated using an oceanographic model (Appendix G.6.13).

Ship wake effects on shorelines were previously assessed in Appendix 8D-2 of the FEIS (Baffinland, 2012) and Technical Supporting Document (TSD) No. 22 for the Phase 2 Proposal (Golder, 2018a).

RESULTS

Results of all ship wake assessments (Baffinland, 2012; Golder, 2018a; Appendix G.6.13) indicated that wave energy from wind-generated waves was estimated to exceed ship-generated wave energy during both average and peak wind conditions, and therefore ship wake impacts would be non-measurable and have negligible effects on the physical shoreline in comparison to existing conditions.

TRENDS

Ship wake impacts have been determined to be have negligible effects in comparison to wind-generated waves throughout more than a decade of assessment.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 82

Category	Marine Environment - Shoreline Effects and Sediment Redistribution
Responsible Parties	The Proponent
Project Phase(s)	Construction and Operation
Objective	To mitigate potential shoreline effects from shipping.
Term or Condition	In the 2023, Annual Report, the Proponent is required to provide the Board with a summary of available information describing the wake characteristics at various vessel speeds and distances for all vessel types to be used to transport ore. Subsequently, if the Proponent proposes to use a new vessel type to transport ore, the Proponent is required to update the summary information previously provided to the Board under this Term and Condition.
Relevant Baffinland Commitment	N/A
Reporting Requirement	The Proponent shall provide a summary discussion of its implementation of this term and condition (including results of monitoring, adaptive management strategies, consultation, and contribution efforts) to the NIRB through the Proponent's annual monitoring report.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) –Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – In Compliance Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Marine Environmental Working Group (MEWG)
Reference	Mary River Project – FEIS (Baffinland, 2012) Mary River Project – Sustaining Operations Proposal, Ship Wake and Propeller Wash Assessment – (WSP, 2024c)
Ref. Document Link	Appendix G.6.13

METHODS

This Term and Condition was modified as part of the Sustaining Operations Proposal (SOP) approval in 2023, requiring a summary of available information describing the wake characteristics at various vessel speeds and distances for all vessel types used to transport ore.

Baffinland contracted WSP to generate a report to assess the Project effects on the marine physical environment related to shipping activities describing the wake characteristics at various vessel speeds and distances for all vessel types to be used to transport ore. Specifically, the potential effects of ship-generated waves on shorelines along the shipping route, and the potential sediment disturbance effects from propeller generated wash velocities in the vicinity of Milne Port. This report is found in Appendix G.6.13

Hydrodynamic modeling using empirical methods was performed to evaluate the potential effects of Project shipping on the incident wave energy at shorelines along the shipping routes, and on the bottom substrate (seabed), (WSP, 2024c).

Ship wake effects on shorelines along the Southern Shipping Route were assessed in Appendix 8D-2 of the FEIS (Baffinland, 2012).

RESULTS

The following results are outlined in the report (Appendix G.6.13, WSP 2024c), ship-generated waves (wake) are expected to be minimal along the Northern Shipping Route with maximum wave heights of 0.12 m near the sailing line and less than 0.05 m at distances greater than 1 Km from the sailing line. The wake height is primarily constrained by the vessel speed limit of 9 knots along the shipping route.

Based on an empirical wind-wave hindcast, significant wave heights from wind-generated waves are estimated to exceed ship generated wave heights during both average and peak wind conditions. The energy flux due to wind-waves will exceed that due to wake waves by several orders of magnitude over a single open water shipping season and have greater potential to disturb sediments along the shoreline. Ship wake wave heights, predicted to be less than 0.05 cm when reaching the rocky and coarse-grained shorelines along the shipping route, are expected to have negligible effects on the surrounding shoreline habitats.

Propeller-generated wash velocities at the seabed are expected to range from 0.4 m/s for a tug vessel (operating at 100% power) to 2.3 m/s for a fully loaded Capesize vessel (operating at 25% power) in the shallowest part (-21 m depth at chart datum) of the existing berth area at Milne Port. The estimated velocities have the potential to cause scour and turbidity in the berthing area for all vessels considered in the model; however disturbed sediment is not expected to remain in suspension for longer than the shortest berthing and loading event. The longest sediment settling time was estimated to be less than 20 minutes, assuming negligible ambient current. Since tugs will be the primary source of propeller wash during berthing and deberthing operations and the ore carrier propeller will only be used intermittently, the estimates of bulk carrier generated wash velocities and scour potential presented in this study are likely conservative. The total area of sediment disturbance (i.e., zone of entrainment and suspension) predicted for a Capesize carrier alone is 20,873 m² (~2 ha), compared to 3,843 m² (~0.4 ha) for a Post-Panamax vessel alone, or 1,244 m² (~0.1 ha) for a Supramax carrier alone. Note that most of the predicted sediment entrainment and suspension is generated by propeller wash of the tugs in shallower waters. The predicted total area of sediment disturbance for a Capesize carrier with tugs is 69,554 m² (~7 ha), compared to 52,999 m² (~5 ha) for a Post Panamax vessel with tugs, or 50,413 m² (~5 ha) for a Supramax carrier with tugs.

Results for the Southern Shipping route indicated that wave energy from wind generated waves is estimated to exceed ship-generated wave energy and ship waves are unlikely to cause any measurable erosion or habitat alteration along the Southern Shipping Route.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Should Baffinland propose to use a new vessel type to transport ore, Baffinland will update the summary information previously provided to the Board under this Term and Condition

Project Certificate Term and Condition No. 83

Category	Marine Environment - Shoreline Effects and Sediment Redistribution
Responsible Parties	The Proponent
Project Phase(s)	All phases
Objective	To provide data on tide levels and storm surges.
Term or Condition	The Proponent shall install tidal gauges at Steensby and Milne Port to monitor sea levels and storm surges.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	The Proponent shall summarize and supply these monitoring results to NIRB in the annual Project report.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Progress
Stakeholder Review	Nunavut Impact Review Board (NIRB)
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Reporting on PC Term and Condition No. 83 is addressed in PC Term and Condition No. 1.

RESULTS

Reporting on PC Term and Condition No. 83 is addressed in PC Term and Condition No. 1.

TRENDS

Reporting on PC Term and Condition No. 83 is addressed in PC Term and Condition No. 1.

RECOMMENDATIONS / LESSONS LEARNED

Reporting on PC Term and Condition No. 83 is addressed in PC Term and Condition No. 1.

Project Certificate Term and Condition No. 83 (a)

Category	Marine Environment - Shoreline Effects and Sediment Redistribution
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operation
Objective	To identify potential for and conduct monitoring to identify effects of sediment redistribution associated with construction and operation of the Milne Port.
Term or Condition	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. In the 2023 Annual Report, the Proponent is required to provide the Board with updates to the marine water and sediment quality monitoring and mitigation program necessary to reflect the increased use of larger ore vessels (Baby Cape and Capesize) at Milne Port. The monitoring program shall include an ongoing assessment of the potential introduction of metals that bio-accumulate in the marine food chain.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	Implementation of these measures and monitoring results shall be reported and discussed in the Proponent's annual report to the NIRB. Updated plans are expected to be submitted to the NIRB throughout the monitoring year as they are finalized.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Marine Environmental Working Group (MEWG)
Reference	Mary River Project – FEIS (Baffinland, 2012) Mary River Project – Addendum to the FEIS (Baffinland, 2013a) 2019 MEEMP and AIS Monitoring Program Report (Golder, 2020a) 2023 MEEMP and NIS/AIS Monitoring Report (WSP, 2024b) Ship Wake and Propeller Wash Assessment, Mary River Project, Sustaining Operations Proposal (WSP, 2023d)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.6.8 Appendix G.6.13

METHODS

In the FEIS (Baffinland, 2012) and the FEIS Addendum for the Early Revenue Phase (Baffinland, 2013a), it was predicted that installation of the existing Ore Dock would have minimal effect on local sediment transport and that Project operations were not likely to result in significant adverse effects on water or sediment quality. These impact predictions were used to inform the current Marine Environmental Effects Monitoring Program (MEEMP) sampling design (2014 through to 2023) including the selection of sample locations and analytical parameters. To meet the overall objective of assessing and monitoring for potential sediment redistribution associated with Milne Port-

related activities, in addition to assessing the potential introduction of metals, Baffinland has implemented the following study components:

Hydrodynamic Modelling

Hydrodynamic modelling was conducted in 2023 to support the Sustaining Operations Proposal with an assessment of potential changes in currents, waves and sediment transport from the use of larger (Baby Cape and Capesize) ore carriers (Appendix G.6.13).

Review of Hydrology and Geomorphology of Phillips Creek

In 2019, a background review of hydrology and geomorphology in Phillips Creek estuary was conducted to better understand fluvial processes and whether observed changes in sediment conditions along the West Transect stem from underlying natural or Project-related causes (Golder, 2020a). This included a literature review of Arctic hydrology and sediment regime, analysis of historical air photographs of Phillips Creek estuary and delta, and a review of collected Milne Inlet sediment data from 2014 to 2017.

MEEMP

Baffinland's monitoring efforts at Milne Port include an ongoing assessment of potential Project-related effects on sediment disturbance, and introductions of nutrients, metals, and hydrocarbons to the marine environment that may have the potential to bio-accumulate in the marine food chain. The 2023 MEEMP (WSP, 2024b) included marine sediment quality and benthic infaunal monitoring to detect changes in sediment disturbance (e.g., redistribution of fines) and associated effects on the benthic infauna community. Marine water quality, marine sediment quality and fish tissue chemistry were sampled for analysis of metals and polycyclic aromatic hydrocarbons (PAHs). To assess potential impacts of increased use of larger ore vessels at Milne Port, additional sampling stations to monitor sediment quality and benthic infauna community were added in proximity to the ore dock. These stations were sampled in 2023 along with the stations sampled as part of the established radial sampling design. As all sediment and benthic infauna sampling for 2023 was conducted prior to arrival of the first Baby Cape or Capesize carrier, these samples may be considered to represent baseline conditions relative to the use of larger ore carriers. No changes were required for the other components of the MEEMP.

Detailed information on study design and sampling methodology is available in the 2023 Annual Report for the MEEMP and AIS Monitoring Program (WSP, 2024b).

RESULTS

Hydrodynamic Modelling

Results of the hydrodynamic modelling conducted to assess potential effects of larger ore carriers indicated ship-generated wave heights (wakes) would be minimal and have negligible effects along the Northern Shipping Route, where they would be constrained by the vessel speed limit of 9 knots (Appendix G.6.13). Wind-generated wave heights were predicted to exceed wake heights during both average and peak wind conditions and the energy flux of wind-generated waves would be several orders of magnitude greater than that of wakes. Propeller-generated wash was modelled in the shallowest part (-21 m Chart Datum) of the berthing area of the Ore Dock in Milne Port. Propeller wash was determined to have the potential to cause scour or resuspension of sediments in the berthing area for all vessel classes but sediments would remain in suspension for a maximum of 20 minutes under negligible ambient currents. The potential total area of sediment disturbance for a Capesize carrier with tugs would be 38%

larger than that predicted for a Supramax carrier with tugs. Most of the predicted sediment entrainment and scouring in shallower waters is expected to be generated by propeller wash of the tugs, as the ore carrier propeller is used only intermittently during berthing.

Review of Hydrology and Geomorphology of Phillips Creek

Results suggest that: (i) Phillips Creek Delta is a dynamic environment that migrates because of sediment deposition and coastal processes; and, (ii) the size of sediment that is deposited by Phillips Creek on the delta will change from year to year due to annual variability in sediment load, coastal forcing, and other natural processes (Golder, 2020a). The dynamic influence of Phillips Creek on the Milne Inlet receiving environment means that large spatial and temporal variabilities are to be expected in the sediment data along the West transect.

No applicable results in 2023.

MEEMP

Results of MEEMP sediment quality studies in 2023 and previous years indicate that the distribution of fine sediment in Milne Inlet is largely not influenced by Project activities, but rather by natural coastal processes that differed between the Northern Offshore Transects and the Coastal Transects. The exception is the finding of likely localized and temporary scouring effects (associated with propeller wash) in the immediate vicinity of the Ore Dock area on the coastal West Transect, as predicted in the Final Environmental Impact Statement (FEIS; Baffinland, 2012) and FEIS addendum (Baffinland, 2013a). These effects are expected to stabilize over time. Importantly, associated impairment of the benthic community was only documented in 2020 at one station in this area, with both density and richness continuing to rebound in 2023.

In 2023, analyses of the physical and chemical composition of sediments were conducted on samples collected from a total of 45 stations for particle size, metals, and organic parameters. In general, concentrations of metals were determined to be less than applicable sediment quality guidelines (e.g., CCME, 1999) and relevant screening values where a CCME guideline does not exist (British Columbia Ministry of the Environment and Climate Change Strategy [BC MOE], 2021; Buchman, 2008), with few exceptions. Concentrations of organic parameters were largely not detected in the sediments sampled. Statistical spatial and temporal trend analyses did not suggest that sediment metal concentrations were accumulating at elevated levels in proximity to the Ore Dock relative to other locations sampled within Milne Inlet.

Some minor exceedances of Interim Sediment Quality Guidelines (ISQGs; CCME, 1999) were noted for arsenic, nickel, and copper but are not considered to be Project-related, as these metals are not associated with the Project and tended to increase with greater distance away from the Ore Dock.

Results were screened against the Threshold Action Response Plan (TARP) criteria (Baffinland, 2023f) for sediment quality. The 'Low Risk' threshold was not triggered in 2023. The sediment quality indicators present at concentrations in 2023 were lower than the ISQG. Where isolated ISQG exceedances did occur, sediment concentrations were within expected background concentrations as informed by pre-project baseline studies. Spatial and temporal trend analysis of fines content and sediment iron concentrations did not suggest a pattern indicative of Port-related effects beyond FEIS predictions.

Benthic infaunal communities in 2023 were diverse throughout the study area. There were no consistent differences between years (2023 vs. 2018- 2020) in benthic community indicators (density and diversity [taxa richness, Simpson's Diversity Index, Simpson's Evenness Index] of taxa) along the four transects and, in isolated instances

where indicators were significantly different between years, endpoints tended to be different only when comparing 2023 to 2019. Statistical differences also tended to occur at greater distances from the Ore Dock rather than closer to the dock. These results do not align with the community response pattern typical of a toxicological impairment due to contaminant exposure, which manifests as a significant decrease in both density and richness as contaminant-sensitive taxa disappear or numbers are diminished, leaving more tolerant taxa to dominate the community. Rather, the 2023 results are more consistent with expected natural variability for these benthic habitat types within Milne Inlet, as there appears to be no evidence to suggest impairment of benthic communities related to the Project. To date, station SW-2 in 2020 was the only instance where reduced fines content was accompanied by a substantial reduction in benthic density, richness and diversity. Data collected from 2021 through 2023 generally indicate that the benthic community at that station has since recovered, and that the effects were temporary and localized.

Results of the benthic infauna assessment were screened against the TARP criteria (Baffinland, 2023f). The 'Low Risk' threshold was not triggered in 2023. The spatial and temporal trend analysis for density and taxa richness did not suggest a pattern indicative of Port-related effects beyond FEIS predictions, and the low risk status/threshold was not triggered for sediment quality.

The MEEMP did not detect any meaningful changes in marine water quality. Analytical results for water quality parameters (i.e., major ions, nutrients, metals, hydrocarbons, and polycyclic aromatic hydrocarbons [PAHs]) were generally within ranges observed during previous MEEMP sampling programs (2015 to 2022). Consistent with previous programs, hydrocarbons and PAHs were not detected in the 2023 water samples. A substantial proportion of parameters analyzed in the water samples from Milne Inlet were not detected at all in downstream sampling stations. All parameters were below relevant water quality guidelines (i.e., CCME WQGs; CCME, 2023).

Results were screened against the TARP criteria (Baffinland, 2023f) for marine water quality. The 'Low Risk' threshold was not triggered in 2023. The 30-day mean for each water quality indicator was less than 75% of the applicable CCME water quality guideline for the protection of aquatic life, and iron did not show a spatial pattern or a temporal trend indicative of effects from the Port's effluent discharge.

When comparing Fourhorn Sculpin and *H. arctica* tissue chemistry between the Milne Port area and relevant reference areas, few differences were observed. Concentrations of most metals in Fourhorn Sculpin tissues were similar among sampling areas, although some metals exhibited greater spatial variability (e.g., arsenic, lead, manganese). Selenium concentrations were significantly lower in Milne Port compared to Koluktoo Bay. For *H. arctica*, concentrations of most metals were similar among sampling areas. Mean magnesium concentrations were significantly greater in samples from Milne Port compared to Tugaat River Estuary.

Among sampling years at Milne Port, concentrations of most metals were similar within each species, although some metals exhibited greater interannual variability (e.g., copper, nickel, tin). For Arctic char, significant increasing trends in iron and magnesium concentrations were observed. Median concentrations of both metals exhibited appreciable interannual variability but were either stable or decreased in 2023 from previous years. For Fourhorn sculpin, no significant increasing trends were observed; significant decreasing trends were observed for aluminum and iron. These trends are considered not indicative of a Project-related effect and were not considered further. For *H. arctica*, significant increasing trends were observed for iron and selenium concentrations. Median concentrations of both metals exhibited relative stability from 2019 to 2023, with minor differences between years.

Mercury and selenium concentrations in all Arctic char and Fourhorn Sculpin samples were below Health Canada (2015)'s Maximum Levels for Chemical Contaminants in Foods mercury consumption guideline of 0.5 mg/kg ww and the BC Ministry of Environment's (2014) selenium concentration guidelines of 4 mg/kg dw, respectively.

Concentrations of all polyaromatic hydrocarbons in all species were below reported detection limits (<0.050 mg/kg ww).

Results of fish health endpoint assessments were screened against the TARP criteria (Baffinland, 2023f). The 'Low Risk' threshold was exceeded for endpoints that were significantly different between Milne Port and the relevant reference area, with a magnitude of effect exceeding the Critical Effect Size (CES). In addition, the direction of effect must be indicative of a potential impairment to fish health. In 2023, one fish health endpoint in Fourhorn Sculpin exceeded the 'Low Risk' threshold; female Fourhorn Sculpin relative gonad weight was significantly different between Milne Port and Koluktoo Bay, and the associated effect size (-31%) exceeded the CES ($\pm 25\%$) in a direction indicative of an impairment to fish health. No additional endpoints for Fourhorn Sculpin and none of the fish health endpoints for *H. arctica* exceeded TARP thresholds.

Results of fish tissue chemistry assessments were screened against the TARP criteria (Baffinland, 2023f). In 2023, concentrations of selenium in Fourhorn Sculpin and magnesium in *H. arctica* were significantly different between Milne Port and the relevant reference area (Koluktoo Bay and Tugaat River Estuary, respectively). However, the magnitudes of observed effects were below the CES ($+100\%$) or in a direction not consistent with Project-related effects. Thus, no tissue chemistry endpoints exceeded TARP thresholds in 2023.

Details of these results are presented in WSP (2024b).

TRENDS

Hydrodynamic Modelling

Not applicable

Review of Hydrology and Geomorphology of Phillips Creek

Not applicable. Review performed in 2019.

MEEMP

Marine water quality, marine sediment quality, benthic infauna community, and fish health all continue to demonstrate results within the predictions of the FEIS.

RECOMMENDATIONS / LESSONS LEARNED

Hydrodynamic Modelling

Not applicable.

Review of Hydrology and Geomorphology of Phillips Creek

Not applicable.

MEEMP

Marine water quality, and fish health sampling should be repeated in 2024 using the procedures outlined in the 2023 MEEMP Annual Report (WSP, 2024b). In 2024, sampling for sediment quality and benthic infauna will be conducted

on 8 stations that have been selected for Capesize effects monitoring. Additional stations will be sampled for benthic infauna for NIS/AIS monitoring (five (5) stations within Milne Port, potentially two (2) stations at Ragged Island if conditions permit).

Project Certificate Term and Condition No. 84

Category	Marine Environment - Shoreline Effects and Sediment Redistribution
Responsible Parties	The Proponent
Project Phase(s)	Construction and Operations
Objective	To prevent sediment redistribution along the shipping route
Term or Condition	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.
Relevant Baffinland Commitments	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	None
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Refer to PC Term and Condition No. 81 and No. 83(a). Reporting on PC Term and Condition No. 83 is covered under PC Term and Condition No. 81 and No. 83(a).

RESULTS

Refer to PC Term and Condition No. 81 and No. 83(a). Reporting on PC Term and Condition No. 83 is covered under PC Term and Condition No. 81 and No. 83(a).

TRENDS

Refer to PC Term and Condition No. 81 and No. 83(a). Reporting on PC Term and Condition No. 83 is covered under PC Term and Condition No. 81 and No. 83(a).

RECOMMENDATIONS / LESSONS LEARNED

Refer to PC Term and Condition No. 81 and No. 83(a). Reporting on PC Term and Condition No. 83 is covered under PC Term and Condition No. 81 and No. 83(a).

Project Certificate Term and Condition No. 85

Category	Marine Environment - Shoreline Effects and Sediment Redistribution
Responsible Parties	The Proponent
Project Phase(s)	Construction and Operation
Objective	To prevent sediment redistribution along the shipping route.
Term or Condition	The Proponent shall develop a monitoring plan to verify its impact predictions associated with sediment redistribution resulting from propeller wash in shallow water locations along the shipping route. If monitoring detects negative impacts from sediment redistribution, additional mitigation measures will need to be developed and implemented. In the 2023 Annual Report, the Proponent is required to identify updates to the monitoring plan to reflect the increased use of larger ore vessels (Baby Cape and Capesize) at Milne Port.
Relevant Baffinland Commitment	84
Reporting Requirement	Implementation of these measures and monitoring results shall be reported and discussed in the Proponent's annual report to the NIRB. Updated plans are expected to be submitted to the NIRB throughout the monitoring year as they are finalized.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	None
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Refer to PC Term and Condition No. 83(a). Reporting on PC Term and Condition No. 85 is covered under PC Term and Condition No. 83(a).

RESULTS

Refer to PC Term and Condition No. 83(a). Reporting on PC Term and Condition No. 85 is covered under PC Term and Condition No. 83(a).

TRENDS

Refer to PC Term and Condition No. 83(a). Reporting on PC Term and Condition No. 85 is covered under PC Term and Condition No. 83(a).

RECOMMENDATIONS / LESSONS LEARNED

Refer to PC Term and Condition No. 83(a). Reporting on PC Term and Condition No. 85 is covered under PC Term and Condition No. 83(a).

Project Certificate Term and Condition No. 86

Category	Marine Environment - Ballast Water
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To update ballast water discharge impact predictions.
Term or Condition	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.
Relevant Baffinland Commitment	85
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Not Applicable
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Marine Environmental Working Group (MEWG)
Reference	Ocean Circulation and Ballast Water Dispersal in Milne Inlet, Baffin Island (CORI, 2014) Data Report for the 2015-2016 Observational Oceanography Program in Milne Inlet (CORI, 2016) TSD 18 - Ballast Water Dispersion Modelling Report (Golder, 2018b) Ballast Water Model Validation Report (Golder, 2019a) Response to DFO Ballast Water Modelling Concerns (Golder, 2020b) 2023 MEEMP and Non-Invasive Species (NIS)/Aquatic Invasive Species (AIS) Monitoring Report (WSP, 2024b) Ballast Water Dispersion Modelling
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.6.8 Appendix G.6.12

METHODS

Ballast water dispersion modelling was initially undertaken in 2014 by Coastal and Ocean Resources Inc. (CORI) on behalf of Baffinland prior to the start of commercial shipping of iron ore at Milne Port (CORI, 2014; 2016). Model inputs were based on oceanographic data local to the region and outputs were validated with measured data collected in Milne Inlet. Modelling results were used to inform sampling sites for Baffinland's AIS monitoring program.

In 2018, ballast water dispersion modelling through Milne Inlet was undertaken (Golder, 2018b) for the Phase 2 Proposal. A three-dimensional hydrodynamic model was developed in the MIKE3 suite to assess the discharge of ballast water in Milne Inlet. This included modelling of ballast water discharges under the current Project, as well as

under Phase 2 operations. The model was calibrated and validated to oceanographic data collected in the model region in Milne Inlet (CORI, 2014).

In 2019, in response to comments from NIRB, the QIA, DFO and Parks Canada, Golder (now WSP) validated the ballast water dispersion model to observed 2018 oceanographic data and updated the model with improved wind data, Phillips Creek discharge estimates, and more spatially resolved heat-flux inputs. This involved running the model for the 2018 open-water season with measured 2018 ballast water discharge volumes, as well as temperature and salinity measurements. Sensitivity of ballast water dispersion to variations in ballast water salinity and temperature was explored through six simulations and a box model analysis was developed to assess the potential increase and/or decrease in temperature and salinity in distinct water masses due to ballast water discharge at the end of the 2018 open-water season (Golder, 2019a; 2020b).

Ballast water dispersion modelling was undertaken in 2023 to assess the potential impact of ballast water discharges associated with the use of larger ore carriers (Babycap and Capesize) in the Sustaining Operations Proposal on salinity and temperature levels in the marine environment (Appendix G.6.12). The existing ship ballast water dispersion model was used to investigate three shipping scenarios representing existing conditions and two future scenarios.

RESULTS

Results of all modelling have indicated that ballast water discharged at Milne Port is unmeasurable beyond Ragged Island, and because of dilution is negligible within 5 Km of the discharge, as predicted. Based on these results, the NIS/AIS program was designed to include some sampling at Ragged Island with the main focus at Milne Port.

TRENDS

Modelling indicates that significant long term changes in salinity / temperature structure of Milne inlet are not anticipated as a result of ballast water releases.

There is no indication that further expansion of the monitoring program is required based on the results of monitoring ballast water modelling.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 87

Category	Marine Environment - Ballast Water
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent invasive species introductions resulting from Project shipping.
Term or Condition	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.
Relevant Baffinland Commitment	85
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	Marine Environmental Working Group (MEWG)
Reference	2023 MEEMP and NIS/AIS Monitoring Report (WSP, 2024b)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.6.8

METHODS

Baffinland's Non-Indigenous Species and Aquatic Invasive Species (NIS/AIS) Monitoring Program was developed in 2015 as part of the MEEMP to detect potential NIS/AIS introduced to Milne Inlet via Project related shipping vectors such as ballast water discharges or hull biofouling. All species identified through baseline and monitoring programs at Milne Port are added to the taxonomic inventory for Milne Port. In addition to the collections of benthic infauna and epifauna, macroalgae, and fish that are conducted for MEEMP, surveys that are conducted specifically for NIS/AIS monitoring include sampling of zooplankton, fouling species on settlement substrates, and targeted benthic sampling for DNA-based investigation and detection of species of interest.

Taxa identified in samples or through direct observation are cross-checked against the taxonomic inventory for Milne Inlet. If a taxon is newly observed (i.e., not listed on the Milne Inlet Taxonomic Inventory), it is checked through a detailed literature review of species descriptions and collection records to determine documented and presumed ranges as well as compared against various databases listing NIS/AIS. Any taxa flagged as potential NIS/AIS, or with uncertainties in their ranges, are sent for independent verification of the taxonomic identification. Specimens are initially sent to a DFO-endorsed Benthic Ecology Lab at Université Laval (Quebec) for independent verification of the taxonomic identification, and subsequently to the Canadian Centre for DNA Barcoding at the University of Guelph, or a global expert specializing in the taxonomic group in question. Results and rationale for the independent verifications are reviewed and taxa undergo a detailed information gathering stage. After these steps, species may

be placed on the “Watch List” (taxa subject to a heightened level of monitoring, which may include targeted sampling for DNA analysis or population assessment) or the “Trigger List” (High-Risk taxa that are showing invasive behaviour in Milne Inlet or have shown invasive behaviour in similar ecosystems; placement of a taxon on this list triggers development of a response plan). Criteria for risk status are detailed in Section 8.3.3.1 of the MEEMP and NIS/AIS monitoring report (WSP, 2024b).

Detailed information on study design and sampling methodology is available in the annual monitoring reports for the MEEMP and NIS/AIS monitoring programs (WSP, 2024b).

RESULTS

The extensive monitoring undertaken in Milne Inlet has detected no confirmed introduced AIS. There are 1,062 taxa currently listed in the Milne Inlet Taxonomic Inventory, of which 410 have been identifiable to species.

The 2023 surveys resulted in 31 new additions to the taxonomic inventory for Milne Inlet (i.e., taxa that had not been observed in previous surveys). All new taxa had records of occurrence in the Canadian Arctic, or described ranges that were likely to include the Project area. Results remain pending for macroflora identifications, as well as genetic analysis of macroflora and animal taxa.

Additionally, NIS/AIS monitoring in 2023 collected five taxa that had been placed on the Watch List in previous years due to uncertainties in their natural range or because they were listed in an existing AIS database (the polychaetes *Marenzelleria* sp., *Hesperonoe* sp., *Sosane wireni*, and *Paramphitrite birulai*, as well as the amphipod *Crassikorophium* sp.). No other Watch List taxa (or potential taxa based on higher level taxonomic identifications) were observed in 2023. Specimens of *Hesperonoe* sp. were sent to taxonomic experts for independent verification along with specimens collected in 2022, results remain pending. All other Watch List taxa had been previously sent for independent verification with specialists and the newly collected specimens were not submitted for additional review, as further resolution was unlikely. Distribution and abundance of each Watch List taxon was compared to previous years to identify meaningful trends in abundance or distribution since the taxon was first observed in Milne Port that may signal the onset of invasive behaviours. No trends signalling potential invasive behaviours were observed.

Two algal specimens collected in 2022 that were identified as cf. *Punctaria latifolia* and cf. *Stictyosiphon soriferus* and were flagged for further review will be sent for independent identification to Dr. Gary Saunders at University of New Brunswick, along with macroalgal specimens from 2023. An unidentified Bryophyta from 2022 was sent to an expert for further identification. Results of these independent reviews remain pending.

No new taxa were added to the Watch List in 2023, while one taxon (*Sosane wireni*) was removed due to records indicating a probable range that extends to the Eastern Canadian Arctic. Following this change, the Watch List consisted of eight taxa. There are no species on the Trigger List.

Overall, the identification and flagging of individual taxa out of the hundreds identified in Milne Inlet indicate the NIS/AIS surveillance program is effective and functioning as intended.

TRENDS

The NIS/AIS program represents the most comprehensive monitoring program for NIS/AIS conducted by a marine port in Canada. The inventory of marine organisms (macroalgae, invertebrates, fish and fish parasites) residing in Milne Port and Milne Inlet currently consists of 1,062 taxa (410 identified to species). The vast majority of these taxa

have been designated as “No Risk” and are not considered to be of concern. There are eight taxa on the Project Watch List and no taxa on the Trigger List. To date, no Project-related introduction of a NIS/AIS species have been documented at Milne Port. There is one range expansion of a fish species into Milne Inlet that is not Project-related.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to sample cross multiple trophic levels, including the expanded zooplankton sampling program in 2024. Continue expanding the Milne Inlet taxonomic inventory and screening all new observations to evaluate geographic range and NIS/AIS status. Continue collecting and reviewing genetic evidence for *Marenzelleria* sp. and *Monocorophium* sp., in addition to macroflora, bryozoan, and tunicate taxa in general, including targeted sampling to obtain specimens for DNA barcoding to further resolve these taxonomic groups in Milne Port.

Project Certificate Term and Condition No. 88

Category	Marine Environment - Ballast Water
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To prevent invasive species introductions resulting from Project shipping.
Term or Condition	<p>Prior to commercial shipping of iron ore and in conjunction with the Marine Environment Working Group, the Proponent shall provide an updated risk analysis regarding ballast water discharge to assess the adequacy of treatment and implications on the receiving environment. This risk analysis shall consider, but not be limited to:</p> <ul style="list-style-type: none"> a. Invasive species b. Seasonal oceanography c. Ballast water quality and quantity d. Receiving water quality; e. Residual physical, chemical, and/or biological effects; and f. Any risk assessment analysis regarding ballast water exchange and treatment efficacy in arctic waters
Relevant Baffinland Commitment	85, 86
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	<p>Southern Transportation Corridor (Steensby Port) – Not Active</p> <p>Northern Transportation Corridor (Milne Port) – Active</p>
Status of Compliance	<p>Southern Transportation Corridor (Steensby Port) – Not Applicable</p> <p>Northern Transportation Corridor (Milne Port) – In Compliance</p>
Stakeholder Review	Marine Environment Work Group (MEWG)
Reference	<p>Risk assessment for ship-mediated introductions of aquatic nonindigenous species to the Canadian Arctic (Chan et al., 2012)</p> <p>Risk Assessment for Potential Introduction of Aquatic Nonindigenous Species through Ballast Water Discharge at Milne Port (SEM, 2013)</p> <p>International Convention for the Control and Management of Ships' Ballast Water and Sediments, 2004 (Convention; International Maritime Organization [IMO], 2017)</p> <p>Ballast Water Regulations (SOR/2021-120) (Transport Canada, 2023)</p> <p>Ballast Water Management Plan (Baffinland, 2019d, 2023h)</p> <p>Mary River Project – Addendum to the Final Environmental Impact Statement. (Baffinland, 2013a)</p> <p>2023 MEEMP NIS/AIS Report (WSP, 2024b)</p> <p>Mary River Project– Risk Assessment for Introduction of Aquatic Invasive Species from Ballast Water and Hull Fouling (WSP, 2024d)</p>
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.1 Appendix G.6.8 Appendix G.6.11

METHODS

In order to establish the relative risk of introduction of Aquatic Invasive Species (AIS) through ballast water exchange prior to commercial shipping of iron ore, the Milne Port activities associated with the Early Revenue Phase were subjected to a semi-quantitative risk assessment (SEM, 2013) using methods developed by DFO (Chan et al., 2012).

An updated risk assessment of AIS introductions from ballast water was developed in 2023 for the Sustaining Operations Proposal, considering an existing shipping scenario and two future shipping scenarios including the use of larger ore carriers (WSP, 2024d; Appendix G.6.11). The assessment took into account Baffinland's Ballast Water Management Plan (Baffinland, 2019d; 2023h, WSP 2024d; Appendix G.6.11), the proportion of ore carriers equipped with a D-2 standard ballast water management system in 2022, ports of origin of the ore carriers, climatic and biological (including AIS lists) characteristics of the originating and receiving waters, volume of ballast water being discharged, hull surface area, and literature-derived estimates of the density and biodiversity of organisms carried in ballast waters or on ship hulls.

Baffinland's Ballast Water Management Plan (Baffinland, 2019d; 2023h) exceeds federal ballast water regulatory requirements by voluntarily conducting ballast water compliance monitoring and because Project vessels are required by Baffinland to conduct a mid-ocean ballast water exchange as required by Transport Canada (2023), followed by ballast water treatment in the case of vessels which are equipped with a D-2 standard ballast water management system. Prior to ballast water discharge, all ore carriers calling on Milne Port have one of their ballast tanks randomly sampled to measure temperature and salinity thereby verifying compliance with the Ballast Water Regulations and International Maritime Organization's (IMO's) D-1 standards (Transport Canada, 2023; IMO, 2017).

RESULTS

The results presented in Appendix 8B-4 of the Early Revenue Phase Addendum to the FEIS (Baffinland, 2013a) indicated that the risk of ballast water-mediated AIS introductions at Milne Port due to Early Revenue Phase shipping operations was low (Invasion Risk categorized as 'Lowest' on a relative risk scale of Lowest-Lower-Intermediate-Higher-Highest).

The analysis conducted in 2023 determined that the overall risk (probability of introduction and magnitude of consequences) on a relative risk scale of lower-intermediate-higher was lower for ballast water-mediated introductions under the Early Revenue Phase and intermediate for the two future scenarios under the SOP (WSP, 2024d; Appendix G.6.11). Elements of the risk assessment were associated with a moderate to higher level of uncertainty given the limited data/information available. Precautionary assumptions were incorporated into the risk assessment. For instance, salinity was not considered on a port-by-port basis, given that the salinity of ballast water sampled upon arrival at Milne Port consistently exceeded 30 parts per thousand and all vessels had to undertake an extended ocean voyage to reach Milne Port. The magnitude of risk was based on numbers of AIS described in broad ecoregions, which may overestimate the AIS present in each port of origin. Where there was uncertainty as to whether an AIS could utilize a ballast water vector, it was assumed that the vector was available to that AIS. It is possible that the conclusions of this risk assessment overstate the risk. Shipping at levels approximating those proposed in the two SOP scenarios has occurred for several years at Milne Port (with a maximum of 81 vessel arrivals in 2017) and no AIS introductions have been detected by Baffinland's NIS/AIS monitoring program (WSP, 2024d; Appendix G.6.11). To date, vigorous monitoring has detected one natural range expansion of a fish. Species for which there is uncertainty in the taxonomy (i.e., collected specimens could not be identified to species) or geographic range are targeted for ongoing monitoring as a precautionary measure. The taxonomic inventory for Milne Port is re-

evaluated and updated annually as additional data are collected by monitoring programs conducted by Baffinland at Milne Port, specifically the Marine Environmental Effects Monitoring Program and NIS/AIS Program.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

It is recommended that NIS/AIS monitoring through the marine environmental effects monitoring program continue to be conducted on an annual basis.

Additionally, Baffinland is collaborating with DFO to develop a risk-based approach for biological ballast water sampling. A pilot program was implemented and sampled ballast tanks of incoming ore carriers at Milne Port in 2023. An updated risk assessment for ballast water as a vector for NIS/AIS will be conducted following completion of the biological ballast water study.

Project Certificate Term and Condition No. 89

Category	Marine Environment - Ballast Water
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent impacts to marine water quality resulting from ballast water exchange.
Term or Condition	The Proponent shall develop and implement an effective ballast water management program that may include the treatment and monitoring of ballast water discharges in a manner consistent with applicable regulations and/or exceed those regulations if they are determined to be ineffective for providing the desired and predicted results. The ballast water management program shall include, without limitation, a provision that requires ship owners to test their ballast water to confirm that it meets the salinity requirements of the applicable regulations prior to discharge at the Milne Port, and a requirement noting that the Proponent, in choosing shipping contractors will, whenever feasible, give preference to contractors that use ballast water treatment in addition to ballast water exchange.
Relevant Baffinland Commitment	57, 87
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Transport Canada, Marine Environmental Working Group (MEWG)
Reference	Ballast Water Management Plan (BWMP; Baffinland, 2019d, 2023h) International Convention for the Control and Management of Ships' Ballast Water and Sediments (IMO, 2017) Discussion paper: Canadian implementation of the ballast water convention (Transport Canada, 2012)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Control-and-Management-of-Ships'-Ballast-Water-and-Sediments-(BWM).aspx

METHODS

In response to the threat of the introduction and spread of non-native species through ballast water, the International Maritime Organization (IMO) adopted the International Convention for the Control and Management of Ships' Ballast Water and Sediments (i.e., the Ballast Water Management (BWM) Convention). The BWM Convention was ratified and entered into force on September 8, 2017. Under the BWM Convention, all ships are required to have an International Ballast Water Management Certificate, their own Ballast Water Management Plan (BWMP), and a comprehensive record of ballast water exchange and monitoring results recorded in an on-board ballast water record book (with a detailed record of when ballast water is taken on board, when it is circulated or

treated for BWM purposes, and when it is discharged into the ocean). Ships also need to record accidental or other exceptional discharges of ballast water to the marine environment.

The BWM Convention includes two performance standards for the discharge of ballast water: D-1 and D-2. The D-1 standard concerns ballast water exchange, which must be undertaken within open ocean areas, defined as waters >200 nautical miles from land and in seas >2,000 m deep. The D-2 standard covers approved ballast water treatment systems. All ships entering Canadian waters must currently meet the D-1 standard while requirements for meeting the D2 standard are phased, but must occur no later than September 8, 2024.

The D-2 standard (treatment) specifies a maximum number of organisms and indicator microbes that are allowed to be discharged to the receiving marine environment according to the schedule set by the IMO. At this point in time, sampling and analysis methodologies to test for compliance with the D-2 standard have not been fully developed by the IMO. It is acknowledged in the IMO guidelines that although significant technical advances and refinements have been made in this area since the adoption of the Convention, there are still numerous issues to be resolved. Administrations are still undertaking research to define the most appropriate methods to test for compliance, and the best way to collect, handle and analyze samples. However, it is expected that in due course, appropriate guidance will become available once full compliance testing regimes are developed and the applicable regulators have had time to gain experience and develop best practice in ballast water sampling and analyses.

Baffinland developed a comprehensive, stand-alone BWMP that is reflective of its current (Baffinland, 2019d) and future (Baffinland, 2023h) shipping operations. The BWMP includes information on applicable legislation, program objectives, monitoring responsibilities, sampling equipment specifications, detailed technical procedures for sampling and analyses, comprehensive QA/QC procedures, and adaptive management measures for implementation during non-compliance events. The BWMP identifies procedures to manage and monitor ship ballast water in a manner consistent with applicable regulations, guidelines, and terms and conditions of the Project Certificate. The BWMP includes a Standard Operating Procedure which provides instructions for salinity testing of ballast water tank on carriers calling at Milne Port.

As a matter of due diligence, Baffinland, as stipulated in its BWMP (Baffinland, 2023h), conducts voluntary ballast water sampling in one randomly selected ballast water tank on all ore carriers arriving at Milne Port prior to ballast water discharge to verify their compliance with the Regulations and the IMO's D-1 standard.

In 2023, all bulk carriers that called at Milne Port during the shipping season were boarded by a Baffinland representative trained in the procedure detailed in the BWMP, who conducted salinity testing of the ship's ballast water before it was approved for release in Milne Port and before loading of the carrier could begin. In these instances, a single ballast tank on the vessel was tested for salinity concentration using a calibrated water quality meter (i.e., YSI Pro 30) to confirm that ballast water salinity levels were above 30‰ (parts per thousand, ppt), prior to being authorized by the port captain to discharge in Milne Port. Salinity levels were consistent with mid-ocean exchange requirements for vessels conducting a transoceanic voyage (salinity of seawater in the mid-Atlantic Ocean, where open-water exchange takes place, is typically in the range of 34-35‰).

It is important to note that the ship operators/owners are the responsible party for ensuring their ships are compliant with federal ballast water regulations and the BWM Convention. There are no specific legal obligations on the part of port and harbour authorities in relation to overseeing ballast water management or treatment procedures on behalf of the ship owner/operators, including for testing of ballast water or reporting ballast water readings to the federal authority. Baffinland's voluntary ballast water compliance monitoring represents a level of monitoring that

exceeds all federal (Transport Canada, 2012) and international (IMO, 2017) regulatory requirements related to ballast water management, and surpasses management practices currently implemented at any marine port in Canada.

RESULTS

In 2023, 38 of the 39 unique ore carriers (97%) that serviced Milne Port had IMO-approved D-2 ballast water treatment systems installed onboard. As most vessels conducted repeat voyages to Milne Port during the 2023 shipping season, this resulted in 74 of the 75 ore carrier voyages having completed both ballast water exchange and treatment methods prior to releasing their ballast water in the RSA (i.e., representing 97% of all ore carriers that called to Milne Port and 99% of all voyages in 2023).

All of the bulk carriers servicing Milne Port during the 2023 shipping season conducted mid-ocean ballast water exchange as required by federal Ballast Water Control and Management Regulations (D-1 standard). All vessels with D-2 treatment systems completed ballast water treatment, and all of these vessels completed both a mid-ocean ballast water exchange and a ballast water treatment prior to releasing ballast waters.

Ballast water salinity was measured in all ore carriers (n=75) that called to Milne Port for all transits in 2023. Results are presented in Table 4.23. Salinity measurements for most carriers ranged between 30.7‰ to 36.2‰, which was compliant with federal Ballast Water Regulations (>30.0‰).

Table 4.23: 2023 Vessel Ballast Water Salinity Test Results Prior to Discharge in Milne Port

Vessel	Date	Salinity (‰)	Tank Tested
Nordic Qinnua Voyage 1	August 13, 2023	34.0	CH #4
Nordic Siku Voyage 1	August 14, 2023	33.5	CH #4
Flag Mette Voyage 1	August 16, 2023	32.7	DBTS 4S
Golden Suek Voyage 1	August 17, 2023	33.6	DBTS 4P
Nordic Olympic Voyage 1	August 18, 2023	33.0	CH #4
Nordic Orion Voyage 1	August 19, 2023	34.3	CH #4
Golden Diamond Voyage 1	August 20, 2023	32.7	CH #3P
Nordic Odin Voyage 1	August 20, 2023	33.4	CH #4
Nordic Oshima Voyage 1	August 21, 2023	32.8	CH #4
Nordic Oasis Voyage 1	August 23, 2023	32.2	CH #4
Nordic Sanngijuq Voyage 1	August 22, 2023	33.2	CH #4
Golden Brilliant Voyage 1	August 25, 2023	33.3	#3 Boat
Hauke Oldendorff Voyage 1	August 26, 2023	33.3	DBTS 5S
Golden Amber Voyage 1	August 26, 2023	30.9	TBTS #3P
Patricia V Voyage 1	August 28, 2023	33.0	CH # 4
Golden Ruby Voyage 1	August 31, 2023	32.8	TS/DB 4P
Golden Freeze Voyage 1	August 31, 2023	32.8	DB TS 4S
Sagar Samrat Voyage 1	September 1, 2023	32.8	CH # 4
Kumpula Voyage 1	September 2, 2023	34.2	4P

Vessel	Date	Salinity (‰)	Tank Tested
Golden Furious Voyage 1	September 3, 2023	33.7	CH #4
Golden Frost Voyage 1	September 3, 2023	33.4	CH #4
Golden Fortune Voyage 1	September 4, 2023	32.8	DB+TS 4 P/S
Heide Oldendorff Voyage 1	September 5, 2023	32.9	TS DB 5P
Golden Fast Voyage 1	September 6, 2023	30.7	4 TS P
Georg Oldendorff Voyage 1	September 9, 2023	31.5	CH#4
Golden Bull Voyage 1	September 9, 2023	31.3	DB 4 P/S
AM Ghent Voyage 1	September 10, 2023	31.9	DB 4P
Rixta Oldendorff Voyage 1	September 10, 2023	30.8	WBT 4 P
Lowlands Hope Voyage 1	September 11, 2023	32.7	DB #4 P/S
Regina Oldendorff Voyage 1	September 13, 2023	33.9	WBT 4 S
AM Krakow Voyage 1*	September 14, 2023	32.7	CH#4
Golden Forward Voyage 1	September 14, 2023	32.0	CH#4
Nordic Nuluujaak Voyage 2	September 15, 2023	33.6	CH#4
Nordic Odyssey Voyage 2	September 16, 2023	32.9	CH#4
Golden Opal Voyage 2	September 17, 2023	33.2	DBTS 4P
Flag Mette Voyage 2	September 18, 2023	32.3	DB/TS #3/4P
Nordic Olympic Voyage 2	September 19, 2023	32.8	CH#4
Nordic Orion Voyage 2	September 20, 2023	33.0	TS #1 P
Nordic Odin Voyage 2	September 21, 2023	31.0	WBT 5/6P
Elena Ve Voyage 1	September 21, 2023	32.9	3P
Nordic Oshima Voyage 2	September 22, 2023	33.5	CH#4
Golden Brilliant Voyage 2	September 23, 2023	33.7	DBTS #35
Golden Diamond Voyage 2	September 24, 2023	34.2	TS/DB 3P
Nordic Qinngua Voyage 2	September 25, 2023	34.7	CH#4
Hauke Oldendorff Voyage 2	September 26, 2023	34.7	DB/TS 6P
Nordic Siku Voyage 2	September 29, 2023	35.2	CH#4
Gisela Oldendorff Voyage 1	October 1, 2023	33.5	CH#4
Patricia V Voyage 2	October 2, 2023	33.8	CH#4
Golden Freeze Voyage 2	October 2, 2023	33.6	CH#4
Nordic Oasis Voyage 2	October 4, 2023	33.3	CH
Golden Ruby Voyage 2	October 3, 2023	33.9	TS DB 3P
Golden Frost Voyage 2	October 6, 2023	33.8	CH#4
Sagar Samrat Voyage 2	October 5, 2023	32.6	CH#4
Golden Furious Voyage 2	October 7, 2023	31.5	CH#4
Golden Amber Voyage 2	October 9, 2023	32.9	DB/TS 3P
Kumpula Voyage 2	October 10, 2023	33	#3P
Golden Fast Voyage 2	October 10, 2023	33.6	CH#4
Nordic Sanngijuq Voyage 2	October 11, 2023	33.4	CH#4

Vessel	Date	Salinity (‰)	Tank Tested
Golden Bull Voyage 2	October 12, 2023	33.8	DB/TS 3P
Gretke Oldendorff Voyage 1	October 13, 2023	33.3	CH#4
Despina V Voyage 1	October 14, 2023	34.5	CH#4
Georg Oldendorff Voyage 2	October 16, 2023	35.7	TB/BS 5/6 P
Nordic Odyssey Voyage 3	October 17, 2023	35.3	CH#4
Nordic Odin Voyage 3	October 18, 2023	36.2	CH # 4
Flag Mette Voyage 3	October 18, 2023	33.2	DB/TS 3+4P
Nordic Olympic Voyage 3	October 19, 2023	33.6	CH # 4
Nordic Nuluujaak Voyage 3	October 19, 2023	33.3	CH # 4
Nordic Orion Voyage 3	October 20, 2023	33.2	CH # 4
Nordic Oshima Voyage 3	October 21, 2023	32.9	CH # 4
Elena Ve Voyage 2	October 25, 2023	31.1	DB 3S
Nordic Qinnngua Voyage 3	October 26, 2023	33.6	CH # 4
Nordic Siku Voyage 3	October 29, 2023	33.3	CH 4

Notes:

* AM Krakow was the only vessel in 2023 to not have a ballast water treatment system on board. This vessel undertook ballast water exchange prior to releasing ballast water in Milne Port. All other vessels that called to Milne Port that had an IMO-approved ballast water treatment system installed, and all undertook ballast water exchange followed by ballast water treatment prior to releasing ballast water. CH= Cargo Hold; DB = Double bottom; TS = Top side; P = Port side; S = Starboard side; WBT = Water ballast tank.

TRENDS

All ships arriving at Milne Port in 2023 were compliant with either the D-1 standard or the D-2 standard of the BWM Convention. An increase in the number of vessels calling to Milne Port with the approved D-2 treatment systems installed onboard occurred annually (99% of carrier voyages compared to 90% in 2022, 73% in 2021, and 58% in 2020). Compliance monitoring data indicate that the current ballast water management measures, as outlined in Baffinland's BWMP, have been effective in protecting the marine environment from ballast-mediated introductions.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to implement and, as necessary, update the BWMP to maintain and/or exceed compliance with Canadian and international ballast water regulations.

Project Certificate Term and Condition No. 90

Category	Marine Environment - Ballast Water
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To prevent impacts to marine water quality resulting from ballast water exchange.
Term or Condition	The Proponent shall incorporate into its Shipping and Marine Mammal Management Plan provisions to achieve compliance with the requirements under the International Convention for the Control and Management of Ship's Ballast Water and Sediment (2004) or its replacement and as implemented by the Canadian Ballast Water and Control Regulations as may be amended from time to time.
Relevant Baffinland Commitment	57
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Transport Canada, Marine Environment Working Group (MEWG)
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Refer to PC Term and Condition No. 89. Reporting on PC Term and Condition No. 90 is covered under PC Term and Condition No. 8.

RESULTS

Refer to PC Term and Condition No. 89. Reporting on PC Term and Condition No. 90 is covered under PC Term and Condition No. 8.

TRENDS

Refer to PC Term and Condition No. 89. Reporting on PC Term and Condition No. 90 is covered under PC Term and Condition No. 8.

RECOMMENDATIONS / LESSONS LEARNED

Refer to PC Term and Condition No. 89. Reporting on PC Term and Condition No. 90 is covered under PC Term and Condition No. 8.

Project Certificate Term and Condition No. 91

Category	Marine Environment - Ballast Water
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To prevent impacts to marine water quality in Steensby Inlet and Milne Inlet.
Term or Condition	The Proponent shall develop a detailed monitoring plan for Steensby Inlet and Milne Inlet for fouling that complies with all applicable regulatory requirements and guidelines as issued by Transport Canada, and includes sampling areas on ships where antifouling treatment is not applied such as the areas where non-native species are most likely to occur.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Transport Canada, Marine Environmental Working Group (MEWG)
Reference	Draft Shipping and Marine Wildlife Management Plan (SMWMP; Baffinland, 2022d) 2023 MEEMP and AIS Monitoring Program Report (WSP, 2024b)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.6.8

METHODS

To date, no regulatory requirement or guideline for monitoring hull fouling have been issued by Transport Canada. Transport Canada does support the International Maritime Organization's Guidelines for the control and management of ships' biofouling to minimize the transfer of aquatic invasive species but these are voluntary guidelines.

Mitigation for hull fouling is implemented for all vessels calling on Milne Inlet and for all international vessels. As outlined in the Draft Shipping and Marine Wildlife Management Plan (SMWMP; Baffinland, 2022d), in order to reduce or eliminate the risk of invasive aquatic species and pathogens being introduced into Canadian waters as a result of ship hull biofouling, an anti-fouling coating will be applied to the hulls of all Project vessels that will arrive and depart from Milne Port. Baffinland is committed to ensuring all vessels procured for the Project comply with the IMO International Convention on the Control of Harmful Anti-fouling Systems on Ships as well as the Pest Management Regulatory Agency of Canada and Regulations for the Prevention of Pollution from Ships and for Dangerous Chemicals (2007-86). As the iron ore carriers commissioned for operations will exceed 400 gross tonnes and will be undertaking international voyages, these vessels will require an International Anti-fouling System Certificate.

Ship hull biofouling monitoring was undertaken in Milne Port over a three-year period (2018 to 2020) in Milne Port as part of Baffinland's Non-Invasive Species (NIS)/Aquatic Invasive Species (AIS) program. This consisted of conducting underwater video surveys of the hulls of several ore carriers per season using a Remotely Operated

Vehicle (ROV) based underwater video system. Video footage was subsequently reviewed by qualified marine biologists to identify potential biofouling species to the lowest practical taxonomic level including potential NIS/AIS.

As outlined in the update for PC Term and Condition No. 87, in addition to ship hull monitoring during 2018-2020, multi-trophic monitoring (zooplankton, macroflora, benthic epifauna and infauna, and fish) has been conducted since 2014 to detect potential NIS/AIS introductions. Additionally, settlement substrates (settlement plates and baskets) have been deployed for NIS/AIS detection, specifically targeting the detection of organisms that may foul surfaces.

RESULTS

Ship hull surveys were not conducted during the 2023 open water season. The 2023 MEEMP (WSP, 2024b) and NIS/AIS surveys resulted in 31 new additions to the taxonomic inventory for Milne Inlet (i.e., taxa that had not been observed in previous surveys; WSP, 2024b; Appendix G.6.8). All new taxa had records of occurrence in the Canadian Arctic, or described ranges that were likely to include the Project area. Results remain pending for macroflora identifications as well as genetic analysis of macroflora and animal taxa. No new taxa were added to the Watch List (a list of taxa subject to heightened monitoring) in 2023, while one taxon (*Sosane wireni*) was removed due to records indicating a probable range that extends to the Eastern Canadian Arctic. Following this change, the Watch List consisted of eight taxa. There are no species on the Trigger List (a list of NIS species determined to exhibit or to present high risk of AIS behaviours in Milne Inlet, triggering development of a Rapid Response Plan).

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

It is recommended that monitoring for NIS/AIS presence continue to be conducted annually under the MEEMP and NIS/AIS program.

Project Certificate Term and Condition No. 92

Category	Marine Environment – Spill Prevention
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operation, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To ensure adequate spill response capacity.
Term or Condition	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.
Relevant Baffinland Commitment	10, 108, 110
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	Marine Environmental Working Group (MEWG)
Reference	Emergency Response Plan (Baffinland, 2020j) Spill Contingency Plan (Baffinland, 2021h) Oil Pollution Emergency Plan – Milne Inlet (Baffinland, 2023j) Spill at Sea Response Plan (Baffinland, 2015)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.8.5

METHODS

Baffinland has developed and maintained appropriate contingency plans to respond to spills on land, at Milne Port, and at sea. The plans outline the equipment to be used in the event of a spill, as well as the roles and responsibilities and necessary training to maintain appropriately trained personnel. Oil Pollution Emergency Response (OPEP; (Baffinland, 2023j)) training and spill response exercises are conducted annually. Timing of the training corresponds with ship-to-shore fuel transfer events at Milne Port. In 2023, training of Baffinland staff on its Oil Pollution Prevention Plan (OPPP; Baffinland, 2024i) and OPEP was conducted by spill response consultant Navenco Marine from July 14 to 16, 2023. The training encompassed classroom and hands-on spill response techniques, including a mock exercise for potential port oil spills during ship-to-shore transfer. In addition to the training, an audit was completed by Navenco Marine to confirm that Baffinland's spill response equipment and training requirements were in compliance with the OPEP and Transport Canada regulations for Baffinland's Class 2 Oil Handling Facility. General land-based spill response training is periodically reviewed with the Mine Rescue Team; however, this does not apply to the OPEP. Baffinland also maintains a contract with Oil Spill Response Ltd. (OSRL) for emergency response in the event of a marine spill.

RESULTS

Not applicable.

Transport Canada Marine Safety and Security (TCMSS) did not conduct an inspection of Baffinland's Class 2 Milne Inlet Oil Handling Facility in 2023.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Annual spill response training will be continued prior to the arrival of fuel vessels and unloading of fuels

Project Certificate Term and Condition No. 93

Category	Marine Environment - Spill Prevention
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To prevent impacts to the marine environment at Steensby Inlet.
Term or Condition	Prior to construction, based on vessel selection and if so required, the Proponent shall reassess the risk analysis of using vessel-based fuel storage, including the potential environmental impacts of containment failure under a range of winter ice conditions, how a spill might spread and the impact of fuel if it does not volatilize to the atmosphere.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable
Stakeholder Review	Not applicable
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Not Applicable. The use of vessel-based fuel storage is not currently active.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 94

Category	Marine Environment - Spill Prevention
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To promote public awareness of Project activities.
Term or Condition	The Proponent shall consult directly with affected communities regarding its plans for over-wintering of fuel in Steensby Inlet, with discussion topics to include descriptions of the duration of proposed activities, vessel type, spill preparedness and emergency response protocols, environmental impact predictions and answers to community member questions.
Relevant Baffinland Commitment	106
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable
Stakeholder Review	Communities of Sanirajak and Igloolik
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Not Applicable. Overwintering of fuel in Steensby Inlet is not currently active.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 95

Category	Marine Environment - Spill Prevention
Responsible Parties	The Proponent, Transport Canada
Project Phase(s)	Construction
Objective	To prevent impacts to the marine environment at Steensby Inlet.
Term or Condition	The Proponent shall meet or exceed all regulatory regulations and requirements as apply to the practice of overwintering a fuel vessel at Steensby Inlet, with reporting to the NIRB and Transport Canada.
Relevant Baffinland Commitment	8
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable
Stakeholder Review	Not applicable
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Not applicable. Overwintering of fuel in Steensby Inlet is not currently active.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 96

Category	Marine Environment - Spill Prevention
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To ensure adequate oversight of Project activities is occurring.
Term or Condition	The Proponent will update the NIRB on the results of all compliance monitoring and site inspections undertaken by government agencies for the overwintering of a fuel vessel in Steensby Inlet.
Relevant Baffinland Commitment	8
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable
Stakeholder Review	Not applicable
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Not applicable. Overwintering of fuel in Steensby Inlet is not currently active.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 97

Category	Marine Environment - Spill Prevention
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To prevent impacts to the marine environment along the shipping route.
Term or Condition	<p>Prior to the commercial shipping of iron ore, the Proponent shall conduct fuel spill dispersion modeling that will, at a minimum, consider:</p> <ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> Pinch points; The approaches into Steensby Inlet and Milne Inlet; 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. Open water and, where applicable, ice-covered conditions <ol style="list-style-type: none"> Spill volumes up to and including loss of a full tanker cargo 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
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	<p>Southern Transportation Corridor (Steensby Port) – Not Active</p> <p>Northern Transportation Corridor (Milne Port) – Active</p>
Status of Compliance	<p>Southern Transportation Corridor (Steensby Port) – Not Applicable</p> <p>Northern Transportation Corridor (Milne Port) - In Compliance</p>
Stakeholder Review	Transport Canada Marine Safety. Canadian Coast Guard
Reference	<p>Milne Inlet Spill Modelling Report Fuel Spill Modelling: Northern Shipping Route Open Water Season – Milne Inlet, Eclipse Sound, Pond Inlet (AMEC Foster Wheeler, 2015)</p> <p>Spill at Sea Response Plan (Baffinland, 2015)</p>
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Revised oil spill modelling was conducted for shipping from Milne Port in 2015. Leading up to this modelling, a fuel spill preparedness workshop was held in April 2014 with Transport Canada (TC) and the Canadian Coast Guard. This workshop established the following credible spill scenarios for modelling:

- For arctic diesel - two (2) compartments of a double-hull, multi-compartment fuel tanker, which amounts to 4,000 m³ (4 mL). The expected maximum size of the fuel tanker is 15 mL.
- For IFO - half of the Intermediate Fuel Oil (IFO) fuel remaining in the ship when sailing into Milne Inlet which amounts to 2,000 m³ (2 mL) of IFO.

The spill assessment considered the open water season, and the month of September was selected as representative in terms of meteorological and oceanographic conditions. Five (5) potential spill locations along the Northern Shipping Route were selected considering community recommendations.

Two (2) scenarios were modelled at each of the five (5) locations using the software OST, which computes spill probability distributions to indicate geographical regions (e.g., Pond Inlet, Eclipse Sound, Navy Board Inlet and Milne Inlet) which might be affected as a result of a spill, how frequently and how soon.

In addition, ten (10) (two fuel types x five (5) locations) simulations were run with a September 'P50' wind condition defined as the average wind speed conditions and the associated most frequent wind direction. Finally, a sensitivity run considering a full fuel tanker loss of 15 mL arctic diesel cargo at a location in Eclipse Sound was also prepared. For these scenarios, RPS ASA's OILMAP was used to provide additional estimation of spill weathering and fate. This includes slick characteristics, estimate of fuel concentrations in the surface layer, amounts evaporated and that have reached shore, and remaining amounts of fuel, and fuel and water (mousse) volume. The spill modelling completed in this study assumes no intervention, response or containment and that the slick is assumed to freely discharge (during a very short duration) from the damaged vessel.

The OILMAP oil spill model and response system introduced above was used to provide additional estimates of spilled fuel fate, in particular, slick characteristics and weathering. OILMAP calculates the evaporation, dispersion and remaining percentage for a given spill scenario where the user defines a fuel product type, weather conditions, properties of the receiving water, and the amount of fuel released.

The fate or weathering processes considered were; evaporation, the conversion of liquid fuel into gaseous component; and natural dispersion, the breakup of a fuel slick into small droplets that are mixed into the sea by wave action. These are two important weathering processes that typically occur over the first five (5) days following a spill and act to remove fuel from the sea surface. Fuel will also be brought to shore depending on the prevailing currents and winds at the time as well as the type and amount of fuel, and type of shoreline. Consideration of the amounts lost due to these processes yields an estimate of the remaining amount of fuel on the surface at any time. These are the key fates modeled and tracked by OILMAP. No containment or recovery of spilled fuel was assumed in the simulations.

Further spill modelling was carried out in 2018 for shipping activities along the Northern Shipping Route from Baffin Bay through Pond Inlet, Eclipse Sound, and Milne Inlet that could be occurring in the presence of ice.

Two (2) spill scenarios are included that release 1 mL of intermediate fuel oil from an ore carrier at locations along the Northern Shipping Route. These include a mid-July sea ice break-up scenario in Eclipse Sound and a mid-October sea ice freeze-up scenario at the mouth of Milne Inlet. A spill distribution probability map for each spill scenario location is presented showing the probability that fuel would reach any particular location on the map, should a spill occur.

For the mid-July scenario at Eclipse Sound, the majority of the simulated trajectories reach shore. For these scenarios, ice temporarily keeps the fuel offshore and delays any drift to the shorelines. As the break-up season progresses, the spill trajectories spend increasingly more time in ice of lesser concentrations, approaching open water. For the mid-October scenario, the number of trajectories reaching shore decreases steadily as freeze-up progresses. The ice keeps the fuel offshore and effectively traps the fuel in the ice as it freezes.

RESULTS

The spill modelling results highlight the importance of spill prevention and fuel spill response plan preparedness to minimize any adverse effects in the unlikely event of a fuel release of any size during vessel traffic into Milne Inlet. The 2015 spill model informed the development of Baffinland's Spill at Sea Response Plan (Baffinland, 2015). While the 2018 spill model informed an update the Baffinland's Spill at Sea Response Plan.

See also PC Term and Condition No. 98 and 176.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

The spill modelling results highlight the importance of spill prevention, the OPPP and the Spill at Sea Response Plan preparedness to minimize any adverse effects in the unlikely event of a fuel release of any size during vessel traffic into Milne Inlet.

The Spill at Sea Response Plan was updated to append the results of additional fuel spill modelling carried out in 2018. The OPPP and OPEP for ship to shore fuel transfers at Milne Port are updated on an annual basis and approved by Transport Canada.

Project Certificate Term and Condition No. 98

Category	Marine Environment - Spill Prevention
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To prevent impacts to the marine environment along the shipping route.
Term or Condition	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.
Relevant Baffinland Commitment	11, 106
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	Transport Canada Marine Safety, Canadian Coast Guard
Reference	Milne Inlet Spill Modelling Report Fuel Spill Modelling: Northern Shipping Route Open Water Season – Milne Inlet, Eclipse Sound, Pond Inlet (AMEC Foster Wheeler, 2015) Spill at Sea Response Plan (Baffinland, 2015)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

See PC Term and Condition No.98 and No.176

RESULTS

The modelling results from the 2015 report (AMEC Foster Wheeler, 2015) were presented in a series of figures showing expected spill trajectories after one (1) day and five (5) days. The spill model informed the development of Baffinland's Spill at Sea Response Plan (Baffinland, 2015). Further spill modelling was carried out in 2018 for shipping activities along the Northern Shipping Route from Baffin Bay through Pond Inlet, Eclipse Sound, and Milne Inlet that could be occurring in the presence of ice.

Two (2) spill scenarios are included that release 1 mL of intermediate fuel oil from an ore carrier at locations along the Northern Shipping Route. These include a mid-July sea ice break-up scenario in Eclipse Sound and a mid-October sea ice freeze-up scenario at the mouth of Milne Inlet. A spill distribution probability map for each spill scenario location is presented showing the probability that fuel would reach any particular location on the map, should a spill occur.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

The spill modelling results highlight the importance of spill prevention, the OPPP and the Spill at Sea Response Plan preparedness to minimize any adverse effects in the unlikely event of a fuel release of any size during vessel traffic into Milne Inlet.

The Spill at Sea Response Plan was recently updated to append the results of additional fuel spill modelling carried out in 2018. The OPPP and OPEP for ship to shore fuel transfers at Milne Port are updated on an annual basis and approved by Transport Canada.

4.6.11 Marine Wildlife (PC Terms and Conditions 99 through 128)

Thirty-one (31) PC Terms and Conditions (including Term and Condition No. 125 and 125a) relate to the potential effects of the Project on marine wildlife. These conditions provide direction on mitigation and monitoring programs and identify shipping information to be communicated to potentially affected communities regarding shipping activities.

Inuit & Stakeholder Feedback

The potential effects of shipping on marine mammals (particularly narwhal, seal, bowhead) continues to be brought forward to Baffinland during community engagement sessions (Appendix B.1), and through the MEWG (Appendix C.1). Underwater noise from shipping and its potential impact on marine mammals and, by extension, traditional hunting activities, has been consistently raised as key concerns. In recent years (2020 and 2021), Baffinland was also provided feedback from Inuit community members regarding the need for increased monitoring of ringed seal. Baffinland addressed this concern through the implementation of a Ringed Seal Aerial Survey Monitoring Program in 2021, which showed that abundance estimates were consistent with baseline results.

Monitoring

Throughout 2023, Baffinland again implemented a robust suite of marine mammal monitoring programs designed to assess ship noise levels in the Regional Study Area (RSA) in relation to established acoustic thresholds for marine mammals, to study the effects of shipping on narwhal abundance, distribution, group composition and behaviour, and to generate updated abundance estimates of the Eclipse Sound and Admiralty Inlet narwhal summer stocks. A list of the marine mammal monitoring programs conducted in 2023 is as follows:

- 2023 Ship-based Observer Program (Appendix G.6.2; Appendix G.6.3 in 2023 NIRB Annual Report) – Fall shoulder season program along with the ongoing Marine Mammal Observer Network (MMON) Monitoring Program;
- 2023 Marine Mammal Aerial Survey Program (Eclipse Sound and Admiralty Inlet) (WSP, 2024e; Appendix G.6.2 in 2023 NIRB Annual Report);
- 2023 Bruce Head Shore-based Monitoring Program (WSP, 2024f; Appendix G.6.7 in 2023 NIRB Annual Report);
- 2023 Underwater Acoustic Monitoring Program (Austin et. al., 2024; Appendix G.6.5 in 2023 NIRB Annual Report).

In addition, Baffinland undertook the 2023 Marine Environmental Effects Monitoring Program (MEEMP) and Non-Indigenous Species / Aquatic Invasive Species (NIS/AIS) Monitoring Program (WSP, 2024b; Appendix G.6.8 in 2023 NIRB Annual Report) to evaluate potential Project effects on marine fish and their habitats, including species for which marine mammals are potentially reliant on over the course of the shipping season.

Table 4.24 provides an evaluation of the Project's impacts on the marine environment, based on monitoring activities completed in 2023, relative to predictions presented in the FEIS and FEIS Addendum.

To the extent that potential Project impacts on the marine environment can be evaluated, the effects of the Project are within FEIS and subsequent addenda predictions.

Table 4.24: Marine Mammals Impact Evaluation

Component	Effects	Monitoring Program	Impact Evaluation
Ringed Seal, Bearded Seal, Walrus, Beluga, Narwhal, Bowhead Whale, Polar Bear	Habitat change resulting from icebreaking and/or ice management of landfast ice	There is no breaking of landfast ice associated with the current phase of the Project.	Not applicable in 2023.
	Hearing impairment and/or damage caused by sound from construction activities	No construction activities occurred at Milne Port in 2023 that would have the potential to cause hearing impairment.	Not applicable in 2023.
		Multiple years of acoustic monitoring of shipping noise demonstrate that there is no potential for acoustic injury as a result of Project-related shipping.	Effects within FEIS predictions.
	Disturbance caused by airborne and/or underwater sound from construction, shipping and aircraft	<p>Data available to date from Baffinland's acoustic monitoring programs (Austin et. al., 2024; Appendix G.6.5) and narwhal behavioural response studies (Golder, 2022b, WSP, 2024f; Appendix G.6.7) have demonstrated that:</p> <ul style="list-style-type: none"> Vessel noise in the RSA is lower than predicted in the FEIS. Vessel noise exposure on marine mammals in the RSA is temporary in nature and below sound levels that could cause acoustic injury. Assessed relative to a broadband Sound Pressure Level (SPL) of 120 dB re 1 µPa (i.e., the current noise disturbance threshold standard used by industry and government for assessing disturbance to marine mammals by continuous-type sounds such as vessel noise), sound exposure durations averaged less than one (1) hour per day. Narwhal behavioural responses to shipping are limited to short-term and localized disturbance effects. 	<p>Effects within FEIS predictions.</p> <p>Data suggest that current mitigation measures (e.g., 9 knot speed restriction, 40-km buffer area at entrance of RSA, limited transits during early shoulder season, etc.) are effective at managing Project incremental effects from shipping on narwhal in the RSA.</p>

Component	Effects	Monitoring Program	Impact Evaluation
		<p>Results from the 2023 aerial survey (WSP, 2024e; Appendix G.6.2) indicate that:</p> <p>i) the 2023 narwhal abundance estimate in Eclipse Sound (10,492 narwhal) was not statistically different to the 2013 baseline condition of 10,489 animals nor the 2019 abundance estimate of 9,931 animals; and</p> <p>ii) the 2023 abundance estimate for the combined Eclipse Sound and Admiralty Inlet stocks of 40,706 animals was not statistically different to the 2013 baseline condition of 45,532 animals nor the 2019 abundance estimate of 38,677 animals.</p> <p>Results indicate that narwhal abundance in Eclipse Sound in 2023 has returned to baseline levels following lower narwhal numbers observed in the RSA in 2020, 2021, and 2022. The increase in 2023 was observed despite the use of larger Capesize ore carriers in the RSA during 2023, and higher shipping levels in the RSA than all previous years since the start of shipping operations. The results collectively show a lack of correlation between shipping levels in the RSA and narwhal numbers in Eclipse Sound.</p>	
Narwhal	Masking of environmental sounds caused by vessel and construction sound	<p>Acoustic monitoring results collected to date (Austin et al., 2024; Appendix G.6.5) demonstrate that both ambient noise (e.g., wind, waves, rain) and vessel noise can result in Listening Range Reduction (LRR), at different contributing levels depending on sound frequency. The listening range for sound at 25 kHz (representative of narwhal clicks and high-frequency buzzes) was more affected, by both vessel noise and ambient noise, than sound at 1 kHz (a representation frequency for burst pulses) where narwhal have decreased hearing sensitivity. A potential</p>	Effects within FEIS predictions

Component	Effects	Monitoring Program	Impact Evaluation
		consequence is a reduced range at which the listener (narwhal) can detect potential prey during echolocation. Vessel noise at 25 kHz caused at least a 50% reduction in listening range during less than 20.4 and 20.5% of the recording period at the Milne Inlet and Bruce Head recorders, respectively. At 5 kHz, a frequency consistent with narwhal knocks and whistles, vessel noise resulted in LRR similar to what narwhal experience from ambient noise fluctuations, causing at least 50% LRR during 23.4 and 28% of the recording period. Burst pulses were the least susceptible vocalization type to LRR due to vessel noise, with at least 4.4 and 2.6% LRR occurring 0.0 and 0.5% of the recording time at Milne Head and Bruce Head recorders, respectively. As aforementioned, ambient noise did not result in any appreciable level of LRR for burst pulses because the hearing threshold for narwhal at 1 kHz is higher than the median ambient sound level at this frequency.	
Bowhead Whales	Mortality from collisions with vessels and blasting during construction	No collisions were noted by ship crews in 2023. No blasting during construction occurred.	Effects within FEIS predictions
Polar Bears	Mortality from human-bear interactions	Polar bear monitors look for polar bears entering camps and remote work areas. No polar bear mortalities resulted from Project operations in 2023.	Effects within FEIS predictions

Path Forward

Baffinland will remain vigilant about the mitigation and monitoring activities that are in place to protect marine mammals. Baffinland will continue to seek input and review monitoring results trends with Inuit community members and the MEWG. Reporting on each PC Term and Condition follows.

Project Certificate Term and Condition No. 99

Category	Marine Environment - Supplemental Baseline Assessments
Responsible Parties	The Proponent, Marine Environment Working Group
Project Phase(s)	Construction and Operations
Objective	To supplement and update baseline information and improve predictions for potential impacts to marine wildlife.
Term or Condition	<p>The Proponent, working with the Marine Environment Working Group, shall consider and identify priorities for conducting the following supplemental baseline assessments:</p> <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> i. In Steensby Inlet on walrus, beluga, bearded seal anadromous Arctic char abundance, distribution ecology and habitat use. 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: <ul style="list-style-type: none"> iii. Aerial surveys for basking ringed seals throughout the landfast ice of Steensby Inlet and at an appropriate control location iv. Shore-based observations of pre-Project narwhal and bowhead whale behavior in Milne Inlet that continues throughout operations at an appropriate frequency throughout the Proponent's ore shipping operations via Milne Inlet d. Enhance the baseline for affected freshwater systems, which includes control sites to detect Project-related changes before they cause significant harm.
Relevant Baffinland Commitment	81
Reporting Requirement	<p>The Proponent shall provide a summary discussion of its implementation of this term and condition (including results of monitoring, adaptive management strategies, consultation, and contribution efforts) to the NIRB through the Proponent's annual monitoring report.</p> <p>Updated plans developed from monitoring, adaptive management, and engagement shall be provided to the NIRB throughout the monitoring year as they are finalized.</p>
Status of PC Term and Condition	<p>Southern Transportation Corridor (Steensby Port) – Not Active</p> <p>Northern Transportation Corridor (Milne Port) – Active</p>

Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Marine Environment Working Group (MEWG)
Reference	Draft Marine Monitoring Plan (Baffinland, 2023f)
Ref. Document Link	Not applicable

METHODS

This PC Term and Condition applies to the Construction phase of the Approved Project and completion of supplemental baseline assessments. The Approved Project is currently in operation; supplemental baseline assessments are complete (pre-2021). These have been submitted to NIRB and are also available on Baffinland's Document Portal (<https://www.baffinland.com/document-portal/>).

Current effort is focused on environmental effects monitoring (EEM) using a number of different EEM programs that focus on detection of potential Project effects on marine mammals and the marine environment. Detailed information on EEM study design and sampling methodology are available in Baffinland's draft revision of the Marine Monitoring Plan (MMP; Baffinland, 2023f).

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Environmental effects monitoring will continue through the life of the project.

Project Certificate Term and Condition No. 100

Category	Marine Environment - Supplemental Baseline Assessments
Responsible Parties	The Proponent, Marine Environment Working Group
Project Phase(s)	Construction
Objective	To supplement baseline information and improve predictions for potential impacts to marine wildlife.
Term or Condition	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.
Relevant Baffinland Commitment	57
Reporting Requirement	To be developed following approval of the Project by the Minister.
Responsible Party	Baffinland
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Not Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - Not Applicable
Stakeholder Review	Marine Environment Working Group (MEWG)
Reference	2022 Shipping and Marine Wildlife Management Plan (SMWMP; Baffinland, 2022d)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Applicable only to the Construction phase, therefore not active for 2023.

Fuel Spills

As outlined in Section 1.2 and Section 3 of the Shipping and Marine Wildlife Management Plan (SMWMP), the SMWMP should be reviewed in relation to other management plans, including the Spill at Sea Response Plan (SSRP). Section 7 of the SSRP addresses spill management during the end and start of the shipping season (i.e., July and October). Additionally, Baffinland notes that all vessels contracted by the Company are required under MARPOL to have a Shipboard Oil Pollution Emergency Plan (SOPEP). For clarity, the spill and emergency responses management measures are the mitigation for efficiently and effectively dealing with unforeseen effects of the Project, such as a fuel spill during the shoulder season.

Avoidance of the North Water Polynya

Baffinland understands the North Water Polynya is more or less defined with geographic boundaries at the top of Baffin Bay between Northwest Greenland (Avanersuaq) and Ellesmere Island and Devon Island on the Canadian Coast (Hastrup et al, 2018). At its peak, the general area covered by this polynya is between 76°N and 79°N and 70°W and 80°W.

Vessels generally follow a route below 75°N through Baffin Bay, and so, ore carriers will not normally enter the area the polynya is known to occur. See Appendix G.6.1 for a copy of the Daily Ship Tracks with Ice Imagery as supporting evidence. Additionally, in July of 2019, Baffinland submitted mapping/ice charts to the NIRB that show the condition of the North Water Polynya relative to the shipping route in early July between 2014 and 2018 (NIRB Registry No. 325730; Baffinland, 2019e). As shown in Figures 2 through 6 of that document, there are safe navigable routes across Baffin Bay in areas south of the polynya even during the shoulder season. Therefore, this component of Term and Condition No. 100 is not applicable to the current phase of the Project as the Northern Shipping Route does not overlap with the North Water Polynya at any point during shipping operations in Baffin Bay. This is because the sea ice boundaries separating the North Water Polynya from the rest of Baffin Bay are melted away or broken up by June of each year at which point the polynya is indiscernible from adjacent areas during July and because of the designated shipping route.

Mitigations for Marine Mammals that might be “less mobile”

Baffinland has developed mitigation measures for the shoulder seasons, as outlined in Section 6.2, Table 2 of the SMWMP, that are specific to circumstances when marine mammals would be “less mobile”, or in heavier ice conditions. These include:

- When marine mammals appear to be trapped or disturbed by Project vessel movements, the vessel will implement appropriate measures to mitigate disturbance, including stoppage of movement until wildlife move away from the immediate area (as safe navigation allows);
- All Project vessels are provided with standard instructions to not approach within 300 m of a walrus or polar bear observed on sea ice;
- All Project vessels are provided with standard instructions to operate their vessel in a manner that avoids separating an individual member(s) of a group of marine mammals from other members of the group; and
- Baffinland will place Marine Wildlife Observers (MWOs) on icebreaking vessels during the shoulder seasons that will be responsible for recording relative abundance, group composition and behaviour of marine mammals relative to icebreaker transits along the Northern Shipping Route. MWOs will also be responsible for recording any incidences of marine mammal strikes or near misses with Project vessels, including icebreaker vessels.

Baffinland notes that this above list does not account for all mitigations outlined in Section 6.2 (Table 2) of the SMWMP (Baffinland, 2022d) and would refer the NIRB to that for a complete list of all mitigation measures employed by Baffinland to reduce potential effects on marine mammals associated with shipping while ice is present.

RESULTS

In 2023, there were no fuel spills during shoulder (or open-water) season shipping, no interactions with the North Water Polynya and no ship strikes on marine mammals.

TRENDS

Shipping during the shoulder (or open-water) seasons has not resulted in large-scale fuel spills along the shipping route, interactions with the North Water Polynya or ship strikes on marine mammals.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will update the SMWMP prior to any winter shipping (applicable to the Southern Shipping Route only). Furthermore, Baffinland notes that this condition is relevant only to the Construction phase of the Project, and therefore not applicable to the Northern Shipping Route.

Project Certificate Term and Condition No. 101

Category	Marine Environment – Monitoring
Responsible Parties	The Proponent, Marine Environment Working Group
Project Phase(s)	Construction and Operation
Objective	To monitor for potential impacts to marine wildlife and marine habitat.
Term or Condition	<p>The Proponent shall incorporate into the appropriate monitoring plans the following items:</p> <ul style="list-style-type: none"> 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; 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 throughout operations at an appropriate frequency throughout the Proponent's ore shipping operations via Milne Inlet; h. Conduct landfast ice monitoring for the duration of the Project Operations phase, which will include: <ul style="list-style-type: none"> i. The number of ship transits that are able to use the same track; ii. The area of landfast ice disrupted annually by ship traffic; and iii. Monitoring strategy focused on assessing and mitigating interaction between humans and wildlife at the port site(s).
Relevant Baffinland Commitment	Not Applicable
Reporting Requirement	<p>The Proponent shall provide a summary discussion of its implementation of this term and condition (including results of monitoring, adaptive management strategies, consultation, and contribution efforts) to the NIRB through the Proponent's annual monitoring report.</p> <p>Updated plans developed from monitoring, adaptive management, and engagement shall be provided to the NIRB throughout the monitoring year as they are finalized.</p>
Status of PC Term and Condition	<p>Southern Transportation Corridor (Steensby Port) – Not Active</p> <p>Northern Transportation Corridor (Milne Port) – Active</p>
Status of Compliance	<p>Southern Transportation Corridor (Steensby Port) – Not Applicable</p> <p>Northern Transportation Corridor (Milne Port) – In Compliance</p>
Stakeholder Review	Marine Environmental Working Group (MEWG), Nunavut Impact Review Board
Reference	<p>2017-2018 Integrated Narwhal Tagging Study (Golder, 2020c)</p> <p>2023 Marine Mammal Aerial Survey Program (WSP, 2024e)</p> <p>2023 Bruce Head Shore-based Monitoring Program (WSP, 2024f)</p> <p>2023 MEWG Meeting Minutes</p> <p>2023 Early Warning Indicator (EWI) Aerial Survey Results (WSP, 2024g)</p>

	2023 Narwhal Adaptive Management Response Plan (NAMRP; Baffinland, 2022g) 2021 Marine Mammal Trigger Action Response Plan (TARP; Baffinland, 2021k) Marine Mammal Noise Exposure Criteria (Southall et al. 2021)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix B.1 Appendix B.2.2 Appendix C.1 Appendix G.6.2 Appendix G.6.6 Appendix G.6.7

METHODS

- a. Not applicable in 2023.
- b. As part of yearly planning and review of upcoming field programs, Baffinland provides its annual monitoring results to the Marine Environment Working Group (MEWG) members (which include Inuit representation through the QIA and each communities HTO) for comment, and also presents plans for monitoring for the upcoming year during MEWG meetings. During an in-person MEWG meeting in Ottawa, ON, on February 15–16, 2023, Baffinland presented an overview of the 2022 shipping convoy operations, a summary of preliminary 2022 marine monitoring results, discussed the proposed 2023 marine monitoring programs, and presented an overview of the draft Marine Monitoring Plan. During a teleconference MEWG meeting on April 19, 2023, Baffinland and the MEWG discussed the ToR update. During teleconference MEWG meetings on July 12, 2023, Baffinland discussed the upcoming 2023 shipping season and monitoring programs. During the final MEWG meeting of 2023. The MEWG met in-person in Iqaluit, NU, to review the 2023 shipping season and marine monitoring programs conducted in 2023. Baffinland held a 2023 pre-shipping meeting with the MHTO and the Hamlet of Pond Inlet on June 28, 2023. During this meeting, Baffinland shared details on the upcoming shipping season. A 2023 pre-shipping season radio show was held in Pond Inlet on June 27, 2023 to provide a summary to Pond Inlet residents on Baffinland’s anticipated shipping activities. An End of 2023 Shipping Season public radio show and meetings were also held on December 7 and 8, 2023, respectively, in Pond Inlet (meeting and radio show summaries available in Appendix B.2). Follow-up correspondence also occurred following MEWG meetings, and distribution of meeting minutes. Inuit are also directly involved in marine monitoring programs as field technicians who receive training and actively contribute to the program outcomes.

Baffinland has also implemented since 2019 a Pond Inlet-based Shipping Monitor Program, which consists of hiring a minimum of two full-time employees to actively track daily Project vessel movements in the RSA using a tracking software ShipView™, and in relation to reported marine mammal sightings (as shared by residents of Pond Inlet through marine VHF radio and Baffinland monitoring teams). Shipping Monitors track any feedback they receive over the shipping season and answer questions as needed, providing a direct liaison between the community of Pond Inlet, hunters and Baffinland’s headquarters, including the Shipping and Sustainable Development departments.

- c. Baffinland’s ongoing development and refinement of monitoring programs and protocols considers input from local community members (e.g., concerns that are communicated through community workshops) as well as discussions with the MEWG, in which Inuit organizations actively participate. Furthermore,

Baffinland endeavours to meet directly with the MHTO multiple times each year, shares information with the MHTO on its planned monitoring programs, and requests letters of support on an annual basis from the MHTO prior to program implementation. Baffinland also engages with Inuit in the local communities through public radio shows, meetings with the Hamlet council and active engagement through the Shipping Monitor Program run in Pond Inlet throughout the entirety of the shipping season. Refer to Appendix B for 2023 engagement records, including community questions, comments and concerns that were received by shipping monitors. Refer to Appendix C for 2023 Working Group meeting records, including the TEWG, MEWG, and QSEMC. Refer to Section 2 of this report for a more in depth description of 2023 engagement activities.

Prior to the start of the 2023 shipping season and monitoring programs, Baffinland held a 2023 pre-shipping meeting with the MHTO and the Hamlet of Pond Inlet on June 28, 2023. During this meeting, Baffinland shared details on the upcoming shipping season. A radio show was also held on June 27, 2023, in Pond Inlet to inform residents about Baffinland's past and anticipated shipping activities for 2023. Baffinland's monitoring programs strive to actively involve local participation and consider community concerns in the development and adaptation of its monitoring programs. Monitoring results are reviewed and discussed annually by MEWG members, including Inuit participants. Offers to meet with the MHTO in Pond Inlet and discuss the monitoring results are provided to the MHTO. Communications between Baffinland and local Inuit through other forums including hamlet and one-on-one meetings, radio shows and the Shipping Monitor Program remain on-going.

- d. Not Applicable in 2023.
- e. In 2023, marine mammal aerial surveys were conducted in the North Baffin during the early shoulder season (July), the peak open-water season (August), and the end of shipping season (October) as part of the 2023 Marine Mammal Aerial Survey Program (MMASP; WSP, 2024e; Appendix G.6.2). Three different types of marine mammal aerial surveys were performed in 2023. Reconnaissance surveys were initially run during the early shoulder season (Leg 1) to collect data on the presence/absence and distribution of marine mammals in the RSA relative to ice conditions at that time of year and prior to the start of shipping activities. A systematic aerial-based transect survey was then conducted during the open-water season (Leg 2) to obtain abundance estimates of the Eclipse Sound and Admiralty Inlet narwhal summer stocks. A visual clearance survey (Leg 3) was conducted at the end of shipping season to confirm that no narwhal entrapment events occurred in the RSA following completion of Baffinland's shipping operations along the Northern Shipping Route.

Detailed methodology and analytical procedures of the 2023 MMASP are presented in WSP (2024e; Appendix G.6.2).

- f. Baffinland will continue to collect ringed seal aerial survey data in the RSA at an appropriate sampling frequency throughout the life of the Project to continue to monitor and evaluate this potential impact pathway for ringed seal. Future survey efforts will be evaluated using satellite-based snow thickness measurements.

- g. Baffinland undertook a shore-based narwhal monitoring program at Bruce Head from 2013–2017² and again from 2019–2023³. The objective of the Bruce Head Shore-based Monitoring Program is to investigate narwhal response to shipping activities along the Northern Shipping Route in Milne Inlet. During the 2023 open-water season, visual survey data were collected from a cliff-based observation platform at Bruce Head overlooking the nominal shipping route. Data were systematically collected on the relative abundance and distribution of narwhal, and on narwhal group composition via shore-based Marine Mammal Observers (MMOs). Narwhal behavioural data were collected using Unmanned Aerial Vehicle (i.e., drones) to evaluate behavioural responses of narwhal to vessel traffic via focal follow video surveys of individual groups. Additional data were collected on environmental conditions and anthropogenic activities (e.g., shipping and hunting activities) to distinguish between the potential effects of Project-related shipping activities and confounding factors that may also affect narwhal behaviour. Detailed methodology and analytical procedures of the 2023 Bruce Head Shore-based Monitoring Program are presented in WSP (2024f; Appendix G.6.7).

RESULTS

- a. Not applicable in 2023.
- b. A total of fifteen Inuit participants (ten from Pond Inlet, one from Arctic Bay, one from Igloolik, and three from Iqaluit) were employed for the 2023 marine monitoring programs. Inuit participants were hired through an Inuvialuit-owned company. The total amount of work hours for Inuit staff on the 2023 marine monitoring programs was 3,576 hours. The work positions filled by Inuit participants in 2023 included: marine wildlife observers polar bear monitors, boat operator and field technicians.

A total of twelve (12) Shipping Monitors supported the planning and monitoring of shipping season activities in 2023. Shipping Monitors can be reached by residents up to 24 hours a day and are also actively tracking shipping activity using the online Automatic Identification System (AIS) vessel tracker.

- c. Baffinland proposed running a narwhal tagging program prior to the start of the early shoulder shipping season. The MHTO was not supportive of Baffinland running this tagging program and, as such, the program did not move forward in 2023.
- d. Not applicable in 2023.
- e. A total of eight (8) different species of marine mammals were observed during the 2023 aerial surveys: narwhal, bowhead whale, beluga whale, ringed seal, harp seal, bearded seal, hooded seal, and polar bear.

Landfast ice was present in the RSA for the full duration of the Leg 1 surveys. Leg 1 survey results generally indicated that narwhal in the Eclipse Sound/Pond Inlet/Baffin Bay stratum remained in the RSA for the duration of the Leg 1 surveys, while narwhal in the Navy Board Inlet strata appeared to have departed the RSA sometime after July 27 (presumably through Lancaster Sound). Once landfast ice in Eclipse Sound began to break-up near the end of Leg 1 (July 27–28), several narwhal sightings were recorded in ice leads present

² 2013 represented a pilot study year for the Bruce Head Shore-based Monitoring Program.

³ A Bruce Head vessel-based monitoring program pilot study was conducted in 2018 instead of a shore-based study due to safety concerns following a damaged observation platform that prevented safe implementation of the shore-based program.

in western Eclipse Sound. However, no narwhal were observed in Milne Inlet or Tremblay Sound during any of the Leg 1 surveys, presumably due to local ice conditions impeding access to these areas or narwhal preference to remain in areas of high ice concentration.

For the Leg 2 surveys, narwhal summer stock abundance was calculated for the Eclipse Sound stock, Admiralty Inlet stock, and the combined Eclipse Sound and Admiralty Inlet stock. Narwhal abundance in the Eclipse Sound summer stock area was estimated at 10,492 animals on August 12-13, 2023 which was not significantly different than the 2013 baseline condition (10,489 animals), the 2016 abundance estimate (12,039 animals) or the 2019 abundance estimate (9,931 animals). The 2023 Eclipse Sound abundance estimate was significantly higher than the three preceding years (2020-2022). The increase in 2023 was observed despite having the highest volume of iron ore shipped out since the start of shipping operations and despite the introduction of larger Capesize ore carriers to Baffinland shipping operations in 2023. These results indicate that narwhal abundance in Eclipse Sound in 2023 has returned to baseline levels following lower narwhal numbers observed in the RSA in 2020, 2021, and 2022.

The 2023 Admiralty Inlet narwhal summer stock was estimated at 30,214 narwhal, which is not statistically different than the 2013 abundance estimate (35,043 animals), the 2019 abundance estimate (28,746 animals), the 2020 abundance estimate (31,026 animals) or the 2022 abundance estimate (43,042 animals). The 2023 abundance estimate was shown to be statistically lower than the 2021 abundance estimate of 72,582 animals.

The 2023 abundance estimate for the combined Eclipse Sound and Admiralty Inlet stocks was 40,706 animals, which was not statistically different than the 2013 abundance estimate (45,532 animals), the 2019 abundance estimate (38,677 animals), the 2020 abundance estimate (36,044 animals) or the 2022 abundance estimate (46,408 animals). The 2023 abundance estimate was shown to be statistically lower than the 2021 abundance estimate of 75,177 animals.

An aerial clearance survey (Leg 3) was flown in the RSA at the end of the shipping season on 31 October 2023. No narwhal sightings were recorded during the survey. Results of the end of season aerial clearance survey indicate that no entrapments occurred in 2023 as a result of Project icebreaking and shipping activities in the RSA.

Detailed results of the 2023 MMASP are presented in WSP (2024e; Appendix G.6.2).

- f. Not applicable in 2023.
- g. The requirement to complete a minimum of three years of shore-based monitoring of narwhal behaviour in Milne Inlet (relative to shipping activities) has been achieved. In 2023, the Bruce Head Shore-based Monitoring Program completed its ninth year of monitoring of narwhal behavioural monitoring in the RSA (WSP, 2024f; Appendix G.6.7)

The following is a summary of key findings pertaining to narwhal behavioural response to vessel traffic based on seven years of shore-based visual survey data collected at Bruce Head between 2014 and 2023.

Relative Abundance and Distribution in the Stratified Study Area (SSA):

- Interannual variation in relative abundance: The relative abundance of narwhal (total number of narwhal in the SSA corrected for survey effort) at Bruce Head was lower in 2023 (2.9 narwhal/h)

than all previous survey years. The highest relative abundance of narwhal recorded at Bruce Head occurred in 2016 (178.0 narwhal/h). Prior to 2023, the lowest relative abundance of narwhal recorded at Bruce Head occurred in 2021 (29.4 narwhal/h). Low narwhal numbers in 2023 were thought to be linked to the late break-up of landfast ice in the RSA in 2023. Consolidated sea ice was present throughout the majority of Western Eclipse Sound during early August, with little to no ice leads available for narwhal to enter Milne Inlet. The late break-up period also resulted in a delay to the start of the 2023 shipping season with the first ship arriving at Milne Port on August 11, 2023. Narwhals were not observed in the Bruce Head study area until August 5, 2023, with narwhal numbers slowly increasing towards the end of the Program. The 2023 aerial survey results also demonstrated that narwhal were primarily concentrated in Tremblay Sound during the first half of August and then shifted into Milne Inlet South during late August (WSP 2024e; Appendix G.6.2). This could also explain the low sighting rates recorded at Bruce Head prior to the Program ending on August 22, 2023.

- **Density:** The effect of “distance from vessel” was shown to have a significant effect on narwhal density, while “vessel travel direction” did not. The model predicted significantly reduced narwhal densities in the SSA when vessels were present in the SSA, but only when exposed to northbound vessels (ore-laden) at distances approaching 2 km. Effect sizes suggest the presence of a moderate biologically significant effect up to a distance of 2.4–2.6 Km from northbound vessels. The same pattern was observed for a southbound vessel moving away from the substrata, although the observed increase was smaller. The observed effect was equivalent to a maximum period of 18–25 min per vessel transit (based on a 9-knot travel speed, assuming narwhal remained stationary during exposure), with animals returning to their pre-response behaviour shortly following the initial vessel exposure (i.e., a temporary effect). During the Program (July 31 to Aug 23, 2022), there were approximately two vessel transits per day in the SSA (32 one-way transits in SSA over a 25-day period). Therefore, the maximum period per day associated with vessel disturbance on narwhal density was 50 min. These findings were consistent with previous years’ findings and with behavioural results from the narwhal tagging study (Golder 2020c), which indicated that narwhal density in the SSA was influenced by vessel traffic, but limited to close distances (i.e., within 2.4–2.6 Km of a northbound vessel). Localized avoidance of the sound source (i.e., the vessel) by narwhal was consistent with a moderate severity behavioural response (Southall et al. 2021). However, given the temporary nature of the effect (i.e., 18–25 min per vessel transit), this would not be considered a biologically significant behavioural response and would not be expected to result in a significant alteration of natural behavioural patterns by narwhal in the RSA or disruption to their daily routine. Accordingly, no effects were anticipated on the individual fitness and/or vital rates of narwhal in the RSA, which may ultimately affect population parameters. This response was in line with impact predictions made in the FEIS for the Early Revenue Phase, in that vessel noise effects on narwhal are anticipated to be limited to temporary, localized avoidance behaviour.

Group Composition in the BSA:

- **Group Composition:** The number of narwhal groups in the BSA in 2023 was the lowest observed since the start of the nine-year study period, with a total of 40 narwhal groups (comprising 163 individuals) recorded. All narwhal life stage categories (adults, juveniles, yearlings, and calves) were recorded in the Behavioural Study Area (BSA) throughout the nine-year monitoring program,

with the majority of the sightings consisting of adult narwhal, followed by juveniles, calves, and yearlings.

- Proportion of Immatures (Early Warning Indicator [EWI]): Findings from the combined multi-year dataset indicated that the relative proportion of immature narwhal observed in the BSA in 2023 (0.242) was significantly higher than pre-shipping values in 2014 and 2015 (0.152 and 0.167, respectively), representing a 57% increase from the baseline condition. This result should be interpreted with caution given the relatively small sample size available at Bruce Head in 2023. For comparative purposes, the EWI was also calculated using the 2023 aerial survey data (dedicated 1000 ft. survey data). Results from the aerial data analysis indicated that the proportion of immature narwhal in Eclipse Sound in 2023 (0.131) was within the range of the 2014/2015 baseline condition (0.154 in 2014 and 0.110 in 2015) (WSP, 2024e; Appendix G.6.2). A statistical comparison was not possible since the raw data from 2014/2015 aerial surveys were not available. Both Bruce Head and aerial-based EWI datasets were associated with high variability and low sample sizes, resulting in high uncertainty in the EWI estimates. In summary, while the EWI data collected at Bruce Head in 2023 suggested an increase in the relative proportion of immature narwhal in Milne Inlet South, the equivalent EWI analysis derived from the spatially broader aerial survey dataset provided no indication that the proportion of immature narwhal in the RSA had changed since the start of shipping operations (2014/2015) (WSP, 2024g; Appendix G.6.6).
- The following summarizes key findings pertaining to narwhal behavioural responses to ship traffic at Bruce Head based on four years (2020–2023) of drone-based focal follow imagery collected in Milne Inlet: Primary behaviour:
 - Primary behaviour: Focal follow survey results provide possible, though conflicting, support that narwhal groups may alter the proportion of time they spend engaged in critical activities when in the presence of vessels. Adult groups engaged less frequently in critical activities when within 3 km of a vessel. Conversely, mixed groups without immatures engaged in critical activities more frequently when within 2.5 Km of a vessel. For mother-immature pairs and groups with immatures, the results did not suggest an effect of vessel presence on critical activities at any distance.
 - Unique behaviours: Unique behaviour displays by narwhal tended to occur less frequently by all narwhal group types in close proximity (<2.7 km) to a transiting vessel, although the observed decrease was not shown to be significant.
- Association of immatures with presumed mother: Immature narwhal were recorded in 148 of the 397 focal follow surveys conducted to date. Of these, immature narwhal occurred on their own in 35 of the surveys, with their presumed mother in 64 of the surveys, and in mixed groups in 49 of the surveys. Nursing behaviour was recorded during 30 of the surveys, of which five (5) coincided with a vessel being present within 5 Km of the focal group.
- Travel speed: Findings suggest an effect of vessel distance on narwhal travel speed at close distances (up to 1 Km). When vessels were within 1 Km, adult groups and mixed groups with immatures travelled approximately 35% to 64% faster than when vessels were not present, however there was no effect on travel speed for mixed groups without immatures. No data was available for mother-immature pairs. Overall, the data suggest an effect of vessel presence on travel speed in close proximity to the vessel, with the strongest evidence for adult groups.

Detailed results of the 2023 Bruce Head Shore-based Monitoring Program are presented in WSP (2024f; Appendix G.6.7).

- h. Not applicable in 2023.

TRENDS

- a. Not applicable in 2023.
- b. Inuit have been involved in monitoring studies at all levels since the inception of the program, with the exception of the 2020 to 2021 monitoring programs given restrictions associated with the COVID-19 Pandemic. The addition of the MHTO as members of the MEWG in 2016 and the hiring of Inuit participants from Inuit-based companies has increased the participation of Inuit in this process. Prior to the COVID-19 Pandemic, Inuit participation in Baffinland's monitoring programs had increased in 2019 (6,500 hours / 23 participants in 2019) compared to 2017 (2,265 hours / 12 participants) and 2018 (1,610 hours / 9 participants). Inuit engagement also progressed to include training in data analysis and reporting in 2019. Due to the COVID-19 Pandemic Inuit participation was not possible in 2020 and was resumed, with limited participation, in 2021. In spite of limited involvement in 2021, Inuit participation consisted of a total of 1,922 hours / 10 Inuit participants for the 2021 monitoring programs. Inuit participation in the 2022 and 2023 monitoring programs was consistent with levels prior to the COVID-19 Pandemic and consisted of a total of 3,180 hours / 12 participants and 3, 576 hours / 15 participants, respectively.
- c. Engagement with Inuit community members with respect to monitoring protocols applied within the marine-based monitoring programs has continued to increase since the start of the program. Both the Marine and Terrestrial Environment Working Groups (MEWG, TEWG) include members from five (5) HTOs (MHTO, IHTA, IHTO, HB HTA, NHTO). These Working Groups serve as a platform for Inuit to address concerns associated with both the marine and terrestrial monitoring programs. Meeting records pertaining to 2023 MEWG, TEWG engagements can be found in Appendix C.1 and C.2, respectively. Baffinland also hosts pre and post-shipping meetings and radio shows on an annual basis within Mittimatalik to inform community members of proposed monitoring and operations plans, as well as actual completed monitoring following the close of the season. Engagement records pertaining to pre and post-shipping meetings and radio shows can be found in Appendix B.2.2.
- d. Not applicable in 2023.
- e. Results from the 2023 narwhal aerial survey (Leg 2) indicated that the 2023 abundance estimates were not significantly different to the 2013 baseline condition of 10,489 animals nor the 2019 abundance estimate of 9,931 animals. The increase in 2023 was observed despite having the highest volume of iron ore shipped out since the start of shipping operations and despite the introduction of larger Capesize ore carriers to Baffinland shipping operations in 2023. Collectively, survey results to date indicate a poor correlation between annual shipping levels and narwhal abundance in the

The combined narwhal abundance in Eclipse Sound and Admiralty Inlet was similar in 2023 to what was observed in previous years (2013, 2019, 2020 and 2022). Collectively, aerial survey results indicate that the combined stock size appears to be stable since the start of Baffinland shipping operations and relative to baseline levels. Results further indicate that some level of animal exchange occurs between the two

putative stock areas but this does not appear to be related to Project shipping levels in the RSA (WSP, 2024e; Appendix G.6.2).

- f. Not applicable in 2023.
- g. The 2023 Bruce Head Shore-based Monitoring Program represents the ninth year of monitoring of narwhal behavioural monitoring in the RSA (WSP, 2024e; Appendix G.6.7). A summary of trends observed in the integrated nine-year Bruce Head Shore-based Monitoring Program is presented above under Results – see Results (g).
- h. Not applicable in 2023.

RECOMMENDATIONS / LESSONS LEARNED

- a. Not applicable in 2023.
- b. Marine monitoring programs will continue increasing Inuit involvement in field monitoring and data reporting whenever possible. Baffinland will continue to invite representatives from the five HTOs within communities of interest to participate in both the MEWG and TEWG. Baffinland will continue to fund the participation of HTO members within these groups by providing per diem and honoraria associated with each meeting. Baffinland representatives will continue to conduct pre and post-shipping radio shows, as well as meetings with the Hamlet, MHTO and QIA. Baffinland will participate in all monitoring-related workshops hosted by the NIRB, similar to the 2023 NIRB Mitigation Workshop that was hosted in Pond Inlet in May of 2023.
- c. Baffinland will continue to engage with the MEWG, HTOs and local Inuit in 2024 with regards to marine monitoring programs to ensure responsiveness to Inuit concerns. Modifications to the terms and conditions in 2023 also encourages participants from the other four (4) impacted HTOs/HTAs to participate in the MEWG should they wish to do so. Continuous communication with the HTOs and Inuit communities will continue in 2024.
- d. Not applicable in 2023.
- e. The 2023 results indicated there was no exceedance of the marine mammal TARP threshold (i.e., >25.0% decrease in stock size [abundance] relative to 2019 aerial survey abundance) (TARP; Baffinland, 2021k).

Aerial surveys are not proposed for summer 2024 based on the results of the 2023 aerial surveys which show that narwhal abundance in 2023 was not statistically different from baseline conditions in 2013, or from the 2019 abundance estimate (i.e., trigger associated with high risk threshold identified in the TARP), despite 2023 having the second highest shipping levels in the RSA since the start of operations and despite Baffinland introducing larger Capesize ore carriers to shipping operations in 2023. Further, the combined Eclipse/Admiralty stock size appears to be stable since the start of Baffinland shipping operations and relative to baseline levels. Collectively, results to date indicate a poor correlation between annual Project shipping levels and narwhal abundance in the RSA and that some level of animal exchange occurs between the two putative stock areas but this does not appear to be related to shipping levels. As such, annual aerial surveys for the purpose of evaluating Project shipping effects on abundance is not considered warranted at this time. Results from DFO's 2023 aerial surveys of the Baffin Bay narwhal population as a whole (all

summer stock areas) will assist in determining future survey requirements for Eclipse Sound and Admiralty Inlet.

Conduct an end of shipping season visual clearance survey to confirm that no narwhal entrapment events have occurred in the RSA following completion of 2024 shipping operations along the Northern Shipping Route.

- f. The results of the 2021 ringed seal aerial survey indicates that ringed seal densities in the RSA are stable relative to 2016 survey estimates since the onset of shipping or ice-breaking activities in the RSA, with some natural inter-annual variation expected. No ringed seal aerial surveys along the Northern Shipping Route were planned or conducted in 2023, and none are planned for 2024.
- g. With respect to future monitoring initiatives for the Bruce Head Shore-based Monitoring Program, Baffinland will continue to consult with the MEWG:
 - Continue the emphasis on the Unmanned Aerial Vehicle (UAV) survey component of the Program, given the valuable insight this tool provides with respect to monitoring changes in fine scale behaviours in the presence of shipping. UAV surveys provide a detailed and permanent record of key narwhal behaviours (i.e., nursing, resting, socializing, sexual displays) that may not otherwise be quantifiable by shore-based visual methods.
 - Continue to undertake additional analyses of the aerial survey data for specific evaluation of the EWI metric (using the dedicated 1,000 ft survey data which was collected for this purpose) to compare with findings of the EWI analysis conducted using the Bruce Head shore-based data.

The 2023 results indicated there was no exceedance of the marine mammal TARP Low Risk threshold, e.g., confirmed Moderate severity behavioural responses (Severity Score 5 and 6) that do not persist longer than two hours following the exposure event (Baffinland, 2021k).

- h. Not applicable in 2023.

Project Certificate Term and Condition No. 102

Category	Marine Environment - Traffic Log and Shipping Information
Responsible Parties	The Proponent
Project Phase(s)	Construction and Operations
Objective	To promote public awareness of Project shipping activities for the general public.
Term or Condition	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.
Relevant Baffinland Commitment	30, 36
Reporting Requirement	To be provided in the Annual Report to the NIRB.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	Not applicable
Reference	Baffinland Corporate Website – Operation – Shipping and Monitoring
Ref. Document Link	https://www.baffinland.com/operation/shipping-and-monitoring/

METHODS

Baffinland has contracted Spire Shipview® (previously known as exactEarth®), a global vessel monitoring and tracking service based on Automatic Identification System (AIS) data from polar orbiting satellites to track and report on vessel movements. The vessel tracking information is available throughout the entire duration of the shipping season on Baffinland's website (<https://www.baffinland.com/operation/shipping-and-monitoring/>) to allow communities to check on vessel coordinates, which direction the vessel is moving, and its destination.

Although the vessel locations plotted on the online map are available 24 hours a day, seven (7) days a week over the entire duration of the shipping season, they are not available "real-time", per se, on a minute by minute basis, but do provide regularly updated snapshots of latest vessel position in the North Baffin region. Data are immediately uploaded to the website once the data, as captured by satellites, are made available through the software.

Following on the success of the 2019 efforts to enhance communications regarding Baffinland's daily shipping activities in the community of Pond Inlet as requested through feedback received by the MHTO, in 2023 Baffinland continued its Shipping Monitor Program, which consists of hiring a minimum of two (2) full-time employees to actively track daily Project vessel movements in the Regional Study Area (RSA) through tracking of data available through Spire Shipview®, and in relation to reported marine mammal sightings (as shared by residents of Pond Inlet through marine Very High Frequency (VHF) radio and Baffinland monitoring teams). One (1) of the primary roles of the Shipping Monitors is to provide direct liaison between the community of Pond Inlet, hunters and Baffinland. They work directly out of the Baffinland office situated on the second floor of the MHTO office building in Pond Inlet. Through this role, Shipping Monitors provide updates on Baffinland's shipping activities using a variety of communication methods including local public radio, marine VHF radio (for hunters on the water) and through social

media (e.g., Facebook posts). Shipping Monitors are also available to track any comments/questions that are communicated by residents, and provide answers as needed.

RESULTS

Over the course of the season, twelve (12) Shipping Monitors from Pond Inlet supported the shipping season in 2023 (see Photos 27 and 28 in Appendix D). The Shipping Monitors provide up to date information on a daily basis (or as relevant) regarding shipping activities throughout the entirety of the shipping season. Baffinland has made vessel routing accessible to the public via the Baffinland website. Baffinland continues to maintain an AIS tracker system in Baffinland's Shipping Monitor office located on the second floor of the MHTO building on a dedicated laptop and wall-mounted monitor. This provides live continuous monitoring of vessels active in the Northern Shipping Route to all office visitors during office hours (8 am to 5 pm). Baffinland also created a dedicated "Baffinland Shipping" Facebook page to further enhance regular communications over the shipping season, attracting hundreds of followers during the active shipping season. Key information was posted including maps showing the Northern Shipping Route extending from Baffin Bay to Milne Port, contact information of Shipping Monitors including direct cell phone line and email, and a link to the live vessel tracking available on the Baffinland website. Deviations reports are also posted on the Facebook page with pictures (where possible). Most of the deviations in 2023 were due to icebergs in the shipping lane causing ships to slightly alter course to avoid collision.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland has found the use of Spire Shipview® to be beneficial in providing information related to ship routing to the public. Baffinland will continue to use this service. Furthermore, it is Baffinland's intent to continue providing live viewing of vessel tracks through its Pond Inlet Office in 2024, and to continue the hiring of Shipping Monitors over the entire duration of the shipping season.

Project Certificate Term and Condition No. 103

Category	Marine Environment – Traffic Log and Shipping Information
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To monitor effectiveness of mitigation of shipping impacts to marine wildlife.
Term or Condition	<p>The Proponent shall report annually to the NIRB regarding project-related ship track and sea ice information, including:</p> <ul style="list-style-type: none"> a. A record of all ship tracks taken along both shipping routes covering the entire shipping season; b. When employing ice-breaking, 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 (if any) 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. When employing ice-breaking, marine bird and mammal species and number of individuals attracted to ship tracks in ice.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be provided in the Annual Report to the NIRB.
Status of PC Term and Condition	<p>Southern Transportation Corridor (Steensby Port) – Not Active</p> <p>Northern Transportation Corridor (Milne Port) – Active</p>
Status of Compliance	<p>Southern Transportation Corridor (Steensby Port) – Not Applicable</p> <p>Northern Transportation Corridor (Milne Port) – In Compliance</p>
Stakeholder Review	Nunavut Impact Review Board
Reference	<p>Marine Mammal Observation Network Season 2023 Summary Report (MMON, 2024)</p> <p>Daily Ice Charts (Canadian Ice Service, 2023)</p> <p>2023 Marine Mammal Aerial Survey Program (WSP, 2024e)</p> <p>2023 Ship-based Observer Survey Program (WSP, 2024h)</p> <p>All Project-related Vessel Transits Along the Northern Shipping Route During 2023 (Figure 4.16)</p> <p>2019 Annual Report to the Nunavut Impact Review Board (Baffinland 2020e)</p> <p>2018 Annual Report to the Nunavut Impact Review Board (Baffinland, 2019f)</p> <p>2023 Daily Ship Tracks with Ice Imagery</p> <p>2023 Marine Mammal Incidental Sightings</p> <p>2021 Marine Mammal Trigger Action Response Plan (TARP; Baffinland, 2021k)</p>
Ref. Document Link	<p>https://www.baffinland.com</p> <p>2023 MEWG Meeting Minutes</p> <p>Appendix G.6.1</p> <p>Appendix G.6.2</p> <p>Appendix G.6.3</p> <p>Appendix G.6.4</p> <p>Appendix G.6.18</p>

METHODS

- a. Vessel tracks and associated speeds along the Northern Shipping Route are recorded throughout the shipping season using the Automatic Identification System (AIS) on ships. AIS is a digital positional awareness system that integrates a standardized Very High Frequency (VHF) transceiver with a Global Positioning System (GPS) receiver installed on marine vessels, along with other onboard electronic navigation sensors, such as a gyrocompass or rate of turn indicator. Vessels fitted with dedicated AIS transceivers can be tracked by AIS base stations located along coastlines or, when out of range of terrestrial networks, through satellites fitted with special AIS receivers. The purpose of the AIS system is to allow vessels, maritime authorities and/or other third parties to track and monitor vessel movements in a defined area in relation to navigational markers and bathymetric features. In Canada, all self-propelled vessels of ≥ 150 gross tonnage carrying more than 12 passengers are required to carry Class A AIS systems, as per the federal Navigation Safety Regulations (SOR/2005-134). The International Maritime Organization Convention for the Safety Of Life At Sea (SOLAS) Regulation V/19.2.4 requires all vessels of 300 gross tonnage (GT) and above engaged on international voyages and all passenger ships irrespective of size to carry AIS onboard. AIS signals emitted by vessels transiting in the RSA are recorded by shore-based stations set up at Pond Inlet and Bruce Head; and when out of range of the base stations, through satellite-based AIS receivers (Spire [previously exactEarth®] ShipView™ exactEarth® AIS archive). Vessel tracks are publicly accessible through the Baffinland website during the shipping season and at the Baffinland office located in the MHTO building on a large wall-mounted monitor.

- b. Daily maps are prepared showing Project-related vessel tracks (including the MSV *Botnica*, MSV *Fennica* and vessels under escort) on all days when ice concentrations were 1/10 or greater. These vessel track maps include an overlay of daily sea ice concentration (i.e., coverage) provided by the Canadian Ice Service (2023) showing vessels transiting in open water whenever possible, while avoiding shore leads and polynyas.

Although not a term or condition, but requested by the MEWG during the February MEWG Meeting, a separate set of daily maps are prepared for non-project vessel traffic using the same temporal coverage and ice concentration overlay as incorporated for the project-related vessel maps.

- c. See (a) and b) above.
- d. See (a) and (b) above.
- e. In 2023, the SBO Program was successfully completed on the MSV *Botnica* and MSV *Fennica* during the fall shoulder season. For the 2023 SBO Program, additional survey protocol was developed to assess the behavioural responses of marine mammals to icebreaking activities in the RSA. Behavioural response data were collected for all species groups. An ordinal logistic regression (OLR) was used to determine if there was a significant relationship between the type of response, vessel activity and distance. Detailed methodology and analytical procedures of the 2023 SBO Program are presented in WSP (2024h; Appendix G.6.3).

Baffinland continues to collaborate with the Marine Mammal Observation Network (MMON) to run a marine mammal incidental sightings program through the participation of vessels contracted by Baffinland, the MSV *Botnica*, MSV *Fennica*, Nordic Bulk Carriers, Golden Bulk Carriers, and Oldendorff Carriers. The consideration of Baffinland partnering with MMON was first suggested during a MEWG meeting on June 6, 2018 since Groupe Desgagnés Inc. (including subsidiary Nunavut Sealink & Supply Inc.), a cargo sealift

contractor to Baffinland, had been an active member of the program (Baffinland, 2019f). In 2021, MMON made available a new whale identification training to participating vessels through an online link, <https://observers.navigatingwhales.ca/>. Vessel crews unable to take the online training were also provided offline training.

No early season icebreaking was conducted by Baffinland in 2023. An aerial clearance survey, for identifying the risk for marine mammal ice entrapment in the region, was completed in the RSA at the end of the 2023 shipping season (WSP,2024e; Appendix G.6.2).

RESULTS

- a. Project-related vessel tracks recorded using AiS in 2023 are plotted in Figure 4.16.
- b. Figures showing daily Project-related vessel tracks overlaid on ice imagery for both the early and late 2023 shoulder seasons (July 10 to August 19 and October 11 to November 10) are presented in Appendix G.6.1.1. These figures demonstrate that Project vessels actively avoided shore leads, polynyas and areas of high ice concentrations during their transits in Baffin Bay and the RSA. Figures showing daily non-Project-related vessel tracks overlaid on ice imagery for both the early and late 2023 shoulder seasons (July 10 to August 19 and October 11 to November 10) are presented in Appendix G.6.1.2.
- c. Project vessel tracks from 2023 are plotted in Figure 4.16. Project vessels are required to leave the nominal shipping route near Ragged Island to access established anchorages at that location (Figure 4.16). The Project vessel tracks shown deviating from the nominal shipping route (e.g., Claude A. Desgagnés, Ocean Taiga and Ocean Tundra) were due to the presence of high ice concentrations in Eclipse Sound during the period of August 3 through August 11 (see Figure 4.16 and Appendix G.6.1.1). The Claude A. Desgagnés, Ocean Taiga and Ocean Tundra generally convoyed together during this period, when they sought refuge in Erik Harbour and traversed back and forth across the north side of Bylot Island. When project-vessels first entered Eclipse Sound (August 9 to 11), deviations south of the nominal shipping route were due to the presence of sea ice in the area. On August 11, a Canadian Coast Guard ship (*Pierre Radisson*) assisted project-vessels transiting through ice in Western Eclipse Sound. The *Pierre Radisson* was instructed by Baffinland to enter and exit the RSA through Eclipse Sound and follow the shipping route, but it entered and exited the region via Navy Board Inlet. There were 41 deviations from the nominal shipping route during the 2023 shipping season, but none were major Project-related vessel deviations as described above.
- d. See (c) above.
- e. The 2023 SBO Program was conducted over a 10-day period during the fall shoulder season (October 21 to 30, 2023). Survey data was collected on both the MSV *Botnica* and MSV *Fennica* icebreakers during active ice escorts in the RSA. All five narwhal sightings occurred when the vessel was icebreaking and the only behavioural response observed was by one group of three narwhal that were observed traveling slowly away from the vessel at 1,200 m. Of the seven sightings of individual polar bears, one displayed vigilance at a closest point of approach (CPA) of 300 m, two ran away at CPAs of 1,000 m and 1,200 m and one walked away at a CPA of 900 m. There was no behavioural response noted during the other three observations. All polar bear sightings occurred when the vessel was icebreaking except for the one bear that was observed resting and then displaying vigilance at 300 m.



Behavioural responses recorded for seals on-ice included scan and flush, and behavioural responses recorded for seals in-water included swim away and rapid dive/splash. The only species for which flush activity was observed were ringed seal and bearded seal. The ordinal logistic regression model predicted that the probability of flush response increased at closer distances to the vessel and the probability of no response increased with increasing distance from the vessel. Model results suggested that seals on ice responded more strongly to the vessels during active icebreaking than when transiting open water. For ringed seals in water, neither distance nor vessel activity had a significant effect on in water ringed seal responses. Detailed results of the 2023 SBO Monitoring Program are presented in WSP (2024e; Appendix G.6.3).

No ship strikes on marine mammals have been recorded to date through any of the SBO programs. Similarly, no ship strikes on marine mammals have been reported by ship operators since the start of the Project, including ore carriers, fuel/cargo ships and support tugs. The only seabird strike reported over six years of monitoring occurred during the 2019 SBO Program (Baffinland, 2020e). The 2023 results indicated there was no exceedance of the Low Risk threshold for this specific indicator, as per the Marine Mammal Trigger Action Response Plan (TARP; Baffinland, 2021k).

A total of fifteen (15) vessels (2 icebreakers and 13 ore carriers) participated in the MMON program in 2023. A total of 24 sightings totalling 94 individuals were recorded between August and October (Table 4.25). The majority of incidental sightings (50%) were made by the MSV *Fennica* in the RSA. Most sightings (75%)

consisted of ringed seal (Table 4.26). Two (2) narwhal sightings totalling nine (9) whales were recorded in August and September.

Appendix G.6.4 includes locations of marine mammal sightings in the RSA from July to October 2023 conducted as part of the MMON program. Additionally, the MMON provided a summary of Baffinland's results that can be found in Appendix G.18 (MMON, 2024).

Table 4.25: Number of Marine Mammal Sightings in the Regional Study Area by Participating Vessel, August–October 2023

Vessel Name	No. of Sightings	Total No. of Individuals	Month of Sighting
MSV Fennica	12	37	October
Flag Mette	2	35	October
Georg Oldendorff	1	1	October
Gretke Oldendorff	2	2	October
Hauke Oldendorff	4	16	August, September
Heide Oldendorff	0	-	-
Nordic Nuluujaak	0	-	-
Nordic Odin	3	3	August, September
Nordic Odyssey	0	-	-
Nordic Orion	0	-	-
Nordic Oshima	0	-	-
Nordic Qinnqua	0	-	-
Golden Amber	0	-	-
Golden Opal	0	-	-
Total	24	94	

Note:

A sighting refers to when a minimum of one individual was recorded at a specific location by a participating vessel during its transit along the Northern Shipping Route.

Table 4.26: Summary of Marine Mammal Sightings in the Regional Study Area, August–October 2023

Species	No. of Sightings	Total No. of Individuals	Month of Sighting
Narwhal	2	9	August, September
Ringed Seal	18	48	August, September, October
Grey Seal	2	35	October
Unidentified Seal	2	2	October
Total	24	94	

Note:

A sighting refers to when a minimum of one individual was recorded at a specific location by a participating vessel during its transit along the Northern Shipping Route.

TRENDS

No major deviations from the nominal Northern Shipping Route in the RSA were undertaken by Project ore carriers during the first nine (9) years of iron ore shipping in this area (2015 to 2023). Forty-one minor deviations from the nominal shipping route were recorded within the RSA in 2023. The majority of these shipping route deviations were to avoid shifting ice through the RSA at the start of the shipping season.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to monitor Project vessel movements in the RSA using the shore-based AIS stations at Pond Inlet and Bruce Head, and satellite-based AIS using the Spire ShipView™ archive. Baffinland will also continue to communicate expectations to Masters with regards to avoiding deviations from the nominal Northern Shipping Route when vessels are under contract to Baffinland, and will maintain active tracking through the use of notification alerts. The SBO Program and participation in the MMON program are also expected to continue into 2024.

Project Certificate Term and Condition No. 104

Category	Marine Environment - Traffic Log and Shipping Information
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations
Objective	To prevent impacts to marine wildlife from Project shipping activities.
Term or Condition	<p>Subject to safety considerations and the potential for conditions as determined by the crew of transiting vessels, to result in route deviations:</p> <ol style="list-style-type: none"> 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. 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.
Relevant Baffinland Commitment	Not Applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	<p>Southern Transportation Corridor (Steensby Port) – Not Active</p> <p>Northern Transportation Corridor (Milne Port) – Active</p>
Status of Compliance	<p>Southern Transportation Corridor (Steensby Port) – Not Applicable</p> <p>Northern Transportation Corridor (Milne Port) – In Compliance</p>
Stakeholder Review	Not applicable
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

- Not applicable
- Refer to PC Term and Condition No. 103. Reporting for PC Term and Condition No. 104 is identical to that of PC Term and Condition No. 103.

RESULTS

- Not applicable.
- Refer to PC Term and Condition No. 103. Reporting for PC Term and Condition No. 104 is identical to that of PC Term and Condition No. 103.

TRENDS

- Not applicable.

- b. Refer to PC Term and Condition No. 103. Reporting for PC Term and Condition No. 104 is identical to that of PC Term and Condition No. 103.

RECOMMENDATIONS / LESSONS LEARNED

Refer to PC Term and Condition No. 103. Reporting for PC Term and Condition No. 104 is identical to that of PC Term and Condition No. 103.

Project Certificate Term and Condition No. 105

Category	Marine Environment - Traffic Log and Shipping Information
Responsible Parties	The Proponent
Project Phase(s)	Construction and Operation
Objective	To prevent impacts to marine wildlife from Project shipping activities.
Term or Condition	<p>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:</p> <ul style="list-style-type: none"> 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. 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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	<p>Southern Transportation Corridor (Steensby Port) – Not Active</p> <p>Northern Transportation Corridor (Milne Port) – Active</p>
Status of Compliance	<p>Southern Transportation Corridor (Steensby Port) – Not Applicable</p> <p>Northern Transportation Corridor (Milne Port) – In Compliance</p>
Stakeholder Review	Marine Environmental Working Group (MEWG)
Reference	<p>Standing Instructions and General Information for Masters of Vessels Loading at Milne Inlet Port (Fednav, 2023)</p> <p>2023 Marine Mammal Aerial Survey Program Report (WSP, 2024e)</p> <p>2023 Bruce Head Shore-based Monitoring Program (WSP, 2024f)</p> <p>2023 Underwater Acoustic Monitoring Program (Open-Water Season) - Report (Austin et al., 2024)</p> <p>2023 Ship-based Observer Survey Program (WSP, 2024h)</p> <p>Draft 2023 Shipping and Marine Wildlife Management Plan (Baffinland, 2023i)</p> <p>Marine Mammal TARP and Action Toolkits (Baffinland 2021k)</p> <p>2023 MEWG Meeting Records</p>
Ref. Document Link	<p>https://www.baffinland.com/media-centre/document-portal/</p> <p>Appendix C.1</p> <p>Appendix G.6.1</p> <p>Appendix G.6.2</p> <p>Appendix G.6.3</p> <p>Appendix G.6.5</p> <p>Appendix G.6.7</p>

METHOD

- a. Several mitigation measures, including those relevant to shipping operations and icebreaking activities associated with the current Project committed to by Baffinland to avoid and/or minimize adverse effects from shipping on marine mammals along the Northern Shipping Route, are adhered to by Baffinland and are identified in Baffinland's Shipping and Marine Wildlife Management Plan (Baffinland, 2022d) including:
- Defined shipping lane throughout the RSA.
 - Maintain constant speed and course when possible.
 - All Project vessels will reduce speeds to a voluntary maximum of 9 knots when travelling within the RSA.
 - No breaking of landfast ice will occur in the spring or fall shoulder season.
 - No icebreaking to commence the 2023 shipping season. Ore carriers will not begin their transit to Milne Port until 3/10ths or less ice is present along the entire shipping route through the Nunavut Settlement Area (NSA) from the entrance of Eclipse Sound and Milne Port.
 - When marine mammals appear to be trapped or disturbed by Project vessel movements, the vessel will implement appropriate measures to mitigate disturbance, including stoppage of movement until wildlife move away from the immediate area (as safe navigation allows).
 - All Project vessels will be provided with standard instructions to not approach within 300 m of a walrus or polar bear observed on sea ice.
 - All Project vessels will be provided with standard instructions to operate their vessel in a manner that avoids separating an individual member(s) of a group of marine mammals from other members of the group.
 - Vessels awaiting instructions from the Port Captain to enter the RSA will be instructed to wait in Baffin Bay at least 40 km east of the NSA.
 - No more than 84 ore carriers will be chartered during the 2023 season to transport up to 6.9 Mtpa until the close of 2024.
 - Baffinland will place Marine Wildlife Observers (via the SBO Program) on icebreaking vessels during the fall shoulder season that will be responsible for recording relative abundance, group composition and behaviour of marine mammals, and if relevant any incidences of marine mammal strike or near misses with Project vessels.
 - Use of convoys throughout the 2023 season to further reduce total sound exposure. Baffinland proposed to target a 15% reduction in overall independent one way transits by implementing convoys.
 - Project aircrafts (helicopter and airplanes) will maintain an altitude of 450 m over marine waters when possible.
 - Establishment of restricted "no-go" zones to avoid key sensitive areas and hunting camp areas (Koluktoo Bay, Tremblay Sound, western shoreline of Milne Inlet).
 - No drifting in Eclipse Sound.
 - Maximum of three (3) vessels anchored at Ragged Island.
 - Limiting vessel idling.

It is important to note that several of these mitigation measures have been implemented on a voluntary basis by Baffinland and exceed any applicable regulatory requirements in Canada. This suite of measures

represents a more conservative practice of vessel traffic management than is demonstrated by any other industrial/commercial shipping operator or government vessel in the RSA (i.e., Canadian Coast Guard, DFO).

Mitigation measures currently implemented by Baffinland to manage adverse effects on marine mammals from shipping are routinely evaluated as part of the ongoing marine mammal monitoring programs. In 2023, monitoring programs included the 2023 Bruce Head Shore-based Monitoring Program (WSP, 2024f; Appendix G.6.7), the 2023 Marine Mammal Aerial Survey Program (WSP, 2024e; Appendix G.6.2), the 2023 Ship-based Observer Program (WSP, 2024h; Appendix G.6.3) and the 2023 Open Water Acoustic Monitoring Report (Austin et al., 2024; Appendix G.6.5).

- b. Baffinland's Standing Instructions to Masters (SITM; Fednav, 2023) identifies a "maximum vessel speed limit of 9 knots over ground beginning at the entrance to Pond Inlet (at 74 degrees' longitude) through Eclipse Sound and throughout Milne Inlet". Project vessel speeds are tracked in real-time using the satellite-based Automatic Identification System (AIS), supported by two (2) shore-based AIS base stations installed along the Northern Shipping Route (at Bruce Head and Pond Inlet).

Not applicable in 2023. RESULTS

- a. Mitigations outlined in the methods section above were successfully implemented by Baffinland in 2023.

Shipping operations began on August 9, 2023, when ice conditions were assessed at 1-3/10ths along the entire shipping route. The Claude A. Desgagnés, Ocean Taiga and Ocean Tundra sailed through Eclipse Sound on August 9-10. On August 10-11, ice conditions in western Eclipse Sound had changed to 4/10th based on satellite imagery (Appendix G.6.1.1). On August 10, the Rossi A. Desgagnés and three ore carriers stopped in western Eclipse due to increased ice concentrations. The vessels continued to Milne Port on August 11 after a ~14 Km escort from the Coast Guard icebreaker Pierre Radisson (Appendix G.6.1.1). The escort did not require any ice breaking along the travelled route.

The use of vessel convoys as a mitigation method to reduce the number of vessel transits through the RSA was implemented for a second straight shipping season in 2023. In total, 39 Project vessel transits included the use of convoys. Six of these convoys traveled from Baffin Bay to Milne Port, 26 traveled from Baffin Bay to Ragged Island, one traveled from Ragged Island to Milne Port, and six (6) traveled from Milne Port to Baffin Bay. The use of convoys resulted in a 22% reduction in transits in the RSA in 2023.

- b. Table 4.27 presents vessel speed information for all Project-related vessels calling to Milne Port in 2023. A total of 75 ore carrier voyages (from 39 ore carrier vessels), 8 freight vessels/tanker voyages (from 4 vessels), 2 tugs, and 2 icebreakers called to Milne Port during the 2023 shipping season. In addition, a Coast Guard icebreaker assisted with Project-related activities without calling to port. Project vessels traveled below the 9-knot speed limit for 99.8% of their transit time in the RSA (Table 4.28). The maximum recorded travel speed for an ore carrier in 2023 was 10.0 knots. The maximum recorded speed for a freight/fuel tanker in 2023 was 9.2 knots. The proportional breakdown of vessel travel speed in the RSA during the 2023 shipping season is presented for all vessel types (ore carriers, cargo/fuel vessels, icebreakers and tugs) in Figure 4.17.
- c. Not applicable in 2023.

Table 4.27: Recorded Speeds of Project Vessels transiting along Northern Shipping Route, 2023

Vessel Name	No. of Round Trips	Vessel Type	Max Speed (knots)	Median Speed (knots)	% of travel >9 knots	% of travel >10 knots
AM GHENT	1	Bulk Carrier	9	8	0	0
AM KRAKOW	1	Bulk Carrier	8.9	7.9	0	0
DESPINA V	1	Bulk Carrier	8.7	8.1	0	0
ELENA VE	2	Bulk Carrier	9.1	7.7	0.02	0
FLAG METTE	3	Bulk Carrier	9.1	8.1	0.01	0
GEORG OLDENDORFF	2	Bulk Carrier	9.4	8.5	0.43	0
GISELA OLDENDORFF	1	Bulk Carrier	8.8	8.2	0	0
GOLDEN AMBER	2	Bulk Carrier	9	7.8	0	0
GOLDEN BRILLIANT	2	Bulk Carrier	9	8	0	0
GOLDEN BULL	2	Bulk Carrier	8.9	8	0	0
GOLDEN DIAMOND	2	Bulk Carrier	9.2	7.6	0.10	0
GOLDEN FAST	2	Bulk Carrier	9	8.2	0	0
GOLDEN FORTUNE	1	Bulk Carrier	8.9	7.6	0	0
GOLDEN FORWARD	1	Bulk Carrier	9	8.1	0	0
GOLDEN FREEZE	2	Bulk Carrier	8.9	7.7	0	0
GOLDEN FROST	2	Bulk Carrier	9	8.5	0	0
GOLDEN FURIOUS	2	Bulk Carrier	9.4	8.4	0.10	0
GOLDEN OPAL	2	Bulk Carrier	8.8	7.6	0	0
GOLDEN RUBY	2	Bulk Carrier	8.9	7.6	0	0
GOLDEN SUEK	1	Bulk Carrier	8.9	7.6	0	0
GRETKE OLDENDORFF	1	Bulk Carrier	9	8.4	0	0
HAUKE OLDENDORFF	2	Bulk Carrier	9	8.6	0	0
HEIDE OLDENDORFF	1	Bulk Carrier	8.8	8.5	0	0
KUMPULA	2	Bulk Carrier	9	8.2	0	0
LOWLANDS HOPE	1	Bulk Carrier	9	8	0	0
NORDIC NULUUJAAK	3	Bulk Carrier	10	7.3	0.06	0
NORDIC OASIS	2	Bulk Carrier	9.1	7.6	0.16	0
NORDIC ODIN	3	Bulk Carrier	9.1	8.3	0.01	0
NORDIC ODYSSEY	3	Bulk Carrier	9.1	7.5	0.02	0
NORDIC OLYMPIC	3	Bulk Carrier	8.9	8	0	0

Vessel Name	No. of Round Trips	Vessel Type	Max Speed (knots)	Median Speed (knots)	% of travel >9 knots	% of travel >10 knots
NORDIC ORION	3	Bulk Carrier	9.2	8	0.03	0
NORDIC OSHIMA	3	Bulk Carrier	9	8	0	0
NORDIC QINNGUA	3	Bulk Carrier	9.1	8	0.05	0
NORDIC SANNGIJUQ	2	Bulk Carrier	8.8	8	0	0
NORDIC SIKU	3	Bulk Carrier	9.1	8.1	0.01	0
PATRICIA V	2	Bulk Carrier	9.7	7.2	0.91	0
REGINA OLDENDORFF	1	Bulk Carrier	9	8.3	0	0
RIXTA OLDENDORFF	1	Bulk Carrier	9	8	0	0
SAGAR SAMRAT	2	Bulk Carrier	9.1	7.6	0.01	0
GAIA DESGAGNES	1	Fuel Tanker	8.9	8.2	0	0
MIA DESGAGNES	1	Fuel Tanker	8.5	8.1	0	0
ROSSI A. DESGAGNES	2	Fuel Tanker	9.2	6.6	0.05	0
CLAUDE A. DESGAGNES	4	General Cargo	8.9	8	0	0
BOTNICA	8	Ice Breaker	9.1	7.5	0.02	0
FENNICA	8	Ice Breaker	9.8	7.7	0.28	0
PIERRE RADISSON – Canadian Coast Guard	1	Ice Breaker	10.9	8.6	12.59	0.06
OCEAN TAIGA	1	Tug	13.2	6.1	1.66	0.81
OCEAN TUNDRA	1	Tug	13.4	8	1.63	1.23

Table 4.28: Proportion of Travel Time in RSA Relative to Speed Restriction – 2023 Shipping Season

Project Vessel Type	% of travel in the RSA <9 knots	% of travel in the RSA <10 knots
Ore carriers	99.9	100.0
Cargo / freight vessels	100.0	100.0
Fuel tankers	100.0	100.0
Tugs	98.4	98.9
Icebreakers Pierre Radisson (Canadian Coast Guard), MSV <i>Botnica</i> and MSV <i>Fennica</i> .	99.0	100.0
Total	99.8	100.0

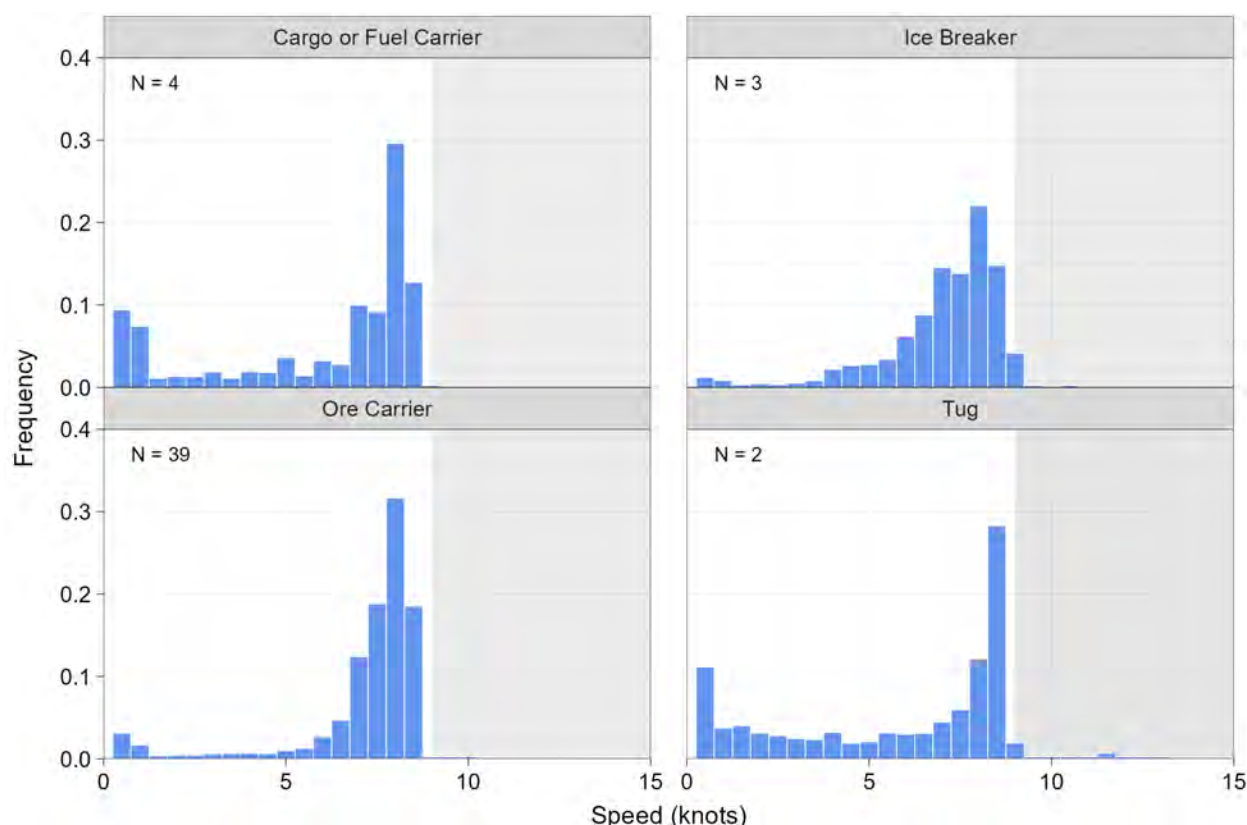


Figure 4.17: Proportional Ship Travel Speed for all Project-related Vessels - 2023 Shipping Season

Notes:

All vessel speeds <0.5 knots were excluded from the analysis as it was assumed vessels were moored/anchored at this time.

TRENDS

- a. Underwater acoustic monitoring results and narwhal behavioural data collected to date have demonstrated that shipping noise in the RSA is lower than predicted in the FEIS and FEIS Addendum, and that behavioural effects from shipping on narwhal are limited to low-level disturbance effects that are localized and temporary in nature. This gives Baffinland confidence that its current mitigation measures (e.g., 9-knot speed restriction, 40 Km buffer area at entrance of RSA, use of convoys, etc.) are demonstratively effective at managing Project incremental effects from shipping on narwhal in the RSA.

The 2023 Bruce Head Shore-based Monitoring Program results indicated there was no exceedance of the Marine Mammal TARP Low Risk threshold, e.g., confirmed Moderate severity behavioural responses (Severity Score 5 and 6) that do not persist longer than two hours following the exposure event. The 2023 SBO Program results indicated there was no exceedance of the Low Risk threshold, e.g., ship strike of one individual, for this specific indicator, as per the Marine Mammal Trigger Action Response Plan (TARP; Baffinland 2021k).

- b. There has been a marked improvement by Project vessel operators since 2018 in terms of adherence to the 9-knot speed restriction in the RSA. Compliance with the 9-knot speed restriction has been near 100% in 2022 and 2023 (Table 4.29). This has been largely the result of continuous improvements in communication between the Port Master/Baffinland Shipping and the vessel owners/operators, substantial updates made to the SITM

regarding updated mitigation measures required by all Project vessels, the use of a real-time AIS-based alert system that immediately informs the Port Master and Baffinland Shipping personnel of a non-compliance event such as a speed exceedance so that the issue can be quickly resolved, and the use of Shipping Monitors in Pond Inlet that actively track Project vessel movements in the RSA in real-time.

- c. Not applicable in 2023.

Table 4.29: Proportion of Travel Time in RSA Relative to 9-knot Speed Restriction – 2018 to 2023 Shipping Seasons

Project Vessel Type	2018	2019	2020	2021	2022	2023
Ore carriers	93.7	99.3	98.5	99.7	99.9	99.9
Cargo / freight vessels	79.0	93.6	99.9	99.8	99.8	100.0
Fuel tankers	79.0	98.2	100	99.0	99.4	100.0
Tugs	85.7	94.5	97.4	95.7	99.9	98.4
MSV <i>Botnica</i>	92.5	99.7	99.8	99.99	100.0	99.0
TOTAL	92.2	97.8	99.0	99.0	99.9	99.8

RECOMMENDATIONS / LESSONS LEARNED

- a. In 2024, Baffinland plans to continue with mitigation measures implemented in 2023 and further evaluate the potential short-term, long-term and cumulative effects of Project-related shipping noise impacts on narwhal during the open-water period.

At the May 2024 MEWG meeting, outside of this reporting period, Baffinland intends to develop a 5-year monitoring program schedule in conjunction with the MEWG. For monitoring programs that have shown stable results consistent with baseline years for the duration of Project operations, Baffinland will suggest that not all programs need to continue on an annual basis. Following this engagement, Baffinland intends to adhere to a 5-year schedule that does not involve duplicating monitoring efforts each year.

- b. In 2024, all Project vessels will continue to be provided with standing instructions to travel along the Northern Shipping Route at speeds not exceeding 9 knots. Baffinland will continue to monitor ship tracks and ship speeds using shore-based AIS stations installed at Pond Inlet and Bruce Head, and satellite-based ship tracking using the Spire ShipView™ archive. Alerts will be sent to vessels exceeding speed limits and diverting from the shipping lane.
- c. Not applicable in 2023.

Project Certificate Term and Condition No. 106

Category	Marine Environment - Shipboard Observers
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To ensure that interactions with marine mammals and Project shipping activities are effectively monitored.
Term or Condition	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 <i>Canada Shipping Act, 2001's</i> Collision Regulations, and should not interfere with safe navigation of the vessel.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	As needed.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	Marine Environment Working Group (MEWG)
Reference	2023 Ship-based Observer Survey Program (WSP, 2024h) 2023 Marine Mammal Incidental Sightings 2018 MEWG Meeting Records (Appendix C.1 in Baffinland, 2019f) 2019 Annual Report to the Nunavut Impact Review Board (Baffinland, 2020e) Marine Mammal TARP and Action Toolkits (Baffinland, 2021k) Eastern Canada Seabirds at Sea standardized protocol (Gjerdrum et al., 2012) 2023 MEWG Meeting Records
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.1 Appendix G.6.3 Appendix G.6.4

METHODS

In order to ensure that interactions with marine mammals and Project shipping activities are effectively monitored, Baffinland developed the SBO Program to monitor for potential ship strikes on marine mammals in the RSA, and secondarily collect observational data on the presence, relative abundance and spatial distribution, and behavioural response of marine mammals along the Northern Shipping Route.

In 2023, the SBO Program was successfully completed on the MSV *Botnica* and MSV *Fennica* during the fall shoulder season. Seabirds were also monitored during the 2023 fall shoulder season using CWS's Eastern Canada Seabirds at

Sea (ECSAS) protocol (Gjerdrum et. al., 2012). Detailed methodology and analytical procedures of the 2023 SBO Program are presented in WSP (2024h; Appendix G.6.3).

Baffinland continues to collaborate with the Marine Mammal Observation Network (MMON) to implement a marine mammal incidental sighting program through the participation of vessels contracted by Baffinland.

Refer to PC Term and Condition No. 103 for additional Methods of the 2023 SBO and Marine Mammal Incidental Sightings programs.

RESULTS

Refer to PC Term and Condition No. 103. Reporting on PC Term and Condition No. 106 is identical to that of PC Term and Condition No. 103.

TRENDS

No ship strikes on marine mammals have been recorded to date through any of the previously run SBO programs. Similarly, no ship strikes on marine mammals have been reported by ship operators since the start of the Project, including ore carriers, fuel/cargo ships and support tugs, and during reporting year 2023. The only seabird strike reported over six (6) years of monitoring occurred during the 2019 SBO Program (Golder, 2020d). The 2023 results indicated there was no exceedance of the Low-Risk threshold for this specific indicator, e.g., ship strike of 1 individual, as per the Marine Mammal Trigger Action Response Plan (TARP; Baffinland, 2021k).

RECOMMENDATIONS / LESSONS LEARNED

Given the success of the SBO Program in prior years and in 2023, continuation of the program utilizing the MSV *Botnica* and MSV *Fennica* will be evaluated for 2024. Baffinland will also continue with its incidental marine mammal sightings program in collaboration with MMON.

Project Certificate Term and Condition No. 107

Category	Marine Environment - Shipboard Observers
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations
Objective	To determine the presence of, and ensure that interactions with marine mammals, seabirds and seaducks are effectively monitored for, along the northern and southern shipping routes, as applicable.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Marine Environment Working Group (MEWG)
Reference	2023 MEWG Meeting Records 2023 Marine Mammal Incidental Sightings 2023 Ship-based Observer Survey Program (WSP, 2024h)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.1 Appendix G.6.3 Appendix G.6.4

METHODS

Refer to PC Term and Condition No. 103 for Methods of the 2023 SBO and Marine Mammal Incidental Sightings programs.

Surveillance monitoring programs, other than the SBO Program, are capable of better understanding potential changes in marine mammal distribution patterns and behaviour, and in so doing improve the likelihood of detecting and understanding potential strong marine mammal responses occurring too far ahead of the ship to be detectable by observers aboard the icebreakers and carriers. These programs include the Bruce Head Shore-based Monitoring Program, the Underwater Acoustic Monitoring Program, and the Marine Mammal Aerial Survey Program. Additional information on these programs is available in PC Term and Condition No. 101 and 109.

RESULTS

Refer to PC Term and Condition No. 103 for Results of the 2023 SBO and Marine Mammal Incidental Sightings programs.

Baffinland completed early shoulder season marine mammal aerial surveys just prior, during and after the start of the 2023 shipping season. The aim of these reconnaissance surveys was to collect data on the presence/absence and distribution of marine mammals in the RSA in relation to ice conditions. The information gathered on marine mammal distribution was communicated during daily shipping briefings with representatives from Baffinland's Shipping, Sustainable Development, Operations teams, and Fednav (including ice analysts). Sightings information was subsequently relayed to vessel captains so they were made aware of locations of marine mammals in the area during their transit through the RSA in the presence of ice. Refer to PC Term and Condition No. 101 for Results of Leg 1 of the Marine Mammal Aerial Survey Program.

TRENDS

Refer to PC Term and Condition No. 106. Reporting on PC Term and Condition No. 107 is identical to that of PC Term and Condition No. 106.

RECOMMENDATIONS / LESSONS LEARNED

Refer to PC Term and Condition No. 106. Reporting on PC Term and Condition No. 107 is identical to that of PC Term and Condition No. 106.

Project Certificate Term and Condition No. 108

Category	Marine Environment - Shipboard Observers
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations
Objective	To ensure that interactions with marine mammals, seabirds, and seaducks are effectively monitored for along the southern and northern shipping routes, as applicable.
Term or Condition	The Proponent shall ensure that data produced by the surveillance monitoring program is analysed 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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Marine Environment Working Group (MEWG)
Reference	2023 Ship-based Observer Survey Program (WSP, 2024h) 2023 MEWG Meeting Records
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.1 Appendix G.6.3

METHODS

Refer to PC Term and Condition No. 103 for Methods of the 2023 SBO Program.

Following completion of the field program, the marine mammal and seabird sightings data collected in the RSA as part of the SBO surveillance monitoring program is analysed rigorously by experienced marine mammal and seabird data analysts using industry best practice methodology (Thomas et al., 2010; Gjerdrum et al., 2012; Bolduc and Fifield, 2017; OBIS, 2019). Baffinland hires third-party experts to implement its monitoring programs that are specialized in various topics related to marine wildlife and statistical analysis. Completed reports included credential of lead authors, professional designations (e.g., Registered Professional Biologist) and academic formation (e.g., Master of Science [MSc], Doctor of Philosophy [PhD]). Additionally, Baffinland has partnered with governmental agencies (e.g., ECCC-CWS) and academic researchers from various universities to complete work, which includes data analysis and interpretation by experienced analysts.

RESULTS

Refer to PC Term and Condition No. 103 for Results of the 2023 SBO Program.

TRENDS

Refer to PC Term and Condition No. 106. Reporting on PC Term and Condition No. 108 is identical to that of PC Term and Condition No. 106.

RECOMMENDATIONS / LESSONS LEARNED

Refer to PC Term and Condition No. 106. Reporting on PC Term and Condition No. 108 is identical to that of PC Term and Condition No. 106

Project Certificate Term and Condition No. 109

Category	Marine Environment - Ship Noise
Responsible Parties	The Proponent
Project Phase(s)	Construction and Operation
Objective	To prevent impacts to marine mammals from Project shipping activities.
Term or Condition	The Proponent shall conduct a monitoring program to confirm the predictions in the FEIS with respect to disturbance effects from ships noise on the distribution and occurrence of marine mammals. The survey shall be designed to address effects during the shipping seasons, and include locations in Hudson Strait and Foxe Basin, Milne Inlet, Eclipse Sound and Pond Inlet. The survey shall continue over a sufficiently lengthy period to determine the extent to which habituation occurs for narwhal, beluga, bowhead and walrus.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Marine Environmental Working Group (MEWG)
Reference	2023 Underwater Acoustic Monitoring Program (Open-Water Season) – Report (Austin et al., 2024) 2023 Marine Mammal Aerial Survey Program (WSP, 2024e) 2023 Bruce Head Shore-based Monitoring Program (WSP, 2024f) 2023 Ship-based Observer Survey Program (WSP, 2024h) Early Warning Indicators for Marine Mammals Technical Memorandum (Golder, 2020e) 2023 MEWG Meeting Records 2017 - 2018 Integrated Narwhal Tagging Study Report (Golder, 2020c)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Baffinland Iron Mines 2023 Annual Report to the Nunavut Impact Review Board (this report): Appendix C.1 Appendix G.6.2 Appendix G.6.3 Appendix G.6.5 Appendix G.6.6 Appendix G.6.7

METHODS

No marine mammal monitoring studies were conducted along the Southern Shipping Route (e.g., Hudson Strait or Foxe Basin), as this phase of the Project is currently inactive.

Marine mammal monitoring programs conducted along the Northern Shipping Route and corresponding analyses undertaken in 2023 used a ‘multiple lines of evidence’ approach to confirm predictions in the FEIS with respect to disturbance effects from ship noise on the distribution and occurrence of marine mammals along the Northern Shipping Route. In the FEIS, it was predicted that marine mammal behavioural responses to ship noise would be limited to temporary, short-term avoidance behaviour, consistent with low to moderate severity responses. No large-scale avoidance behaviour, displacement effects, or abandonment of the summering grounds are predicted to occur.

In 2023, monitoring programs used visual, acoustic and remote sensing techniques to assess changes in marine mammal distribution and abundance within the RSA, and behavioural responses of narwhal and other marine mammals to ship noise. The 2023 monitoring programs included the 2023 Bruce Head Shore-based Monitoring Program, the 2023 Marine Mammal Aerial Survey Program (MMASP), the 2023 Underwater Acoustic Monitoring Program, the 2023 SBO Program, and the 2023 Marine Mammals Incidental Sightings Program. No narwhal tagging was conducted in 2023 but results from past narwhal tagging programs continue to inform ongoing monitoring programs and adaptive management for the Project, including information on potential habituation of shipping by narwhal. Collectively, these multi-year monitoring programs provide for a comprehensive evaluation of potential ship noise effects on marine mammals during the entire shipping period and throughout the life of the Project.

Detailed methodology and analytical procedures of the 2023 monitoring programs are available in the respective 2023 annual monitoring reports (WSP, 2024e; Appendix G.6.2, 2024f; Appendix G.6.7, 2024h; Appendix G.6.3; Austin et al., 2024; Appendix G.6.5), with a brief overview provided below (by monitoring program).

2023 Marine Mammal Aerial Survey Program

Refer to PC Term and Condition No. 101.

2023 Bruce Head Shore-based Monitoring Program

Refer to PC Term and Condition No. 101.

2023 Underwater Passive Acoustic Monitoring Program

The 2023 Underwater Acoustic Monitoring Program was developed by JASCO Applied Sciences (JASCO), in collaboration with WSP and Baffinland, to evaluate potential Project-related effects to marine mammals from shipping noise. The main objective of this program was to document and characterize ambient and anthropogenic underwater noise levels recorded in 2023 at two acoustic monitoring stations. The Milne Inlet recorders were deployed on August 1, 2023 and retrieved on October 9, 2023. Both Autonomous Multichannel Acoustic Recorders (AMARs) recorded continuously during this period. Two (2) additional acoustic recorders were deployed (one in Milne Inlet and one in Eclipse Sound) on October 9, 2023 to record underwater sounds during the end of the 2023 shipping season and through winter. Those recorders will record noise prior to the start of the 2024 shipping season. Data from this time period analysis and inclusion in 2024 annual reporting.

Additional objectives of the program were:

- to acoustically identify marine mammal species (notably narwhal) present along the Northern Shipping Route in 2023;

- to evaluate Project-shipping noise levels in relation to established marine mammal acoustic thresholds for injury and disturbance and to compare measured sound levels from shipping activities to modelled estimates used for environmental effects assessment;
- to characterize the contribution to the soundscape from Capesize ore carriers; and
- to estimate the extent of Listening Range Reduction (LRR) associated with Project vessels, relative to ambient noise levels. Year over year comparisons of the LRR calculations since 2018 were made.

Detailed methodology on data collection and analytical procedures for the 2023 Acoustic Monitoring Program are presented in Austin et. al. (2024; Appendix G.6.5).

2023 Ship-based Observer Program/2023 Marine Mammal Incidental Sightings Program

Refer to PC Term and Condition No. 103.

RESULTS

Detailed results of the 2023 monitoring programs are available in the respective 2023 annual monitoring reports (WSP, 2024e; Appendix G.6.2, 2024f; Appendix G.6.7, 2024h; Appendix G.6.3; Austin et al., 2024; Appendix G.6.5), with a brief overview provided below (by monitoring program).

2023 Marine Mammal Aerial Survey Program

Refer to PC Term and Condition No. 101.

2023 Bruce Head Shore-based Monitoring Program

Refer to PC Term and Condition No. 101.

2023 Underwater Acoustic Monitoring Program

All underwater recordings were made during open-water shipping periods with no icebreaking activities. Mean broadband sound levels in 2023 (one-minute averaged) were 111.5 and 108.1 decibel, relative to 1 micropascal (dB re 1 μ Pa) at the Milne Inlet and Bruce Head recorders, respectively (median levels were 97.9 and 97.2 dB re 1 μ Pa). Sound exposure levels (SEL) never exceeded thresholds for acoustic injury to relevant marine mammals (i.e., temporary or permanent hearing loss) at any of the three recording locations. The one-minute averaged sound pressure level (SPL) occasionally exceeded the 120 dB re 1 μ Pa marine mammal disturbance threshold at each station; for 1.2 % and 1.9 % of the 69 days of recording at Bruce Head and Milne Inlet, respectively.

Sounds from two marine mammal species (bowhead and narwhal) were identified in the acoustic data, in addition to suspected sounds from pinnipeds and possibly beluga. The timing for narwhal acoustic detections in Milne Inlet was consistent with recordings since 2018. Beluga whale acoustic detections were suspected in the recordings following the methodology of Zahn et al.(2021), indicating that beluga were suspected to be occasionally present in the region amongst or near narwhal. Bowhead whale vocalizations were acoustically detected (and manually validated) occasionally at both stations. Some acoustic signals consistent with those produced by ringed seals were also detected throughout the recordings.

Vessels were acoustically detected in 20% and 21% of the 2023 acoustic recordings at the Bruce Head and Milne Inlet recorders, respectively. LRR—the fractional decrease in the available listening range for marine animals—was computed at each recording station for three frequencies, each representative of different narwhal vocalization

types: 1 kilohertz (kHz; representative of narwhal burst pulses), 5 kHz (representative of whistles and knock trains) and 25 kHz (representative of clicks and high-frequency buzzes). In response to requests from the Marine Environment Working Group, JASCO compiled a year-over-year comparison of LRR calculations. The LRR results for each of the three frequencies are summarized as follows:

1 kHz (burst pulses)

Greater than 50 % LRR for sound at 1 kHz occurred during 2.6% and 4.4 % of the time when vessels were detected (i.e., 0.5% and 0.9 % of the recording period) at the Bruce Head and Milne Inlet recorders, respectively, in 2023. Ambient noise did not cause appreciable LRR at 1 kHz at either recording station, given the hearing threshold for a narwhal at 1 kHz is higher than the median ambient sound level at this specific frequency. These LRR values at Milne Inlet are slightly less than values computed in the same area between 2019 and 2022, when vessel noise resulted in greater than 50 % LRR for sound at 1 kHz during between 1.2% and 1.9 % of the total recording durations for those years.

5 kHz (whistles/knock trains)

Greater than 50% LRR for sound at 5 kHz occurred during 23.4% and 28% of the time when vessels were detected (i.e., 4.9% and 5.6% of the recording periods) at the Milne Inlet and Bruce Head recorders, respectively in 2023. Ambient noise resulted in greater than 50% LRR for sound at 5 kHz during 22.1 and 27.7% of the recording period without vessel noise (i.e., 17.5% and 22.2% of the recording period) at the Milne Inlet and Bruce Head recorders in 2023. These vessel-attributed LRR values at Milne Inlet are lower than the values computed in the same area between 2019 and 2022, when vessel noise resulted in greater than 50% LRR for sound at 5 kHz during as much as 8 % of the total recording durations in those years. Ambient noise at Milne Inlet resulted in greater than 50% LRR for sound at 5 kHz during between 8 and 18 % of the total recording durations in prior years, consistent with this year's measurements.

25 kHz (clicks / high frequency buzzes)

Greater than 50 % LRR for sound at 25 kHz occurred during 20.4% and 20.5 % of the time when vessels were detected (i.e., 4.1 and 4.3 % of the recording period) at the Bruce Head and Milne Inlet recorders, respectively. Ambient noise resulted in greater than 50 % LRR for sound at 25 kHz during 22 and 24.6 % of the recording period without vessel noise (i.e., 17.4 and 19.7 % of the recording period) at the Milne Inlet and Bruce Head recorders, respectively, in 2023. These vessel-attributed LRR values at Milne Inlet are consistent with results in the area from 2021–2022 and are lower than the values computed in 2019 and 2020 (with greater than 50 % LRR at 25 kHz occurring for 8–9 % of the total recording durations in those years). Ambient noise at Milne Inlet resulted in greater than 50 % LRR for sound at 25 kHz during between 10 and 26 % of the total recording durations between 2019 and 2022, with the results for 2023 falling within that range.

Overall, the results of 2023 PAM program are consistent with results from previous annual acoustic monitoring programs conducted by JASCO in the regional study area since 2018. The results demonstrate that while noise from Project vessels is detectable in the underwater soundscape, vessel noise exposure is temporary in nature (detectable in at most 32% of the recordings) and below sound levels that could cause acoustic injury. Assessed relative to a broadband Sound Pressure Level (SPL) of 120 dB re 1 µPa (i.e., the current noise disturbance threshold standard used by industry and government for assessing disturbance to marine mammals by continuous-type sounds such as vessel noise, and the threshold against which this Project was assessed and approved), sound exposure durations averaged less than one hour per day. This is consistent with effects predictions that acoustic

impacts would be localized and temporary and that there are substantial periods in each day when marine mammals are not disturbed by Project vessel noise.

Ship-based Observer Program/2023 Incidental Marine Mammals Sightings Program

Refer to PC Term and Condition No. 103.

TRENDS

Acoustic monitoring results and narwhal behavioural data available to date have demonstrated that shipping noise in the RSA is lower than predicted in the FEIS and that behavioural effects from shipping on narwhal are limited to low-level disturbance effects that are localized and temporary in nature. This gives Baffinland confidence that its current mitigation measures (e.g., 9 knot speed restriction, 40 Km buffer area at entrance of RSA, no icebreaking during early shoulder season based on local ice conditions, etc.) are demonstratively effective at managing Project incremental effects from shipping on narwhal in the RSA.

Refer to PC Term and Condition No. 101 and 103 for Trends specific to each monitoring program.

RECOMMENDATIONS / LESSONS LEARNED

In 2024, Baffinland plans to continue with mitigation measures implemented in 2023 and further evaluate the potential short-term, long-term and cumulative effects of Project-related shipping noise impacts on narwhal during the shipping season.

At the May 2024 MEWG meeting, outside of this reporting period, Baffinland intends to develop a 5-year monitoring program schedule in conjunction with the MEWG. For monitoring programs that have shown stable results consistent with baseline years for the duration of Project operations, Baffinland will suggest that not all programs need to continue on an annual basis. Following this engagement, Baffinland intends to adhere to a 5-year schedule that does not involve duplicating monitoring efforts each year.

Project Certificate Term and Condition No. 110

Category	Marine Environment - Ship Noise
Responsible Parties	The Proponent, Marine Environment Working Group
Project Phase(s)	Construction and Operation
Objective	To prevent impacts to marine mammals from Project shipping activities.
Term or Condition	The Proponent shall immediately develop a monitoring protocol that includes, but is not limited to, acoustical monitoring, to facilitate assessment of the potential short term, long term, and cumulative effects of vessel noise on marine mammals and marine mammal populations. The Proponent is expected to work with the Marine Environment Working Group to determine appropriate early warning indicator(s) that will ensure rapid identification of negative impacts along the southern and northern shipping routes.
Relevant Baffinland Commitment	84
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Marine Environmental Working Group (MEWG)
Reference	Draft Adaptive Management Plan (Baffinland, 2020l) Narwhal Adaptive Management Response Plan (NAMRP; Baffinland, 2022g) Preliminary Summary of 2020 Narwhal Monitoring Program (Baffinland, 2021j) Marine Mammal Trigger Action Response Plan (TARP; Baffinland, 2021k) 2023 Underwater Acoustic Monitoring Program (Open-Water Season) (Austin et al., 2024) 2023 Marine Mammal Aerial Survey Program Report (WSP, 2024e) Proportion of immature narwhal (early warning indicator) in Eclipse Sound and Admiralty Inlet from 2023 aerial survey imagery (WSP, 2024g) 2023 Bruce Head Shore-based Monitoring Program Report (WSP, 2024f) 2023 Ship-based Observer Survey Program (WSP, 2024h) Early Warning Indicators for Marine Mammals Technical Memorandum (Golder, 2020e) 2023 MEWG Meeting Records
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.1 Appendix G.6.2 Appendix G.6.3 Appendix G.6.5 Appendix G.6.6 Appendix G.6.7

METHODS

Monitoring Protocol

In order to better understand potential short-term, long-term and cumulative effects of vessel noise on marine mammals, Baffinland has implemented since 2014 a number of marine mammal monitoring programs aimed at evaluating the potential effects on vessel noise on marine mammals and marine mammal populations (e.g., Bruce Head Shore-based Monitoring Program, Marine Mammal Aerial Survey Program (MMASP), Narwhal Tagging Study, SBO Program, Ringed Seal Aerial Survey Program, Underwater Passive Acoustic Monitoring (PAM) Program. An overview of all the marine mammal monitoring programs completed by Baffinland to date for the Northern Shipping Route is provided in Table 4.30. A summary of the marine mammal monitoring activities undertaken in 2023 is presented in PC Term and Condition No. 109.

Table 4.30: Baffinland's Marine Mammal Monitoring Programs Undertaken for Northern Shipping Route (2006 to 2023)

Marine Mammal Monitoring Program	Baseline						Early Revenue Phase (4.2 Mtpa)			Early Revenue Phase (6 Mtpa)					
	2006	2007	2008	2010	2013	2014 ¹	2015 ¹	2016	2017	2018	2019	2020	2021	2022	2023
Bruce Head shore-based Monitoring	—	—	—	—	X	X	X	X	X	—	X	X	X	X	X
Passive Acoustic Monitoring	—	—	—	—	—	X	X	—	—	X	X	X	X	X	X
Ship-based Observer (SBO) Program	—	—	—	—	X	X	X	—	—	X	X	—	—	—	X
Aerial Surveys – Cetaceans	X	X	X	—	X	X	X	X ²	—	—	X	X	X	X	X
Aerial Surveys - Pinnipeds	X	X	X	—	-	X	—	—	—	—	—	—	X	—	—
Narwhal Tagging Study	—	—	—	—	—	—	—	X	X	—	—	—	—	—	—

Notes:

2014 included baseline data collection and initial evaluation of EEM protocols, 2015 was first full year of EEM implementation, post- Milne Port ore dock construction (Early Revenue Phase Phase).

DFO 2016 aerial survey data analyzed by Baffinland (Golder, 2018c)

Early Warning Indicator

Baffinland has developed a number of indicators in support of the Project aimed at the rapid identification of adverse impacts on narwhal along the Northern Shipping Route. Many of these indicators, monitored across multiple monitoring programs, are suitable for the purpose of early detection of adverse effects on narwhal resulting from Project activities and/or other contributing factors in the marine environment (Baffinland, 2021k). Of these, one indicator has been formally identified as an early warning indicator (EWI) for narwhal, based on consolidated input from members of the Marine Environmental Working Group (MEWG) since 2018. This EWI is defined as ‘a decrease in the proportion of immature narwhal (defined as calves and yearlings) relative to the observed population’. This EWI was originally proposed by DFO and was also confirmed as being of high importance by the MHTO (Golder, 2020e). A detailed description of the EWI selection process is presented in Golder (2020e).

The data used for deriving the EWI is primarily collected as part of the Bruce Head Shore-based Monitoring Program, and specifically from narwhal group compositional data collected in the defined Behavioural Study Area (BSA). The threshold for the EWI was originally defined as a ‘10% decrease in the proportion of immatures (i.e., calves and yearlings) observed at Bruce Head relative to the lowest available baseline value (0.152 recorded in 2014).’ The 10% decrease (0.137) was used to maintain consistency with the threshold level used in the marine mammal impact assessment as per the FEIS (Baffinland, 2012) and the FEIS Addendum (Early Revenue Phase; Baffinland, 2013a). If potential Project-related effects (i.e., shipping noise) were shown to be responsible for an observed exceedance of the threshold (0.137), this would trigger EWI adaptive management practices as summarized in Section 5.4 of Golder (2020e).

As part of the MEWG advisory process, DFO subsequently recommended that an index of variability be incorporated into the EWI calculation, along with an estimate of error associated with this value (Baffinland 2021j). The EWI analysis method was thus modified in 2021 to include an index of variability in the EWI calculations. To achieve this, the number of narwhal groups recorded in each sampling year at Bruce Head was divided into ten bins with an equal number of groups assigned per bin. A set of planned contrasts was constructed, so that each sampling year was compared to the average of the 2014–2015 mean least squares. Since the question of interest was whether each sampling year was different from baseline levels (2014–2015) and not whether a difference between years existed, an analysis of Variance (ANOVA) was not run prior to performing the planned contrasts. An effect size was calculated as the difference between each year’s least squares mean and the average of the 2014–2015 least squares mean values, expressed as a percentage of the average of the 2014–2015 least squares mean values. The EWI threshold was therefore revised to ‘a statistically significant difference between the annual least squares mean value and the average of the 2014–2015 least squares mean values’.

Based on prior monitoring results for narwhal, Baffinland proactively developed and implemented a Narwhal Adaptive Management Response Plan (Baffinland, 2022g), which included a follow-up investigation on the EWI through an analysis of 2020–2023 aerial survey data. The objective was to investigate whether any observed change in the proportion of immature narwhal at Bruce Head was reflected in the Eclipse Sound summer stock regional population. The data sources used for this analysis included targeted photographic survey (1,000 ft altitude) flown in Milne Inlet and Tremblay Sound during the open-water marine mammal aerial survey program, and equivalent aerial surveys flown from 2020 onward. A similar analysis of photographic aerial survey data collected in Admiralty Inlet in 2023 was undertaken to compare the EWI results to an adjacent narwhal summering ground area where Project-related shipping does not occur.

Adaptive Management Protocol

A draft Adaptive Management Plan (AMP) was developed which provides a framework for how adaptive management is incorporated into Project operations (Baffinland, 2020l). As part of this process, a Marine Mammal Trigger Action Response Plan (TARP) was developed for the Project which identifies a number of performance indicators, effect thresholds and pre-defined actions (i.e., responses) that are used to evaluate and respond to potential Project effects on narwhal and other marine mammal species in the Project area (Baffinland, 2021k). The TARP shares the same objective as the EWI identified above, although uses a broader range of effect indicators that are measured against a series of tiered thresholds (i.e., low, moderate and high-risk thresholds) that are designed to guide short-term and long-term adaptive management strategies. The pre-defined actions identified in the TARP describe the responses that Baffinland would implement should the corresponding threshold levels be exceeded and assuming there is some degree of certainty that the measured change is Project-related. Three levels of action have been identified: low, moderate, and high. These responses range from increased monitoring and data analysis (e.g., trend analysis); identification of possible sources; to risk assessment and/or mitigation. On March 22, 2021, Baffinland released the most current version of the Marine Mammal TARP and Action Toolkits as part of its responses to Post-Hearing Questions related to Phase 2 (Baffinland, 2021k).

RESULTS

Detailed results of the 2023 marine mammal monitoring programs are available in the respective 2023 annual monitoring reports (WSP 2024e; Appendix G.6.2, 2024f; Appendix G.6.7, 2024h; Appendix G.6.3; Austin et al., 2024; Appendix G.6.5), with a brief overview provided (by monitoring program) in PC Term and Condition No. 101 for the Marine Mammal Aerial Survey Program and Bruce Head Shore-based Monitoring Program, PC Term and Condition No. 103 for the SBO Program and PC Term and Condition No. 109 for the Underwater Acoustic Monitoring Program.

Early Warning Indicator

During 2023, a total of 40 narwhal groups (comprising 163 individuals) were observed in the Bruce Head BSA, including 19 calves and 20 yearlings. The combined annual proportion of immatures relative to the total number of narwhal observed in 2023 was 0.242. This represented a 57% increase from the 2014 to 2015 baseline condition. This increase was statistically significant ($p=0.03$; Table 4.31).

The proportion of immature narwhal values resulting from aerial surveys conducted in 2020 (0.117), 2021 (0.128), 2022 (0.124) and 2023 (0.131; WSP 2024g; Appendix G.6.6) fall within the range of the proportion of immature estimates for 2014 (0.154) and 2015 (0.110) (Moulton et al. 2019). While there appeared to be variability between years, there was no indication that the proportion of immature narwhal in the RSA in 2023 had declined compared to 2020–2022 estimates or 2014–2015 estimates. Statistical analyses did not find significant differences between 2020/2021/2022/2023 years ($P=0.40$). A statistical comparison between the 2020/2021/2022/2023 proportion of immature narwhal and results from Moulton et al. (2019) was not possible as the detailed 2014–2015 dataset was not available for analysis.

Table 4.31: Change in the Annual Proportion of Immature Narwhal Compared to the 2014 to 2015 Baseline Condition

Year	P-value	Effect Size (%)	
		Mean	95% Confidence Interval
2016	0.6	+7.4	-18.3 to +41
2017	0.7	+5.5	-18.6 to +37
2018	Not applicable	Not applicable	Not applicable
2019	0.7	+5.8	-18.8 to +38
2020	0.5	-8.9	-30.7 to +20
2021	0.09	-32.8	-57.7 to +7
2022	0.003	-33.4	-49 to -13
2023	0.03	+57	+4.2 to +137

TRENDS

Monitoring Protocol

Refer to PC Term and Condition No. 109.

Early Warning Indicator

The EWI threshold for narwhal was not exceeded in 2023 based on group composition data obtained during the Bruce Head Shore-based Monitoring Study. The relative proportion of immature narwhal observed in the BSA in 2023 (0.242) was significantly higher than pre-shipping values in 2014 and 2015 (0.152 and 0.167, respectively), representing a 57% increase from the baseline condition. The effect size and its 95% CI (+4% to +137%) suggest an increase in the 2023 annual proportion of immature narwhal relative to the baseline values. Since this result is likely due to the small sample size and the absence of adult narwhal in the Bruce Head area due to an ice blockage of North Milne Inlet in early summer, the proportion of immature narwhal was further investigated through EWI analysis of the 2023 aerial survey data. While there appeared to be variability in the EWI values between years through the aerial survey data, there was no indication that the proportion of immature narwhal in the RSA in 2023 had declined compared to 2020–2022 estimates or 2014–2015 estimates.

The 2023 EWI results from Bruce Head and from the aerial survey data do not indicate any exceedance of the Moderate Risk threshold for this specific indicator, as per the Marine Mammal Trigger Action Response Plan (TARP; Baffinland, 2021k).

RECOMMENDATIONS / LESSONS LEARNED

Monitoring Protocol

Acoustic monitoring results and narwhal behavioural data available to date have demonstrated that shipping noise in the RSA is lower than predicted in the FEIS and that behavioural effects from shipping on narwhal are limited to low-level disturbance effects that are localized and temporary in nature. This gives Baffinland confidence that its

current mitigation measures (e.g., 9 knot speed restriction, 40-Km buffer area at entrance of RSA, no icebreaking during early shoulder season based on local ice conditions, etc.) are effective at managing Project incremental effects from shipping on narwhal in the RSA.

In 2024, Baffinland plans to continue with mitigation measures implemented in 2023 and further evaluate the potential short-term, long-term and cumulative effects of Project-related shipping noise impacts on narwhal during the open-water period.

At the May 2024 MEWG meeting, outside of this reporting period, Baffinland intends to develop a 5-year monitoring program schedule in conjunction with the MEWG. For monitoring programs that have shown stable results consistent with baseline years for the duration of Project operations, Baffinland will suggest that not all programs need to continue on an annual basis. Following this engagement, Baffinland intends to adhere to a 5-year schedule that does not involve duplicating monitoring efforts each year.

Early Warning Indicator

The selected EWI is active and is functional at monitoring for early detection of project effects, as intended. There is no indication that the proportion of immature narwhal in the RSA in 2023 has declined since the start of shipping operations.

In addition to the aforementioned EWI, Baffinland has also developed (and currently uses) a number of other effect indicators in support of the Project aimed at the rapid identification of adverse impacts on narwhal along the Northern Shipping Route, as outlined in the Marine Mammal TARP (Baffinland, 2021k). Many of these indicators, monitored across multiple monitoring programs, have been shown to be effective of early detection of adverse effects on narwhal resulting from Project activities and/or other contributing factors in the marine environment.

Ongoing EWI monitoring through both the Bruce Head Shore-based Monitoring Program and the Marine Mammal Aerial Survey Program is thus recommended.

Project Certificate Term and Condition No. 111

Category	Marine Environment - Ship Noise
Responsible Parties	The Proponent, Marine Environment Working Group
Project Phase(s)	Construction and Operation
Objective	To prevent impacts to marine mammals from Project shipping activities.
Term or Condition	<p>The Proponent shall develop clear thresholds for determining if negative impacts as a result of vessel noise are occurring. Mitigation and adaptive management practices shall be developed to restrict negative impacts as a result of vessel noise. This shall include, but not be limited to:</p> <ul style="list-style-type: none"> a. Identifications of zones where cumulative noise could be mitigated due to biophysical features (e.g., water depth, distance from migration routes, distance from overwintering areas etc.) b. Vessel transit planning, for all seasons, to determine the degree to which cumulative sound impacts can be mitigated through the seasonal use of different zones
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	<p>Southern Transportation Corridor (Steensby Port) – Not Active</p> <p>Northern Transportation Corridor (Milne Port) – Active</p>
Status of Compliance	<p>Southern Transportation Corridor (Steensby Port) – Not Applicable</p> <p>Northern Transportation Corridor (Milne Port) – In Compliance</p>
Stakeholder Review	Marine Environmental Working Group (MEWG)
Reference	<p>Draft Adaptive Management Plan (Baffinland 2020l)</p> <p>Narwhal Adaptive Management Response Plan (NAMRP; Baffinland, 2022g)</p> <p>Marine Mammal Trigger Action Response Plan (TARP) (Baffinland, 2021k)</p> <p>2023 Underwater Acoustic Monitoring Program (Open-Water Season) (Austin et al., 2024)</p> <p>2023 Marine Mammal Aerial Survey Program Report (WSP, 2024e)</p> <p>2023 Bruce Head Shore-based Monitoring Program Report (WSP, 2024f)</p> <p>2023 Ship-based Observer Survey Program (WSP, 2024h)</p> <p>EWIs for Marine Mammals Technical Memorandum (Golder, 2020e)</p> <p>2023 EWI Aerial Survey Results (WSP, 2024g)</p> <p>2023 MEWG Meeting Records</p>
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.1 Appendix G.6.2 Appendix G.6.3 Appendix G.6.5 Appendix G.6.6 Appendix G.6.7

METHODS

Project Effect Indicators

Baffinland's marine mammal monitoring programs include a number of monitoring indicators and thresholds for determining if adverse impacts on marine mammals are occurring as a result of Project shipping (Baffinland, 2021k). These include, but are not limited to, the following:

- change in underwater noise level relevant to established acoustic thresholds and ambient (i.e., background) noise levels.
- change in absolute abundance (e.g., stock size) relative to pre-shipping numbers and previous survey years.
- change in relative abundance and distribution relative to pre-shipping numbers and previous survey years.
- change in group composition relative to pre-shipping numbers and previous survey years.
- change in reproductive output (i.e., proportion of immature narwhal in the population) relative to pre-shipping numbers and previous survey years.
- change in behaviour (e.g., for which many different response variables are used as monitoring indicators such as change in animal orientation, travel speed, dive behaviour, etc.) - compared to previous survey years and relative to established behavioural severity indexing (Southall et al., 2007, 2021; Finneran et al., 2017).
- Occurrence of ship strikes.

For those indicators where established guidelines exist, such as underwater noise (e.g., marine mammal acoustic injury and disturbance criteria), these are used for the basis of the threshold (e.g., proportion of time in a day the disturbance threshold is exceeded, referred to as the daily disturbance period). Where established guidelines do not exist, comparisons are typically made to pre-project baseline years where possible, or to previous monitoring years, with the threshold being statistical significance that is suggestive of a pattern of a Project or shipping-induced effect.

Early Warning Indicator (EWI) and Trigger Action Response Plan (TARP) for Marine Mammals

Refer to PC Term and Condition No. 110.

RESULTS

Project Effect Indicators

Results for the various Project effect indicators for the marine environment are presented in the respective 2023 annual marine monitoring reports (WSP 2024e; Appendix G.6.2, 2024f; Appendix G.6.7, 2024h; Appendix G.6.3, Austin et al., 2024; Appendix G.6.5), with a brief overview provided (by monitoring program) in PC Condition No. 109.

EWI and TARP for Marine Mammals

Refer to PC Term and Condition No. 110.

TRENDS

Refer to PC Term and Condition No. 110.

RECOMMENDATIONS/LESSONS LEARNED

Refer to PC Term and Condition No. 110.

All empirical data collected to date clearly demonstrates that the effects of vessel noise and shipping activities on marine mammals are within the range of the predicted effects. Our programs further demonstrate that we have

sufficient statistical power to detect project effects. As written, Baffinland is fully compliant with the requirements outlined in PC Term and Condition No. 111.

Project Certificate Term and Condition No. 112

Category	Marine Environment - Ship Noise
Responsible Parties	The Proponent, Marine Environment Working Group
Project Phase(s)	Construction and Operation
Objective	To prevent impacts to marine mammals from Project shipping activities.
Term or Condition	<p>Prior to commercial shipping of iron ore, the Proponent, in conjunction with the Marine Environment Working Group, shall develop a monitoring protocol that includes, but is not limited to, acoustical monitoring that provides an assessment of the negative effects (short and long term cumulative) of vessel noise on marine mammals. Monitoring protocols will need to carefully consider the early warning indicator(s) that will be best examined to ensure rapid identification of negative impacts. Thresholds shall be developed to determine if negative impacts as a result of vessel noise are occurring. Mitigation and adaptive management practices shall be developed to restrict negative impacts as a result of vessel noise. This shall include, but not be limited to:</p> <ul style="list-style-type: none"> • Identification of zones where noise could be mitigated due to biophysical features (e.g., water depth, distance from migration routes, distance from overwintering areas etc.). • Vessel transit planning, for all seasons. • A monitoring and mitigation plan is to be developed and approved by the Department of Fisheries and Oceans prior to the commencement of blasting in marine areas.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	<p>Southern Transportation Corridor (Steensby Port) – Not Active</p> <p>Northern Transportation Corridor (Milne Port) – Active</p>
Status of Compliance	<p>Southern Transportation Corridor (Steensby Port) – Not Applicable</p> <p>Northern Transportation Corridor (Milne Port) – In Compliance</p>
Stakeholder Review	Marine Environmental Working Group (MEWG)
Reference	<p>Draft Adaptive Management Plan (Baffinland, 2020l)</p> <p>Narwhal Adaptive Management Response Plan (NAMRP; Baffinland, 2022g)</p> <p>Marine Mammal Trigger Action Response Plan (TARP; Baffinland, 2021k)</p> <p>2023 Underwater Acoustic Monitoring Program (Open-Water Season) (Austin et al., 2024)</p> <p>2023 Marine Mammal Aerial Survey Program Report (WSP, 2024e)</p> <p>Bruce Head Shore-based Monitoring Program Report (WSP, 2024c)</p> <p>2023 Ship-based Observer Survey Program (WSP, 2024h)</p> <p>EWIs for Marine Mammals Technical Memorandum (Golder, 2020e)</p> <p>2023 EWI Aerial Survey Results (WSP, 2024d)</p> <p>2023 MEWG Meeting Records</p>
Ref. Document Link	<p>https://www.baffinland.com/media-centre/document-portal/</p> <p>Appendix C.1</p> <p>Appendix G.6.2</p> <p>Appendix G.6.3</p> <p>Appendix G.6.5</p>

	Appendix G.6.6
	Appendix G.6.7

METHODS

Refer to PC Terms and Conditions No. 110 and 111. Reporting on Methods for PC Term and Condition No. 112 is identical to that of PC Term and Condition No. 110 and 111.

RESULTS

Refer to PC Terms and Conditions No. 110 and 111. Reporting on Results for PC Term and Condition No. 112 is identical to that of PC Term and Condition No. 110 and 111.

TRENDS

Refer to PC Terms and Conditions No. 110 and 111. Reporting on Trends for PC Term and Condition No. 112 is identical to that of PC Term and Condition No. 110 and 111.

RECOMMENDATIONS/LESSONS LEARNED

Refer to PC Terms and Conditions No. 110 and 111. Reporting on Recommendations/Lessons Learned for PC Term and Condition No. 112 is identical to that of PC Term and Condition No. 110 and 111.

Project Certificate Term and Condition No. 113

Category	Marine Environment - Arctic Char
Responsible Parties	The Proponent, Marine Environment Working Group
Project Phase(s)	Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent impacts to marine fish in Steensby Inlet and Milne Inlet
Term or Condition	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
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Marine Environmental Working Group (MEWG)
Reference	2023 MEEMP and NIS/AIS Monitoring Program Report (WSP, 2024b)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.6.8

METHODS

Fish monitoring in Milne Inlet is undertaken annually during the open-water season to assess fish health condition in the marine receiving environment and to provide a general characterization of the fish community in the study area during this period, including Arctic char. The marine fish program was initially developed based on traditional fishing areas (i.e., IQ) and sites adjacent to the Milne Port facility. For fish health monitoring, fish condition and tissue chemistry in Milne Inlet are compared to reference areas in Koluktoo Bay and in Milne Inlet near Tugaat River.

Marine fish and fish habitat surveys in the Milne Port area were first conducted in 2010 with monitoring occurring annually from 2013 to 2023. Modifications incorporated to the marine fish program in 2023 (as part of Baffinland's 2023 MEEMP and AIS Monitoring Program) in response to recommendations and feedback provided by the MEWG, DFO, and Inuit stakeholders, included the following:

- In 2023, fishing methods were modified by decreasing the number of Fukui traps within sets from three to one. This adjustment aimed to synchronize Fukui trap deployment hours with those of hoop nets, facilitating a more accurate comparison between fish sampling methods and their respective results in the fourth trial year.
- Increased fishing efforts were conducted on the western shore near Phillips Creek to further characterize the marine fish community in Milne Port.
- Continued exploratory fishing to identify and characterize reference areas for the MEEMP fish health sampling program was conducted on the northern shore of the mouth of Koluktoo Bay and in Milne Inlet near the estuary of the Tugaat River.

Detailed information on study design and sampling methodology is available in the annual monitoring report for the MEEMP program (WSP, 2024b; Appendix G.6.8)

Monitoring of stock size of Arctic Char is not undertaken for the Project as this is beyond the current scope of the marine-based monitoring programs. Catch per unit effort (CPUE) of Arctic char is used as an indicator of abundance. See 'Recommendations and Lessons Learned' section below for more information.

RESULTS

Detailed sampling results are available in the 2023 MEEMP annual report (WSP, 2024b; Appendix G.6.8). An overview summary is provided below.

Fish Community

A total of 422 fish belonging to 12 known taxa were recorded in Milne Port from 82 fishing events (efforts) using a combination of methods during the 2023 open water survey season. Similar to previous sampling years, Arctic Char (*Salvelinus alpinus*), Fourhorn Sculpin (*Myoxocephalus quadricornis*) and Shorthorn Sculpin (*Myoxocephalus scorpius*) were the most abundant species. Other fish captured were Arctic Staghorn Sculpin (*Gymnocanthus tricuspis*), Ribbed Sculpin (*Triglops pingelii*), Pacific Cod (*Gadus macrocephalus*; formerly *G. ogac*, which is no longer considered an accepted species), Arctic Alligatorfish (*Aspidophoroides olrikii*), Arctic Sculpin (*Myoxocephalus scorpioides*), Spatulate Sculpin (*Icelus spatulata*), and single instances of a juvenile Polar Cod (*Boreogadus saida*), a Saddled Eelpout (*Lycodes mucosus*), an Atlantic Spiny Lumpsucker (*Eumicrotremus spinosus*), and an unidentified juvenile cod (*Gadus* sp.). This was the first record of Atlantic Spiny Lumpsucker as a capture of the fish community monitoring program, but this species was previously observed during visual monitoring of Milne Port and is not considered to be a nonindigenous species. The composition and abundance of the fish community captured in 2023 was generally comparable to those of the 2020-2022 monitoring programs, however, the species richness was the highest recorded since 2020 (12 known taxa as compared to 9-10 known taxa in years 2020 through 2022) and abundance, uncorrected for fishing effort, was the lowest since 2020 (422 individuals as compared to 482-852 individuals in 2020-2022).

Results of statistical analyses of the CPUE (i.e., catch rates corrected for fishing effort) supported the conclusion that existing mitigation measures were functioning as intended and that current Project activities were not resulting in adverse effects on the local marine fish communities in Milne Port. No reduction in fish abundance was associated with activities in the Direct Project Footprint (DPF); fish CPUE in the DPF was generally higher or no different than the CPUE in the Indirect Project Footprint (IPF). Analyses of total CPUE (all fish species combined) indicated higher CPUE in the DPF compared to the IPF for angling-jigging, gill net, and hoop net catches and no effect of fishing area for angling-trolling and Fukui trap catches. For Arctic char, there was no significant difference in CPUE between the DPF and IPF for gill netting, the only fishing method that could be analyzed. For Fourhorn Sculpin, area comparisons of CPUE were conducted for angling-jigging and gill net fishing methods (the major methods by which Fourhorn Sculpin was captured) and both indicated CPUE was higher in the DPF compared to the IPF. This may relate to the use of constructed rocky reef habitat around the project's Ore and Freight docks by Fourhorn Sculpin.

Fish Health

A total of 22 incidental mortalities of Arctic Char from Milne Inlet were processed in 2023, including 14 adults (five females, nine males) and eight juveniles. Processed Arctic Char ranged in age from 4 to 25 years, in total length from 313 to 647 mm, and in weight from 320 to 2,014 g. Condition factor ranged from 0.53 to 1.24. Fish were considered

to be in good health, with many being described as having abundant internal fat and few being observed with parasite infections.

A total of 21 stomachs collected from incidental mortalities of Arctic Char were analyzed for stomach contents. A total of 17 unique prey items were identified: 11 amphipods, three calanoid copepods, two fish, two snails, two mysids, one polychaete worm, one dipteran fly, one additional copepod, and one additional crustacean. Dominant prey items consumed by Arctic Char in 2023 included crustaceans (56% by weight), and fish (43% by weight). Crustaceans were comprised of amphipods (24% by weight), calanoid copepods (6.3% by weight), mysids (10% by weight), and unidentified crustaceans (16% by weight). Fish were comprised of sand lance species (*Ammodytes* spp.; 42% by weight) and unidentified fishes (1.1% by weight). Larval stage cestode tapeworm parasites (i.e., plerocercoids) were identified from the stomach of one Arctic char.

Differences in fish health endpoints were observed for female and male Fourhorn Sculpin between the Milne Port area and the Koluktoo Bay reference area. Females from the Milne Port area were significantly larger at age (i.e., greater size-at-age) and heavier at length (i.e., greater relative weight), but had significantly lower relative liver and relative gonad weights compared to female fish from Koluktoo Bay. Differences in size-at-age, relative weight, and relative gonad weight exceeded the critical effect size (CES) for female fish. For male fish, mean age was significantly lower but size-at-age was significantly greater in Milne Port compared to Koluktoo Bay. Differences in fish health endpoints were also observed for female and male Fourhorn Sculpin among sampling years within Milne Port; age, relative weight, relative liver weight, and relative gonad weight differed among sampling years for female fish, and age, size-at-age, relative weight, relative liver weight, and relative gonad weight differed among sampling years for male fish.

No differences in *Hiatella arctica* survival (as length-frequency distribution), growth (as whole animal wet weight), condition (as relative weight and relative shell weight), or reproduction (as mantle somatic index) were observed when comparing Milne Port with Tugaat River Estuary. When evaluating fish health endpoints for *H. arctica* within Milne Port among sampling years, differences were observed for whole animal wet weight, relative weight, relative shell weight, and mantle somatic index. No consistent trends in differences were observed for any endpoint, suggesting interannual variability was the main contributor to observed differences.

Results of fish health endpoint assessments were screened against the TARP criteria. The 'Low Risk' threshold was exceeded for endpoints that were significantly different between Milne Port and the relevant reference area, with a magnitude of effect exceeding the CES. In addition, the direction of effect must be indicative of a potential impairment to fish health. In 2023, one fish health endpoint in Fourhorn Sculpin exceeded the 'Low Risk' threshold. Female Fourhorn Sculpin relative gonad weight was significantly different between Milne Port and Koluktoo Bay, and the associated effect size (-31%) exceeded the CES ($\pm 25\%$) in a direction indicative of an impairment to fish health. No additional endpoints for Fourhorn Sculpin and none of the fish health endpoints for *H. arctica* exceeded TARP thresholds.

Fish Tissue Chemistry

When comparing Fourhorn Sculpin and *H. arctica* tissue chemistry between the Milne Port area and relevant reference areas, few differences were observed. Concentrations of most metals in Fourhorn Sculpin tissues were similar among sampling areas, although some metals exhibited greater spatial variability (e.g., arsenic, lead, manganese). Selenium concentrations were significantly lower in Milne Port compared to Koluktoo Bay. For

H. arctica, concentrations of most metals were similar among sampling areas. Mean magnesium concentrations were significantly greater in samples from Milne Port compared to Tugaat River Estuary.

Among sampling years at Milne Port, concentrations of most metals were similar within each species, although some metals exhibited greater interannual variability (e.g., copper, nickel, tin). For Arctic char, significant increasing trends in iron and magnesium concentrations were observed. Median concentrations of both metals exhibited appreciable interannual variability but were either stable or decreased in 2023 from previous years. For Fourhorn sculpin, no significant increasing trends were observed; significant decreasing trends were observed for aluminum and iron. These trends are considered not indicative of a Project-related effect and were not considered further. For *H. arctica*, significant increasing trends were observed for iron and selenium concentrations. Median concentrations of both metals exhibited relative stability from 2019 to 2023, with minor differences between years.

Mercury and selenium concentrations in all Arctic Char and Fourhorn Sculpin samples were below Health Canada's Maximum Levels for Chemical Contaminants in Foods mercury consumption guideline of 0.5 mg/kg ww and the BC MOE selenium concentration guidelines of 4 mg/kg dw, respectively.

Concentrations of all polyaromatic hydrocarbons in all species were below reported detection limits (<0.050 mg/kg ww).

Results of fish tissue chemistry assessments were screened against the TARP criteria. In 2023, concentrations of selenium in Fourhorn Sculpin and magnesium in *H. arctica* were significantly different between Milne Port and the relevant reference area (Koluktoo Bay and Tugaat River Estuary, respectively). However, the magnitudes of observed effects were below the CES (+100%) or in a direction not consistent with Project-related effects. Thus, no tissue chemistry endpoints exceeded TARP thresholds in 2023.

TRENDS

Fish Community

The composition and abundance of the fish community captured in 2023 was generally comparable to those of the 2020-2022 monitoring programs, however the species richness was the highest recorded since 2020 (12 known taxa as compared to 9-10 known taxa in years 2020 through 2022) and abundance, uncorrected for fishing effort, was the lowest since 2020 (422 individuals as compared to 482-852 individuals in 2020-2022).

Results of statistical analyses of the CPUE (i.e., catch rates corrected for fishing effort) supported the conclusion that existing mitigation measures were functioning as intended and that current Project activities were not resulting in adverse effects on the local marine fish communities in Milne Port. No reduction in fish abundance was associated with activities in the Direct Project Footprint (DPF); fish CPUE in the DPF was generally higher or no different than the CPUE in the Indirect Project Footprint (IPF). Analyses of total CPUE (all fish species combined) indicated higher CPUE in the DPF compared to the IPF for angling-jigging, gill net, and hoop net catches and no effect of fishing area for angling-trolling and Fukui trap catches. For Arctic char, there was no significant difference in CPUE between the DPF and IPF for gill netting, the only fishing method that could be analyzed. For Fourhorn Sculpin, was area comparisons of CPUE were conducted for angling-jigging and gill net fishing methods (the major methods by which Fourhorn Sculpin was captured) and both indicated CPUE was higher in the DPF compared to the IPF. This may relate to the use of constructed rocky reef habitat around the project's Ore and Freight docks by Fourhorn Sculpin.

Fish Health

Results of the fish health analysis for Arctic char, Fourhorn Sculpin, and *Hiatella arctica* were within FEIS predictions, which indicated the potential for low magnitude reductions in fish health and condition associated with release of site drainage. Results presented herein do not exceed predicted effects on fish health due to Project activities.

Condition factor of Arctic char was compared statistically between 2021, 2022, and 2023. Condition factor was lower in 2023 compared to 2022 but did not differ significantly for other pairwise comparisons. The relative difference among years was approximately 12%. Observed variation in Arctic char condition factor likely reflected natural variability attributable to seasonal and interannual differences in the Arctic char population of Milne Inlet.

For Fourhorn Sculpin, several fish health endpoints differed between Milne Port and the Koluktoo Bay reference area. In female Fourhorn Sculpin, relative gonad weight was significantly lower in Milne Port compared to Koluktoo Bay, and the magnitude of effect was greater than the CES: this resulted in a 'Low Risk' threshold exceedance. Similar results were not observed for male Fourhorn Sculpin. Temporal comparisons of female relative gonad weight indicated no differences among sampling years (i.e., 2018 to 2023). The observed range of interannual variability and the absence of a consistent trend in relative gonad weight over time in Milne Port together suggest the observed difference in relative gonad weight for female Fourhorn Sculpin between Milne Port and Koluktoo Bay may be a result of interannual variability. Continued monitoring will provide additional insight into the variability of fish health endpoints for this fish species.

Hiatella arctica health endpoints did not differ between Milne Port and Tugaat River Estuary, however, interannual differences in growth (whole animal wet weight), condition (relative weight and relative shell weight), and mantle somatic index all differed significantly among sampling years. Relative differences ranged from 11% for relative weight to 122% for mantle somatic index. In the absence of significant differences in *H. arctica* health between Milne Port and Tugaat River Estuary in 2023, it is assumed that differences among sampling years represent natural variability within *H. arctica*.

Tissue Chemistry

Results of chemical analyses of metals and PAHs in Arctic Char tissues were within FEIS predictions, which are consistent with low magnitude increases in fish tissue concentrations of metals and/or PAHs associated with release of site drainage. These results do not exceed predicted effects on fish tissue chemistry due to Project activities. Metal concentrations were generally above detection limits and variable among species and years. In 2023, concentrations of most contaminants of potential concern (CoPCs) did not differ significantly between Milne Port and the reference areas for Fourhorn Sculpin and *H. arctica*. There were statistically significant differences among years in most CoPCs, but the magnitudes of differences were relatively small, and the measured concentrations of CoPCs in 2023 remained within the range of historical variability for all species. Temporal trends in CoPCs were rarely observed, indicating identified differences were likely a result of interannual variability, and the magnitude of trends were considered not ecologically relevant.

Concentrations of many metals in Arctic char were similar among years, however some demonstrated notable interannual variability (e.g., copper, iron, selenium, zinc). Among CoPCs, no significant temporal trends were observed for aluminum, mercury, and selenium, while significant trends were observed among years for iron and magnesium. Rank-transformed iron concentrations in Arctic char demonstrated a significant increasing trend from 2018 to 2023. Median concentrations displayed interannual variability pre-2022, but increased between 2022 and 2023 (Relative Percent Difference [RPD]: 44%) compared to previous years. Magnesium concentrations in Arctic Char

demonstrated a significant increasing trend from 2018 to 2023. Median magnesium concentrations displayed interannual variability over the sampling period, increasing steadily from 2018 to 2022, with median concentration decreasing by approximately 6% in 2023 to levels comparable to those observed in 2019 and 2020.

All tissue samples for Arctic char, Fourhorn Sculpin and *H. arctica* collected from 2018 to 2023 were below Health Canada's Maximum Levels for Chemical Contaminants in Foods mercury consumption guideline of 0.5 mg/kg ww. All tissue samples for Arctic char and Fourhorn Sculpin were also below BC MOE fish tissue guidelines of 4 mg/kg dw for selenium.

RECOMMENDATIONS / LESSONS LEARNED

It is recommended that fish community, fish health, and fish tissue chemistry continue to be monitored on an annual basis through the MEEMP-NIS/AIS Monitoring Program.

Project Certificate Term and Condition No. 114

Category	Marine Environment – Arctic Char
Responsible Parties	The Proponent, Marine Environment Working Group
Project Phase(s)	Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent impacts to marine fish in Steensby Inlet and Milne Inlet.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Not Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – Not Applicable
Stakeholder Review	Not applicable
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Not applicable, as no commercial fishery has been developed.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 115

Category	Marine Environment - Arctic Char
Responsible Parties	The Proponent
Project Phase(s)	Construction and Operations
Objective	To prevent impacts to marine fish in Steensby Inlet and Milne Inlet.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	Fisheries and Oceans Canada (DFO), Marine Environment Working Group (MEWG)
Reference	Community Engagement On Fisheries Offsetting - Steensby Component (Knight Piésold, 2023d)
Ref. Document Link	Appendix G.19

METHODS

Baffinland conducted engagement on the Project as a whole with the five (5) North Baffin communities (Arctic Bay, Clyde River, Igloolik, Pond Inlet, and Sanirajak) prior to, during, and following the environmental reviews of the Project by the NIRB.

In 2023, Baffinland facilitated several community engagement activities involving HTO members and Hamlet representatives to discuss marine and freshwater fisheries offsetting options proposed for the Steensby Component of the Project. These engagement activities were held in preparation of *Fisheries Act Authorization* applications to gather input into potential offsetting options in both freshwater and marine environments to address potential losses in fish habitat associated with permanent habitat alteration or destruction of fish habitat. Communities were engaged to help refine proposed fish offsetting locations and methods. For the freshwater environment, offsetting is required for planned in-water infrastructure and construction activities along the Steensby Railway and at Steensby Port (bridges, culverts, pond encroachments). For the marine environment, offsetting options are required for the in-water works to be constructed at Steensby Port (ore dock, construction dock, island link causeway, anchor moorings). Input from these engagements has been used to refine Baffinland's applications for Authorizations under the *Fisheries Act* for the Steensby Component of the Project.

During these engagement activities, Baffinland shared information on the proposed fish habitat offsetting measures in the freshwater and marine environment, including freshwater habitat offsetting such as fish introductions, habitat restoration and enhancement opportunities. The marine offsetting measure discussed was construction of a rocky reef(s) in Steensby Inlet, similar to the rocky reef offset habitat that has been constructed at Milne Port that has proven successful.

Additionally, in 2023, Baffinland engaged with the communities of Arctic Bay and Pond Inlet to provide an overview of the proposed rocky reef habitat offsetting plan for the Milne Port Freight Dock associated with Baffinland's *Fisheries Act* Authorization (Ref No. 14-HCAA-00525), and seek input from Hamlet representatives, Ikajutit HTO and MHTO members about rocky reef design and location.

RESULTS

Following consultation on the proposed Milne Port rocky reef habitat offsetting, the Hamlets of Arctic Bay and Pond Inlet provided letters of support for the rocky reef offsetting method.

A number of potential offsetting options were identified and evaluated for the freshwater and marine environment for the Steensby Component of the Project. Potential offsetting options identified by communities included cleanup of debris associated with disused camp sites, permanent water crossing infrastructure where fish-bearing streams are forded by hunters, and specific locations where fish passage may be naturally impeded. There was an interest from communities in collecting data that would assist Arctic char fisheries and monitoring of potential Project impacts. There was an overall preference to avoid further disturbance to the land and the most interest is related to enhancement of Arctic char fisheries. A senior biologist completed a verification site visit of a portion of the community-identified offsetting sites between August 28 and September 11, 2023, including sites near Igloolik, Pond Inlet, Sanirajak.

Following the community engagement on offsetting measures in 2023, it was concluded that opportunities to improve fish habitat are limited at the locations identified by the communities, as fish habitat is pristine throughout the region with few opportunities to construct offsetting that would improve fish habitat. Removal of debris from old camp sites and crossing infrastructure would be unlikely to improve fish habitat, or only represent a small fraction of the required offset. Baseline data is limited in the region and multiple opportunities exist to collect information that would assist in managing the Arctic char fisheries and identifying potential solutions to improve fish habitat.

Further details on engagement activities held for the Steensby Component are provided in Appendix G.19 (Knight Piésold, 2023d).

TRENDS

Results from the six-years of post-construction monitoring of the Milne Port Ore Dock offsetting works have shown the coarse rock offsetting habitat on the perimeter of the Ore Dock is effective in supporting biological activity, providing support for the addition of coarse substrates as an effective approach for successful offsetting. The *Fisheries Act* Authorization (FAA) for the Milne Port Ore Dock was closed by DFO in 2021 as monitoring results demonstrated the effectiveness of the offsetting habitat.

Year 2 of post-construction monitoring for the Freight Dock offset habitat occurred in 2021. Year 2 of monitoring indicated that macroalgae, motile invertebrates and fish continue to colonize the Freight Dock offset habitat, and that it appears to be providing a suitable and stable substrate for continued colonization and growth of marine organisms. Year 5 of post-construction monitoring will occur in 2024.

Over the long term, as existing data is expanded upon with results from offsetting monitoring programs and community consultations in the region, the suitability of freshwater and marine habitat offsetting methods will be further evaluated.

RECOMMENDATIONS / LESSONS LEARNED

Through engagement conducted in 2023, Baffinland received recommendations from communities on proposed habitat offsetting for the Steensby Component of the Project. These community-driven recommendations are pivotal inputs in the selection of proposed methods for fish habitat offsetting.

Baffinland will continue to monitor the success of fish habitat offsetting measures associated with the construction of the Freight Dock and future Milne Port rocky reef. Baffinland will also continue to provide the results of monitoring programs to DFO, the MEWG and other interested parties, as requested.

Baffinland remains committed to exploring potential offsetting options in both freshwater and marine environments to address potential losses in fish habitat associated with permanent habitat alteration or destruction of fish habitat associated with future permitting requirements, as needed.

Project Certificate Term and Condition No. 116

Category	Marine Environment – Blasting
Responsible Parties	The Proponent, the Department of Fisheries and Oceans
Project Phase(s)	Construction
Objective	To prevent impacts to marine fish and fish habitat from explosives.
Term or Condition	Prior to construction, the Proponent shall develop mitigation measures to minimize the effects of blasting on marine fish and fish habitat, marine water quality and wildlife that includes, but is not limited to compliance with the Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters (Wright and Hopky, 1998) as modified by the Department of Fisheries and Oceans for use in the North and as revised from time to time.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Not Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – Not Applicable
Stakeholder Review	Not applicable
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

In the event blasting is required, Baffinland will provide operational control procedures in consultation with the MEWG and DFO that prescribe the requirements for the use of explosives in or near marine water bodies to ensure the activity is carried-out in accordance with DFO guidance and best practice.

No blasting occurred in the marine environment or in nearshore areas during 2023.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 117

Category	Marine Environment – Blasting
Responsible Parties	The Proponent, Fisheries and Oceans Canada
Project Phase(s)	Construction
Objective	To prevent impacts to marine fish and fish habitat from explosives.
Term or Condition	The Proponent shall ensure that blasting in, and near, marine water shall only occur during periods of open water. Blasting in, and near, fish-bearing freshwaters shall, to the greatest degree possible, only occur in open water. If blasting is required during ice-covered periods, it must meet requirements established by Fisheries and Oceans Canada.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Not Active
Status of Compliance	Not Applicable
Stakeholder Review	Fisheries and Oceans Canada (DFO), Marine Environment Working Group (MEWG)
Reference	Surface Water and Aquatic Ecosystem Management Plan (Baffinland, 2021d) Quarry Blasting Operations Management Plan (Baffinland, 2013b) Guidelines for Use of Explosives In or Near Canadian Fisheries Water (Wright and Hopky, 1998)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Not Applicable in 2023. Blasting in the marine environment has not occurred on site to date. In the event it is required, Baffinland will provide operational control procedures in consultation with the MEWG and DFO that prescribe the requirements for the use of explosives in or near marine waterbodies to ensure the activity is carried-out in accordance with DFO guidance and best practice, including the requirement that blasting in, and near, marine water shall only occur during periods of open water.

For freshwaters, Baffinland's Surface Water and Aquatic Ecosystem Management Plan (SWAEMP) and Quarry Blasting Operations Management Plan have been developed to include the requirements for the use of explosives (blasting) in or near freshwater bodies. The requirements were developed in accordance with DFO guidance, including the *Guidelines for Use of Explosives In or Near Canadian Fisheries Water, 1998* (Wright and Hopky, 1998), in order to mitigate possible effects on fish habitat and fish health.

RESULTS

Blasting in the marine and freshwater environment has not occurred on site to date.

TRENDS

To date, no blasting has occurred within the required setback distances at the Project.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 118

Category	Marine Environment – Blasting
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To prevent impacts to marine fish and fish habitat from explosives.
Term or Condition	The Proponent shall incorporate into the appropriate mitigation plan prior to construction, thresholds for the use of specific mitigation measures meant to prevent or limit marine wildlife disturbance, such as bubble curtains for blasting, and nitrate removal.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Not Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Not applicable
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

No marine construction activity occurred at Steensby or Milne Port in 2023.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable

Project Certificate Term and Condition No. 119

Category	Marine Environment - Ringed Seals
Responsible Parties	The Proponent, Marine Environment Working Group
Project Phase(s)	Construction
Objective	To prevent impacts to ringed seals from icebreaking associated with Project shipping.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Not applicable
Status of Compliance	Not applicable
Stakeholder Review	Marine Environment Working Group (MEWG)
Reference	2021 Ringed Seal Aerial Survey Program (Golder, 2022c) Marine Mammal Trigger Action Response Plan (TARP; Baffinland, 2021k)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Winter shipping has not been required in the previous and current Project phases (Early Revenue Phase, PIP, PIPE, PIPR, SOP). Baffinland's shipping-related management and mitigation measures applied along the Northern Shipping Route (the only active part of the Project to date) takes into consideration key sensitive periods of ringed seal. Specifically, shipping and icebreaking will be conducted outside of key sensitive periods including pupping, nursing and mating periods (i.e., January to May, no temporal overlap with Project-related shipping). Baffinland did not ice break during the early 2023 shoulder season and did not commence shipping until ice concentrations were less than 3/10ths, on August 9, 2023. Baffinland did not conduct ringed seal aerial surveys in 2023, however, surveys were conducted along the Northern Shipping Route Study Area in June 2021 in response to concerns raised by the MHTO that ringed seal abundance and distribution has changed since Project shipping began, and more acutely since icebreaking activities in the shoulder season commenced in 2018.

RESULTS

Not applicable.

TRENDS

Seal aerial surveys were completed in the Regional Study Area in years 2006 (exploratory only), 2007 and 2008 to characterize baseline conditions in support of the FEIS (Baffinland, 2012). Surveys completed in 2007 and 2008 focused on Milne Inlet and Koluktoo Bay. Baffinland later completed surveys in 2014 to update baseline data on ringed seal density and distribution. DFO subsequently completed surveys in 2016 and 2017 to assess spring

distribution and density of ringed seal in Eclipse Sound and Milne Inlet areas (Young et al., 2019; Yurkowski et al., 2019).

Baffinland conducted a 2021 Ringed Seal Aerial Survey Program (RSASP; (Golder, 2022c) in Eclipse Sound and Milne Inlets. The results of this 2021 survey indicated that ringed seal densities have overall remained stable with some annual variations since the onset of shipping operations in 2015, and since Project icebreaking activities began in the shoulder seasons in 2018. These results confirmed that mitigation measures were functioning as intended and that these Project activities were being managed in a way that has not adversely affected ringed seals. The cessation of ice-breaking during the early shoulder season, in combination with the 2021 aerial survey results, indicated that a 2023 ringed seal aerial survey was not required as recommended by Baffinland's technical marine mammal experts.

The results of the 2021 RSASP also indicate there was no exceedance of the marine mammal TARP High Risk threshold, e.g., Confirmed >25.0% decrease in density throughout the Local Study Area (LSA), as per the Marine Mammal TARP (Baffinland, 2021k). The TARP does not include a Low or Moderate Risk Condition Status / Threshold for this performance indicator.

RECOMMENDATIONS / LESSONS LEARNED

Mitigation measures in place for ringed seal have been carefully developed to completely avoid shipping impacts on ringed seal during periods when they are "grouped up" (i.e., the winter and spring), when group behaviour is critical to reproductive activities such as mating. The timing of the shipping season protects seals during the basking period and aims to avoid impacts on seals at the time when they start maintaining breathing holes during initial ice freeze-up. Results from the 2021 surveys demonstrate that mitigations are functioning as intended.

No ringed seal aerial survey program is planned in 2024 for the Northern Shipping Route.

Project Certificate Term and Condition No. 120

Category	Marine Environment - Marine Mammal Interactions
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operation, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent impacts to marine mammals associated with Project shipping.
Term or Condition	<p>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:</p> <ol style="list-style-type: none"> Wildlife will be given right of way. Ships will, when possible, maintain a straight course and constant speed, avoiding erratic behavior. 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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	<p>Southern Transportation Corridor (Steensby Port) – Not Active</p> <p>Northern Transportation Corridor (Milne Port) – Active</p>
Status of Compliance	<p>Southern Transportation Corridor (Steensby Port) – Not Applicable</p> <p>Northern Transportation Corridor (Milne Port) – In Compliance</p>
Stakeholder Review	Marine Environmental Working Group (MEWG)
Reference	<p>Draft 2023 Shipping and Marine Wildlife Management Plan (Baffinland, 2023i)</p> <p>2023 Ship-based Observer Survey Program (WSP, 2024h)</p> <p>Standing Instructions and General Information for Masters of Vessels Loading at Milne Inlet Port (Fednav, 2023)</p> <p>2023 MEWG Meeting Records</p>
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.1 Appendix G.6.3

METHODS

Refer to PC Term and Condition No. 103 and 105. Reporting on PC Term and Condition No. 120 is identical to that of PC Term and Condition No. 103 and 105.

RESULTS

Refer to PC Term and Condition No. 103 and 105. Reporting on PC Term and Condition No. 120 is identical to that of PC Term and Condition No. 103 and 105.

TRENDS

Refer to PC Term and Condition No. 103 and 105. Reporting on PC Term and Condition No. 120 is identical to that of PC Term and Condition No. 103 and 105.

RECOMMENDATIONS / LESSONS LEARNED

To ensure adherence to the SMWMP, Baffinland will continue to monitor vessel tracks and associated speeds using shore-based AIS stations at Pond Inlet and Bruce Head, and satellite-based vessel tracking using the Spire ShipView™ archive.

In 2024, all Project vessels (ore carriers, fuel tankers, cargo ships, tugs, icebreaker) will be subject to the mitigation measures outlined above (as part of the annually updated SITM) when under contract to Baffinland, including standing instructions to travel through Eclipse Sound and Milne Inlet at speeds of no greater than 9 knots and to avoid deviating from the nominal Northern Shipping Route. Baffinland will also continue to hire community-based Shipping Monitors based in Pond Inlet to provide community oversight of its shipping activities.

Project Certificate Term and Condition No. 121

Category	Marine Environment - Marine Mammal Interactions
Responsible Parties	The Proponent, Fisheries and Oceans Canada, Environment Canada
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent impacts to marine mammals and seabird colonies associated with Project shipping.
Term or Condition	<p>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:</p> <ul style="list-style-type: none"> • Date, time and location of the incident; • Species of marine mammal or seabird involved; • Circumstances of the incident; • Weather and sea conditions at the time; • Observed state of the marine mammal or sea bird colony after the incident; and, • Direction of travel of the marine mammal after the incident, to the extent that it can be determined.
Relevant Baffinland Commitment	80, 83
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Marine Environment Working Group (MEWG), Fisheries and Oceans Canada (DFO), Environment and Climate Change Canada (ECCC)
Reference	Draft 2023 Shipping and Marine Wildlife Management Plan (Baffinland, 2023i)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Baffinland's Shipping and Marine Wildlife Management Plan (Baffinland, 2023i) mandates the recording of any contact that occurs between Project vessels and marine mammals or seabird colonies.

In order to ensure that interactions with marine wildlife and Project shipping activities are effectively monitored, Baffinland developed the Ship-based Observer Program (SBO) to monitor for potential ship strikes on marine mammals and seabirds in the RSA and implemented this program in 2018, 2019, and 2023 by deploying Marine Wildlife Observers on the MSV *Botnica* (2018, 2019, 2023), and the MSV *Fennica* (2023), which were icebreakers commissioned by Baffinland to serve as an escort vessel to ore carriers at the beginning and end of the shipping season. Seabirds were monitored using the Canadian Wildlife Service (CWS)'s Eastern Canada Seabirds at Sea (ECSAS) protocol. The SBO program was not implemented as planned in 2023 at the start of the shipping season

since shipping did not begin until icebreaking was no longer required (i.e., until a continuous path of no greater than 3/10th ice concentrations from Eclipse Sound to Milne Port).

Initiated in 2020, Baffinland continues to partner with the Marine Mammal Observation Network (MMON) to implement a marine mammal incidental sighting program through the participation of Project ice breakers, tugs, and ore carriers. In 2023, all sightings were obtained from ore carrier crews and the MSV *Fennica*. The consideration of Baffinland partnering with MMON was first suggested during a MEWG meeting on June 6, 2018 since Groupe Desgagnés Inc. (including subsidiary Nunavut Sealink & Supply Inc.), a cargo sealift contractor to Baffinland, had been an active member of the program. Training was made available to participating vessel representatives through a new platform developed by MMON.

RESULTS

There were no marine mammal or seabird strikes reported in 2023, and therefore no notification was required.

TRENDS

From 2013 through 2023, no notifications of accidental contact with marine mammals or seabirds were required, with the exception of one seabird strike that occurred in October 2019. Given that this remains the only seabird strike to occur since 2013, there is insufficient data to undertake any type of trend analysis.

RECOMMENDATIONS / LESSONS LEARNED

Given that only one (1) seabird strike has been recorded to date (from 2019), no additional mitigation measures are deemed necessary based on the very low frequency of occurrences. Additional recommendations will be considered should this be observed on a recurring basis.

Project Certificate Term and Condition No. 122

Category	Marine Environment - Marine Mammal Interactions
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent impacts to marine mammals and seabird colonies associated with Project shipping.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be provided in the Annual Report to the NIRB.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Marine Environment Working Group (MEWG)
Reference	Draft 2023 Shipping and Marine Wildlife Management Plan (Baffinland, 2023i)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Baffinland's Shipping and Marine Wildlife Management Plan (Baffinland, 2023i) mandates the recording of any contact that occurs between Project vessels and marine mammals or seabird colonies.

In order to ensure that interactions with marine wildlife and Project shipping activities are effectively monitored, Baffinland developed the Ship-based Observer (SBO) Program to primarily monitor for potential ship strikes on marine mammals and seabirds in the RSA. The program was implemented in 2018 to 2019 by deploying Marine Wildlife Observers (MWOs) on the MSV *Botnica*, an icebreaker that was commissioned by Baffinland to serve as an escort vessel to ore carriers at the beginning and end of the shipping season. Seabirds were monitored using the Canadian Wildlife Service (CWS)'s Eastern Canada Seabirds at Sea (ECSAS) protocol.

Unfortunately, due to boarding restrictions related to the global COVID-19 Pandemic, the SBO program could not be implemented in 2021, as was the case in 2020. In 2022, the SBO Program did not take place during the fall shoulder season due to the presence of multi-year ice in the RSA which resulted in early termination of the 2022 shipping season (last day of Project shipping in RSA was 13 October 2022). In 2023, the SBO Program was successfully completed during the fall shoulder season from 21-30 October. In 2023, MWOs were stationed on both the MSV *Botnica* and MSV *Fennica* to support this study since dual and tandem escorts occurred at the end of the shipping season.

To supplement the SBO program, Baffinland has partnered with the Marine Mammal Observation Network (MMON) since 2020 to implement a marine mammal incidental sighting program through the participation of Baffinland contracted vessels. Training was made available to participating vessel representatives through an online platform

developed by MMON in 2021. In 2023, a total of fifteen (15) vessels (2 icebreakers and 13 ore carriers) documented sightings to support the MMON program.

RESULTS

No ship strikes on marine mammals or seabirds occurred during the 2023 SBO program.

TRENDS

From 2013 through 2023, no notifications of accidental contact with marine mammals or seabirds were required, with the exception of a seabird strike that occurred in October 2019. Given that this was the first seabird strike to occur since 2013 and the only one recorded to date, there is insufficient data to undertake any type of trend analysis.

RECOMMENDATIONS / LESSONS LEARNED

Given that only one (1) seabird strike has been recorded to date (from 2019), no additional mitigation measures are deemed necessary based on the very low frequency of occurrences. Additional recommendations will be considered should this be observed on a recurring basis.

Project Certificate Term and Condition No. 123

Category	Marine Environment - Marine Mammal Interactions
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent impacts to marine mammals and seabird colonies associated with Project shipping.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	Marine Environment Working Group (MEWG)
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

In order to ensure that interactions with marine mammals and Project shipping activities are effectively monitored, Baffinland developed the Ship-based Observer (SBO) Program to primarily monitor for potential ship strikes on marine mammals and seabirds in the Regional Study Area (RSA), and secondarily to collect observational data on the presence, relative abundance and distribution, and behaviour of marine mammals and seabirds within the boundaries of the RSA relative to Project vessel operations.

Baseline studies for the SBO Program were conducted in 2013 and 2014. The program was executed again in 2015, 2018, 2019 and 2020 to conduct Project Environmental Effects Monitoring (EEM). The 2013 and 2014 SBO Programs took place during the construction phase at Milne Port, while the 2015 program occurred during Year 1 of shipping operations. As Baffinland had not designed or constructed purpose-built ore carriers as originally planned, there was reliance on placing the observers aboard market vessels in order to conduct the monitoring. Fuel tanker and sealift vessel traffic in and out of Milne Port served as the SBO observation platform during the 2013 to 2015 program. Observers boarded the ship in Pond Inlet, disembarked at Milne Port, and returned to Pond Inlet via community charter flight for the subsequent vessel boarding. The SBO Program was put on hold in 2016 due to concerns regarding safe onboarding of the observers on the vessels in Pond Inlet (as boarding occurred at sea). In 2018 and 2019, Marine Wildlife Observers (MWOs) were stationed off of the MSV *Botnica*, an icebreaker that was commissioned by Baffinland to serve as an escort vessel to ore carriers at the beginning and end of the shipping

season, to alleviate previous concerns associated with safe onboarding in Pond Inlet. The MSV *Botnica* provided a safe climate-controlled viewing platform 20 m above sea level, where MWOs could comfortably and effectively observe marine wildlife and environmental conditions. Seabirds were monitored using the Canadian Wildlife Service (CWS)'s Eastern Canada Seabirds at Sea (ECSAS) protocol (Gjerdrum et al., 2012).

Unfortunately, due to boarding restrictions related to the global COVID-19 Pandemic, the SBO program could not be implemented in 2020 or 2021. In 2022, the SBO Program did not take place during the fall shoulder season due to the presence of multi-year ice in the RSA which resulted in early termination of the 2022 shipping season (last day of Project shipping in RSA was October 13, 2022). In 2023, the SBO Program was successfully completed during the fall shoulder season from October 21-30. In 2023, MWOs were stationed on both the MSV *Botnica* and MSV *Fennica* to support this study since dual and tandem escorts occurred at the end of the shipping season.

RESULTS

Similar to previous years, no ship strikes on marine mammals (or near misses) were recorded during the active monitoring periods on the MSV *Botnica* or MSV *Fennica* during 2023. Overall, the distances maintained by marine mammals from the survey vessel in 2023 lend confidence to existing environmental assessment predictions, in that marine mammals in the RSA are likely to demonstrate localized avoidance of Project vessels, and that vessel strikes on marine mammals are unlikely to occur based on current vessel speeds in the RSA (9 knot speed restriction).

In 2023, seabird sightings were recorded using the CWS ECSAS survey protocol in addition to marine mammal observations. Marine mammal sightings were recorded over a daily monitoring period extending up to 9 h depending on available daylight hours. Seabird sightings were recorded during dedicated seabird surveys conducted periodically throughout the day (lasting one to two hours each). The total daily watch period for seabirds was variable depending on sighting conditions, ranging from 0.5 to 4.5 h.

TRENDS

No ship strikes on marine mammals have been recorded to date through any of the previously run SBO programs. Similarly, no ship strikes on marine mammals have been reported by ship operators since the start of the Project, including ore carriers, fuel/cargo ships and support tugs, and during reporting year 2023. The only seabird strike reported over six years of monitoring occurred in October 2019.

RECOMMENDATIONS / LESSONS LEARNED

Continuation of the SBO Program is recommended for 2024 in accordance with NIRB Project Certificate No. 005 Terms and Conditions. Ongoing annual monitoring will allow for additional data comparison between monitoring years, which will serve to identify whether any additional adaptive management measures during the shoulder seasons are required.

Project Certificate Term and Condition No. 124

Category	Marine Environment - Marine Mammal Interactions
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To prevent impacts to marine mammals and marine fish populations from increased harvesting pressures in Project areas.
Term or Condition	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.
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Fisheries and Oceans Canada (DFO), Crown Indigenous Relations and Northern Affairs Canada (CIRNAC), Qikiqtani Inuit Association (QIA), Terrestrial Environment Working Group (TEWG)
Reference	2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a) Hunting and Fishing (Harvesting) Policy (Baffinland, 2013c) Environmental Protection Plan (Baffinland, 2021c)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

As part of the Site orientation and training on the Environmental Protection Plan (EPP), individuals coming onto site participate in cultural awareness training and are provided with an overview of the policies outlined in the Hunting and Fishing (Harvesting) Policy (Baffinland, 2013c). Baffinland does not interfere with rights of public hunting or fishing near or on the PDA. All visitors that check in with site security and visitor activities reported to security are tracked through a Hunter and Visitor Log. Visitor information for 2023 is summarized in the 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a).

Upon approval from DFO, fishing activities and fish population health surveys occur annually for the collection of environmental data and fish population health metrics by trained contracted professionals for aquatic effects assessment. Required scientific permits are applied for and received before sampling or fish population health programs occur. Results are published under various annual reports. Scientific collection permits are intended for non-lethal programs.

RESULTS

No incidences of Project personnel hunting or fishing within Impact Area lands leased to Baffinland and/or the PDA occurred in 2023.

Consulting groups Minnow Environmental Inc. (Minnow), North South Consultants (NSC), and WSP Global Inc. (WSP; formerly known as Golder Associates Ltd.) completed various fish surveys over the course of 2023 to collect environmental data and fish population health metrics. The purpose was to gather information on distribution, relative abundance, size and other biological characteristics to evaluate potential mine related effects as required under *Fisheries Act* Authorizations, licences and applicable management plans.

In 2023, a total of 286 land use visitor person-days were recorded at Project sites, an approximate 20% reduction from 2022. It is difficult to draw conclusions when comparing to 2020 and 2021 due to restrictions around COVID-19 and impacts on access log data. In 2023, Baffinland continued providing support to land users upon request and when possible, following health and safety precautions as needed.

TRENDS

No Project personnel have participated in hunting or fishing on the PDA unless approved by scientific permit and Baffinland has not interfered with public rights to fish or hunt in or near the PDA.

Baffinland continues to accommodate all hunting parties and other visitors that travel to the Project. However, to prevent potential transfer of the COVID-19 virus and other Infectious diseases including Tuberculosis to Nunavummiut, the following protocols remain in place through 2023. All camps and accommodations facilities remained closed to non-Project staff, however, the HTO Cabins and Visitor Communication Centers (VCC) remained available for use by hunters/visitors.

To eliminate any potential contact with site personnel, a non-contact Visitor Communication Center was established in 2020 at each work site (Mine Site and Milne Port), eliminating the necessity for visitors and Baffinland employees to interact closely, and was continued to be used in 2023. The Visitor Communication Center includes a radio with a dedicated channel for hunters/visitors to contact Security directly. Requests for food and other goods were dropped off at the Visitor Communication Centers at a predetermined drop off time.

In order to facilitate equipment and personnel relocation requests from Milne Port to the Mine Site, Hunters and escorts must wear adequate Personal Protective Equipment (PPE) including an N95 Mask, Hunters will also have to be separated from Baffinland personnel by a physical barrier during the transport.

The BCLOs continued to advise Nunavummiut of the COVID-19 and other Infectious disease protocols in place at the Project. Baffinland continued to maintain COVID-19 signage at the MHTO hunting cabins and VCCs. Hunter and visitor supply requests continued to be accommodated in 2023 based upon supplies available on site.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland continues to monitor and implement the policy banning all employees and contractors from hunting and fishing within the Project Development Area and accommodating all hunting parties.

Project Certificate Term and Condition No. 125

Category	Marine Environment - Public Engagement
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To assess acceptability of acoustic deterrent devices for the general public.
Term or Condition	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.
Relevant Baffinland Commitment	41
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - Not Applicable
Stakeholder Review	Not applicable
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Not applicable. No acoustic deterrents have been required and therefore considered for use on the Project to date.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 125 (a)

Category	Marine Environment - Public Engagement
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To ensure public acceptability of project vessel anchor sites and reduce potential conflicts between project marine shipping and local harvesting.
Term or Condition	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.
Relevant Baffinland Commitment	35
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	Mittimatalik Hunters and Trappers Organization (MHTO)
Reference	Request for Further Modification of Condition 179(a) and 179(b) of Mary River Project Certificate No. 005 (Baffinland, 2019g) Northern Shipping Corridor Anchorage Locations (Baffinland, 2020m) Marine Shipping and Vessel Management Report (Baffinland, 2023k)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Baffinland continues to interact with the Hamlet of Pond Inlet and the MHTO to better understand potential concerns associated with its shipping operations, including discussions related to anchorage sites. The evaluation on the suitability of alternative anchorage sites for Project-related vessels considers a number of safety, ecological and logistical factors. Accordingly, Baffinland completed an alternative anchorage options analysis in early 2020 that included locations suggested by the MHTO (e.g., Guy's Bight, Erik Harbour; see Figure 1 in Attachment 1 of Baffinland (2020m) submitted to NIRB on June 8, 2020 (Baffinland, 2019g; NIRB Registry. No. 327657) through previous engagement efforts and discussed these results during the End of 2019 Shipping season meeting in Pond Inlet. Baffinland also presented its analysis during the 2020 Pre-shipping season held in July 2020 (Baffinland, 2020n). As indicated in Baffinland (2020m), alternate locations within the shipping corridor will need to meet the following aspects to be considered a suitable alternative to Ragged Island: (i) is within close proximity to Milne Port, (ii) where depth is no greater than 55 m, (iii) where width allows for safe maneuverability, (iv) that provides refuge during weather events, (v) that allows for three (3) vessels to be safely anchored at the same time, and (vi) is not considered to be of heightened ecological importance (e.g., Koluktoo Bay or Tremblay Sound). Note that the maximum water depth for proposed anchorage locations was revised to 55 m in 2023 after subsequent discussions with the

Baffinland's Head of Shipping, which differs from the 100 m water depth captured in historical documentation. Details pertaining to suitable anchorage depths are found in Section 3.2.1 of the 2023 Marine Shipping and Vessel Management Report (Baffinland, 2023k).

In Table 3.1 of the 2023 Marine Shipping and Vessel Management Report to the NIRB (Baffinland, 2023k), Baffinland listed all anchorage locations that had been suggested historically by the MHTO, along with the respective rationale for rejecting each proposed location. Baffinland stated in Section 3.2.1 of the 2023 Marine Shipping and Vessel Management Report (Baffinland, 2023k) that the company remains open to exploring feasible alternative anchorage locations and encouraged community members and the MHTO to submit feedback through community consultations. At the time of this report, no additional alternative anchorage locations have been received by Baffinland.

Baffinland intends to continue to utilize the existing anchorage and drifting zone with the limitation of no more than three (3) vessels present until other acceptable alternatives can be identified in consultation with the MHTO.

RESULTS

As indicated in Baffinland (2020m), alternate locations within the shipping corridor will need to meet the following aspects to be considered a suitable alternative to Ragged Island: (i) is within close proximity to Milne Port, (ii) where depth is no greater than 55 m (revised in Baffinland, 2023k), (iii) where width allows for safe maneuverability, (iv) that provides refuge during weather events, (v) that allows for three (3) vessels to be safely anchored at the same time, and (vi) is not considered to be of heightened ecological importance (e.g., Koluktoo Bay or Tremblay Sound).

To minimize community concerns expressed, Baffinland limits the number of ships anchored at Ragged Island to a maximum of three (3) Project-related vessels. Baffinland also commits to restricting vessels drifting to the extent possible in Eclipse Sound since the 2019 shipping season. There is an established drifting zone proximal to Ragged Island, which is to only be used for safety-related needs, that ensures vessels will not drift near Pond Inlet or other parts of the shipping corridor. These management practices will continue to be implemented in 2024.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to consult with the MHTO and other key stakeholders throughout the life of the Project to mitigate Project effects on local communities and other resource users to the fullest extent practicable. Baffinland will provide updates as warranted through future annual reporting efforts.

Project Certificate Term and Condition No. 126

Category	Marine Environment - Public Engagement
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To incorporate local input into monitoring data collection.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Responsible Party	Baffinland
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Marine Environment Working Group (MEWG)
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Refer to PC Term and Condition No. 101. Reporting on PC Term and Condition No. 126 is identical to that of PC Term and Condition No. 101b.

RESULTS

Refer to PC Term and Condition No. 101. Reporting on PC Term and Condition No. 126 is identical to that of PC Term and Condition No. 101b.

TRENDS

Refer to PC Term and Condition No. 101. Reporting on PC Term and Condition No. 126 is identical to that of PC Term and Condition No. 101b.

RECOMMENDATIONS / LESSONS LEARNED

Refer to PC Term and Condition No. 101. Reporting on PC Term and Condition No. 126 is identical to that of PC Term and Condition No. 101b.

Project Certificate Term and Condition No. 127

Category	Marine Environment – Public Engagement
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To promote public awareness and engagement with Project shipping activities.
Term or Condition	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.
Relevant Baffinland Commitment	27,28
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	Mittimatalik Hunter and Trappers Organization, Marine Environment Working Group (MEWG)
Reference	Not applicable
Ref. Document Link	https://www.baffinland.com/operation/shipping-and-monitoring/

METHODS

Although this condition is specific to Steensby which does not currently have shipping activity, Baffinland still ensures that the public is made aware of shipping-related activities. Accordingly, Baffinland has enlisted Spire Shipview®, a global vessel monitoring and tracking service based on Automatic Identification System (AIS) data from polar orbiting satellites to track and report on vessel movements. The information is readily available on the Baffinland website over its entire shipping season and on the Baffinland Shipping Facebook page.

Information on ships such as last reported coordinates of the vessel, whether the vessel is moving, the direction of vessel movement and destination of the vessel are provided.

The vessel locations plotted on the online map provide regularly updated snapshots of vessel movement in the North Baffin region approximately every 30 minutes. Baffinland encourages all land and water users to continue to practice safe boating, hunting, and other travel activities, and be aware of their surroundings at all times.

Although the Steensby portion is currently Not Active, Makivik is a member of the Marine Environment Working Group where any proposed changes to shipping activities would be discussed.

RESULTS

Baffinland has made vessel routing for the northern shipping route accessible to the public via the Baffinland website and on the Baffinland Shipping Facebook page. Baffinland also installed an AIS tracker system in Baffinland's Shipping Monitor office located on the second floor of the MHTO building in Pond Inlet on a dedicated laptop and wall-

mounted monitor for viewing the live continuous Spire Shipview® feeds of vessels active in the Northern Shipping Route by all visitors during Baffinland's regular office hours (8 am to 5 pm).

In 2023, Baffinland reached out to Makivvik Corporation with information on the Steensby Component of the approved Mary River Project. The information provided included the proposed shipping route for the Southern Corridor. A follow-up meeting was held in January 2024 with Makivvik Corporation who will continue to participate as a member of the Marine Environment Working Group (MEWG), and with whom Baffinland will continue to engage directly as the Steensby Component develops.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland has found the use of Spire Shipview® to be beneficial in providing information related to ship routing to the public. Baffinland will continue to use this service for the northern shipping route. Furthermore, it is Baffinland's intent to continue hiring Shipping Monitors based in Pond Inlet and to providing live viewing of vessel tracks through the Baffinland office in 2024. Baffinland Shipping Monitors will also continue to inform residents about shipping activities through the use of marine VHF radio, local public radio, and Facebook posts on the dedicated Baffinland Shipping Facebook page. Information on project shipping activities will also continue to be shared with the MEWG and the MHTO and Makivvik Corporation through the sharing of MEWG Meeting Records and invitation for participation at MEWG meetings.

Baffinland will 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 as the Steensby Component develops through MEWG meetings or as part of future consultations and engagements.

Project Certificate Term and Condition No. 128

Category	Marine Environment - Public Engagement
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To ensure habitat compensation is acceptable to local communities.
Term or Condition	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).
Relevant Baffinland Commitment	27, 28
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Fisheries and Oceans Canada, Mittimatalik Hunter and Trapper Organization, Pisiksik Working Group
Reference	Community Engagement On Fisheries Offsetting - Steensby Component (Knight Piésold, 2023d)
Ref. Document Link	Appendix G.19

METHODS

Baffinland conducted engagement on the Project as a whole with the five (5) North Baffin communities (Arctic Bay, Clyde River, Igloolik, Pond Inlet, and Sanirajak) prior to, during, and following the environmental reviews of the Project by the NIRB.

In 2023, Baffinland facilitated several community engagement activities involving HTO members and Hamlet representatives to discuss marine and freshwater fisheries offsetting options proposed for the Steensby Component of the Project. These engagement activities were held in preparation of *Fisheries Act Authorization* applications to gather input into potential offsetting options in both freshwater and marine environments to address potential losses in fish habitat associated with permanent habitat alteration or destruction of fish habitat. Communities were engaged to help refine proposed fish offsetting locations and methods. For the freshwater environment, offsetting is required for planned in-water infrastructure and construction activities along the Steensby Railway and at Steensby Port (bridges, culverts, pond encroachments). For the marine environment, offsetting options are required for the in-water works to be constructed at Steensby Port (ore dock, construction dock, island link causeway, anchor moorings). Input from these engagements has been used to refine Baffinland's applications for Authorizations under the *Fisheries Act* for the Steensby Component of the Project.

During these engagement activities, Baffinland shared information on the proposed fish habitat offsetting measures in the freshwater and marine environment, including freshwater habitat offsetting such as fish introductions, habitat restoration and enhancement opportunities. The marine offsetting measure discussed was construction of a rocky

reef(s) in Steensby Inlet, similar to the rocky reef offset habitat that has been constructed at Milne Port that has proven successful.

Additionally, in 2023, Baffinland engaged with the communities of Arctic Bay and Pond Inlet to provide an overview of the proposed rocky reef habitat offsetting plan for the Milne Port Freight Dock associated with Baffinland's *Fisheries Act* Authorization (Ref No. 14-HCAA-00525), and seek input from Hamlet representatives, Ikajutit HTO and MHTO members about rocky reef design and location.

RESULTS

Following engagement on the proposed Milne Port rocky reef habitat offsetting, the Hamlets of Arctic Bay and Pond Inlet provided letters of support for the rocky reef offsetting method.

A number of potential offsetting options were identified and evaluated for the freshwater and marine environment for the Steensby Component of the Project. Potential offsetting options identified by communities included cleanup of debris associated with disused camp sites, permanent water crossing infrastructure where fish-bearing streams are forded by hunters, and specific locations where fish passage may be naturally impeded. There was an interest from communities in collecting data that would assist Arctic char fisheries and monitoring of potential Project impacts. There was an overall preference to avoid further disturbance to the land and the most interest is related to enhancement of Arctic char fisheries. A senior biologist completed a verification site visit of a portion of the community-identified offsetting sites between August 28 and September 11, 2023, including sites near Igloodik, Pond Inlet, Sanirajak.

Following the community engagement on offsetting measures in 2023, it was concluded that opportunities to improve fish habitat are limited at the locations identified by the communities, as fish habitat is pristine throughout the region with few opportunities to construct offsetting that would improve fish habitat. Removal of debris from old camp sites and crossing infrastructure would be unlikely to improve fish habitat, or only represent a small fraction of the required offset. Baseline data is limited in the region and multiple opportunities exist to collect information that would assist in managing the Arctic char fisheries and identifying potential solutions to improve fish habitat.

Further details on engagement activities held for the Steensby Component are provided in Appendix G.19 (Knight Piésold, 2023d).

TRENDS

Results from the six-years of post-construction monitoring of the Milne Port Ore Dock offsetting works have shown the coarse rock offsetting habitat on the perimeter of the Ore Dock is effective in supporting biological activity, providing support for the addition of coarse substrates as an effective approach for successful offsetting. The FAA for the Milne Port Ore Dock was closed by DFO in 2021 as monitoring results demonstrated the effectiveness of the offsetting habitat.

Year 2 of post-construction monitoring for the Freight Dock offset habitat occurred in 2021. Year 2 of monitoring indicated that macroalgae, motile invertebrates and fish continue to colonize the Freight Dock offset habitat, and that it appears to be providing a suitable and stable substrate for continued colonization and growth of marine organisms. Year 5 of post-construction monitoring will occur in 2024.

Over the long term, as existing data is expanded upon with results from offsetting monitoring programs and community consultations in the region, the suitability of freshwater and marine habitat offsetting methods will be further evaluated.

RECOMMENDATIONS / LESSONS LEARNED

Through engagement conducted in 2023, Baffinland received recommendations from communities on proposed habitat offsetting for the Steensby Component of the Project. These community-driven recommendations are pivotal inputs in the selection of proposed methods for fish habitat offsetting.

Baffinland will continue to monitor the success of fish habitat offsetting measures associated with the construction of the Freight Dock and future Milne Port rocky reef. Baffinland will also continue to provide the results of monitoring programs to DFO, the MEWG and other interested parties, as requested.

Baffinland remains committed to exploring potential offsetting options in both freshwater and marine environments to address potential losses in fish habitat associated with permanent habitat alteration or destruction of fish habitat associated with future permitting requirements, as needed.

4.7 PERFORMANCE ON SOCIO-ECONOMIC TERMS AND CONDITIONS

4.7.1 Population Demographics (PC Terms and Conditions 129 through 134)

Six (6) PC Terms and Conditions are listed in the Population Demographics section of the Project Certificate. Three (3) of these describe the NIRB's expectations with respect to working with the Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and establishing a Project-specific working group. The remaining three (3) PC Terms and Conditions relate to mitigating the potential for demographic changes, and the monitoring and reporting of demographic change within the North Baffin communities as a result of Project employment.

Inuit & Stakeholder Feedback

Key stakeholders who provide input related to the socio-economic monitoring program for the Project include the five (5) North Baffin communities, the QIA, various departments of the GN, and CIRNAC, all of which are members of the regional QSEMC. The QIA, GN and CIRNAC are also members of the project specific Mary River Socio-economic Monitoring Working Group (SEMWG). While the potential for in-migration of Non-Inuit into the North Baffin communities and out-migration of Inuit from the North Baffin were raised as concerns by the GN and by communities during the environmental assessment, it was not raised as a concern in engagement activities in 2023.

Monitoring

The Local Study Area (LSA) is defined by the five (5) North Baffin communities. Baffinland conducts monitoring of population demographics in the LSA by reviewing government population statistics, tracking employee origin information, and the tracking of changes to an employee(s) address. Table 4.32 provides an evaluation of Project impacts on population demographics, based on monitoring activities completed in 2023, relative to predictions presented in the FEIS and FEIS Addendum.

Table 4.32: Population Demographics Impact Evaluation

Component	Effects	Monitoring Program	Impact Evaluation
Mine Employment	Migration of non-Inuit Project employees into the North Baffin LSA	Baffinland's 2023 Socio-Economic Monitoring Report includes a review of population statistics and BCLO tracking of worker changes in home community. Baffinland was able to administer the Inuit Employee Survey at the Mary River Project and in the North Baffin LSA communities in Q4 2023 (ERM, 2024).	Effects may be occurring but links to Project are uncertain. Recorded effects are not significant.
	Out-migration from North Baffin	Cumulative Baffinland data (i.e. Baffinland Human Resources data and BCLO survey) since 2015 indicates a net of one non-Inuit employee/contractor is known to have in-migrated to the North Baffin LSA. In that same time period Baffinland data indicates a net negative migration (out-migration) of 31 Inuit workers from the North Baffin LSA, which includes 7 (net) Inuit employees/contractors in 2023. This is significantly lower than the lower end of the out-migration estimate from the EIS (i.e.15 individuals). While a small number of Project workers have moved out of the North Baffin LSA, the effect has been smaller than predicted.	

Component	Effects	Monitoring Program	Impact Evaluation
		It is also impossible to determine whether out-migration from the North Baffin LSA might have been any different if the Project was not there.	

Path Forward

Baffinland will continue to monitor this aspect of the socio-economic environment, and will discuss monitoring results with the SEMWG and QSEMC. Reporting on each PC Term and Condition follows.

Project Certificate Term and Condition No. 129

Category	Population Demographics - Qikiqtaaluk Socio-Economic Monitoring Committee
Responsible Parties	The Proponent, members of the QSEMC
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	Description of the general monitoring framework to be developed in consultation with the Qikiqtaaluk Socio-Economic Monitoring Committee.
Term or Condition	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.
Relevant Baffinland Commitment	41, 43, 45, 46
Reporting Requirement	To be determined following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	2023 Socio-Economic Monitoring Report (SEMR; Aglu and ERM, 2024) Draft Socio-Economic Monitoring Plan (Baffinland, 2019h). 2023 QSEMC Correspondences
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.7.1 Appendix C.4

METHODS

Baffinland continues to engage with the Government of Nunavut (GN) led regional Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and the Mary River Socio Economic Monitoring Working Group (SEMWG). The SEMWG is a sub-set of the QSEMC whose members include Baffinland (Lead), the Government of Nunavut (GN), the Government of Canada, and the QIA. A Terms of Reference (ToR) for the SEMWG (which identifies socio-economic monitoring priorities and objectives for the Project, as well as the responsibilities of the Parties) has been developed and is provided in the Socio-Economic Monitoring Plan (SEMP; Baffinland, 2019h). Baffinland has also incorporated feedback from SEMWG members while developing the Project's socio-economic monitoring program and continues to welcome feedback on the program from the SEMWG and QSEMC.

RESULTS

A 2-day meeting of the QSEMC took place May 2-3 2023 in Iqaluit, where several Baffinland personnel and supporting consultants were in attendance. Three general topics were discussed during the 2-day meeting, which included community well-being and culture, Qikiqtaalungmiut participation in major projects, and Qikiqtaalungmiut business opportunities and economics benefits experienced due to major projects. Baffinland delivered presentations on

monitoring results from the 2022 SEMR for each of the three topics of focus. Baffinland also participated in a Q&A and break-out discussion for each topic.

Baffinland's Socio-Economic Monitoring Report assesses the socio-economic performance of the Project on an annual basis. Performance of the Project is assessed using socio-economic indicators for Valued Socio-Economic Components (VSECs) considered in the FEIS (Baffinland, 2012). The report has identified various positive effects of the Project and presents information that is consistent with several FEIS predictions. In other cases, monitoring data have revealed unclear, inconsistent, or otherwise negative trends which may be due to external factors not associated with the Project. Long-term monitoring will be necessary to track Project outcomes more fully over time and may contribute to an improved understanding of observed trends and causality. Baffinland's compliance with various Project Certificate Terms and Conditions pertaining to socio-economic monitoring are also discussed throughout this report.

TRENDS

Where appropriate, trends have been described for the indicators assessed in the Socio-Economic Monitoring Report. These trends demonstrate whether an indicator has exhibited change and describes the direction of that change. Trends are identified at various scales, which include:

- North Baffin LSA (i.e., Arctic Bay, Clyde River, Igloolik, Pond Inlet, Sanirajak);
- Iqaluit;
- The Qikiqtani Region;
- Nunavut; or,
- Project Level

Additional information on these trends including pre-development average, 3-year average, last-year value, and the change from previous periods are outlined in the Executive Summary of the 2023 SEMR (Aglu and ERM, 2024).

RECOMMENDATIONS / LESSONS LEARNED

The Socio-Economic Monitoring Report is in alignment with the Mary River Environmental Impact Statement's predictions, Project Certificate's Terms and Conditions and SEMP. Going forward, successful socio-economic monitoring for the Project will require appropriate long-term data, the regular input of Project stakeholders, and a focus on continual improvement. Baffinland is committed to using adaptive management as a tool to identify and make necessary improvements to the Project's socio-economic performance in the future.

Baffinland plans to participate in the 2024 meeting of the QSEMC, and is awaiting confirmation of meeting dates.

Project Certificate Term and Condition No. 130

Category	Population Demographics - Project-specific monitoring
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	Recognizing that some Project-specific socio-economic monitoring initiatives may be best addressed in smaller more focused working groups, this is encouraged where possible.
Term or Condition	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.
Relevant Baffinland Commitment	41, 43, 46
Reporting Requirement	To be determined following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024) 2023 SEMWG Meeting Records and Correspondence Draft Socio-Economic Monitoring Plan (Baffinland, 2019h)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.7.1 Appendix C.3

METHODS

Baffinland continues to engage with the QSEMC and the SEMWG on the Project's socio-economic monitoring program. In addition, Baffinland regularly engages North Baffin community members through its community engagement program, and other committees that operate under provisions of the Inuit Impact and Benefit Agreement (IIBA), on various socio-economic topics. A complete community engagement record for the 2023 year is provided in Appendix B.1 of this report. Topics discussed during the SEMWG and QSEMC meetings held in 2023 are listed in Table 2.5 and Table 2.6 (respectively).

RESULTS

Baffinland continues to maintain and engage the SEMWG, whose members include Baffinland, the Government of Nunavut, the Government of Canada, and the QIA. A Terms of Reference (ToR) for the SEMWG (which identifies socio-economic monitoring priorities and objectives for the Project) has been developed and is provided in the SEMP (Baffinland, 2019h). Baffinland has incorporated feedback from SEMWG members while developing the Project's Socio-Economic Monitoring Program and continues to welcome feedback on the program from working group members. Baffinland delivered a presentation providing an overview on the socio-economic monitoring report development and invited members to provide feedback on the 2023 QSEMC. Several key topics were also discussed

during the working group meeting, focussing on data availability challenges with data from the Nunavut Bureau of Statistics, crime monitoring results, payroll discrepancies (i.e., Company values compared to GN), as well as welcomed questions and comment on the 2022 Inuit Employee Survey findings. During the meeting the QIA suggested Baffinland explore avenues to increase survey response rate for the 2023 year, and recommended the Company provide incentive for completion of the survey as well as to trial the administering of the survey in North Baffin communities and at Mary River Project sites.

Following the meeting, Baffinland circulated the draft 2023 Inuit Employee Survey to SEMWG members for review and input. Comments and suggestions were submitted by the QIA and where reasonable, incorporated by Baffinland. In an effort to increase response rates for the survey, and as suggested by the QIA, Baffinland provided incentives (i.e., chance to win one of 2 pre-loaded visa cards) as well as piloted the administration of the survey in communities in 2023. The survey was administered at the Mine Site, Milne Port, and in the LSA communities between October 23, 2023 and December 1, 2023. In total, Baffinland collected 81 responses to the survey, representing a response rate of 22%⁴. This represents an increase from an 18% response rate achieved in 2022 compares to the 18% response rate achieved in 2022, and 32.5% response rate achieved in 2020.

TRENDS

See trend reporting for Project Certificate Term and Condition No. 129 and No. 133.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to engage with the QSEMC, SEMWG and North Baffin LSA communities on the Project's monitoring program and will consider establishing smaller, focused Socio-Economic Working Groups to address specific community issues or Project challenges if deemed appropriate.

⁴ Response rate is calculated by dividing number of responses by number of Inuit employees on staff in Q3 of the 2023 fiscal year).

Project Certificate Term and Condition No. 131

Category	Population Demographics - Monitoring demographic changes
Responsible Parties	The Proponent, members of the QSEMC
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To monitor demographic changes affecting the North Baffin communities and the territory as a whole in order to understand changes and to evaluate the Proponent's predictions as related to population demographics.
Term or Condition	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.
Relevant Baffinland Commitment	45
Reporting Requirement	To be determined following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024) Draft 2019 Socio-Economic Monitoring Plan (Baffinland, 2019h)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.7.1

METHODS

Baffinland has provided demographic change information in the 2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024) and this information was presented to the QSEMC in May 2023 for review and discussion. This includes data on population estimates, known in-migrations of Non-Inuit Project employees and contractors, known out-migrations of Inuit and Non-Inuit Project employees and contractors, percentage of Inuit vs. non-Inuit residents in the North Baffin Local Study Area (LSA), and Nunavut annual net migration. Baffinland also regularly administers an Inuit Employee Survey, which collects information related to employee changes of address, housing status, and migration intentions.

RESULTS

Demographic change indicator trends are provided in Table 4.33. Detailed results are presented in the 2023 Socio-Economic Monitoring Report (SEMR; Aglu and ERM, 2024).

TRENDS

Where appropriate, trends have been described for the indicators assessed in the 2023 SEMR (Aglu and ERM, 2024).

Table 4.33: 2023 Monitoring of Indicators of Demographic Change

Indicator / Topic	Summary
Known in-migrations of non-Inuit Project employees and contractors	Cumulative Baffinland data (i.e. Baffinland Human Resources data and BCLO migration survey) since 2015 indicates a net of one non-Inuit employee/contractor is known to have in-migrated to the North Baffin LSA.
In-migration of non-Inuit to the North Baffin LSA	While LSA-level migration data is not available, the proportion of Inuit to non-Inuit in LSA communities has remained relatively similar to pre-development levels. However, data to monitor this metric relies on annual data from public institutions, and this data has not been updated since 2016.
Known out-migrations of Inuit Project employees and contractors	Cumulative Baffinland data (i.e. Baffinland Human Resources data and BCLO survey) since 2015 indicates a net negative migration (out-migration) of 31 Inuit workers from the North Baffin LSA, which includes 7 (net) Inuit employees/contractors in 2023.
Out-migration of Inuit from the North Baffin LSA	While LSA-level migration data is not available, the proportion of Inuit to non-Inuit in LSA communities has remained relatively similar to pre-development levels. However, data to monitor this metric relies on annual data from public institutions, and this data has not been updated since 2016.
Population estimates	The average annual population growth rates over the post-development period for North Baffin LSA communities was 2.1%, Iqaluit 1.7%, and Nunavut 1.6%, higher than the Canadian average growth rate of 1.1%. The rate of growth does not appear to have been affected by the Project.
Nunavut net migration	Nunavut net migration was -88 people in 2019 (the latest year data is available from public institutions), continuing a negative trend over the past 5 years.
Employee and contractor changes of address, housing status, and migration intentions	Information relating to changes of address, housing status, and migration intentions is gathered from the annual Inuit Employee Survey. Seven (9%) 2023 survey respondents indicated they had moved to a different community in the past 12 months (9% in 2023 and 2022, 5% in 2020, 4% in 2019, 10% in 2018, and 7% in 2017). Five (7%) planned to move to a different community in the next 12 months (7% in 2023, 10% in 2022, 5% in 2020, 14% in 2019, 18% in 2018, and 16% in 2017).

RECOMMENDATIONS / LESSONS LEARNED

Baffinland continues to provide demographic change information in its SEMR and to present this information for review and discussion with the QSEMC on an annual basis. However, only limited government data are currently available for the indicators ‘in-migration of non-Inuit to the North Baffin LSA’ and ‘out migration of Inuit from the North Baffin LSA’. For this reason, Baffinland continues to present data from various non-government sources (e.g. Inuit Employee Survey, BCLO migration survey, Baffinland human resources data) to help better understand this topic.

Project Certificate Term and Condition No. 132

Category	Population Demographics - Training programs
Responsible Parties	The Proponent, North Baffin Hamlets, Municipal Training Organization, Government of Nunavut
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To develop training programs in ways which contribute to limiting the potential for migration to occur as North Baffin residents seek training and employment opportunities in the larger centre of Iqaluit.
Term or Condition	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 supplementing existing recreational facilities and programming in North Baffin communities.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

In 2023, Baffinland partnered with local and regional governmental agencies and educational institutions to support local communities and promote training programs for residents while limiting the potential for out migration. Baffinland's priority in training is to train people to work at the mining operation. Training provided can benefit local communities should an employee choose to change jobs and return to work in the community. The skill set learned at Baffinland is transferrable for life long benefit of the individual and their home communities.

Baffinland's 3-week in 3-week out fly-in fly-out rotational schedule additionally allows for employees to return to their communities for more than 50% of the time to continue traditional lifestyles and community activities.

The Work Ready Program (WRP) in each of the five (5) impacted communities and Iqaluit is a five (5) -day program that introduces the mining industry and working at a fly-in, fly-out operation includes, but also contains learning skills that are transferable such as: essential skills, safety and financial literacy. This community based training also resulted in a positive financial benefit to each community. Travelling instructors utilized local hotels and restaurants, and community participants who received a training bonus most often spent that money in the community. Small businesses were used for catering and transportation.

Baffinland liaised with Nunavut Arctic College (NAC) in the communities to promote their programs that are pertinent to the preparation and development of one to either work at the mine or for other opportunities in their communities: Adult Basic Education (ABE), Pathway to Adult Secondary School programs (PASS), and Pre-Trades training.

RESULTS

Community Based Work Ready Program

Baffinland continues to offer the Community Based WRP training. The community WRP is a 40-hour training program facilitated in the communities in person which addresses the following areas: Self Awareness, an Introduction to Mining, Essential Skills for the Workplace, Money Management and Preparing for Fly-In, Fly-Out. For 2023, in line with the IIBA commitments, the WRP was delivered in all five of the North Baffin surrounding communities as well as Iqaluit.

In 2023, Baffinland held 15 community based WRP sessions, with a total of 55 participants.

In 2023, QIA informed Baffinland that they will be creating an online version of the WRP to increase the availability of the training for all Nunavut communities. Baffinland participated in the initiative's initial development with QIA program development consultants. In Q1 and Q2 of 2024, Baffinland and QIA will co-develop the online WRP, where the module is anticipated to launch in Q3.

Baffinland continues to encourage its employees to take advantage of community training that is made available, such as Adult Basic Education (ABE), Pathway to Adult Secondary School programs (PASS), and Pre-Trades training.

TRENDS

Not applicable.

RECOMMENDATIONS/LESSONS LEARNED

In 2024, Baffinland will be continuing the recruitment of Community Recruitment and Training Coordinators that will be physically located in each of the five surrounding communities. These employees will be trained in their tasks and responsibilities and gainfully employed while they reside in their community.

The relationship that has been built between NAC, QIA and Baffinland is strong and this should ensure the continued ability to highlight additional training opportunities in each of the surrounding communities.

Baffinland also recognizes that the Government of Nunavut is developing a Mine Training Strategy that may provide additional opportunities for prospective or current Inuit employees to receive training in their own communities. As the Mine Training Strategy is implemented Baffinland will work with the GN to find mutual opportunities and report on any outcomes in future annual monitoring reports.

Project Certificate Term and Condition No. 133

Category	Population Demographics - Monitoring demographic changes
Responsible Parties	The Proponent, members of QSEMC, Government of Nunavut, Nunavut Housing Corporation
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	Training programs may be developed with the goal of limiting the potential for migration to occur as North Baffin residents may choose to seek employment and therefore move from smaller North Baffin communities to the larger centre of Iqaluit.
Term or Condition	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.
Relevant Baffinland Commitment	43, 45
Reporting Requirement	To be determined following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024) 2023 Inuit Employee Survey Report (ERM, 2024) Draft 2019 Socio-Economic Monitoring Plan (Baffinland, 2019h)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal Appendix G.7.1

METHODS

Baffinland regularly administers a voluntary Inuit Employee Survey, which collects information on employee changes of address, housing status, and migration intentions. In 2023, the survey underwent minor modification based on feedback received from the QIA. Baffinland will continue to discuss the survey and survey results with the SEMWG and the QSEMC and will continue to engage on the Project's Socio-Economic Monitoring Program (SEMP). From October 23, 2023 to December 1, 2023, the Inuit Employee survey was administered at the Mine Site, Milne Port, and within LSA communities, including Iqaluit, with assistance from BCLOs (ERM, 2024).

RESULTS

Survey administration took place between October 23, 2023 and December 1, 2023 at the Mine Site and Milne Port, as well as in-community with assistance from the BCLOs. At site, the survey was administered through the Baffinland Human Resources (HR) and Labour Relations department, and respondents had the option of having a cultural advisor and/or an HR representative (i.e., HR Advisor, Inuit Relations) to support filling out the survey (e.g., by reading the questions and explaining the options). Surveys were advertised site wide via hard-copy posters and electronically (on screen). The survey was available in English and Inuktitut and was administered in paper format. Participation in the survey was voluntary and respondents did not have to provide response to question(s) they did not wish to answer. Respondents were advised prior to the survey that their responses would remain confidential, and their names would not be used publicly, however, Baffinland could use survey information in public reports and/or presentations.

In total, Baffinland collected 81 responses to the survey, representing a response rate of 22%⁵. This represents an increase from an 18% response rate achieved in 2022, and 32.5% response rate achieved in 2020.

Table 4.34 pertains to current Inuit employee and contractor survey respondent changes in address/community of residence (n=54).

Table 4.34: Changes in Inuit Employee and Contractor Residence and Community (2023 Inuit Employee Survey Results)

Type of Change	Number of Respondents	Percentage of Respondents
All question respondents (n=54)		
Residence changed in the past 12 months, within existing community	3	4%
Residence changed in the past 12 months, moved to new community	7	9%
Residence did not change in the past 12 months	65	87%
Total	75	100.0%
If you answered 'Yes, from one community to another community', which community did you move from? (n=6)		
Iqaluit to Clyde River	1	17%
Iqaluit to Red Deer, Alberta	1	17%
Pangnirtung to Iqaluit	1	17%
Pond Inlet to Igloolik	1	17%
Clyde River	1	17%
Sanirajak	1	17%
Total	6	100.0%

Notes: Some percentages may not add to 100% due to rounding.

Source: 2023 Inuit Employee Survey Report (ERM, 2024)

⁵ Response rate is calculated by dividing number of responses by number of Inuit employees on staff in Q3 of the 2023 fiscal year).

Table 4.35 pertains to current Inuit employee and contractor housing status ($n=79$ and $n=73$).

Table 4.35: Current Inuit Employee and Contractor Housing Status (2023 Inuit Employee Survey Results)

Current Housing Status	Number of Respondents	Percentage of Respondents
What type of housing do you currently live in? (n=79)		
Public housing	42	57%
Privately owned – Owned by you	5	7%
Privately owned - Owned by a family member or friend	11	15%
Renting from a private company or individual	11	15%
Other	5	7%
Total	79	100.0%
Have you ever considered purchasing a home in your community? (n=73)		
Yes – I do not currently own a home but would like to purchase one	36	49%
Yes – I own but would like to purchase a new home	2	3%
No – I am satisfied with my current home	21	29%
No – I do not want to purchase a home	14	19%
Total	73	100.0%

Notes:

Some percentages may not add to 100% due to rounding.

Source: 2023 Inuit Employee Survey Report (ERM, 2024).

Table 4.36 summarizes results pertaining to Inuit employee and contractor migration intentions ($n=73$).

Table 4.36: Inuit Employee and Contractor Migration Intentions (2023 Inuit Employee Survey Results)

Migration Intentions	Number of Respondents	Percentage of Respondents
Do you plan on moving from one residence to another residence in the next 12 months? (n=73)		
Plan to move residences in the next 12 months, within existing community	6	8%
Plan to move residences in the next 12 months, to a new community	5	7%
Do not plan to move residences in the next 12 months	62	85%
Total	73	100%
If yes, which community are you planning to move to? (n=3)		
Montreal or Winnipeg	1	33%
Iqaluit	1	33%

Migration Intentions	Number of Respondents	Percentage of Respondents
Iqaluit or Ottawa	1	33%
Total	3	100.0%

Notes:

Some percentages may not add to 100% due to rounding.

Source: 2023 Inuit Employee Survey Report (ERM, 2024).

TRENDS

As indicated in Figure 4.18, nine (9) 2023 survey respondents indicated they had moved to a different community in the past 12 months (9% of respondents in 2023 and 2022, 5% in 2020, 4% in 2019, 10% in 2018, and 7% in 2017) where 5 noted they planned to move to a different community in the next 12 months (7% in 2023, 10% in 2022, 5% in 2020, 14% in 2019, 18% in 2018, and 16% in 2017). The number of respondents that indicated they planned to move to a different community decreased by 3% from 2022 results and 2023 results. The proportion of employees living in public housing appeared to be trending downwards from 2017 to 2022 (66.7% in 2017, 60.7% in 2018, 54.9% in 2020 and 49% in 2022), although this percentage increased in 2023 (57%). This increase may be attributed to the higher response rate to the survey, or due to other factors, such as the construction of new public housing available in Nunavut.

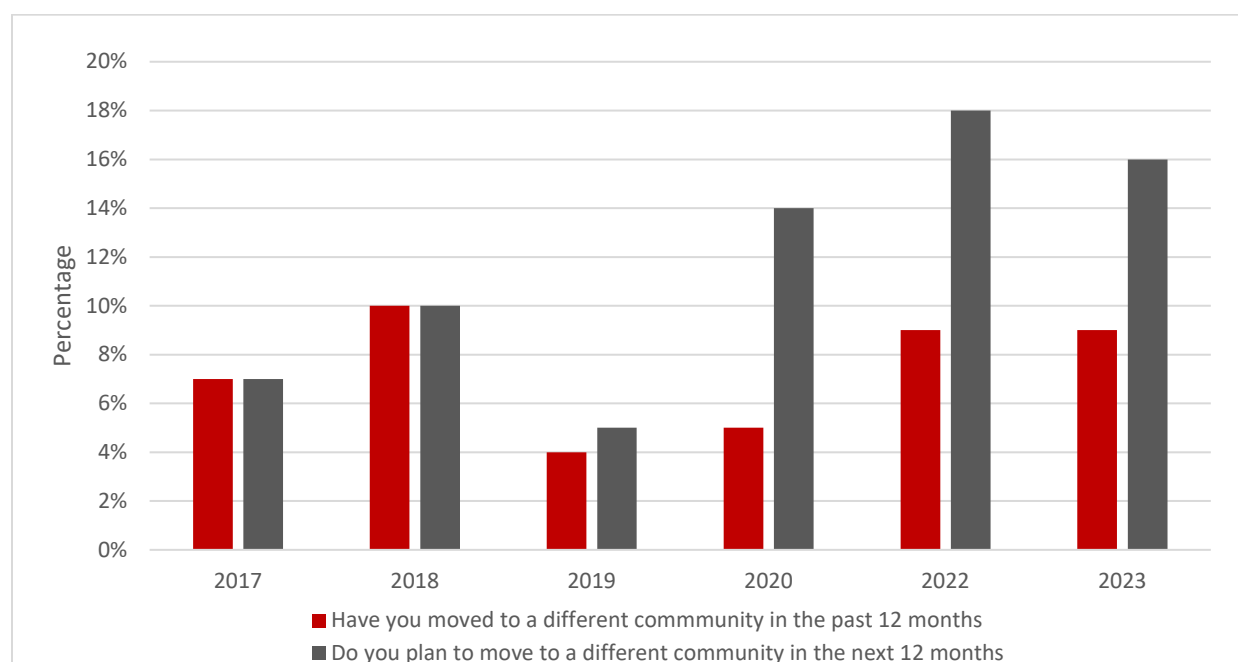


Figure 4.18: Inuit Employee and Contractor Migration Intentions (Inuit Employee Surveys)

Baffinland will continue to track employee changes of address, housing status, and migration intentions through the annual Inuit Employee Survey to see if future trends emerge.

RECOMMENDATIONS / LESSONS LEARNED

Participation in the 2023 survey increased compared to 2022. A total of 81 surveys (22% response rate) were collected during the 2023 Inuit Employee Survey administration period, representing an increase when compared to the 2022 administration period (18% response rate). This increase can be attributed to a number of factors including strong engagement by the administration team, expanding the administration of the survey to the North Baffin LSA communities through the BCLOs, and providing incentive to those who completed a survey (i.e., chance to win one of two pre-loaded visa credit cards). It is worth noting the BCLO position in Igloolik was not filled at time of survey administration. This role has since been filled and will assist with the administration of the 2024 survey.

The Company will continue to look for ways to expand survey administration to ensure the survey aims to attract responses from the largest segment of the Baffinland Inuit workforce.

Project Certificate Term and Condition No. 134

Category	Population Demographics - Employee origin
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	Project-specific information regarding employee origin is important to comparing predictions of labour availability and employment opportunities with actual levels of employment from various demographic segments over different geographic areas.
Term or Condition	<p>The Proponent shall include with its annual reporting to the NIRB a summation of employee origin information as follows:</p> <ol style="list-style-type: none"> The number of Inuit and non-Inuit employees hired from each of the North Baffin communities, specifying the number from each The number of Inuit and non-Inuit employees hired from each of the Kitikmeot and Kivalliq regions, specifying the number from each 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 The number of non-Canadian foreign employees hired, specifying the locations and number from each foreign point of hire.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be determined following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.7.1

METHODS

Data on the origin, number, and ethnicity of employees and contractors who worked on the Project are presented in the 2023 Socio-Economic Monitoring Report and summarized in the below Table 4.37 (Aglu and ERM, 2024). This information was obtained from internal Baffinland records.

RESULTS

The results of employee origin information is presented by Full-Time Equivalents (FTEs), as opposed to headcount.

Table 4.37: Detailed Baffinland and Contractor Employment Full-Time Equivalents 2023, Site Based

Location	Baffinland			Contractor			All workers		
	Inuit	Non-Inuit	Total	Inuit	Non-Inuit	Total	Inuit	Non-Inuit	Total
LSA Communities									
Arctic Bay	18	1	19	12	-	12	30	1	31
Clyde River	12	-	12	7	-	7	19	-	19
Pond Inlet	28	-	28	9	-	9	37	-	37
Igloolik	10	-	10	10	-	10	20	-	20
Iqaluit	21	1	22	26	1	27	47	1	49
Sanirajak	20	-	20	10	1	11	31	1	31
LSA Total	110	2	111	75	1	76	185	2	187
Other Qikiqtaaluk Communities									
Cape Dorset	-	-	-	-	-	-	-	-	-
Kimmirut	1	-	1	-	-	-	1	-	1
Pangnirtung	2	-	2	-	-	-	2	-	2
Qikiqtarjuaq	-	-	-	-	-	-	-	-	-
Resolute	1	-	1	-	-	-	1	-	1
Sanikiluaq	-	-	-	-	-	-	-	-	-
Kinngait	1	-	1	-	-	-	1	-	1
Other Qikiqtaaluk	-	-	-	-	-	-	-	-	-
Other Qikiqtaaluk Total	5	-	5	-	-	-	5	-	5
Other Nunavut									
Chesterfield Inlet (Kivalik)	1	-	1	-	-	-	1	-	1
Unknown	-	-	-	1	-	1	1	-	1
Other Nunavut Total	1	-	1	1	-	1	2	-	2
Other Provinces and Territories									
Alberta	3	78	81	1	66	67	4	144	148
British Columbia	1	34	35	-	22	22	1	56	57
Manitoba	-	23	23	-	12	12	-	34	34
New Brunswick	2	81	83	-	29	30	2	110	112
Newfoundland & Labrador	1	227	228	-	72	72	1	299	300
Northwest Territories	-	-	-	-	3	3	-	3	3

Location	Baffinland			Contractor			All workers		
	Inuit	Non-Inuit	Total	Inuit	Non-Inuit	Total	Inuit	Non-Inuit	Total
Nova Scotia	0	178	178	1	41	42	1	219	220
Ontario	18	294	312	4	102	105	22	395	417
Prince Edward Island	-	8	8	-	2	2	-	10	10
Quebec	1	54	56	2	59	61	3	114	117
Saskatchewan	-	23	23	-	8	8	-	31	31
Yukon	-	1	1	-	-	-	-	1	1
Other Provinces and Territories Total	27	1,001	1,028	8	415	423	34	1,417	1,451
Other									
International	-	-	-	-	3	3	-	3	3
Unknown	-	-	-	-	-	-	-	-	-
Other Total	-	-	-	-	3	3	-	3	3
Totals	142	1,003	1,145	83	420	503	225	1,423	1,648

Note:

Due to issues associated with rounding, numbers presented – most notably with regard to FTEs – may not add up precisely to the totals provided and percentages may not precisely reflect the absolute figures. This is due to presenting FTE data broken down across a number of attributes (e.g., by community, region, Inuit status and gender).

For 'Other Nunavut' contractor category, raw data on file does not indicate what community the person is from.

One FTE represents 2,184 hours⁶, which is the approximate time one (1) person works on a full-time basis each year. Headcount, on the other hand, provides a 'snapshot' of who is working at a specific point in time (e.g. The end of a quarter).

Using FTEs to present employee origin provides a good indication of where employees and contractors are being hired from, on average, over the year.

TRENDS

There were 225 Inuit FTEs at the Project in 2023 (including direct and contractor employees), including 143 from North Baffin LSA communities and 47 from Iqaluit. This represents an increase of 61 Inuit FTEs (an approximate 37%) since operation began in 2015. There was an initial drop in Inuit FTEs from 2014 to 2016, likely caused by a shift away from the large amount of labour used during construction. A slight decline in Inuit FTEs has been observed since 2019 when employment in general peaked in anticipation of expansion. This drop in Inuit FTEs can be attributed to

⁶ Starting in 2022, Baffinland modified the average employee schedule from a two-week in/two-week out rotational schedule, to a three-week in/three week-out rotational schedule. This was done to support COVID-19 isolation period requirements under various provincial jurisdictions. In line with this change, Baffinland modified the number of hours used to calculate FTEs from 2,016 hours to 2,184 hours.

Project operational uncertainty and the onset of the COVID-19 Pandemic in March 2020. Acting in line with Government of Nunavut Public Health Orders, Baffinland demobilized Nunavummiut employees and contractors from site from January to July 2021, and again from end of December 2021 to March 2022. Baffinland Inuit employees received full wages during this period. No demobilization of Inuit employees took place in 2023.

The number of directly employed Inuit from LSA communities (including Iqaluit) was 110 (FTEs) in 2023, representing a slight decrease from 2022 and 2021 figures (i.e., 118 and 130 FTEs, respectively). The number of Inuit contractor FTEs from LSA communities increased to 75 in 2023, compared to 64 and 65 in 2022 and 2021, respectively.

For Non-Inuit, there were 1,420 FTEs at the Project in 2023, compared to 1,513 in 2022. The number of Non-Inuit FTEs living in LSA communities was the same in 2023 and 2022, at two (2) FTEs. Of the 1,420 Non-Inuit FTEs, most resided in Ontario (28%), Newfoundland (21%), and Nova Scotia (15%).

There were a total of three (3) non-Inuit contractor FTEs reporting living outside of Canada in 2023. These FTEs represent the total of smaller amounts of work (e.g., hours worked ranging from 6 to 600 per individual) done by a variety of specialized contractors originating from, Australia, Chile, China, France, Germany, Ireland, Mexico, the Netherlands, New Zealand, the United Kingdom, Ukraine, the United States, and Finland.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to provide information regarding employee origin in future Socio-Economic Monitoring Reports. The Socio-Economic Monitoring Report (SEMR) provides detailed Baffinland and contractor employment data, including Inuit and non-Inuit employment by North Baffin communities, other Nunavut regions, outside Nunavut, and internationally (see Table 3 in the 2023 SEMR; Aglu and ERM, 2024).

4.7.2 Education and Training (PC Terms and Conditions 135 through 141)

Seven (7) PC Terms and Conditions relate to education and training, mostly encouraging Baffinland to maximize education and training benefits to Nunavummiut in the local communities. This includes the development of recognizable and transferable skills that can be used outside of the mining industry. The NIRB required Baffinland to conduct a labour market analysis, which was updated for the Early Revenue Phase.

Inuit & Stakeholder Feedback

As noted in Section 4.7.1, the key stakeholders focused on the socio-economic environment include the five (5) North Baffin communities, the QIA, various departments of the Government of Nunavut (GN), and CIRNAC. There is an inherent relationship between the education and training initiatives and objectives implemented by Baffinland and the GN, which is responsible for delivering most education and training programs in Nunavut. Commitments for Baffinland to provide education and training opportunities are contained in the IIBA and this subject is regularly discussed through the IIBA Employment Committee. The SEMWG and QSEMC also regularly discuss this element of the Project. Aside from employment (discussed in Section 4.7.3), Baffinland's stakeholders have viewed education and training opportunities as a key benefit of the Project (Appendix G.7.2).

Monitoring

Baffinland tracks and reports on the amount of training delivered each year (including the amount of training delivered to Inuit workers), government educational attainment statistics, and results from an Employee Information Survey. Table 4.38 provides an evaluation of the Project's impacts on education and training, based on monitoring activities completed in 2023, relative to predictions presented in the FEIS and FEIS Addendum.

Table 4.38: Education and Training Impact Evaluation

Component	Effects	Monitoring Program	Impact Evaluation
Life Skills	Training of workers and contractors, resulting in improved life skills amongst LSA residents. Training in 2023 is described in PC Term and Condition No. 137.	All Inuit training hours for Baffinland staff are tracked and reported quarterly and annually to the QIA. Baffinland reports on its training programs annually in its socio-economic monitoring report. In 2023, Inuit training hours totalled 34,450 hours which is 29.9% of the total training provided by Baffinland.	Positive effects consistent with FEIS predictions
Education and Skills	Training programs as described above; incentives related to school attendance and success (i.e., laptop program, scholarships); opportunities to gain skills on the job		Positive effects consistent with FEIS predictions

Positive effects with respect to life skills and to education and work skills have occurred as a result of the Project.

Path Forward

Baffinland will continue to implement and refine its training programs, in consultation with the SEMWG, QSEMC, and the Project's workforce. Reporting on each PC Term and Condition follows.

Project Certificate Term and Condition No. 135

Category	Education and Training - Employee work/study programs
Responsible Parties	The Proponent, Qikiqtani Inuit Association
Project Phase(s)	Construction and Operations
Objective	Recognizing the 12-hour work days inherent with work at the Project site, it is not clear how employees would successfully engage in a work/study program offered by the Proponent.
Term or Condition	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).
Relevant Baffinland Commitment	93
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	Not Applicable
Ref. Document Link	Not Applicable

METHODS

Q-STEP / Apprenticeship

Baffinland and Qikiqtani Inuit Association (QIA) are continuing to support the Mary River Impact and Benefit Agreement (IIBA) implementation with the Qikiqtani Skills and Training for Employment Partnership (Q-STEP) Inuit Training and Development Program. Funded by the Government of Canada, and with financial and in-kind supports from Baffinland, this initiative focuses on pre-trades instruction and related training and employment initiatives for apprenticeships at the Mary River Mine Site. The funding is providing support for expenses relate to training, such as wages, accommodations, and travel. This program began in February, 2022, and it is scheduled to continue to March 31, 2028. The target is to hire and maintain 16 Inuit apprentices in various trades, with the end goal that apprentices complete training and advancing in their careers in mining industry trades.

Baffinland works in partnership with the Government of Nunavut (GN), Department of Family Services (or other province apprenticeship offices for Inuit residing outside of Nunavut) to deliver apprenticeship programs. This allows Inuit employees to train to become journeypersons in skilled trades. Baffinland has identified apprenticeship opportunities in the following areas: Housing Maintainer, Oil Burner Mechanic, Electrician, Welder, Heavy Equipment Mechanic, Automotive Service Technician, Heavy Truck and Trailer Service Technician, Heat Systems Technician/Oil Burner Mechanic, Millwright, and Machinist. A qualified journey person is able to work in the trade with other employers.

As part of the apprenticeship program, Baffinland Inuit apprentices are released from their work schedule to be able to attend technical training in Rankin Inlet or Alberta, (as per the GN's apprenticeship program for Nunavummiut), or other provincial jurisdictions (for Inuit apprentices residing outside of Nunavut). This takes place each year of their

apprenticeship program (either three (3) or four (4) years). During this time, they continue to receive their Baffinland base salary.

Heavy Equipment Operator Training

In collaboration with Q-STEP and QIA, Baffinland will offer opportunities for off-site training to employees as they become available or identified. One opportunity for 2023 was the Excavator training program which is offered at Operating Engineers Training Institute of Ontario (OETIO) in Morrisburg. It is meant to further develop the skills of graduates of the OETIO Loader, Haul Truck and Skid Steer Operator program. For this program, participants are released from their work so that they can take this training offsite, while continuing to receive their Baffinland base salary.

Baffinland works with the Mary River Inuit Impact and Benefit Agreement (IIBA), the Employment Committee and the Joint Employment Committee (JEC) to discuss training opportunities at both the mine site and in communities. These discussions are of an ongoing and of an iterative nature and will continue to occur in 2024.

Note that Work Ready Training offered within communities is described in detail under Term and Condition 132.

RESULTS

Q-STEP/Apprenticeship Program

Baffinland continued to offer apprenticeship training in 2023. As of December 2023, there were ten (10) Inuit employees participating in the apprenticeship program, which includes on-the-job training coupled with offsite formal technical training. During 2023, a total of five (5) apprentices attended technical training, with three successfully passing their program and two who were unsuccessful:

- two (2) in Alberta for the Heavy Equipment (successful) and Welding (unsuccessful)
- one (1) in Ontario for Heavy Duty Equipment Technician (successful)
- one (1) in New Brunswick for the Electrician trade (successful)
- one (1) in Rankin Inlet for the Electrician trade (unsuccessful)

For one of the unsuccessful apprentices, it was their second try at block 1, they had again been prepared and tutored for many months before the second try and unfortunately did not pass, so they were removed from the program. For the second unsuccessful apprentice, a plan has been made for their second try at the block training to be completed in early 2024, including pre-block preparations and ensuring that accommodations for a learning disability are provided by the school and the Apprenticeship office of the province. Baffinland will continue to identify, assist, support and encourage apprentices to attend and complete apprenticeship technical training.

Heavy Equipment Operator Training

As part of the Q-STEP program, two Baffinland employees participated in a 4-week Excavator training program offered at Morrisburg in collaboration with QIA. One of the two employees successfully completed the program.

TRENDS

In 2023, Baffinland apprentices completed over 14,000 training hours including on-the-job and technical training. Five (5) apprentices attended technical training, which is an increase again this year, after having interrupted all technical training during the COVID-19 Pandemic of 2020-2021 and restarting the technical training with three (3) apprentices in 2022.

In 2023, Baffinland sent a number of employees offsite for training in order to develop their heavy equipment operator skills and competencies.

RECOMMENDATIONS / LESSONS LEARNED

The Q-STEP team continues to seek additional third party funding to support the continuation of apprenticeship training and offer other opportunities at Baffinland.

Baffinland will continue to examine programs offered in other jurisdictions, including those offered by other mining companies operating in similar conditions, to determine their potential suitability for offer at the Mary River Project.

Baffinland also recognizes that the GN is developing a Mine Training Strategy that may provide additional opportunities for prospective or current Inuit employees to receive additional training. As the Mine Training Strategy is implemented Baffinland will work with the GN to find mutual opportunities and report on any outcomes in future annual monitoring reports.

Project Certificate Term and Condition No. 136

Category	Education and Training - Transferable skills and training
Responsible Parties	The Proponent, Qikiqtani Inuit Association, Government of Nunavut, Municipal Training Organization
Project Phase(s)	Construction and Operations
Objective	Offering training which results in certifications that are valid for employment at more than one site or in different fields provides an investment in the long-term employability of Nunavummiut.
Term or Condition	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.
Relevant Baffinland Commitment	92, 94
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	Not Applicable
Ref. Document Link	Not Applicable

METHODS

On-Site Training

Baffinland has trained a number of Inuit employees in Standard First Aid with CPR/AED level C. Training has also been provided for Mine Rescue, which involves advanced first aid (Emergency Medical Responder) and Cardiopulmonary Resuscitation (CPR), ladder and fire tool training, pumper truck operations, self-contained breathing apparatus, rope and confined space rescue and basic and advanced firefighting techniques. Internal and external instructors have been engaged to ensure the highest standard is being delivered and achieved. Standard First Aid with CPR/AED Level C, Emergency Medical Responder and Basic Life Support is training that is provided by an instructor who is certified in the Canadian Red Cross program. A number of employees are also part of the Emergency Response Team (ERT) which provides them with a large number of skills and recognition which can be used outside of Baffinland.

There are a number of other certificates offered at Baffinland that remain valid and may be recognized for other opportunities: Workplace Hazardous Materials Information System (WHMIS) awareness training certificate, Transportation of Dangerous Goods (TDG) certificate and Workers' Safety and Compensation Commission (WSCC) Supervisor certificate.

Apprenticeship Program

Baffinland works in partnership with the GN, Department of Family Services to deliver apprenticeship programs. This allows Nunavummiut to train to become journeypersons in skilled trades. Baffinland has identified apprenticeship opportunities in the following areas: Housing Maintainer, Oil Burner Mechanic, Electrician, Welder, Heavy Equipment Mechanic, Automotive Service Technician, Heavy Truck and Trailer Service Technician, Heat Systems Technician/Oil Burner Mechanic, Millwright, and Machinist. A qualified journey person is able to work for other employers in their trade.

RESULTS

On Site Training

In 2023, the Training Department provided numerous training and qualifications; a list of qualifications that Baffinland employees can obtain is provided in the 'Methods' section for PC Term and Condition No. 137. The objective of these training programs is to upskill the trainees and provide them transferable skills to work at the Project, or to be able to apply to other careers and opportunities. In 2023, Inuit training totalled 34,450 hours, equivalent to 29.9% of the total training provided by Baffinland.

Apprenticeship Program

Baffinland continued to offer apprenticeship training in 2023. As of December 31, 2023, there were 10 registered Inuit apprentices at Baffinland. Of this number, five (5) are first-year apprentices and five (5) are second-year apprentices, as summarized in Table 4.39.

Table 4.39: Apprentices at Baffinland in 2023

Number of Apprentices	Level of Training	Occupation
1	Year 1 Apprentice	Heavy Equipment Service Technician "Heavy Equipment Mechanic"
1	Year 1 Apprentice	Automotive Service Technician "Automotive Mechanic"
1	Year 1 Apprentice	Welder
1	Year 1 Apprentice	Machinist
1	Year 1 Apprentice	Housing Maintainer
2	Year 2 Apprentice	Heavy Equipment Service Technician "Heavy Equipment Mechanic"
1	Year 2 Apprentice	Housing Maintainer
2	Year 2 Apprentice	Electrician

During 2023, a total of five (5) apprentices attended block training:

- two (2) in Alberta for the Heavy Equipment (successful) and Welding (unsuccessful)
- one (1) in Ontario for Heavy Duty Equipment Technician (successful)
- one (1) in New Brunswick for the Electrician trade (successful)
- one (1) in Rankin Inlet for the Electrician trade (unsuccessful)

For one of the unsuccessful apprentices, it was their second try at block 1, they had again been prepared and tutored for many months before the second try and unfortunately did not pass, so they were removed from the program. For the second unsuccessful apprentice, a plan has been made for their second try at the block training to be completed in early 2024, including pre-block preparations and ensuring that accommodations for a learning disability are provided by the school and the Apprenticeship office of the province. Baffinland will continue to identify, assist, support and encourage apprentices to attend and complete apprenticeship technical training.

TRENDS

Inuit training for 2023 totalled 34,450 hours, equivalent to 29.9% of the total training provided by Baffinland. This is a decrease in Inuit training hours when compared to 2022. This can be explained by the higher volume of training completed in 2022 due to the return of Nunavummiut workers from home following a COVID outbreak from December 2021 to early March 2022; this means that there was an increase in Inuit training hours in 2022 when Nunavummiut returned to site.

In 2023, five (5) apprentices attended technical training. This is an increase again this year, after having interrupted all technical training during the COVID Pandemic of 2020-2021 and restarting the technical training with three (3) apprentices in 2022.

RECOMMENDATIONS / LESSONS LEARNED

The Q-STEP team continues to seek additional third party funding to support the continuation of apprenticeship training at Baffinland as it is a very sought after program that leads to certification.

All current apprentices at Baffinland shall continue to attend technical training school for their specific trade and apprenticeship level in 2024. Baffinland is coordinating the training with the Nunavut Apprenticeship Department.

Baffinland will continue to look for training that can be provided by external organizations which are valid for employment at more than one site.

Baffinland also recognizes that the GN is developing a Mine Training Strategy that may provide additional opportunities for prospective or current Inuit employees to receive additional training. As the Mine Training Strategy is implemented Baffinland will work with the GN to find mutual opportunities and report on any outcomes in future annual monitoring reports.

Project Certificate Term and Condition No. 137

Category	Education and Training - Transferable skills and training
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	Offering training which results in certifications that are valid for employment at more than one site or in different fields provides an investment in the long-term employability of Nunavummiut.
Term or Condition	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.
Relevant Baffinland Commitment	92
Reporting Requirement	The initial listing should be provided to the NIRB at least 60 days prior to the start of construction, an annually thereafter or as may otherwise be required.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	2023 List of Training Baffinland Provided
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.7.2

METHODS

There are a number of qualifications that employees can obtain which would aid them for their work and their personal lives. The objective of these training programs is to upskill the trainees and provide them transferable skills to work at the Project, or to be able to apply to other careers and opportunities. An exhaustive list of training is provided in Appendix G.7.2.

Baffinland delivers training that is job specific, and all of which is subject to operational need. It is noteworthy that due to poor internet connectivity in some communities, employees who reside in the North Baffin Communities upon hire complete the full suite of training once they arrive on-site for their first employment rotation.

RESULTS

In 2023, Inuit training totalled 34,450 hours, equivalent to 29.9% of the total training provided by Baffinland.

TRENDS

Baffinland continues to provide training and certification to employees as required. Future plans focus on new training programs and certifications that will allow more Inuit to become employed in meaningful and long-term careers at Baffinland.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to monitor and evaluate training programs to ensure that training is effective and offers employees the opportunities to advance in their chosen careers and to develop transferable skills. New initiatives and programs are being considered to enhance the subject matter of training as well as enhance the support that is offered by Baffinland Management to Project employees.

Baffinland continues to work with contractors to ensure Inuit content in the form of training opportunities and to explore new skills development initiatives. Training programs are expected to continue to evolve at the Project as the operation advances, employment increases, and feedback from Inuit employees is considered.

Baffinland also recognizes that the Government of Nunavut is developing a Mine Training Strategy that may provide additional opportunities for prospective or current Inuit employees to receive additional training. As the Mine Training Strategy is implemented Baffinland will work with the GN to find mutual opportunities and report on any outcomes in future annual monitoring reports.

Project Certificate Term and Condition No. 138

Category	Education and Training - Inuit employee training
Responsible Parties	The Proponent, Qikiqtani Inuit Association (QIA)
Project Phase(s)	Construction
Objective	Working together with the QIA to prepare effective training programs developed specifically for Inuit will assist in employee preparedness and may improve employee retention.
Term or Condition	The Proponent is encouraged to work with the QIA to ensure the timely development of effective Inuit training and work-ready programs.
Relevant Baffinland Commitment	92
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Not Active
Status of Compliance	In Compliance
Stakeholder Review	Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	Not Applicable
Ref. Document Link	Not Applicable

METHODS

Baffinland and Qikiqtani Inuit Association (QIA) are continuing to support the Mary River Impact and Benefit Agreement (IIBA) implementation with the Qikiqtani Skills and Training for Employment Partnership (Q-STEP) Inuit Training and Development Program. Funded by the Government of Canada, and with financial and in-kind supports from Baffinland, this initiative focuses on pre-trades instruction and related training and employment initiatives for apprenticeships at the Mary River Project. The funding is providing support for expenses relate to training, such as wages, accommodations, and travel. This program began in February, 2022, and it is scheduled to continue to March 31, 2028. The target is to hire and maintain 16 Inuit apprentices in various trades, with the end goal that apprentices complete training and advancing in their careers in mining industry trades.

Baffinland continued working in collaboration with QIA, to identify candidates for training opportunities and for Inuit to gain skills and competencies to secure employment with Baffinland. This program is designed to prepare Inuit for employment both at the Project and in the community and to gain employment skills for future employment in the region through a number of training-to-employment initiatives.

RESULTS

Heavy Equipment Operator Training

As part of the Q-STEP program, two Baffinland employees participated in a 4-week Excavator training program offered at Morrisburg in collaboration with QIA. One of the two employees successfully completed the program.

Community Based Work Ready Program

Baffinland continues to offer the Community Based Work Ready Program (WRP) training. The community WRP is a 40-hour training program facilitated in the communities in person which addresses the following areas: Self Awareness, an Introduction to Mining, Essential Skills for the Workplace, Money Management and Preparing for Fly-In, Fly-Out. For 2023, in line with the IIBA commitments, the WRP was delivered in all five (5) of the North Baffin surrounding communities as well as Iqaluit.

In 2023, Baffinland held 15 community based WRP sessions, with a total of 55 participants.

In 2023, QIA informed Baffinland that they will be creating an online version of the WRP to increase the availability of the training for all Nunavut communities. In Q1 and Q2 of 2024, Baffinland and QIA will co-develop the online WRP, where the module is anticipated to launch in Q3.

TRENDS

In 2023, the WRP continued to be delivered in the five (5) surrounding communities and Iqaluit.

In 2023, Baffinland apprentices completed over 14,000 training hours including on-the-job and technical training. Five (5) apprentices attended technical training, which is an increase again this year, after having interrupted all technical training during the COVID-19 Pandemic of 2020-2021 and restarting the technical training with three (3) apprentices in 2022.

RECOMMENDATIONS / LESSONS LEARNED

In 2024, Baffinland will look to work with QIA to ensure that an effective online WRP is developed to be able to continue to increase its labour pool and help prepare Nunavummiut to be ready for employment at its Mine Site and Milne Port locations

Baffinland also recognizes that the Government of Nunavut is developing a Mine Training Strategy that may provide additional opportunities for prospective or current Inuit employees to receive additional training. As the Mine Training Strategy is implemented Baffinland will work with the GN to find mutual opportunities and report on any outcomes in future annual monitoring reports. Baffinland acknowledges that QIA could have a role to play in such future training.

Project Certificate Term and Condition No. 139

Category	Education and Training - Hiring southern Canadians and foreign employees
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	With the unknown availability of labour from the North Baffin region and Nunavut as a whole to provide employment to the Project, the need to employ southern Canadians or foreign workers may implicate the Proponent's on-site language, cross-cultural awareness, and other programming. Having information available regarding the sourcing of labour for the Project is important to ensuring the Proponent and others are prepared for any influx of southern or foreign employees.
Term or Condition	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 Early Revenue Phase as well as hiring points within Nunavut and outside of the North Baffin region and RSA.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Not Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtani Inuit Association, Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	Qikiqtani Labour Market Analysis (NIRB Registry No. 291437, FHW Consulting, 2014a) Qikiqtani Labour Market Analysis (MiHR, 2021)
Ref. Document Link	Not applicable

METHODS

Baffinland ensures priority hiring for Inuit within the five (5) points of hire communities as well as the Qikiqtani region. Following this Inuit who are beneficiaries under the Nunavut Agreement and who reside anywhere else in Canada are priority hires. All Inuit employees who express interest are contacted, and their qualifications and skills are assessed against any open roles. Inuit who are qualified for roles are interviewed and if successful are offered career positions at Baffinland.

Baffinland and QIA undertake a triannual study of the Qikiqtani Labour Market. As per the last Qikiqtani Labour Market Analysis (QLMA) report completed by Mining Industry Human Resources Council (MiHR) in 2021, there are challenges in recruiting Inuit from the North Baffin region and Nunavut as a whole given the limited skillset available within Qikiqtani labour supply (MiHR, 2021). Limited numbers of semi-skilled and skilled qualified workers currently seeking work are available. Because of this limited availability of labour, Baffinland is required to employ southern Canadian workers at site to meet operational and business requirements.

When employing a workforce with significant southern Canadian representation it is important to ensure on-site language, cross cultural awareness, and other programming is available. Taking steps to ensure these are in place will increase communication and good working relations.

In 2023, Baffinland and QIA continued to explore development of a Skills Equivalency Assessment Template (SEAT). This assessment template is designed to assess Inuit skills and knowledge acquired through traditional skills and training as opposed to southern education and training. The SEAT is based on a holistic complete review of Inuit Traditional Knowledge and Skills and allows Baffinland to include this as part of the recruitment and selection process.

RESULTS

The Labour Market Analysis review is conducted tri-annually. The QLMA study is to focus around two (2) key sections:

- The Labour Market Analysis (LMA) examines the labour market conditions in the Qikiqtani region of Nunavut, from both a labour demand and labour supply perspective; and the Skills and Capacities Assessment (SCA) profiles the skills and capacities of the labour force, including a look at how people distribute by skill level among Qikiqtani's labour supply;
- Inuit Labour Force Barriers Analysis (ILBA) explores barriers to full employment for Inuit and identify potential strategies to support/improve the ability of Inuit people to attain and maintain employment at Baffinland operations.

The QLMA aims to understand and inform expectations of labour supply in the Qikiqtani region, such that project partners can develop strategies to maximize the potential of their community members. As well, the QLMA covers labour demand factors that may tighten the labour market for different occupations and categories of skill level.

The QLMA report aims to profile the skills and capacities of the labour force, including a look at how people distribute by skill level and how specific skills are utilized among the labour supply. Understanding the skill profile of the labour force can help identify where particular skill gaps in a region may exist and ultimately point to potential opportunities to better align the skills of the labour force with those in demand.

TRENDS

The QLMA is a critical resource when examining labour supply and demand. QLMA is to be completed triannually.

Through MiHR, Baffinland, QIA, research and understanding the SEAT will highlight knowledge and skills gained through traditional Inuit Qaujimajatuqangit (IQ), Inuit teaching and learning, and traditional activities. These skills will be measured as equivalent to southern Canadian traditional learning where appropriate.

RECOMMENDATIONS / LESSONS LEARNED

There are challenges in attracting workers in the Qikiqtani's unique and complex labour market. The main attractors to working full-time are financial and personal motivations such as supporting family members or purchasing equipment that will help with hunting such as snowmobiles, boats and All Terrain-Vehicles (ATVs) as well as rifles and ammunition. However, these attractors are challenged by factors such as earnings-based rent increases and the family impacts of a rotational work schedule.

Findings from the QLMA indicate that there is limited detailed understanding of what mining work involves and what employment opportunities there may be. Baffinland continues to offer the community-based work ready program. The updated work ready program is a 40-hour training program facilitated in the communities and addresses the following areas: self awareness, introduction to mining, essential skills for the workplace, money management and preparing for fly-in, fly-out. These improvements in the work ready training program prepare Inuit participants with more employable and transferable skills. Baffinland employed Inuit Recruitment Coordinators within the impacted communities to assist Inuit candidates with resume writing and interviewing capabilities that incorporate traditional knowledge and skills.

Many of the barriers to Inuit employment stem from weak social infrastructure, notably lack of access to affordable child care, housing shortages, limited educational (elementary, secondary and post-secondary) levels and work-related training opportunities, social assistance dependency through rent rated to income, lack of equitable health services to address complex mental health and addiction issues, and barriers to obtaining a driver's license (often a requirement for employment).

Baffinland recognizes the importance of mental health both within and beyond the workplace. Alongside the Community Counsellors Program and the Employee and Family Assistance Program (EFAP), Baffinland maintains two on-site mental health counsellors and offers additional support services for employees.

Skills gaps and cultural norms concerning career advancement can create barriers, suggesting that Inuit employees may need more encouragement to apply for advancement, particularly for supervisory positions and above. The timeframes and steps required to advance from an entry-level position upward can also pose challenges. Recognizing this, Baffinland has undertaken Career Path interviews with all Inuit employees to understand the individual employees' current career path interest and other opportunities as part of their career development. In 2023, Baffinland continued engagement with Inuit employees and established career development plans for Inuit employees.

Recognizing the importance of ensuring that language and cross cultural awareness is provided to the total workforce, Baffinland has ensured this is addressed. 100% of employees who arrive at the Baffinland site are required to complete an extensive site orientation on their first day at site. One hour of this orientation provides cultural awareness training, provided to all employees on their first day of work.

Project Certificate Term and Condition No. 140

Category	Education and Training - Survey of Nunavummiut employees
Responsible Parties	The Proponent
Project Phase(s)	Construction and Operations
Objective	Monitoring the number of employees who leave previous employment in their home communities or who leave some type of formal education in pursuit of employment with the Project is important to evaluate predictions made and the potential impacts to North Baffin communities and education rates.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024) 2023 Inuit Employee Survey Report (ERM, 2024)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.7.1

METHODS

When a candidate applies to a job listing through Baffinland's online application system, the candidate is prompted to fill out employment and education details in their profile for the application to the respective role, including their current employment status, whether they are currently enrolled in an education program, and their highest level of education obtained. In early 2022, Baffinland updated its tracking system to be able to compile and report on these data systematically, as reported below.

Baffinland regularly administers a voluntary Inuit Employee Survey, which collects information on employee level of education obtained and whether the employee resigned from a previous job placement or educational institution to take up employment with the Project. Baffinland has discussed its results with the GN, SEMWG (which includes GN, QIA, and CIRNAC representatives), and QSEMC and will continue to engage both groups on the Project's socio-economic monitoring program. The most recent survey was administered by Baffinland in October to December 2023 (results shown below in Table 4.40 and Table 4.41). Results from the Inuit Employee Survey are also provided, where relevant, in the Project's annual Socio-Economic Monitoring Report (SEMR).

RESULTS

Inuit Employee Survey

In 2023, a total of 81 surveys were completed by Inuit employees and contractors. Table 4.40 summarizes results on the education status of survey respondents prior to Project employment (n=32 and n=5).

Table 4.41 summarizes results on the employment status of survey respondents prior to Project employment (n=31 and n=19).

Table 4.40: Education Status Prior to Project Employment (2023 Inuit Employee Survey Results)

Pre-Employment Status	Number of Respondents	Percentage of Respondents
Were you enrolled in an academic or vocational program at the time of your hire at the Mary River Project? (n=32)		
Yes	3	9%
No	29	91%
Total	32	100%
If yes, did you suspend or discontinue your education because you were hired to work at the Mary River Project? (n=5)		
Yes	1	33%
No	2	67%
Total	3	100%

Notes:

Some percentages may not add to 100% due to rounding.

Source: 2023 Inuit Employee Survey Report (ERM, 2024).

Table 4.41: Employment Status Prior to Project Employment (2023 Inuit Employee Survey Results)

Pre-Employment Status	Number of Respondents	Percentage of Respondents
Did you resign from a previous job in order to take up employment with the Mary River Project? (n=31)		
Yes	10	32%
No	21	68%
Total	31	100%
If yes, what was your previous employment status? (n=19)		
Casual	1	10%
Part-time	2	20%
Full-time	7	70%
Total	10	100%

Notes:

Source: 2023 Inuit Employee Survey Report (ERM, 2024).

In 2023, Baffinland collected information for 481 Inuit applicants to job positions through the Company online application system. Information on Baffinland's Inuit applicants' pre-employment status is shown in Table 4.42 below.

Table 4.42: Pre-Employment Activities of Baffinland Inuit Applicants

Pre-Employment Status of Baffinland Inuit Applicants	Number of Applicants	Percentage of Applicants
Are you enrolled in an education program (n=481)		
Yes	16	3%
No	444	92%
Unknown	21	4%
Total	481	100.0%
Current Employment Status (n=481)		
Employed	139	29%
Unemployed	311	65%
Other (student)	2	<1%
Unknown	29	6%
Total	481	100%

Notes:

Some percentages may not add to 100% due to rounding

As noted above, the data shown in Table 4.42 pertains to the pre-employment status of applicants. Not all applicants will proceed to be hired by Baffinland. In 2023, no Inuit applicants were hired who indicated they were currently enrolled in an education program and six (6) Inuit applicants were hired who indicated they were currently employed at the time they applied to work for Baffinland.

Out of the 481 Inuit applicants, 268 applicants submitted a General Application. General Application postings do not reflect current workforce requirements. Baffinland collects applications from interested parties on an ongoing basis, and utilizes these applications when vacancies become available.

TRENDS

Long terms trends are difficult to discern as 2022 was the first year Baffinland was able to report on Inuit applicant information related to current employment and educational program status. Results from 2023 showed a slight increase in Inuit applicants (9%) that were enrolled in an education program when they applied for a position with Baffinland from 2022 (4%).

In the 2023 Inuit Employee Survey, one of the three respondents who reported being enrolled in an education program prior to their employment reported that they suspended or discontinued that education because they were hired, compared to 3 out of 4 respondents in 2022. This represents a return to 2020 levels, where only one respondent reported leaving an academic program. In 2017, 2018 and 2019, 0%, 3% and 0% of survey respondents reported suspending their education as a result of being hired to work at the Project. Baffinland will continue to

track employee education and pre-employment status through an Inuit Employee Survey to see if additional trends emerge.

65% of Inuit applicants were not currently employed when they applied to work with Baffinland, compared to 29% who reported being employed (6% of respondents had unknown employment status, and less than 1% said that they were students). From the 2023 Inuit Employee survey, 32% of respondents indicated that they resigned from a previous job to take up employment at the Project, an increase from 2022 (22%).

In 2023, no Inuit employees were hired who indicated they were currently enrolled in an education program, compared to two (2) Inuit employees in 2022. In both 2023 and 2022, six (6) Inuit employees were hired who indicated they were currently employed at the time they applied to work for Baffinland.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to collect information from applicants on pre-employment activities, and administer the Inuit Employee Survey on a regular basis.

Project Certificate Term and Condition No. 141

Category	Education and Training - Training of Inuit
Responsible Parties	The Proponent, Qikiqtani Inuit Association
Project Phase(s)	Construction
Objective	To ensure that effective training is available in a timely manner.
Term or Condition	The Proponent is encouraged to work with the Qikiqtani Inuit Association prior to construction in order to prioritize the provision of training of Inuit to serve as employees in monitoring or other such capacities.
Relevant Baffinland Commitment	92
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Not Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtani Inuit Association (QIA)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.7.1

METHODS

Baffinland continues to work collaboratively with the QIA to promote Inuit training, education, and employment initiatives, consistent with provisions of the Inuit Impact and Benefit Agreement (IIBA, 2018). This work occurs through IIBA committees such as:

- The Joint Executive Committee; and
- Employment and Contracting Committees.

Inuit training and employment initiatives addressed through the IIBA include:

- Inuit Human Resources Strategy;
- Apprenticeship Program (not mentioned specifically in the IIBA, but apprenticeship training is identified as a potential program);
- Morrisburg Heavy Equipment Operator (HEO) training program (not mentioned specifically in the IIBA, but heavy equipment operator training is identified as a potential program);
- Work Ready Program;
- Summer Student Employment;
- Inuit Internship Program;
- Achievement Awards and Scholarships; and
- Baffinland Inuit Training Centre.
- Furthermore, Baffinland and the QIA as well as the GN, Kakivak Association and the Government of Canada partnered in the \$19 million Qikiqtani Skills and Training for Employment Partnership (Q-STEP) training program from 2017 to 2023. The objective of this program was to provide Inuit with skills and qualifications

to meet the employment needs of the Mary River Project as well as other employment opportunities in the Qikiqtani region. Training under the Q-STEP program includes work ready programs (community-based and site-based), formal certification in heavy equipment operation, community-based driver training for Class 7, Class 5, and Class 3 (managed by QIA), general skills development, and apprenticeship programs.

- Baffinland and QIA are continuing to support Mary River IIBA implementation with the Q-STEP Inuit Training and Development Program. Funded by the Government of Canada, and with financial and in-kind supports from Baffinland, this initiative focuses on pre-trades instruction and related training and employment initiatives for apprenticeships at the Mary River Project sites. The funding is providing supports for expenses related to training, such as wages, accommodations, and travel. This program began in February, 2022, and it is scheduled to continue to March 31, 2028. The target is to hire and maintain 16 Inuit apprentices in various trades, with the end goal that apprentices complete training and advancing in their careers in mining industry trades.
- As part of the commitment under the IIBA, in particular Article 7.15 Retention, Advancement, and Career Development, the Training and Inuit Success Team along with the Human Resources team will work with Inuit team members to have discussions on advancement opportunities (Career Paths). They will help team members map out a path to new roles, and will help facilitate a conversation with operations management to achieve these plans where possible (Career Development Plan). Baffinland is also developing an Inuit Leadership Development Program called Aulattijit for existing and emerging leaders. Team members will communicate in either English or Inuktitut as appropriate and desired and will talk about training opportunities, career paths, and Inuit mobility.

RESULTS

Detailed information on training programs is provided in responses to Term and Condition No. 136, 137, and 138 as well as in the 2023 SEMR (Aglu and ERM, 2024).

TRENDS

Detailed information on training programs is provided in responses to Term and Condition No. 136, 137, and 138 as well as in the 2023 SEMR (Aglu and ERM, 2024).

RECOMMENDATIONS / LESSONS LEARNED

While this condition was met for the construction period for which it applied, Baffinland recognizes the need to institute training programs at early stages to ensure Inuit are equipped with the necessary skills to take advantage of employment opportunities at the Mary River Project. The Mary River IIBA and Inuit Human Resources Strategy outline several initiatives Baffinland is undertaking to advance Inuit training and employment. The success of Inuit training and employment initiatives will continue to be tracked through Baffinland's Socio-Economic Monitoring Reports and IIBA Implementation Reports provided to QIA.

4.7.3 Livelihood & Employment (PC Terms and Conditions 142 through 147)

The Project provides direct and indirect employment opportunities to residents of the five (5) North Baffin communities and Iqaluit, as well as Nunavummiut in general.

Six (6) PC Terms and Conditions relate to potential impacts of the Project on livelihood and employment. The conditions identify actions that Baffinland and other parties (the GN, QIA and the Nunavut Housing Corporation) should undertake to remove barriers to employment of Inuit, including those barriers faced by Nunavummiut with limited or no previous wage employment experience; women; those living in social housing (the majority of Nunavummiut); and unilingual candidates.

The IIBA outlines the commitments Baffinland has made to ensuring the North Baffin communities benefit from employment opportunities of the Project. Baffinland and QIA also establish annual Minimum Inuit Employment Goals (MIEGs) to set a target for Inuit employment and to outline the actions that need to be taken to meet it. Both parties worked together to develop 3-year MIEGs for all skill categories (i.e., Unskilled, Semi-Skilled, Skilled, Professional, Management) which will be in place until 2025.

Baffinland and QIA initiated the development of an Inuit Human Resources Strategy (IHRS) in 2016. The IHRS was finalized with QIA in 2017. In 2019, Baffinland developed the Inuit Success Team. This team ensures Inuit success at Baffinland by directly interacting with all Inuit working at Baffinland. The team encourages Inuit to access available on-site and community-based training opportunities as well as ensures Baffinland continues to develop and retain Inuit employees.

In 2023 Baffinland launched Aulatijiit, a new Inuit Leadership Development Program at Mary River Project. The Program is an innovative, culturally based program that will give Inuit employees opportunity to advance to leadership roles within the company.

Inuit & Stakeholder Feedback

Discussions around livelihood and Project-related employment opportunities continue to be a key focus of the comments provided by community members and other stakeholders during public meetings. Employment impacts and/or opportunities is a common topic discussed in SEMWG meetings.

Monitoring

Baffinland tracks and reports on Inuit employment levels reached each year. This information is presented in quarterly and annual IIBA reports to the QIA, and annually in the Mary River Socio-Economic Monitoring Report (SEMR). Furthermore, Baffinland has provided information on potential barriers to employment for women in the 2023 SEMR for the Mary River Project. This includes indicator data on hours worked by female employees and contractors, and information on childcare availability and costs. Table 4.43 provides an evaluation of the Project's impacts on employment, relative to predictions presented in the FEIS.

In 2023, the Project continued to generate substantial wage employment for LSA residents. The generation of 300,616 employment hours for North Baffin LSA Inuit (Baffinland and contractor) is greater than the FEIS prediction of 230,000 hours, while the 102,751 employee hours generated by Inuit from Iqaluit is less than the 112,000 hours predicted in the FEIS. Combined, the 403,367 hours for the North Baffin LSA and Iqaluit is significantly greater than the predicted 342,000 hours.

Table 4.43: Livelihood and Employment Impact Evaluation

Component	Effects	Monitoring Program	Impact Evaluation
Wage Employment	Employment of LSA residents	In 2023, the Project continued to generate substantial wage employment for LSA residents. The generation of 300,616 employment hours for North Baffin LSA Inuit is greater than the FEIS prediction of 230,000 hours, while the 102,751 hours in Iqaluit is less than the 112,000 hours predicted in the FEIS. Combined, the 403,367 hours for the LSA is significantly greater than the predicted 342,000 hours.	Positive effects consistent with FEIS predictions
	Creation of indirect jobs within the LSA	Spending on Inuit businesses is an indicator of potential indirect employment: Since Project development, more than \$1.79 billion in contracts have been awarded to Inuit Firms. The value of contracts awarded to Inuit Firms was more than \$171.3 million in 2023. Furthermore, the Project created 3,598,965 hours of labour opportunity in 2023, much greater than the predicted 900,000 hours.	Positive effects consistent with FEIS predictions
Job Progression and Career Advancement	Expanded employment and career development options	In 2023, Baffinland continued providing training and skills development opportunities to Inuit. This included more than 34,000 hours of training for Inuit in dozens of training programs. An average of 10 Inuit apprentices were also employed by Baffinland. Two interns were hired in 2023. Over 258,000 hours of training have been provided to Inuit since Project development. 21 Inuit were promoted in 2023, an increase from 10 promotions in 2022.	Positive effects consistent with FEIS predictions

Path Forward

Baffinland continues to refine its Inuit human resources programs and remains committed to meeting Inuit employment targets. The Baffinland Apprenticeship Program, the development of a labour pool of multi-skilled Inuit Heavy Equipment Operators, implementation of the Q-STEP training program (in conjunction with QIA and Governments), the running of on-site and community-based training initiatives, and other actions to meet the 3-year Minimum Inuit Employment Goals should also assist with increasing employment in the North Baffin communities. Baffinland will continue to monitor Inuit employment levels at the Project for future trends. Reporting on each PC Term and Condition follows.

Project Certificate Term and Condition No. 142

Category	Livelihood and Employment - Employee Cohesion
Responsible Parties	The Proponent
Project Phase(s)	Construction and Operations
Objective	To promote cohesion between employees on site, and between employees and their families.
Term or Condition	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.
Relevant Baffinland Commitment	105
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtani Inuit Association (QIA)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024) 2023 Inuit Employee Survey Report (ERM, 2024)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.7.1

METHODS

Although the working language at the work sites is English, the Company supports the principle of increased use of Inuktitut in the workplace over the lifetime of the Project. As an operating mine in Nunavut, Baffinland must also comply with the *Inuit Language Protection Act*. In 2020, the updated *Inuktitut in the Workplace Policy*, which was revised with QIA as part of the work completed by the IIBA Employment Committee, was rolled out at the Project sites.

As such, Baffinland has implemented the following considerations throughout the employment lifecycle in order to proactively address direct and indirect effects:

- In order to ensure that ability to access opportunities is not impacted by language, Baffinland integrates language consideration throughout its recruitment, employment and training processes. An Inuktitut language portal is available in the Baffinland job search database, which allows job seekers to read job descriptions in Inuktitut. In addition to this, Inuit are able to apply/send in resumes in both English and/or Inuktitut. Baffinland also includes Inuktitut-speaking trainers for the Work Ready Program (WRP) offered in LSA communities, including Iqaluit.
- Baffinland is committed to providing translation in the dialect required to ensure that every employee is able to fully understand materials and documents. All staffing documents and processes, including notices, applications and interviews, are available in and can be completed in Inuktitut. In 2023, Baffinland employed four full-time translators. Pursuant to the IIBA, Baffinland provides Inuit employees with access to

professional career counselling and professional counselling for personal issues on an as-needed basis. Services are available from Inuktitut-speaking counsellors through the Ilisaqsivik Society.

- To address potential health and safety effects of language use at the Project sites', as well as other effects, such as potential alienation of employees, Baffinland applies its *Inuktitut in the Workplace Policy*, which outlines the Company's position in respect to support for the use of Inuktitut at all Project sites in Nunavut and ensures that a lack of proficiency in English will not be a barrier to Inuit employment, subject to considerations of health and safety.
- At the mine site, for both health and safety considerations as well as to promote inclusivity, Baffinland works to reduce barriers associated with language through increased use of bilingual (English and Inuktitut) signs and documents, with the use of graphics and symbols where possible. All safety materials, policies, directives and public postings are available in both English and Inuktitut. Baffinland also provides translation and interpretation services as necessary, including at certain meeting and presentations to ensure respectful, transparent dialogue, and understanding. In any instance where language is a barrier for any employee, Baffinland is committed to using best efforts to provide translation in the dialect required to ensure that every employee is able to fully understand materials and documents. Article 11.4 (Inuktitut in the Workplace) of the IIBA also specifically addresses the topic of Inuktitut in the workplace. The *Inuktitut in the Workplace Policy* has been in place since 2013. In 2019, Baffinland worked with the QIA to update the Policy, which is currently implemented at Site. Progress in adherence to the policy is tracked in the IIBA Annual Implementation Report and is further discussed at the Employment Committee.
- Baffinland is proactive in addressing any potential language or cultural barriers. To address potential alienation of employees that may occur as a result of language or other cultural barriers, Baffinland uses a variety of activities and programming that promotes the use and awareness of Inuktitut and Inuit culture on site for all staff, including:
 - Inuit Cultural Engagement Workshops: these workshops are provided to all employees at the project and which share information on Inuit history, customs and traditions, and language;
 - Mandatory Cultural Awareness Employee Orientation Program: this cultural awareness training is compulsory and is completed by all Baffinland employees and contractors during site orientation (excluding short-duration visitors);
 - Inuktitut lessons, which are delivered by site-based Cultural Advisors; and
 - Country food cooking classes, and country food tastings.
- Baffinland has also revised its Mission, Vision and Values statements in direct alignment with Inuit Societal Values.

To ensure an understanding of workplace conditions, including the use of language, QIA and Baffinland also administer the Annual Workplace Conditions Survey, which provides opportunity for employees to report concerns. The Survey was administered in 2023 after not being administered in 2021 and 2022. The 2023 survey was conducted by both Qikiqtani Inuit Association and Baffinland staff to collect information from Inuit and Non-Inuit employees on workplace conditions experienced by Inuit employees at the Mary River Project. The on-site component of the Workplace Conditions Review occurred from January 18-24 2023.

RESULTS

Baffinland monitors Inuit employee and contractor's use of Inuktitut through the Inuit Employee Survey. In 2023, 79 of 81 respondents who completed the survey provided response to question 7 – what language(s) do you speak? 68 question respondents (86%) indicated that they speak both Inuktitut and English. Four (4) respondents (5%) indicated that they were unilingual Inuktitut speakers, although all answered the English version of the survey and some provided comments in English. Seven (7) respondents indicated that they did not speak Inuktitut (9%), and only one (1) respondent reported speaking French (1%).

TRENDS

2022 was the first year that a question on language was included in the Inuit Employee Survey. In the 2022 survey, fewer individuals responded to this question (48) compared to 2023 (79). A higher proportion of respondents indicated speaking both Inuktitut and English in 2022 (94%) compared to 2023 (86%). A similar proportion of respondents indicated speaking only Inuktitut in 2023 (5%) compared to 2022 (4%), although a higher proportion of respondents in 2023 indicated not speaking Inuktitut (9%) compared to 2022 (2%). No respondents reported speaking French in 2022, compared to one respondent (1%) in 2023.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to monitor trends through the annual Inuit Employee Surveys.

Project Certificate Term and Condition No. 143

Category	Livelihood and Employment - Employee family contact
Responsible Parties	The Proponent
Project Phase(s)	Construction and Operations
Objective	To enable and foster connection and contact between employees and family members.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	As needed
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Not applicable
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Internet and telephone access is available free of charge to employees in the accommodation rooms at site, and in some common areas. If the individual has a phone, tablet or laptop they may use the wireless internet to connect their devices and communicate with friends and family via audio or video applications, in the privacy of their own room or common areas. Bandwidth and utilization levels may limit the use of some applications.

Internet and Communication Facilities

Baffinland recognizes the importance of facilitating effective communication between our workforce and their families, particularly given the remote nature of our operations. We continuously strive to improve our communication methods and provide convenient access to internet and telephone services for our employees.

Wireless Internet Access

Internet and telephone access is available free of charge to employees in the accommodation rooms at site, as well as in some common areas. Individuals with phones, tablets, or laptops can connect their devices to the wireless internet to communicate with friends and family via audio or video applications, either in the privacy of their own rooms or in designated common areas. It is important to note that bandwidth and utilization levels may occasionally limit the use of some applications.

Desktop Computers and Private Offices

In addition to personal devices, employees also have access to desktop computers onsite, ensuring that those who may not have their own devices can still utilize internet-based communication tools. These desktops are available for use whenever needed, providing further flexibility for individuals.

Furthermore, private offices are accessible to employees both at the Mine Site and the Milne Port. These offices offer a quiet and private space for individuals to conduct video calls or other communication activities, ensuring confidentiality and convenience.

Communication Platforms

While various communication platforms such as Zoom, WhatsApp, Facebook Messenger/Calling, and Viber are utilized onsite. We have observed improvements in communication with the implementation of Baffinland's new StarLink internet service, particularly for Zoom video calling.

Overall, Baffinland remains dedicated to providing reliable and accessible communication facilities for employees, supporting their well-being and connectivity with their families.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 144

Category	Livelihood and Employment - Requirements for employment
Responsible Parties	The Proponent
Project Phase(s)	Construction and Operations
Objective	To ensure that the prerequisites and requirements for employment are clear and well known in work readiness programs.
Term or Condition	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, and language abilities.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Not applicable
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Job postings identify employment prerequisites and requirements, as do Baffinland Community Liaison Officers (BCLOs) when individuals drop off their resumes at their local offices. Employment prerequisites and requirements are also made clear to potential employees during Work Ready Program (WRP) training (general) and pre-screening interviews (specific). Ongoing requirements (background check, and medical) are included in the employment agreement that new employees receive and sign. Between the various channels, all the listed prerequisites and requirements as listed in Project Certificate Term and Condition No. 144 are effectively communicated to potential employees.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland is continuously seeking ways to increase Inuit employment in the Project and to provide relevant and meaningful training opportunities for local community members.

Project Certificate Term and Condition No. 145

Category	Livelihood and Employment - Barriers to employment for women
Responsible Parties	The Proponent, Government of Nunavut, members of QSEMC
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To monitor and understand the existence of barriers to employment for women specifically relating to childcare availability and costs.
Term or Condition	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.
Relevant Baffinland Commitment	43, 45
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024) 2023 Engagement Records 2023 SEMWG Meeting Records Draft 2019 Socio-Economic Monitoring Plan (Baffinland, 2019h)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix B.1 Appendix C.3 Appendix G.7.1

METHODS

Baffinland has provided information on potential barriers to employment for women in the 2023 Socio-Economic Monitoring Report (SEMR; Aglu and ERM, 2024). This includes indicator data on hours worked by female employees and contractors, and some information on childcare availability and costs. Furthermore, specific reference is made in the Mary River Project IIBA to Inuit women's access to employment (Article 7.17) and affirmative steps for attracting female employees (Article 11.5; which acknowledges Inuit women entering non-traditional occupations can face barriers related to skill levels and discrimination). Actions identified in Article 11.5 include:

- The Company shall develop an affirmative action plan that sets out measurable goals and procedures to monitor compliance with government employment equity legislation and any harassment policies.
- The Company and a designated Inuit organization shall develop and locate training programs developed specifically to attract women who may want to work at the Project.
- The Company and a designated Inuit organization shall develop and implement gender sensitivity training programs.
- The Company shall provide for appropriate accommodations and facilities for female Inuit employees.

The Arnait Action Plan committee has resumed efforts on reducing barriers to employment, with the focus in 2023 to ensure that activities under the Arnait Action plan continue. Further work will be attained for engaging with Inuit women to understand existing barriers affecting (or preventing) their inclusion in the workplace and to recommend strategies and plans to remove and or overcome barriers. Baffinland's renewed efforts for 2023 focused on Baffinland's internal resources and capacity in the 3-core areas to increase Inuit women employment in all levels of the organization. The actions related to the Arnait Action Plan are reported to the Employment Committee on a regular basis.

RESULTS

Table 4.44 presents the hours (and percentage of hours) worked by women and men on the Project in 2023. 407,987 hours (or 11.3% of total hours worked on the Project) were worked by women, which is 23,203 hours less than documented for 2022. As a percentage of the workforce, Inuit women represented approximately 32% of the Inuit workforce (which is up from 28% in 2022), and Non-Inuit women represented slightly more than 8% of the Non-Inuit workforce (down from approximately 9% in 2021). When looking at the ratio of female vs. male employment at site for Inuit and Non-Inuit employees, the percentage of hours worked by Inuit women (i.e., approximately 32% of total Inuit workforce) exceeded that for non-Inuit women (i.e., 8.15% of total Non-Inuit workforce) in 2023.

Table 4.44: Hours Worked by Project Employees and Contractors by Ethnicity and Gender (2023)

	Hours Worked	FTE	% of 2023 Total
Inuit			
Male	335,687	154	9.3%
Female	155,642	71	4.3%
Non-Inuit			
Male	2,855,290	1307	79.3%
Female	252,345	116	7.0%
All Ethnicities			
Male	3,190,977	1461	88.7%
Female	407,987	187	11.3%
Total	3,598,964	1,648	100.00%

Women in mining have been under-represented over the last five (5) years, representing 15% of the Canadian workforce (MiHR, 2021). When looking at the ratio of female vs. male employment at site for Inuit employees, the percentage of hours worked by Inuit females exceeds the average 5-year trend across Canada by more than 10%.

Appropriate community-level indicator data are currently unavailable for the topic of childcare availability and costs. As such, this topic continues to be tracked and discussed through informal discussions aligned with GN-Baffinland Memorandum of Understanding (MoU) priorities, QSEMC process, community engagement conducted for the Project, and through the Inuit employee survey that is typically administered on an annual basis. Employment levels can be influenced by many factors, including the existence of barriers faced by certain demographic groups. The

Arnaik Action Plan committee has identified that inadequate access to childcare in the LSA may be creating some barriers to increased employment of women at the Project. However, new employment opportunities created for women in the LSA resulting from the Project should be acknowledged. Baffinland has also developed, or has committed to developing, several measures that encourage Inuit female employment and retention at the Project. Goals and priorities in this area were finalized with the QIA in the IHRS and through renegotiation of the IIBA in 2018. The success of IIBA and IHRS initiatives will continue to be tracked by Baffinland.

Baffinland continues to strive for the inclusion of Inuit women in its annual training programs. In 2023, training completed by Inuit women represented an approximate 24% - or 12,886 hours – of total training hours completed by Inuit (i.e., 34,450 hours).

TRENDS

As indicated in Figure 4.19, there were 71 female Inuit Full-Time Equivalents (FTEs) in the workforce in 2023 (Baffinland and contractor employees), up from 65 in 2022. Female Inuit employment as a percentage of the total Inuit workforce and entire workforce (i.e., Inuit and Non-Inuit) was 31.6% and 4.3%, respectively, representing an increase when compared to 2022 values.

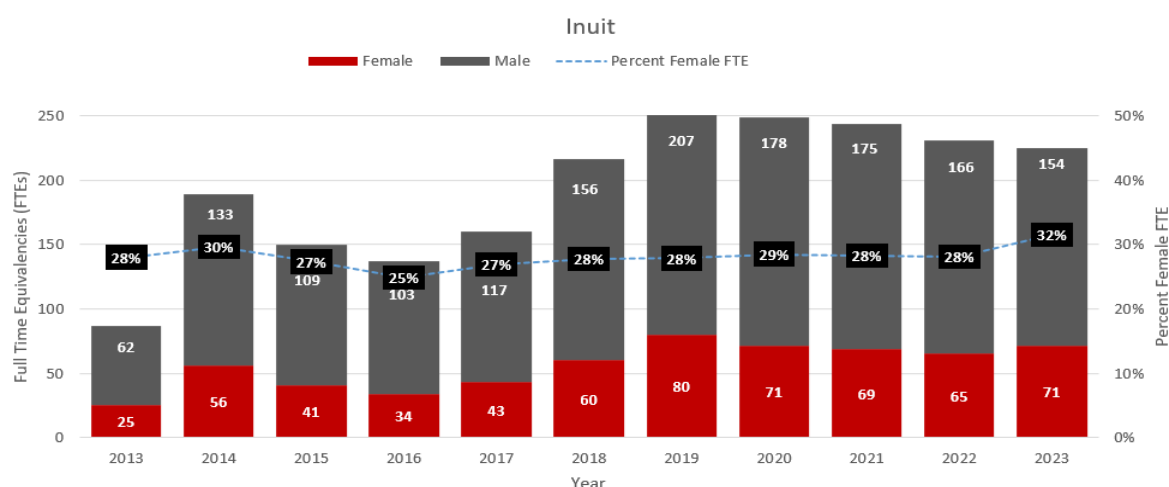


Figure 4.19: Baffinland and Contractor Inuit FTEs by Gender

Note:

Values may not add up due to rounding.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland continues to provide information related to potential barriers to employment for women through its Socio-Economic Monitoring Reports. However, appropriate community-level indicator data are currently unavailable for the topic of childcare availability and costs.

Baffinland engages with the GN on employment topics through the SEMWG and QSEMC as well as the MoU signed in 2019. Baffinland remains open to discussions with the GN and members of the QSEMC on the subjects of female employment and access to child care, including discussions on how improved monitoring data may be obtained.

Project Certificate Term and Condition No. 146

Category	Livelihood and Employment - Availability of childcare for Project Employees
Responsible Parties	Government of Nunavut and Qikiqtani Inuit Association
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To lessen the barriers to employment as relating to the availability of childcare.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	Not Applicable
Stakeholder Review	Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

This PC Term and Condition is not directed at Baffinland.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 147

Category	Livelihood and Employment - Affordability of housing
Responsible Parties	The Proponent, Government of Nunavut and Nunavut Housing Corporation
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To lessen the barriers to maintaining employment as relating to the availability and costs of housing.
Term or Condition	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.
Relevant Baffinland Commitment	43
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Government of Nunavut (Nunavut Housing Corporation; Community and Government Services; Economic Development and Transportation); Mary River Socio-Economic Monitoring Working Group (SEMWG); Qikiqtani Socio-economic Monitoring Committee (QSEMC)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.7.1

METHODS

In 2014, the Nunavut Housing Corporation (NHC) implemented changes to the Public Housing Rent Scale that were intended to reduce disincentives to employment, support the goals of poverty reduction, and make the calculation of rents fairer for tenants. Public Housing rent is now assessed based on the total gross income(s) of only the one or two Primary Tenants in the unit, and is based on an annual assessment of income. To reduce an abrupt and significant increase in rent after gaining new employment, the new Public Housing Rent Scale limits rent increases to 25% of the new rent assessed per year until the rent asses total is reached.

Baffinland continues to regularly discuss housing with the QSEMC and SEMWG, of which the Government of Nunavut (GN; including Nunavut Housing Corporation) is an active participant. Baffinland and the Government of Nunavut also maintain a Memorandum of Understanding (MoU) that highlights priority areas for potential collaboration. This MoU provides a venue for any GN Department or Agency, including Nunavut Housing Corporation (NHC), to approach Baffinland with proposals relevant to their mandates, including housing. Baffinland will always remain open to any discussions related to housing the GN and NHC wishes to have.

Baffinland delivered basic financial literacy training to North Baffin community members through the in-community Work Ready Program (WRP) in 2023. Financial literacy training delivered through the WRP included budgeting that consider housing and rent, as well as provided explanation of financial loans.

RESULTS

Not applicable

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to engage and discuss housing-related issues with the GN and the NHC and will advocate for more work-friendly social housing policies for its workers.

Baffinland is looking forward to engaging with the GN and the NHC through the SEMWG and MoU in 2024. Going forward, and if agreed upon with the GN, Baffinland will report on successes and achievements under the MoU in relation to this subject in subsequent annual reports.

4.7.4 Economic Development, Self-Reliance, and, Contracting and Business Opportunities (PC Terms and Conditions 148 through 152)

Five (5) PC Terms and Conditions relate to the potential impacts of the Project on economic development and self-reliance, and contracting and business opportunities. The objectives of the conditions are to: encourage Baffinland to investigate what measures the Proponent could take to encourage home ownership; promote the contracting of Inuit firms by contracting with smaller work packages; undertake collaborative monitoring with regional agencies to evaluate the Project's interactions with harvesting and food security; outline measures to minimize impacts on park users; and to complete an assessment of the risk presented by temporary mine closure on local employment and economic development.

Inuit & Stakeholder Feedback

With respect to economic development, local communities, the QIA, the GN, and the federal government are all key stakeholders. As with employment, Inuit and other stakeholders are interested to see the Project enhance economic development in the Region. Commitments and contracting guidelines are contained in the IIBA to encourage contracting of Inuit firms.

Concerns have been expressed regarding the potential negative effects or challenges associated with temporary or early closure of the Project. In response to these concerns, and in accordance with Term and Condition No. 149, Baffinland updated its temporary closure planning report in 2021. The updated report was informed by perspectives and feedback received during a series of engagements with the QSEMC, SEMWG, and North Baffin LSA community members (i.e., community economic development officers) in the 2021 year.

Monitoring

Baffinland tracks and reports on the amount spent on contracting with Inuit firms each year and on LSA payroll amounts. Baffinland has also presented information on Project harvesting interactions and food security, household income and food security, and land user. Such Project interactions are discussed in the 2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024). Table 4.45 provides an evaluation of the Project's impacts on economic development and self-reliance, and contracting and business opportunities based on monitoring activities completed in 2023, relative to predictions presented in the FEIS and FEIS Addendum.

Positive effects with respect to aspects of the economy in the North Baffin communities have accrued as a result of Project employment.

Path Forward

Baffinland and QIA signed an amended IIBA in 2018 (IIBA, 2018). Both continue to work collaboratively to improve Inuit business opportunities at the Mary River Project. Baffinland will continue to monitor and report on Project-related economic-development effects in future years. Reporting on each PC Term and Condition follows.

Table 4.45: Economic Development Impact Evaluation

Component	Effects	Monitoring Program	Impact Evaluation
Land	Mine operation and ongoing construction activities causing increased industrial utilization of land, may affect harvesting and travel, or result in changes to how people engage in the land-based economy	In 2023, a total of 286 land use visitor person-days were recorded at Project sites, an approximate 20% reduction from 2022. The QIA's Inuit Stewardship Plan is intended to focus on land use monitoring, which will supplement Baffinland's existing programs.	Positive and negative effects consistent with FEIS predictions
People	Employment, training and contracting resulting in increased human capacity and well-being; opportunities for youth, improved education and training; and increased wealth and well-being	Baffinland's 2023 Socio-economic Monitoring Report presents 2023 training, employment, income, and contracting statistics, as well as investments in school-based initiatives and company donations. Taken together, this data indicates the Project has had a positive effect on skills and opportunities in the LSA.	Positive effects consistent with FEIS predictions
Community Economy	Employment of North Baffin residents resulting in an improved ability to achieve strategic community development objectives; increased wealth in community; increased local business opportunities	Employment monitoring and results are described in Section 4.7.3. Since Project development, the value of contracts awarded to Inuit firms has been more than \$1.79 billion. \$171.3 million in contracts was awarded to Inuit Firms in 2023. Furthermore, Baffinland's Inuit employee payroll totaled \$17.11 million. These amounts include all Inuit employees who lived inside and outside of Nunavut. Contractor's Inuit employee payroll totaled \$7.43 million. Therefore, Project Inuit employee payroll totaled more than \$24.5 million in 2023.	Positive effects consistent with FEIS predictions
Territorial Economy	Employment of Nunavut residents causing growth in the territorial economy. Expanded economic activity (Gross Domestic Product [GDP]) Increased diversity of territorial economy.	Impacts to the territorial economy consist of employment (Section 4.7.3) and contracting within Nunavut (see above), as well as corporate and payroll taxes, mineral royalties and IIBA payments (Section 4.7.8).	Positive effects consistent with FEIS predictions

Project Certificate Term and Condition No. 148

Category	Economic Development and Self-Reliance, and Contracting and Business Opportunities – Food security
Responsible Parties	The Proponent, Members of the QSEMC
Project Phase(s)	Construction and Operations
Objective	To improve understanding of the interactions between the Project and Inuit harvesting and how this relates to food security for residents of the North Baffin.
Term or Condition	The Proponent is encouraged to undertake collaborative monitoring in conjunction with the Qikiqtaaluk Socio-Economic Monitoring Committee's monitoring program which addresses Project harvesting interactions and food security and which includes broad indicators of dietary habits.
Relevant Baffinland Commitment	45
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024) 2023 Inuit Employee Survey Report (ERM, 2024) Tusaqtavut for Phase 2 Application of the Mary River Project [Pond Inlet] (QIA, 2019a) Tusaqtavut for Phase 2 Application of the Mary River Project [Hall Beach and Igloolik] (QIA, 2019b) Tusaqtavut for Phase 2 Application of the Mary River Project [Arctic Bay and Clyde River] (QIA, 2021) Nunavut Food Security Strategy and Action Plan 2014-2016. (Nunavut Food Security Coalition, 2014).
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.7.1

METHODS

Baffinland monitors and provides information on Project harvesting interactions and food security in the Socio-Economic Monitoring Report (SEMR).

Appropriate indicator data at the community level are currently unavailable for this topic. As such, this topic continues to be tracked through the QSEMC process, community engagement conducted for the Project, and related information (results are reported in the SEMR). Some territorial (but not community-scale) government data are available on harvesting and food security in Nunavut and are presented in the SEMR. Other data related to this topic are presented in the report and include: proportion of tax filers with employment income, median employment income, percentage of population receiving social assistance, number of recorded land use visitor person-days at Project sites, and number of Wildlife Compensation Fund claims.

To help address this, in 2023, Baffinland added a new question regarding food security to the Inuit Employee Survey. A new question regarding whether total household income has been enough to meet respondents' (and their families') needs since obtaining Mary River Project employment was added as well. Baffinland also collects information related to employee's perspectives on ability to provide, health and well-being, and ability to participate in harvesting and land-based activities through the Inuit Employee Survey.

The Qikiqtani Inuit Association's 2019 and 2021 Tusaqtavut studies (QIA, 2019a; 2019b; 2021), supported by Baffinland under IIBA and Inuit Certainty Agreement (ICA) cost recovery provisions, reported baseline interactions with the existing Approved project and anticipated Phase 2 interactions, and including harvesting interactions, from interviewed Inuit participants in the North Baffin LSA communities. Community-level data collected through the QIA's Tusaqtavut Studies is also included in the SEMR.

Baffinland continues to fund the development of the QIA's Inuit Stewardship Plan, which once finalized will focus on the Project's potential effects by Inuit led monitoring programs. Program results will be provided to Baffinland on a regular basis and be reported as appropriate through Baffinland's own monitoring reports. The QIA is also due to issue their Pond Inlet Country Food Security Report in 2024, which will provide additional information that may be reported through Baffinland's annual reporting to NIRB.

RESULTS

Harvesting and consumption of country food remains a valued and important part of Inuit culture and diet. Monitoring data presented in the SEMR suggest Inuit land use activities coexist with the Project, as local land users have continued to access Project sites since construction. Inuit employee harvesting while on shift is also permitted at the Project (subject to certain restrictions).

Based on numbers reported to the Government of Canada by Inuit, harvesting levels of narwhal have been consistently higher since current project ore shipments began in 2015. The following Table 4.46 sets out the reported narwhal harvesting records for the period 2001 through 2022.

Table 4.46: DFO Narwhal Harvesting Records (2015-2022)

Year	Pond Inlet Population	Narwhal Harvest	Per Capita Narwhal Harvest	Average Narwhal Harvest	Average Per Capita Narwhal
2001	1,282	65	0.051	82	0.056
2002	1,307	63	0.048		
2003	1,341	67	0.050		
2004	1,358	65	0.048		
2005	1,375	62	0.045		
2006	1,369	88	0.064		
2007	1,383	65	0.047		
2008	1,400	73	0.052		
2009	1,453	44	0.030		
2010	1,482	62	0.042		
2011	1,533	112	0.073		

Year	Pond Inlet Population	Narwhal Harvest	Per Capita Narwhal Harvest	Average Narwhal Harvest	Average Per Capita Narwhal
2012	1,544	97	0.063		
2013	1,579	147	0.093		
2014	1,613	135	0.084		
2015	1,639	190	0.116	139	0.078
2016	1,663	118	0.071		
2017	1,790	159	0.089		
2018	1,784	64	0.036		
2019	1,809	184	0.102		
2020	1,835	140	0.076		
2021	1,862	152	0.082		
2022	1,891	103	0.054		
Increase in Harvest (2015-2022 compared to 2001-2014 period)				169%	140%

It is unknown what the reported narwhal tag numbers are to date for 2023: this information has not been made publicly available to Baffinland. In summary, based on 22 years of available harvest and population data for Pond Inlet, an above average number of narwhal have been harvested on a nominal and per capita basis in 6 of the 7 years Project shipping has occurred.

Annual average harvesting of narwhal has been higher in the years since commercial shipping began in 2015, then in the period before where no shipping occurred. Between 2001 and 2014 the average annual harvest was 82, and between 2015 and 2022 it was 139, a roughly 70% increase.

On December 14, 2023, the GN provided an update on caribou harvest data for the 2023/2024 year (Table 4.47). The quota was increased to 400 caribou for Baffin Island for the season and the total allowable limit was reached and the season closed on February 12, 2024. Baffinland does not have final detailed harvest numbers for the 2023/2024 season. However, the 2023/2024 season closed on February 13 2024.

Table 4.47: Caribou Harvest data for 2023-2024 Season

Community	Harvests	Tags	Surplus/Deficit
Pond Inlet	21	52	40%
Arctic Bay	11	30	37%
Clyde River	13	41	32%
Igloodik	22	31	71%
Sanirajak	4	11	36%
Sub-total	71	165	43%
Iqaluit	115	74	155%

Community	Harvests	Tags	Surplus/Deficit
Kinngait	12	43	28%
Kimmirut	39	45	87%
Qikiqtarjuaq	0	20	0%
Pangnirtung	53	53	100%
Sub-total	219	235	93%
Total	290	400	73%

Since 2022 the Nunavut Wildlife Management Board (NWMB) has determined to increase harvest limits across Baffin Island from 250 in 2021/2022 to 350 in 2022/2023. In each year that follows for the next eight years the harvest allowance will increase by 50, with 20% of the total harvest allowed for females. The GN has confirmed there are some positive signs that show the recovery of the Baffin Island caribou herd may be occurring, but stresses ongoing caution and a need to evaluate data as it becomes available that may require a change in course. The Qikiqtaaluk Wildlife Board's (QWB's) submissions on the matter supported the increase, also acknowledging an increase in caribou numbers and a need for harvesting to manage available food sources to support the larger recovery in the caribou population.

Stakeholder concerns expressed about Project effects on harvesting and wildlife are acknowledged. Various mitigation measures have been established by Baffinland to address effects on Inuit travel, camps, and harvesting. For example, Baffinland has contributed an initial \$750,000 to a Wildlife Compensation Fund (administered by the QIA under the terms of the 2018 IIBA) to address the potential for wildlife-related impacts from the Project. The QIA reported that 29 Wildlife Compensation claims were paid in 2023, out of 31 submitted claims, with total funds distributed amounting to \$187,351.17. Further, as per Section 17.7 of the 2018 IIBA, each year the Company supplies each Inuk residing in Pond Inlet who is not less than twelve years old with 300 litres of has to support harvesting activities.

In 2023, a total of 81 Inuit Employee Surveys were completed, representing a response rate of 22%. This represents a slight increase compares to the 18% response rate achieved in 2022, however, has not reached the 32.5% response rate achieved in 2020. Table 4.48 outlines frequency of responses to Food Security Indicators included in the annual Inuit employee survey.

There are positive indications that the Project contributes to improved household income and food security in the LSA. This has occurred by providing LSA residents with meaningful employment opportunities and through related contributions and initiatives. Baffinland also contributes to various community wellbeing initiatives directly (e.g., through the IIBA's Ilagiiktunut Nunalinnullu Pivalliajutisat Kiinaujat (INPK) Fund, school lunch program, seasonal country food exchange program, community food bank donations) and indirectly (e.g., through the QIA Legacy Fund and QIA Benefits Fund), which may assist individuals not directly benefiting from Project employment.

The Nunavut Food Security Coalition (2014) has outlined four components of food security (i.e., availability, accessibility, quality, and use) and factors affecting each component. Baffinland has acknowledged it can play a role in each of these food security components. However, the Nunavut Food Security Coalition (2014) also highlights

Table 4.48: Food Security Indicators (Ability to Meet Needs, Harvesting Participation, and Food Security) (2023 Inuit Employee Survey Results)

Type of Change	Number of Respondents	Percentage of Respondents
Has your total household income been enough to meet your families' needs for transportation, food, housing, clothing, and other necessary expenses since obtaining Mary River Project employment? (n=75)		
More than enough	5	7%
Enough	26	35%
Not enough	22	29%
Don't know	10	13%
Prefer not to answer	12	16%
Total	75	100.0%
How has you and your family's ability to participate in harvesting or other land-based activities changed since obtaining Project employment? (Only check one box) (n=72)		
Very improved	0	0%
Improved	15	21%
Neutral (i.e., no effect)	50	69%
Worsened	3	4%
Very Worsened	4	5%
Variable (i.e., both improved and worsened)	4	5%
Total	73	100.0%
Since working for Baffinland, how often have you and other household members worried that food would run out before you got money to buy more? (n=75)		
All the time	6	8%
Most of the time	18	24%
Sometimes	29	39%
Not much of the time	15	20%
Never	8	11%
Total	76	100.0%

Notes:

Some percentages may not add to 100% due to rounding. One respondent selected both "Improved" and "Neutral (i.e., no effect)" on the question regarding participation in harvesting, both responses were included in the table above, which is why the total responses (73) does not equal the number of respondents (n=72). One respondent selected both "All the time" and "Most of the time" on the question regarding food security, both responses were included in the table above, which is why the total responses (77) does not equal the number of respondents (n=76). Percentages for these questions indicate percentage of respondents, not responses. (ERM, 2024)

food security components "are influenced by many complex factors" and notes "this critical and complex issue is larger than the mandate of any one organization. A collaborative approach is essential." Baffinland continues to

make contributions to the components of food security through initiatives commensurate with its role as a regional mineral developer; Baffinland's role in each of the four food security components identified by the Nunavut Food Security Coalition (2014) is described in the Socio-Economic Monitoring Report.

Baffinland acknowledges Inuit and stakeholder concerns have historically been raised on this topic. However, relevant mitigation is in place (e.g., Wildlife Compensation Fund, Harvesters Enabling Program) and Baffinland continues to make contributions to the components of food security through initiatives commensurate with its role as a regional mineral developer. In addition, potential effects on wildlife resources continue to be tracked through Baffinland's environmental monitoring programs and the TEWG/MEWG processes. Relevant sections of Baffinland's Annual Report to the NIRB should be consulted for monitoring results and information specific to these topics.

TRENDS

Employment income can facilitate the purchase of food and other family goods, including those needed to participate in harvesting if desired. The 2023 Inuit Employee Survey results had 31 respondents (42%) indicating they had enough or more than enough total household income to meet their families' needs for transportation, food, housing, clothing, and other necessary expenses since obtaining Mary River Project employment. While the question regarding total income being enough to provide for necessities was not asked on the 2022 survey, the 2022 Inuit Employee Survey results had 40 respondents (77%) indicating their ability to provide for themselves and their family has improved or very much improved since obtaining Project employment, with 11 respondents (22%) reported no effect, and 2 respondents (2) indicating that it was variable (ERM, 2024). No respondents indicated that their ability to provide for themselves or their family has worsened.

When asked about effect on their or their family's ability to participate in harvesting or other land-based activities since obtaining Project employment, the majority of respondents (69%) reported that there has been no effect on their or their family's ability to participate in harvesting or other land-based activities since obtaining Project employment. Fifteen (15) respondents (21%) reported that their ability to participate in land-based activities has improved, with no respondents indicating a very improved ability. Four (4) respondents (5%) said their ability has worsened or very worsened. Four (4) respondents (6%) reported variable ability. Compared to 2022, this represents an increase in the proportion of respondents who reported that there had been no effect on their or their family's ability to participate in harvesting or other land-based activities since obtaining Project employment. As well, the proportion of respondents who indicated their ability to participate in land-based activities since obtaining Project employment had improved or very much improved was less (21% compared to 38% in 2022).

In the 2023 Inuit Employee Survey, the majority of respondents (89%) indicated some degree of food insecurity, with eight (8) respondents (11%) indicating that they were never worried that food would run out before they got money to buy more. Since this is the first year this question was asked, no trends can be identified at this time.

The QIA reported that 29 Wildlife Compensation claims were paid in 2023, with total funds distributed amounting to \$187,351.17. This increase in claims compared to previous years (19 claims amounting to \$99,824 in 2022) may be the result of ongoing work between the QIA and North Baffin HTOs to resolve long standing issues with the administration of the program.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to monitor the topic of Project harvesting interactions and food security in its SEMR. However, appropriate community-level indicator data are currently unavailable for this topic. As such, this topic

continues to be tracked through the QSEMC process, community engagement conducted for the Project, and related information. The addition of a specific question regarding food security to the 2023 Inuit Employee Survey assisted in filling data gaps identified in previous Socio-Economic Monitoring Reports. However, interpretation of this data would be more effective in comparison to community-level data, which remains a significant gap. Baffinland expects community or territory-level data regarding food security to be released in July 2024 in the 2022 Indigenous Peoples Survey.

Due to challenges securing a venue for the convening of the QSEMC, committee members did not meet in 2022, however the meeting resumed in 2023. 2022 socio-economic monitoring results were shared, including data limitations and requested feedback from members of the working group on how to address these challenges. Topics discussed at the QSEMC related to food security included purchasing vs. harvesting country foods, the relationship between growing populations and food security, and potential actions to support food security. More context of these discussions is available in the 2023 SEMR. Baffinland is committed to continuing discussions with the QSEMC and SEMWG on how to improve monitoring data.

Baffinland is open to discussing with the SEMWG and QSEMC how improved monitoring data may be obtained, which may include reporting wildlife harvest success under quota's each year for caribou and narwhal.

Baffinland has provided the necessary funding and support to QIA to conduct a Pond Inlet Country Food Baseline Study. The study commenced in 2021 with the QIA initiating engagements with the Hamlet of Pond Inlet and the MHTO on the topics of food security and sovereignty. The study is being conducted by a team made out of QIA representatives, Inuit chosen researchers, and Pond Inlet Community Members.

Project Certificate Term and Condition No. 149

Category	Economic Development and Self-Reliance, and Contracting and Business Opportunities – Impacts of temporary closure
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To further the understanding of how a temporary closure may impact on the well-being of the residents and businesses of the North Baffin region.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Not Active
Status of Compliance	In Compliance
Stakeholder Review	Nunavut Impact Review Board (NIRB)
Reference	Potential Effects of a Mine Closure (FHW Consulting, 2014b) Temporary Closure Planning: Socio-Economic Considerations for the Mary River Project (Jason Prno Consulting Services Ltd. [JPCSL], 2022)
Ref. Document Link	Not applicable

METHODS

Acknowledging the Project has evolved considerably since the 2014 submission of the previous closure planning report (FHW Consulting, 2014b) Baffinland conducted additional planning for socio-economic aspects of temporary closure in 2021. Baffinland engaged with the SEMWG and QSEMC community members on potential impacts and community and stakeholder concerns relating to the heightened risk of temporary closure in 2022.

In January 2022, Baffinland submitted the updated report *‘Temporary Closure Planning: Socio-Economic Considerations for the Mary River Project’* to the Nunavut Impact Review Board which considers risks for temporary mine closure and how communities in the North Baffin region may be affected by it, including economic, social and cultural effects (JPCSL, 2022). The content of the report was informed by community and stakeholder perspectives, and Baffinland engaged QSEMC and SEMWG, as well as the North Baffin Community Economic Development Officers (CEDOs), ahead of its submission.

RESULTS

Due to experiencing operational uncertainty and the Project being assessed as being in a ‘moderate to high’ risk profile for temporary closure in 2022, Baffinland implemented a variety of mitigation measures to promote the well-being employees in the event of temporary closure. These included engaging with Service Canada for support and expedited process of employment insurance claims in the event that termination notices came into effect, provision

of dedicated counselling services to assist employees with concerns related to termination notices, and other mitigation measures.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

In the case of temporary mine closure, Baffinland's socio-economic goal is to mitigate unanticipated losses in Project economic benefits for local communities by addressing adverse effects through relevant employee, family, and community programs and support.

When the Project is approaching closure, Baffinland will work with government and community stakeholders to implement programs to support employee transition. Baffinland is also committed to working with the QIA to develop a Mine Closure Working Group that will include members from local communities and will address biophysical and socio-economic issues related to temporary and permanent site closure.

Project Certificate Term and Condition No. 150

Category	Economic Development and Self-Reliance, and Contracting and Business Opportunities – Impacts to visitors of Sirmilik National Park and Tallurutiup Imanga National Marine Conservation Area.
Responsible Parties	The Proponent, Parks Canada
Project Phase(s)	Construction and Operations
Objective	To limit potential of Project impacts upon visitors, researchers and/or beneficiary users of the Sirmilik National Park and Tallurutiup Imanga National Marine Conservation Area.
Term or Condition	<p>The Proponent will ensure the following:</p> <ul style="list-style-type: none"> 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 (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.
Relevant Baffinland Commitment	34
Reporting Requirement	The Proponent shall provide a summary discussion of its implementation of this term and condition (including the results of monitoring or adaptive management strategies) to the NIRB through the Proponent's annual monitoring report.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Parks Canada, Environment Climate Change Canada, Qikiqtani Inuit Association, Indigenous and Northern Affairs Canada, Nunavut Impact Review Board, Parks Canada
Reference	2023 Terrestrial Environmental Annual Monitoring Report (EDI, 2024a) 2023 Marine Mammal Aerial Survey Program Report (WSP, 2024e)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1 Appendix G.6.2

METHODS

Baffinland continues to contract Spire Shipview® (previously known as exactEarth®), a global vessel monitoring and tracking service based on AIS (Automatic Identification System) data from polar orbiting satellites to track and report

on vessel movements. The vessel tracking information is available on Baffinland’s website to allow any member of the public to check on vessel coordinates, which direction the vessel is moving, and its destination.

Pilots are made aware of the minimum flying altitude in the region, which are included in aviation contracts. Helicopter flight height compliance is monitored annually and is reported on in the 2023 Terrestrial Environment Annual Monitoring Report (TEAMR; EDI, 2024a). Flight paths were also tracked during the implementation of marine mammal aerial surveys completed in July and August, 2023 (WSP, 2023e).

RESULTS

Parks Canada continues to be advised of shipping activity through publicly accessible information posted in Pond Inlet, social media (through Facebook), local public radio announcements and marine VHF radio, Baffinland’s Annual Report to the NIRB and through MEWG updates (i.e., presentations, monitoring reports, etc.). Parks Canada can also access vessel tracking information at any time on Baffinland’s website to check on vessel coordinates, which direction the vessel is moving, and its destination.

All aircraft transiting to and from monitoring areas near Sirmilik Park and Tallurutiup Imanga National Marine Conservation Area took into consideration the recommended flight altitude of 2,000 feet. A total of 14 twin otter flights were conducted above Sirmilik National Park in support of the 2023 Marine Mammal Aerial Survey Program, all of which were flown at an altitude greater than 2,000 ft, which is depicted in Table 4.49 below.

Table 4.49: Flights above Sirmilik National Park in support of the 2023 Marine Mammal Aerial Survey Program

Date	No. Flights	Air Time (minutes)	Minimum Altitude (ft)	Type of Flight
23-Jul-2023	1	22	2,000+	Transit
24-Jul-2023	1	12	2,000+	Transit
25-Jul-2023	2	28	2,000+	Transit
25-Jul-2023	1	15	2,000	Survey in Oliver Sound
26-Jul-2023	1	31	2,000+	Transit
27-Jul-2023	1	36	2,000+	Transit
30-Jul-2023	1	36	2,000+	Transit
31-Jul-2023	1	19	2,000+	Transit
13-Aug-2023	1	34	2,000+	Transit
16-Aug-2023	2	32	2,000+	Transit
17-Aug-2023	1	20	2,000	Survey in Oliver Sound
17-Aug-2023	1	9	2,000+	Transit

A total of 33 twin otter flights were conducted above Tallurutiup Imanga National Marine Conservation Area in support of the 2023 Marine Mammal Aerial Survey Program, details for which are outlined in Table 4.50 below. Of these 33 flights, 25 were flown below the 2,000 ft flight height requirement. It should be noted that the amended Project Certificate requiring flight altitudes of 2,000 ft above Tallurutiup Imanga National Marine Conservation Area, was not issued until November 17, 2023, following the completion of all 2023 flights. Additionally, all 33 flights were required for monitoring Early Warning Indicators (EWI) as part of the Marine Mammal Aerial Survey Program

(MMASP) and are exempt from this requirement. Therefore, all flights outlined in Table 4.50 below should be deemed compliant with PC Term and Condition No. 150.

Table 4.50: Flights above Tallurutiup Imanga National Marine Conservation Area in support of the 2023 Marine Mammal Aerial Survey Program

Date	No. Flights	Air Time (minutes) for 1,000 ft EWI survey	Air Time (minutes) for 2,000 ft EWI survey
23-Jul-2023	1	3 hrs. 18 min	-
24-Jul-2023	1	3 hrs. 31 min	-
25-Jul-2023	2	5 hrs. 26 min	-
26-Jul-2023	1	3 hrs. 10 min	-
27-Jul-2023	2	4 hrs. 38 min	-
28-Jul-2023	1	3 hrs. 49 min	-
29-Jul-2023	2	6 hrs. 54 min	-
30-Jul-2023	1	4 hrs.	-
31-Jul-2023	2	5 hrs. 24 min	-
10-Aug-2023	1	2 hrs. 41 min	-
11-Aug-2023	1	1 hr. 41 min	52 min
12-Aug-2023	1	1 hr. 23 min	2 hrs. 31 min
13-Aug-2023	2	5 hrs. 38 min	37 min
16-Aug-2023	2	5 hrs. 35 min	50 min
17-Aug-2023	1	3 hrs.	1 hr. 32 min
18-Aug-2023	1	1 hr. 10 min	-
19-Aug-2023	1	1 hr. 54 min	-
20-Aug-2023	2	7 hrs. 7 min	1 hr. 22 min
23-Aug-2023	1	3 hrs. 11 min	1 hr. 57 min
24-Aug-2023	2	3 hrs. 22 min	2 hrs. 2 min
25-Aug-2023	2	3 hrs. 52 min	-
26-Aug-2023	1	1 hr. 54 min	-
29-Aug-2023	2	4 hrs. 38 min	-

There were two helicopter flights flown above Sirmilik National Park and 93 flights flown above Tallurutiup Imanga National Marine Conservation Area unrelated to the MMASP, totalling 0.55 hours and 8.11 hours, respectively. Both flights above Sirmilik National Park that were flown below the recommended 2,000 ft altitude occurred on July 11th, 2023 in response to a search and rescue. Of the 8.11 hours flown above Tallurutiup Imanga National Marine Conservation Area, 2.53 hours of flying occurred <2,000 ft. A total of 26 helicopter flights were involved in these 2.53 hours of flying, 25 of which included rationale for low-level flying, including: Sampling/short distance, weather, search and rescue, and slinging. The single flight that did not include appropriate rationale was on August 8th for food and passenger transport, for which less than one minute was flown below the recommended 2,000 ft altitude.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to make all pilots aware of the cruising altitude of at least 650 magl minimum throughout the PDA, as well as the minimum flying altitude of 2,000 feet over Sirmilik Park and Tallurutiup Imanga National Marine Conservation Area.

Baffinland will ensure that pilots are informed of altitude restrictions associated with Tallurutiup Imanga National Marine Conservation Area and Sirmilik National Park. Baffinland will continue to conduct EWI surveys at 1,000 ft above Tallurutiup Imanga National Marine Conservation Area, as needed, which will remain exempt from this Term and Condition.

Baffinland remains open to discussion with Parks Canada if updates to the brochure or other additional information is requested.

Baffinland has found the use of Spire Shipview® to be beneficial in providing information related to ship routing to the public. Baffinland will continue to use this service. Furthermore, it is Baffinland's intent to continue providing live viewing of vessel tracks through the Shipping Monitors based out of the Pond Inlet Office, and providing live viewing to the public and any agencies with an interest in the Project, including Parks Canada, on the Baffinland website in 2024. Baffinland will continue to provide information about its shipping season through MEWG correspondence and/or relevant MEWG meetings.

Project Certificate Term and Condition No. 151

Category	Economic Development and Self-Reliance, and Contracting and Business Opportunities - Access to housing
Responsible Parties	The Proponent
Project Phase(s)	Construction and Operations
Objective	To investigate ways that economic development and self-reliance may improve access to housing by employees.
Term or Condition	The Proponent is encouraged to investigate measures and programs designed to assist Project employees with homeownership or access to affordable housing options.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Nunavut Impact Review Board (NIRB)
Reference	Nunavut Housing Corporation Home Renovation and Repair Program to Nunavut Residents (NHC, 2015) Memorandum of Understanding (GN and Baffinland, 2019) Igluliuqatigiingniq "Building houses together" Nunavut 3000. Innovation and Partnerships to Expand Nunavut's Housing Continuum (NHC, 2023)
Ref. Document Link	Not applicable.

METHODS

Access to affordable housing in Nunavut is the responsibility of the Government of Nunavut (GN) and the Nunavut Housing Corporation (NHC). However, with the introduction of paid employment at the Project, some Nunavut-based employees may be introduced to banking activities and programs, including savings and investment accounts and possible access to mortgages and similar opportunities, all of which may help employees with eventual home ownership. Baffinland engages with the GN and NHC on specific issues and supports for Project employees, and the NHC is a member of the QSEMC. Baffinland and the GN have also signed a Memorandum of Understanding (MoU) in 2019 to work on issues of mutual concern.

Baffinland regularly administers an Inuit Employee Survey, which collects data on employee housing status and other topics. Baffinland administered the most recent survey from October 23 to December 1, 2023.

In 2023, Baffinland continued to provide basic financial literacy training, which covered topics such as budgeting that considers rent/housing as well as loans, through the Work Ready Program (WRP).

RESULTS

Currently, there is not a clear and direct relationship between Project employment and any measures or programs undertaken by Baffinland or others and home ownership. However, Project employment should eventually act to increase the purchasing power of local residents and decrease the number of individuals receiving income support. This is expected to occur primarily through increases in local wealth generated by Project-related employment and

other economic opportunities. While the manner in which Project employees spend their incomes will ultimately be a personal choice, access to adequate housing (including private ownership) may be a goal for some individuals. Incomes generated by the Project may help individuals accomplish this goal should they wish.

In the 2023 Inuit Employee Survey, the majority (81%) of respondents⁷ reported that their housing situations have not changed since obtaining Baffinland employment (ERM, 2024). No respondents reported that they had purchased a home since obtaining employment. When asked if they have ever considered purchasing a home in their community, responses were split, with 38 respondents (52%) answering yes and 35 (48%) answering no.

In 2023, for those who did not want to purchase a home, the reasons varied, including inability to save money for a down payment (selected by 45% of respondents to the question), not knowing how to go about purchasing a home (32%), lack of houses for sale in respondents' communities (23%) and lack of houses for sale that meet an individual and their family's needs (18%), and the high costs associated with maintaining a home (18%).⁷ Many respondents (72%) were not aware of the Nunavut Down Payment Assistance Program offered by the NHC.

The NHC continues to make investments in new housing units across the territory and has several existing programs, which support improved access to housing for Nunavut residents. In October 2022, the NHC released a new strategic plan called Igluliuqatigiingniq ("building houses together", also referred to as Nunavut 3000), which advances priorities and goals related to increasing housing in Nunavut over the next decade through procurement and partnerships (NHC, 2023). In 2023, the NHC announced the signing of design-build contracts for the construction of 150 new public housing units across eight Nunavut communities. Construction was to commence in Fall 2023. The signing of the design-build contracts are part of the 2023-2024 Public Housing Delivery Plan under Nunavut 3000 (NHC, 2023).

The NHC also offers home purchase assistance programs (e.g., the Nunavut Down Payment Assistance Program; Tenant to Owner Program) and home renovation and repair programs to Nunavut residents (e.g., the Emergency Repair Program, Home Renovation Program, and Senior Citizens' Home Repair Program). Together, these programs and investments are expected to lead to improved housing circumstances for individuals, help reduce overcrowding, and address public housing deficits in the territory.

TRENDS

In 2023, an increased proportion of survey respondents indicated they were considering purchasing a home in their community (52%, compared to 25% in 2022 and 43% in 2020; ERM, 2024). Compared to 2022, the proportion of respondents who reported that their housing situations have not changed since obtaining Baffinland employment and the proportion who were not aware of the Nunavut Down Payment Assistance Program were similar. In the 2022 survey, two (2) respondents had purchased a home since obtaining employment, with both indicating their belief that the change was made possible through Project employment, while no respondents to the 2023 survey indicated that they had purchased a home. Similar reasons for not purchasing a home were reported in both years, largely focused on associated costs, although more respondents to the 2023 survey indicated housing adequacy and availability as a reason for not purchasing a home.

⁷ Percentages of respondents add up to more than 100% because respondents were able to select multiple answers. As such, percentages do not represent proportion of responses, but proportions of respondents.

RECOMMENDATIONS / LESSONS LEARNED

Results from the Inuit Employee Survey indicate a large proportion of respondents are unaware of how to go about purchasing a house are unaware of housing-related programs that may assist with their purchase. Baffinland recognizes these potential barriers to homeowner by Inuit employees and contractors.

In efforts to address these potential barriers, Baffinland looks forward to engaging with the GN and the NHC through the MoU to connect employees to housing-related government resources. Going forward, and if agreed upon with the GN, Baffinland will report on successes and achievements under the MoU in subsequent annual reports.

Project Certificate Term and Condition No. 152

Category	Economic Development and Self-Reliance, and Contracting and Business Opportunities – IIBA contract requirements
Responsible Parties	Qikiqtani Inuit Association
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To improve ability of small businesses to access Project contract and sub-contract opportunities.
Term or Condition	The Qikiqtani Inuit Association is encouraged to provide the Board and the Qikiqtaaluk Socio Economic Monitoring Committee with information regarding the effectiveness of any provisions within the Inuit Impact and Benefit Agreement which may require that larger contracts be broken down into smaller size in order that they are reasonably managed by smaller businesses in the North Baffin region, while respecting any confidential or privileged information.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	Not Applicable
Stakeholder Review	Qikiqtani Inuit Association, Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	Not Applicable
Ref. Document Link	Not Applicable

METHODS

This condition is not assigned to Baffinland however the Company can confirm that it continued implementing provisions of the IIBA to support increased access to Inuit firms for contracting opportunities at the Mary River Project. This includes contracting procedures designed to maximize opportunities for Inuit Firm participation in smaller and larger contracts. Implementation is regularly monitored by the IIBA Contracting Committee, and Baffinland provided monthly and quarterly reports to QIA on the number and value of contracts awarded to Inuit Firms.

Baffinland contributed \$275,000 to a Business Capacity and Start Up Fund in 2023, which was a continuation of previous years' contributions. The fund, which is administered by QIA, is intended to develop business capacity and enhance the ability of Inuit Firms to participate in the Project bidding process through the provision of advice and assistance related to start-up capital and financing, management development, ongoing business management, financial management, contracts and procurement or human resources management. Baffinland also participates in both the Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and the Mary River Socio Economic Monitoring Working Group (SEMWG). These Working Groups provide a discussion forum and information sharing hub that supports impacted communities and interested stakeholders to take part in monitoring efforts to Project specific economic monitoring.

Further Inuit Firm business development efforts will be informed by the Inuit Firm Survey, which was developed in 2019 and released to all Inuit Firms registered with Nunavut Tunngavik Incorporated (NTI). The survey allows Inuit Firms to identify areas in which they require the most business development support, thereby directing Baffinland and QIA efforts, as well as informing the utilization of the Business Capacity and Start-Up Fund. Based on feedback from earlier surveys, Baffinland is in the process of developing a number of business development workshops for Inuit Firms including, at a minimum: 1) a workshop targeted at Inuit youth and women entrepreneurs looking to establish a business in the North Baffin communities. This workshop will be delivered in 2024 in Pond Inlet. Further workshops are to be developed based on responses from the Inuit Firm Business Development Survey and feedback during the Annual Contracting Information Session(s).

RESULTS

The total value of contract dollars spent with Inuit Firms in 2023 totalled approximately \$173.4 million. This includes forty-two (42) contracts with Inuit-owned businesses and joint ventures, most of which were based in either the North Baffin communities or Iqaluit. Since Project development, nearly a total of more than \$1.8 billion worth of contracts have been awarded to Inuit-owned businesses and joint ventures.

TRENDS

Table 4.51 provides a breakdown of contracts awarded to Inuit Firms. The value of Inuit contracting changes greatly from year to year due to the nature of mine development with large projects being carried out for one to two years at a time. Impacts on contract commitments and expenditure due to COVID-19 and the reduction of non-essential contract work in 2020 was largely resolved in 2021, which saw an increase in contract activity and values paid to Inuit Firms. In 2023, the value of contracts awarded to Inuit Firms decreased when compared to 2021 values; however, 2023 values are larger than those awarded in 2020.

Table 4.51: Annual Breakdown of Contracts Provided to Inuit Firms

Procurement Details	Value of Procurement (dollars paid) with Inuit Owned Businesses and JV's (Millions)	Total Number of Contracts with Inuit
2014	\$64 M	19
2015	\$103.5 M	12
2016	\$64.4 M	9
2017	\$387.2 M	18
2018	\$104.8 M	9
2019	\$288.8 M	8
2020	\$91.1 M	10
2021	\$195.6 M	24
2022	\$162.2 M	26
2023	\$173.4 M	42

RECOMMENDATIONS / LESSONS LEARNED

Baffinland continues to work with the QIA through the Contracting Committee and the Joint Executive Committees to maximize Project-related benefits to Inuit Firms.

4.7.5 Human Health & Wellbeing (PC Terms and Conditions 153 through 157)

Five (5) PC Terms and Conditions relate to the potential impacts of the Project on human health and well-being. These conditions focus on the implementation of measures to support Inuit employed by the Project, including: the provision of employee assistance programs, addressing potential cultural conflicts at site, the provision of services or programs to benefit families in potentially affected communities to mitigate the impact of employees' absence from home, and monitoring of potential indirect effects of the Project on human health and well-being. Commitments to the provision of employee assistance and counselling are contained in the IIBA.

Inuit & Stakeholder Feedback

As noted in Section 4.7.1, the key stakeholders focused on the socio-economic environment include the communities, the QIA, various departments of the GN, and the federal government. There is an inherent relationship between the Project and the GN for managing socio-economic effects from the Project as the GN is responsible for delivering most health and social services programs in Nunavut. Key concerns expressed by stakeholders relate to the effects of fly-in/fly-out employment on workers and their families. These concerns were raised during the environmental assessment, and in recent consultation.

Monitoring

Baffinland tracks and reports on several indicators of human health and well-being. This includes reporting on the number of instances that illegal substances or alcohol are identified during security searches at the Project sites, and occupational health and safety statistics. Baffinland has also presented information on the prevalence of substance abuse, gambling issues, family violence, marital problems, rates of sexually transmitted infections and other communicable diseases, rates of teenage pregnancy, high school completion rates, proportion of tax filers with employment income and median employment income, percentage of population receiving social assistance, and other topics (e.g., crime rates) in the 2023 Socio-Economic Monitoring Report (SEMR; Aglu and ERM, 2024). Table 4.52 provides an evaluation of the Project's impacts on human health and well-being, based on monitoring activities completed in 2023, relative to predictions presented in the FEIS and FEIS Addendum.

Changes in human health and well-being are often more apparent over a longer term, and attributing cause can be challenging. As Project construction only began in 2013, there is a minimal amount of post-Project data currently available. Human health and well-being can also be influenced by many different socio-economic factors, including those which are external to the Project. Direct correlations between the Project and human health and well-being will only come to light with the analysis of additional annual data. However, there is currently no indication the FEIS predictions are not being met and it is expected that the Project is improving the health and well-being of some individuals and families in the LSA who participate in the Project. There were no significant injuries and no fatalities at the Project sites in 2023.

Path Forward

Baffinland will continue to deliver and refine its training and employee assistance programs, and monitor indicators of human health and well-being, in consultation with the SEMWG, the QSEMC, and the Project's workforce. Reporting on each PC Term and Condition follows.

Table 4.52: Human Health and Well-being Impact Evaluation

Component	Effects	Monitoring Program	Impact Evaluation
Substance Abuse	Increased substance abuse due to the transportation of substances through Project sites	Security searches employees arriving and departing site, and the site is searched with drug dogs and trained staff.	Relevant monitoring activities for human health and well-being are longer term and conclusions will be drawn in future years
	Increased substance abuse because Project employment makes substances more affordable	In 2023, fourteen (14) drug and alcohol related contraband infractions occurred at Project sites amongst employees and contractors. This is an decrease when compared to occurrences in 2022 (i.e., twenty (20) infractions). All individuals who do not comply with Baffinland's no drugs/no alcohol policy are immediately removed from site and disciplinary action (up to and including termination) is commenced. Baffinland also notifies the Royal Canadian Mounted Police (RCMP), where appropriate, of search results.	
	Baffinland's focus on health and safety, and employee assistance and counselling programs will increase awareness of employees, reducing substance abuse	Impaired driving violations have increased in the North Baffin LSA during the post-development period. However, the trend is not significantly different than the trend in all of Nunavut when comparing the different periods.	
Increased Well-being and Community Social Stability	Project employment resulting in increased well-being of children, and increased community social stability	There are positive indications the Project is contributing to the enhanced well-being of children, by providing LSA residents (and parents) with opportunities to obtain meaningful employment and incomes. These opportunities can help reduce the various family stresses and uncertainties associated with un- and under-employment. Baffinland has also implemented an Employee and Family Assistance Program for workers and their family members who may require family-related or other forms of personal assistance. There are also positive indications the Project continues to improve household income and food security in the LSA. This has occurred through contributions to community wellness initiatives and by providing LSA residents with meaningful employment opportunities. Increased employment income facilitates the purchase of store-bought food and other family goods, while also providing an improved means to participate in harvesting.	Relevant monitoring activities for human health and well-being are longer term and conclusions will be drawn in future years

Project Certificate Term and Condition No. 153

Category	Human Health and Well-Being - Employee and family health and well-being
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Closure and Post-Closure Monitoring
Objective	To provide adequate medical services on site, including those that contribute to the mental health and well-being of all employees.
Term or Condition	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.
Relevant Baffinland Commitment	96
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Nunavut Impact Review Board (NIRB)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.7.1

METHODS

Baffinland's benefit plan includes an Employee and Family Assistance Program (EFAP), which offers all permanent employees and their dependents professional short-term counselling as well as topic-specific life coaching on an as-needed basis. In addition, on-site Inuit Cultural Advisors are available for the Project's Inuit employees to meet with, and Baffinland provides all employees with regular access to an on-site Project physician assistant.

Per Article 11.7 of the IIBA, a Community Counsellor Program was established in 2019 by Baffinland in the North Baffin LSA communities. In partnership with Ilisqsiq Society, Inuit counsellors have been hired to work within Clyde River and Pond Inlet. The program offers culturally and linguistically relevant counselling services in Nunavut while also increasing the number of trained Inuit counsellors who are able to provide counselling services in Inuktitut. Ilisqsiq provides the in-community support services and also provides virtual services, this partnership enables counselling support for all individuals living in Impacted communities.

In 2022, Baffinland hired two (2) on-site mental health counsellors. Two (2) counsellors were available to employees in 2023 as well. These counsellors are accessible to all Baffinland employees and contractors. Baffinland is very proud about the Mary River Project being the first mine in Canada to offer mental health services at site, 24/7.

RESULTS

As of 2023, Baffinland has two (2) on-site mental health counsellors which provide counselling services to all Baffinland employees and contractors. From January to December 2023, a total of 1,752 counselling sessions were administered to Baffinland employees and contractors. Sessions for Inuit employees and contractors made up 62.5% (1,095 sessions) of total sessions, with Non-Inuit employees and contractors making up 37.5% (657) of total sessions (Aglu and ERM, 2024). On-site Cultural Advisors are available for all of Baffinland's Inuit employees as well.

EFAP usage was approximately five (5) accesses per 100 employees in 2023. 2023 usage of EFAP by Nunavut-based and Non-Nunavut based employees was 22 and 47, respectively. The majority of EFAP counselling service usage was conducted over the phone or through video.

TRENDS

Following a spike of EFAP usage in 2022, at approximately seven (7) accesses per 100 employees, usage returned to previous years' levels in 2023, at approximately five (5) accesses per 100 employees. EFAP usage decreased for both Nunavut based and Non-Nunavut based employees to in 2023 (Figure 4.20).

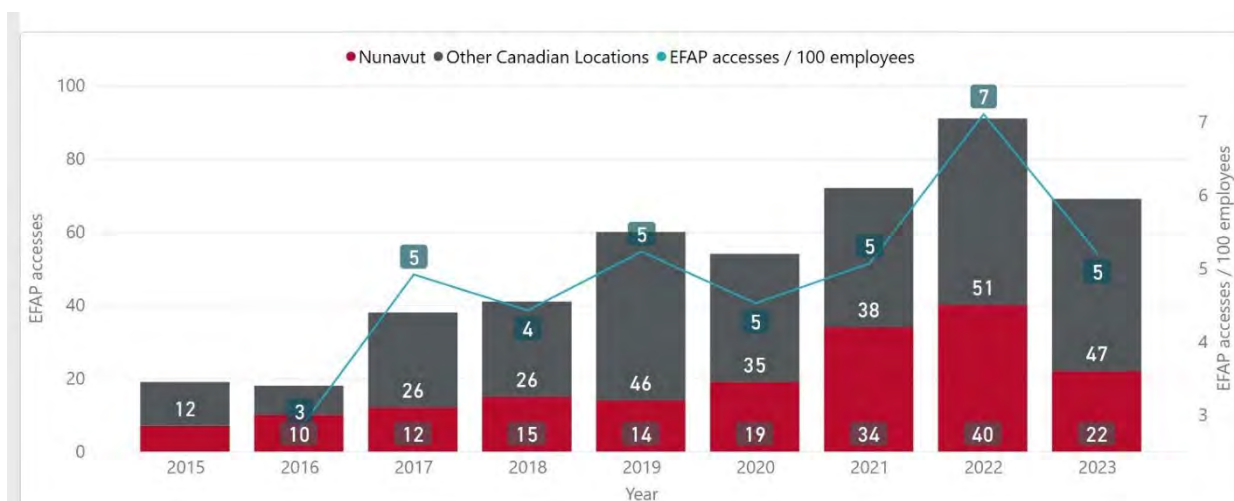


Figure 4.20: Number of times Baffinland's Employee and Family Assistance Plan (EFAP) was accessed

The usage of EFAP by Nunavut-based employees decreased in 2023, with 22 EFAP accesses, a decrease of 18 from 2022. For non-Nunavut based employees, EFAP access also decreased from 51 accesses in 2022 to 47 accesses in 2023.

It is possible that increased promotion of the program for Baffinland's employees and their families, coupled with the impacts of the COVID-19 Pandemic and operational uncertainty, influenced increased use of the service during 2021 and 2022. 2023 levels of EFAP use generally resemble pre-pandemic levels. This may be due to project stabilization and/or a decrease in impacts of COVID-19 being realized.

Similar to the number of visits to the site's physician assistant, increased EFAP usage does not necessarily indicate negative effects. Increased EFAP usage, like other company-provided health services, can be an indicator of either positive (e.g., provision of health services that may have been less available in the community), negative (e.g., onset of Project-related negative health condition), or neutral effects (e.g., provision of health services that would have otherwise been accessed in the community).

RECOMMENDATIONS / LESSONS LEARNED

Baffinland has received informal positive feedback about the presence of Inuit Cultural Advisors (previously called on-site Elders) on site to work with and mentor Baffinland employees. Baffinland will maintain the employment of Inuit Cultural Advisors on site, per IIBA Article 11.8. Baffinland has also received direct positive feedback on the

deployment of the Community Counsellors Program and would like to take this opportunity to thank the Ilisaqsivik Society for their ongoing work and effort to administer this program.

Baffinland hired two (2) on-site mental health counsellors in 2022. The on-site counsellors work with Baffinland and contractor employees and provide counselling services. Services provided by these counsellors continued in 2023. Baffinland has received positive feedback regarding its on-site mental health counselling services. For instance, many Inuit employees have indicated that these services have helped them, especially for those who do not have consistent mental health counsellors in their home communities. Inuit employees have also reported that, since the introducing these services on site, they have been able to learn more about mental health in general and how to cope with anxiety, depression, grief, etc. The on-site counsellors have also been able to provide assistance on matters falling outside of mental health. For example, counsellors have been able to connect Inuit employees to services provided through other organizations for issues relating to housing, government-issued IDs, etc.

Project Certificate Term and Condition No. 154

Category	Human Health and Well-being - Indirect impacts to health and well-being
Responsible Parties	The Proponent, Government of Nunavut, members of the QSEMC
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To understand the indirect impacts of the Project upon health and well-being.
Term or Condition	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.
Relevant Baffinland Commitment	43, 45
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024) 2021-2022 Annual Report (Nunavut Department of Education, 2023)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.7.1

METHODS

Baffinland has provided information on potential indirect effects of the Project in the Socio-Economic Monitoring Report. This includes information and indicators (where available) on the prevalence of substance abuse, gambling issues, family violence, marital problems, rates of sexually transmitted infections and other communicable diseases, rates of teenage pregnancy, high school completion rates, and other topics (e.g., crime rates).

Baffinland also monitors the number of drug and alcohol related contraband infractions as an indicator for the presence of illicit substances. All contraband infractions at the Project are of concern and are taken seriously. The infractions that have occurred to date appear to represent a small number of individuals from the Project workforce. All individuals who do not comply with Baffinland's no drugs/no alcohol policy are immediately removed from site and disciplinary action (up to and including termination) is commenced. This management response supports Baffinland's goal of 'Safety First, Always,' while also preventing further transport of contraband substances through Project sites.

RESULTS

Detailed results are presented in the Socio-Economic Monitoring Report across a range of indicators.

In 2023, 14 drug and alcohol-related contraband infractions occurred at Project sites among Baffinland and contractor employees – a decrease of 6 from the 20 infractions found in 2022 (Aglu and ERM, 2024). There were a total of five (5) infractions in 2021.

TRENDS

- Graduation rates steadily declined in the Qikiqtani region from 2009 to 2014 but have risen quickly since then, although there was a slight decrease from 2017 to 2018. School attendance rates in the North Baffin Local Study Area (LSA) region have not changed considerably over time or compared to the rest of Qikiqtani, although attendance noticeably decreased across the region for the 2020/2021 school year. Many factors affect school attendance and graduation rates; a significant factor is including the onset of remote learning beginning in March 2020. While data disaggregated by region was not available for the 2021/2022 school year, the attendance rate for Nunavut as a whole increased significantly from 57.7% to 74.5% between the two school years. This was likely influenced by a gradual return to in-person learning, although all schools were not fully open to in-class instruction for the entire year (Nunavut Department of Education, 2023). Given the wide variety of factors impacting these rates, the data does not suggest a significant effect of the Project.
- Drug violations have shown a downward turn during the post-development period in the North Baffin LSA after an increase in the pre-development period. These trends mirror Iqaluit and Nunavut-wide trends, which are seeing steep declines in the past few years. Various factors may have influenced a decrease in drug violations pre-development, including the legalization of cannabis in 2018. Due to the rise during the pre-development period and the alignment with territory-wide trends, it is difficult to say if the Project is having a significant impact on drug use, though a negative effect is currently not apparent.
- 2016 was the most recent year data on the percentage of health centre visits related to infectious diseases were available from the Nunavut Bureau of Statistics. Compared to pre-development period averages, there has been a slight increasing trend in health centre visits related to infectious diseases in the North Baffin LSA (from 2.6% to 2.7%) and decreasing trends in Iqaluit (from 2.0% to 1.0%) and Nunavut (from 4.8% to 3.1%) in the post-development period. Detailed results are presented in the Socio Economic Monitoring Report (SEMR).

RECOMMENDATIONS / LESSONS LEARNED

Baffinland continues to provide information on potential indirect effects of the Project through its SEMRs and complies with this Term and Condition. In instances where appropriate community-level indicator data are currently unavailable (e.g., for the topics of prevalence of gambling issues, prevalence of family violence, prevalence of marital problems, and rates of teenage pregnancy), these topics continue to be tracked, as possible, through the QSEMC monitoring and reporting process and community engagement conducted for the Project.

Due to challenges securing a venue for the convening of the QSEMC, committee members did not meet in 2022, however the meeting resumed in 2023. 2022 socio-economic monitoring results were shared, including data limitations and requested feedback from members of the working group on how to address these challenges. More context of these discussions is available in the 2023 SEMR. Baffinland is committed to continuing discussions with the QSEMC and SEMWG on how to improve monitoring data.

Project Certificate Term and Condition No. 155

Category	Human Health and Well-being - Employee cohesion
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To encourage the on-site cohesion of employees through cultural-awareness and social programs.
Term or Condition	The Proponent is strongly encouraged to provide the NIRB with an updated report on its development of mitigation measures and plans to deal with potential cultural conflicts which may occur at site as these may become needed.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be provided at least 60 days prior to the commencement of any construction activities.
Status of PC Term and Condition	Not Active
Status of Compliance	In Compliance
Stakeholder Review	Nunavut Impact Review Board (NIRB)
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Baffinland is committed to promoting employee cohesion through cultural awareness and social programs. In 2023, Baffinland continued to provide cultural recognition programs such as cultural awareness, promote Inuktitut in the workplace and Inuit Cultural Advisors to support Inuit employees. All of the cultural awareness and promotion activities on site benefit all employees and help to bridge the gap between different cultures to foster an inclusive and culturally safe work environment.

Baffinland has a robust Proactive Dispute Resolution Process that is designed to facilitate trust, promote open, honest, and accurate communication, expedite the resolution of issues, enhance the relationship, and conform with the Complaints and Grievances process in the IIBA. It focuses on providing a proactive method to amicably resolve issues and in cases involving an Inuit employee, the Human Resources Advisor of Inuit Relations or Cultural Advisor are involved in all meetings.

Nunavut Day celebrates the official division of Nunavut from the Northwest Territories and the official recognition of Nunavut as an independent territory. In 2023, Baffinland held its annual celebrations of Nunavut day at the Mine Site. The celebrations included a country food feast, cultural festivities and games, and celebrating the history of the territory hosted by former Nunavut premier and Baffinland's Senior Advisor Paul Quassa.

On November 7th, 2023 Baffinland celebrated International Inuit day on site. The Cultural Advisors conducted classes for employees who wanted to learn how to sew and make various traditional clothing; this was a part of the classes they were running through the month of November and into December. Traditional Country Food was also cooked in the country kitchen for employees to enjoy.

Consistent with the provisions of the IIBA, Baffinland has also instituted measures to reduce and address potential cultural conflicts at site, including:

- Mandatory cultural awareness training provided to all new employees and contractors as part of site orientation;
- Offering the Inuit Cultural Engagement (ICE) Workshop to all Baffinland employees and contractors;
- Providing culturally appropriate working conditions, including the use of Inuktitut in the workplace;
- Maintaining up to two (2) on-site Inuit Cultural Advisors to provide counselling services and support;
- Maintaining up to four (4) on-site Human Resources Advisor - Inuit Relations;
- Maintaining two (2) Inuit Success Assurance Facilitators;
- Maintaining one (1) IIBA Employment and Training Specialist;
- Continuing access to the country food kitchen provided for the consumption and sharing of traditional country food and activities; and
- Ongoing translation of signage and policies on site to ensure effective communications to and for the safety of all employees.

Baffinland is committed to continuing to deliver the Inuit Cultural Engagement Workshop to all employees at site. This workshop provides a learning opportunity for non-Inuit to the Inuit culture and traditions.

The Human Resource (HR) Advisor, Inuit Relations and Cultural Advisors continue to work with all employees, Inuit and Non-Inuit to increase engagement and improve communications. This team has been actively involved with reaching out to Inuit employees, discussing concerns, and assisting them to speak with their supervisors or managers. 100% of employees who arrive at the Baffinland site are required to complete an extensive site orientation on their first day at site. One hour of this orientation provides cultural awareness training. This team alongside with the Inuit Success team are working with Inuit employees and their supervisors to implement individual Career Development Plans. The HR Advisors, Inuit Relations have regular meetings with Inuit employees to facilitate a greater level of engagement and to identify and resolve issues.

Baffinland has employed two (2) full time Mental Health Counsellors to provide support and assistance to all employees onsite and continues to make the Employee and Family Assistance Program (EFAP) available to all employees who may wish to talk to someone or to get help dealing with any concerns. This is available in both English and Inuktitut.

In addition, Baffinland has developed an Annual Cultural Activity plan that celebrates the heritage of the region and aims to promote a deeper understanding of traditional activities. The plan is designed based on the Inuit Calendar, which is rooted in the seasonal cycles and traditional practices of the community. Activities are to align with the changing seasons, offering a range of experiences that reflect the cultural landscape of Nunavut. The Annual Cultural Activity Plan is fully funded by Baffinland and through these initiatives, we aim to foster cultural pride and strengthen community bonds with the workforce.

RESULTS

In addition to quarterly Cultural Activities, which in 2023 included events such as Inukshuk making, spring parka making etc., the Cultural Advisors at site often do smaller events such as bannock making or sewing with both Inuit and Non-Inuit together, which helps to build understanding and bridge cultural differences between Inuit and Non-Inuit employees. The Cultural Advisors also make stews using muskox and caribou which are always popular. During

2023, the Cultural Advisors also arranged/facilitated traditional Inuit games as part of the Nunavut Day celebration and based on the level of positive feedback, this was also added to the cultural program.

Baffinland continues to work with all departments and Inuit employees on the Inuit Career Mobility Strategy. The strategy provides a structured approach to proactively managing the development of Inuit employees by focusing on experiential learning supplemented with training. As employees gain knowledge and skills, they are better able to identify career goals and Baffinland can support this through training and experiential learning opportunities.

TRENDS

Baffinland continues to deliver cultural workshops and activities at site which are available to all employees. The Inuit Success team continues to engage with site management and employees and offers ongoing cultural training and supports.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland is committed to supporting Inuit employees at site and continuing to build cultural awareness and understanding amongst the entire Baffinland team. A number of initiatives were planned for 2023 to increase cultural awareness.

- Measures to promote the use of Inuktitut (ongoing efforts to translate signs/manuals – will continue in 2023, also incorporating Inuktitut translation and support in training.);
- Continue providing language lessons on-site for interested employees;
- Continued review and enhancement of cross-cultural training programs and on-boarding orientation programs;
- Delivery of presentations (on-site and at corporate head office) relating to Inuit culture and the IIBA;
- Conducting an Ulu Making Workshop with Site Employees (Inuit and Non-Inuit);
- Conducting an Inuit Drum Making Workshop at site with Site Employees (Inuit and Non-Inuit);
- Conducting a Workshop to allow site employees to sew sealskin ornaments; and
- Celebration of Inuit Societal Days including Nunavut Day, Indigenous Peoples Day, and Inuit Day.

Project Certificate Term and Condition No. 156

Category	Human Health and Well-Being - Support Initiatives
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To assist with fostering well-being within point-of-hire communities.
Term or Condition	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
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Nunavut Impact Review Board (NIRB)
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

The following is a summary of programs aimed at the provision and/or support of recreation programs and other opportunities to mitigate potential impacts of employees' absences from those who remain at home and in the communities.

An Ilagiiktunut Nunalinnullu Pivalliajutisait Kiinaujat Fund (the Fund) has been established under Article 12 of the IIBA (Support for Communities). The objectives of the fund include:

- Creation of opportunities for community capacity building;
- The fair distribution of impacts and benefits between communities and across generations;
- Maintenance of consistency with community development objectives; and
- Promotion of mutual understanding and learning.

The Fund is intended to support a wide range of activities including participation in community projects, youth and Elder programs, hunter support activities, cultural learning and revitalization, social support programs for families and individuals and counseling and healing programs. Baffinland and QIA each contributed \$375,000 annually to the Fund which is administered by QIA. Through successful IIBA renegotiations in 2018, the Company and QIA further agreed that commencing in 2019, maximum annual matching contributions to the Fund by the Company will be increased but shall not exceed \$550,000 annually.

As a responsible corporate citizen, Baffinland is committed to assisting the North Baffin Communities with sponsorship requests. Baffinland has prioritized donations and sponsorships and grouped them into five (5) general categories that best align with Baffinland's corporate vision and objectives.

- Health and Safety;

- Education;
- Arts, Sports and Culture;
- Community Engagement; and
- Mining Events/Mining Education.

Baffinland aims to support initiatives, events, and programs that fall within one or more of these areas.

In keeping with its values, Baffinland understands the importance of supporting various social, recreational and cultural activities in communities. In addition to IIBA-dedicated staff, which oversee the implementation of social support programs outlined in the IIBA, Baffinland has a Donations and Sponsorship Committee that evaluates proposals requesting support, in addition to being mandated to proactively identify opportunities to support North Baffin communities. Baffinland also delivers annual support for Inuit who are advancing their education (i.e., high school graduation laptop program, annual scholarships, etc.). The following lists some of the community donations, sponsorships and IIBA commitments provided in 2023, which primarily took place in the first half of the year, as Baffinland made the difficult decision to take a pause on all new donations and sponsorships until more certainty over the future of Baffinland's operations is secured.

- 60 laptops to high school graduates in the North Baffin Communities;
- \$20,000 (\$5,000/each) to four (4) recipients as part of the 2023 annual scholarship fund;
- 300,000, adjusted annually for inflation based on 2018 dollars, is made available for the North Baffin LSA School Lunch Program annually, as per the IIBA. In 2023, \$160,330 was distributed as part of this program to schools in Arctic Bay, Clyde River, and Igloolik.
- Over \$500,000 towards the Harvesters Enabling Program in Pond Inlet, which was established through the IIBA, to support a gas program to enhance Inuit travel in the area.
- \$497,023 in community benefits distributed as a result of the contracting with Arctic Co-Op.
- Contributed a total of \$25,000 (\$5,000 per community) as a Holiday donation to support celebrations and community wellness.
- Provided a \$5,000 sponsorship at the Qikiqtani Charity Gala to support Breakfast Programs for schools in the Qikiqtani Region.
- Contributed a total of \$25,000 (\$5,000 per community) for the Nunavut Day Community BBQ celebrations.
- Provided a food hamper donation to Grise Fiord
- \$270,000 provided to the Tasiuqtiit Working Group to support community wellness initiatives selected by the Hamlet of Pond Inlet and the MHTO in Pond Inlet

In 2023, Baffinland and its business partners such as Arctic Co-Ops (through quarterly benefits, food banks, other initiatives) contributed over \$1,500,000 towards various social, recreational, educational and cultural initiatives throughout North Baffin Communities and Iqaluit, further enhancing Baffinland's commitment to creating a positive benefit to Nunavummiut communities.

RESULTS

For more information, see Section 2.3.3.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 157

Category	Human Health and Well-Being - Counseling and treatment programs
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To make available, necessary treatment and counseling services for employee and family well-being.
Term or Condition	The Proponent should consider providing counseling and access to treatment programs for substance and gambling addictions as well as which address domestic, parenting, and marital issues that affect employees and/or their families.
Relevant Baffinland Commitment	96
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Nunavut Impact Review Board (NIRB)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.7.1

METHODS

Methods to maintain compliance with this Project Certificate Term and Condition are addressed in reporting related to PC Term and Condition No. 153.

RESULTS

Refer to Term and Condition No. 153 for 2023 EFAP and on-site mental health counsellor usage.

TRENDS

EFAP usage has been relatively consistent from 2017 to 2023 at approximately five (5) accesses per 100 employees, with the exception of 2022, when usage increased to 7 accesses per 100 employees.

It is possible that increased promotion of the program for Baffinland's employees and their families, coupled with the ongoing impacts of the COVID-19 Pandemic and operational uncertainty, influenced increased use of the service during 2022. Increased EFAP usage, like other company-provided health services, can be an indicator of either positive (e.g., provision of health services that may have been less available in the community), negative (e.g., onset of Project-related negative health condition), or neutral effects (e.g., provision of health services that would have otherwise been accessed in the community).

Baffinland started reporting on frequency of visits to the on-site mental health counsellors in 2023. No trends are able to be discerned at this time.

A summary of human health and well-being monitoring results and trends is also provided in the 2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024).

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to provide employee access to the EFAP and on-site mental health counsellors, on-site Inuit Cultural Advisors, and site physician assistants. The on-site mental health counsellors provide services, such as one-on-one substance-related counselling, to all Baffinland employees and contractors. The Company is also dedicated to continuing the availability of the Community Counsellor Program Baffinland encourages its employees and stakeholders to provide feedback on how its various programs and initiatives can be improved in the future. For example, Baffinland's Workplace Conditions Review process (required under the IIBA) has previously reviewed aspects of the counselling and support services available to Project employees. Baffinland provides ongoing support to employees with challenges related to substance abuse by setting them up for an assessment with Homewood Health EFAP and based on the recommendations from the assessment, placing them in the in-patient treatment programs. Baffinland covers all costs related to this treatment from the assessment cost, bridge-counselling cost, in-patient treatment center placement cost, to flight cost, etc. Baffinland has had a few employees successfully return to work after completing these programs.

4.7.6 Community Infrastructure and Public Services (PC Terms and Conditions 158 through 161)

Four (4) PC Terms and Conditions relate to the potential impacts of the Project on community infrastructure and public services. All four conditions name the Government of Nunavut (GN) as the responsible party for implementation of these conditions. NIRB encourages Baffinland to work with the GN to address public service issues, particularly those that may be adversely affected by the Project.

Inuit & Stakeholder Feedback

Key stakeholders focused on community infrastructure and public services include community members, Hamlet administrations, the QIA, the GN, and CIRNAC. The GN is the primary stakeholder, since it is responsible for the delivery of many public services. Hamlets expressed concern that skilled workers may leave their workforce to work for the Project, resulting in a skills gap, at least temporarily. Some Project employees and contractors have left positions in their communities to pursue employment at the Project. However, the Mary River Experience – The First Three Years report (BDSI, 2016) describes a lack of full-time hamlet work in many communities and the important role the Project plays in filling this gap. Potential opportunities for the community to realize new community infrastructure as a result of the Project continue to be expressed.

Monitoring

Baffinland conducted Inuit Employee Surveys in 2017, 2018, 2019, 2020, and 2022, and 2023. Results are provided in the annual socio-economic monitoring reports. Baffinland also reports on indicators pertaining to competition for skilled workers, labour force capacity, pressures on existing health and social services provided by the GN that may be impacted by Project related in-migration of employees, and on Project-related pressures on community infrastructure. Table 4.53 provides an evaluation of the Project's impacts on community infrastructure and public services, based on monitoring activities completed in 2023, relative to predictions presented in the FEIS and the FEIS addendum.

Table 4.53: Community Infrastructure and Public Services Impact Evaluation

Component	Effects	Monitoring Program	Impact Evaluation
Recruitment and Retention of Hamlet Employees	Competition for skilled workers may lead to temporary effects on municipal services	Inuit Employee Survey results continue to indicate the Project may be having some negative effect by increasing the competition for workers in local communities. Results from the 2023 Inuit Employee Survey show that 32% of respondents left a previous job to join Baffinland. Out of the 10 respondents who left a previous job, none specified that a Hamlet was their previous employer, although, several respondents specified working for governmental or local employers. This effect will continue to be monitored to determine if the Project has a sustained negative effect on Hamlet staff retention. Direct engagement with Hamlet governments could support monitoring of this effect.	Effect within FEIS predictions
Education and Skills	Long term improvement in labour force capacity		Long-term effect may be realized over time

Component	Effects	Monitoring Program	Impact Evaluation
		<p>Currently no data is collected on whether and how Hamlets are benefitting from any labour force capacity created by the Project. Reasons Inuit employees cited for resigning in 2023 included family reasons, and accepting positions closer to home. Therefore, it is anticipated that community-based employers, such as Hamlet governments, will continue to have opportunities to hire former Project employees.</p> <p>Further, Baffinland does not offer conditional training. Individuals that receive training from Baffinland are free to use the skills gained from training to seek employment from an employer of their choosing.</p>	

It is also expected that ongoing training and experience generated by the Project, in addition to regular employee turnover, will continue to increase the pool of skilled workers in the local labour force and negate any short-term, negative Project effects. Effects to community infrastructure and public services as a result of Project employment are consistent with FEIS predictions. An overall improvement in the capacity of the local labour force will occur and become apparent over time.

Path Forward

Baffinland will continue to monitor this aspect of the socio-economic environment, and will discuss monitoring results with the SEMWG. Baffinland will administer the Inuit Employee Survey in Q4 of 2024. Reporting on each PC Term and Condition follows.

Project Certificate Term and Condition No. 158

Category	Community Infrastructure and Public Services – Impacts to health services
Responsible Parties	The Proponent, Government of Nunavut
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To monitor indirect Project impacts to health and social services provided by the Government of Nunavut.
Term or Condition	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.
Relevant Baffinland Commitment	43
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024)
Ref. Document Link	Appendix G.7.1

METHODS

Baffinland actively engages with the Government of Nunavut (GN) on its socio-economic monitoring program and other general socio-economic issues through the QSEMC, the SEMWG and the Baffinland-GN MoU. Baffinland signed an MoU directly related to health care services with the GN Department of Health in 2017 regarding site health services and medevac procedures. More specifically, the MoU describes the health care staff and services Baffinland will provide on-site, including procedures Baffinland will follow during medevac situations, for pre-employment medical examinations, and for the reporting and management of communicable diseases, amongst other topics. Another MoU was signed between Baffinland and the GN in 2019. The MoU asserts Parties' strategic alliance and cooperation and partnership to promote responsible economic development and enable mutual benefits as opportunities continue to emerge in Nunavut. The MoU commits Baffinland and the GN to explore opportunities for collaboration, information sharing, and facilitation of partnerships for a number of topics including barriers to employment, education and training, community wellness, and infrastructure and transportation. A component of the 2019 MoU is the establishment of an oversight committee where opportunity(s) for collaboration on these topics can be discussed.

Baffinland has provided information on potential socio-economic effects of the Project in its 2023 Socio-Economic Monitoring Report (Appendix G.7.1; Aglu and ERM, 2024). This includes indicator data related to pressures on existing health and social services provided by the GN that may be impacted by Project-related in-migration of employees (e.g. Percentage of the population receiving social assistance, percent of health centre visits related to

infectious diseases, total and per capita number of health centre visits, number of visits to Project site physician assistant).

RESULTS

Summary results and trends in socio-economic monitoring data are presented in Table 4.54. Detailed results are presented in the 2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024).

Table 4.54: Selected Human Health and Well-Being Indicators and Trends in 2023

Indicator / Topic	Summary and Trends
Percentage of population receiving social assistance	The portion of the population receiving social assistance in the North Baffin LSA has largely stayed the same during the post-development period, however data has not been updated by the Nunavut Bureau of Statistics since 2018.
Percent of health centre visits related to infectious diseases	Compared to pre-development period averages, there has been a slight increasing trend in health centre visits related to infectious diseases in the North Baffin LSA (from 2.6% to 2.7%) and decreasing trends in Iqaluit (from 2.0% to 1.0%) and Nunavut (from 4.8% to 3.1%) in the post-development period, however data has not been updated by the Nunavut Bureau of Statistics since 2016.
Number of health centre visits (total)	Between 2010 and 2016 (within both the pre-development and the post-development period), there were significant changes in per capita health centre visits in Pond Inlet, Clyde River, and Arctic Bay. Per capita visits in 2016, the latest year data was available, in all North Baffin LSA communities, except Arctic Bay, were similar to historical levels (2009 and earlier). Based on this observation, and given the lack of data for more recent years (when Inuit employment grew significantly), the Project is not considered to have had a significant effect on the use of public health services and infrastructure in the LSA.
Number of health centre visits (per capita)	
Number of visits to Project physician assistant	The Project continues to provide all workers with regular access to a physician's assistant, with whom they can confidentially address health-related issues (including those unrelated to the workplace). The number of visits per Inuit employee in 2023 and 2022 increased after a predictable drop in 2020 and 2021 with Nunavummiut demobilized for parts of those years. The number of visits per Inuit employee in 2023 have nearly returned to pre-pandemic levels (3.9 visits per Inuit employee in 2023, compared to 4.0 in 2019). A trip to the physician's assistance could be an indicator of either positive, negative, or neutral effects.

In-migration of workers is one way the Project could negatively affect health and social service provision in the LSA. Company monitoring data suggest North Baffin Local Study Area in-migration is not occurring in any significant manner (see Section 4 of the 2023 Socio-Economic Monitoring Report; Appendix G.7.1; Aglu and ERM, 2024).

A net of +1 individuals are known to have moved from the North Baffin LSA into Iqaluit since 2015 (data obtained from annual BCLO survey discussed in Section 4.2 of the 2023 Socio-Economic Monitoring Report; Appendix G.7.1; Aglu and ERM, 2024). More generally, Appendix C of the 2023 Socio-Economic Monitoring Report indicates an average of 67 Inuit and two (2) Non-Inuit employees/contractors (by headcount) with known origins lived in Iqaluit in 2023 (Appendix G.7.1; Aglu and ERM, 2024). Appropriate government-sourced migration data for the LSA are otherwise unavailable. However, the Project may also be contributing positively to LSA health service provision, by providing employees with regular access to an on-site Project physician assistant(s) and by providing various

counselling and support services (e.g., EFAP, on-site Cultural Advisors, on-site mental health counsellors, Community Counsellor Program).

TRENDS

Baffinland's analysis concludes that it is doubtful the Project had significant effect on the number of clinic visits in North Baffin LSA communities. This is largely based on available data (per capita clinic visits in LSA communities), which shows no significant trend which correlates with mining activity. Baffinland finds this conclusion reasonable given the currently available data.

Trends are presented in the 2023 Socio-Economic Monitoring Report (Appendix G.7.1; Aglu and ERM, 2024).

RECOMMENDATIONS / LESSONS LEARNED

The Government of Nunavut (GN) is responsible for health reporting and Baffinland would expect that if additional collaboration with the GN was desired in this area it would be raised through the SEMWG, QSEMC, engagement under the 2019 MoU, or through other engagement platforms. Baffinland will continue to monitor and report on functions relating to pressure on existing services provided by the Government of Nunavut as such may be impacted by Project-related in-migration of employees. The Company will continue to engage the SEMWG and QSEMC on this topic as well.

Project Certificate Term and Condition No. 159

Category	Community Infrastructure and Public Services – Impacts to infrastructure
Responsible Parties	The Proponent, Government of Nunavut
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To monitor Project-related impacts to infrastructure within the Local Study Area communities.
Term or Condition	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.
Relevant Baffinland Commitment	43
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.7.1

METHODS

Baffinland continues to engage the Government of Nunavut directly, and through their membership in the QSEMC and the SEMWG, on the Mary River Socio-Economic Monitoring Program. Baffinland also provides information on potential socio-economic effects of the Project in the Socio-Economic Monitoring Report (SEMR). This includes indicator data related to increased project-related pressures to community and airport infrastructure in the Local Study Area (LSA) communities (i.e., Arctic Bay, Clyde River, Igloolik, Iqaluit, Pond Inlet, and Sanirajak). Baffinland signed a Memorandum of Understanding (MoU) with government of Nunavut 2019. The MoU asserts Parties' strategic alliance and cooperation and partnership to promote responsible economic development and enable mutual benefits as opportunities continue to emerge in Nunavut. The MoU commits Baffinland and the GN to explore opportunities for collaboration, information sharing, and facilitation of partnerships for a number of topics, including infrastructure and transportation.

Further, following the 2019 fuel shortage at the Iqaluit Airport, Baffinland committed to ensuring that each year Baffinland's airline partner would provide a fuel usage estimate report to the GN in advance of the annual fuel sealift to Iqaluit.

RESULTS

To support the movement of workers, freight, and other materials to and from the Project, Baffinland uses community airport infrastructure in the LSA. This is due to the remote location of the Project and lack of viable alternative transportation methods (aside from seasonal marine re-supply).

In 2023, Baffinland's utilization of community infrastructure, particularly airports, continued to be lower than pre-pandemic levels. In 2023, there were 1,004 Project aircraft movements at LSA community airports. This includes fixed-wing aircraft (e.g., passenger, cargo, and 'combi' type) and rotary-wing aircraft (e.g., helicopters used for site activities). Travel restrictions resulting from public health orders associated with the COVID-19 Pandemic as well as the change from a two-week-in/two-week-out to a three-week-in/three-week-out rotation were key contributing factors influencing Baffinland's utilization of community infrastructure in 2022 and 2023, particularly airports. The change in rotation schedule resulted in a decrease in the Iqaluit to Mary River jet service from an average of five flights per week to three flights per week.

Following the 2019 fuel shortage at the Iqaluit Airport and the subsequent NIRB Annual Report commitments to reviewers for that same year, Baffinland committed to ensuring that each year Baffinland's airline partner would provide a fuel usage estimate report to the GN in advance of the annual fuel sealift to Iqaluit. Baffinland reported to the GN that it would consume an estimated 5,828,000 litres of Jet A fuel from the Iqaluit Airport in the 2023 fiscal year.

TRENDS

In 2023, Baffinland's utilization of community infrastructure, particularly airports, increased compared to 2022 (990 Project aircraft movements), 2021 (731 Project aircraft movements), and 2020 (421 Project aircraft movements), though remain significantly less than in pre-pandemic years (i.e., down from a total of 2,253 movements in 2019).

Project-related aircraft movements add some incremental pressure on LSA community airport facilities. However, LSA community airports regularly accommodate various non-Project passenger, cargo, and other aircraft, where project-related aircraft movements at LSA community airports in 2018 (the latest year data is available) represented a small portion (8.4%) of this total.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland continues to engage with the GN through the SEMWG and the QSEMC on the Project's Socio-Economic Monitoring Program. As this is an area that is already monitored by the GN, Baffinland would expect that if additional collaboration was desired in this area it would be raised and/or responded to through these forums.

Baffinland will continue to provide information related to increased Project-related pressures to community infrastructure in the LSA communities, and to airport infrastructure in all point-of-hire communities and in Iqaluit, in the Socio-Economic Monitoring Report.

Project Certificate Term and Condition No. 160

Category	Community Infrastructure and Public Services – Distribution of benefits
Responsible Parties	Qikiqtani Inuit Association, Government of Nunavut
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To ensure the distribution of benefits is done in a way that off-sets Project-related impacts to infrastructure or services.
Term or Condition	The Government of Nunavut and the Qikiqtani Inuit Association are encouraged to cooperate to ensure in a broad sense, that Project benefits are distributed across impacted communities and across various demographic groups within these communities in a manner that best offsets any Project-related impacts to infrastructure or services.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In progress
Stakeholder Review	Qikiqtani Inuit Association (QIA) and Government of Nunavut (GN)
Reference	Not Applicable
Ref. Document Link	Not Applicable

METHODS

This PC Term and Condition is not aimed at Baffinland. See Baffinland's reporting under PC Term and Condition No. 167 for an understanding of the benefits, royalties and taxation that was paid to the GN and QIA for 2023.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 161

Category	Community Infrastructure and Public Services – Policing
Responsible Parties	Government of Nunavut, Royal Canadian Mounted Police
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To ensure the territorial government and its policing service are adequately prepared to handle any Project-related increases to the need for service and associated impacts.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Government of Nunavut (GN)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.7.1

METHODS

This PC Term and Condition is not aimed at Baffinland.

Baffinland regularly engages the Government of Nunavut (GN) on the Project's Socio-Economic Monitoring Program. For example, Baffinland produces an annual Socio-Economic Monitoring Report (which includes demographic and crime-related information) and regularly engages the QSEMC and SEMWG to discuss socio-economic impacts and benefits of the Project.

Baffinland also directly engaged local Royal Canadian Mounted Police (RCMP) detachments in the North Baffin communities on an as-needed basis.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

4.7.7 Culture, Resources & Land Use (PC Terms and Conditions 162 through 166)

Five (5) PC Terms and Conditions relate to the potential impacts of the Project on culture, resources and land use. The conditions request Baffinland notify communities regarding Project activities and particularly shipping and that Baffinland engage communities in monitoring programs and the establishment of mitigation measures to ensure that both consider traditional activities.

Inuit & Stakeholder Feedback

In addition to the Inuit of the five (5) North Baffin communities, key stakeholders focused on culture, resources and land use include the QIA, the GN Department of Culture and Heritage, and the Inuit Heritage Trust. The latter two (2) organizations are responsible for the management of cultural heritage including archaeological sites. The potential for the Project to affect current land uses and the availability of wildlife resources were key concerns of the communities and the QIA. The GN departments expressed concern regarding the potential for adverse effects to archaeological sites and ensuring proper planning and procedures took place. Concerns regarding potential impacts to resources and land use continue to be a theme of community engagement.

Monitoring

Baffinland conducts annual monitoring and when required mitigation work under an Archaeological Permit issued by the GN. Baffinland also monitors the number of land use visitor person-days at Project sites, and the number of Wildlife Compensation Fund claims recorded annually. Table 4.55 provides an evaluation of the Project's impacts on culture, resources and land use, based on monitoring activities completed in 2023, relative to predictions presented in the FEIS and FEIS Addendum.

Baffinland's monitoring data suggests Inuit land use and harvesting coexists with the Project to some degree. However, Baffinland respects that each individual's experience with the Project can be unique and varied.

Baffinland acknowledges the potential for wildlife-related impacts from the Project that can affect harvesting and has accordingly contributed \$750,000.00 to a Wildlife Compensation Fund (administered by the QIA under the terms of the IIBA) to address this issue.

Baffinland will continue to provide maintenance services to the MHTO Cabins in the Project Area when requested by the MHTO. Additionally, Inuit travel through the site will continue to be accommodated by escorted travel over the Tote Road, conducting repairs to identified land use crossing areas as needed, and the continued provision of food, fuel and equipment repairs.

Path Forward

Baffinland will continue to monitor this aspect of the socio-economic environment, and will discuss monitoring results with the SMWG and QSEMC, as well as with HTOs in each of the impacted communities, either directly or through their participation in environmental working groups, or ad hoc initiatives to better understand specific project and land use interactions. Reporting on each PC Term and Condition follows.

Baffinland also awaits the outcomes of several undertakings by the QIA to further understand the Project's effects on culture, resources and land use beyond the Tusaqtavut Studies, which includes the ongoing supplemental CRLU Assessment and the Pond Inlet Country Food Baseline Report.

Table 4.55: Culture, Resources and Land Use Impact Evaluation

Component	Effects	Monitoring Program	Impact Evaluation
Archaeological Sites	Unauthorized removal of artifacts from known archaeological sites	Worker site orientation training includes rules regarding archaeological sites, with dismissal a consequence of offence. Baffinland's consulting archaeologist visits sites most years. Sites are successfully mitigated or protected, as applicable.	Effects did not occur
	Disturbance to archaeological sites due to ground disturbance activities without mitigation		
	Potential for chance finds	Reporting of chance finds as per Cultural and Heritage Resource Protection Plan: no chance finds located in 2023.	Effects did not occur
Inuit Harvesting of Wildlife	Mine operations affecting the harvesting of caribou, marine mammals and fish	<p>Land user visits to the Mine Site and Milne Port are recorded. The QIA reported that 29 claims were paid from the Wildlife Compensation Fund in 2023, totaling \$187,351.17.</p> <p>The Total Allowable Harvest (TAH) for caribou on Baffin Island was increased from 350 to 400 for the 2023/2024 harvest season. On February 12, 2024 the GN closed the harvest season as all tags had been used.</p> <p>Baffinland has not been able to obtain 2023/2024 narwhal harvest data from the GN or DFO, however, for the 2022/2023 year, total reported landings for narwhal management units for Pond Inlet was 103 and within the range of harvests recorded since 1994.</p> <p>Other harvested animals that interact with the current Project are not subject to a quota system or reporting and therefore there is no reportable data for the 2023 period.</p>	Effect within FEIS predictions
Travel and Camps	Potential for reduced safety travelling around Eclipse Sound and Pond Inlet and through Milne Port. Emissions and noise disruption during travel and/or camping	<p>Site observations suggest Inuit land use coexists with the Project's activities. In 2023, a total of 286 land use visitor person-days were recorded at Project sites.</p> <p>Baffinland continued to supply food, fuel and reasonable mechanic services for Inuit travelling through the Project Area in 2023.</p>	Effect within FEIS predictions
	Sensory disturbance and safety along Milne Inlet Tote Road		Effect within FEIS predictions

Component	Effects	Monitoring Program	Impact Evaluation
	Detour around Mine Site	<p>Baffinland continued to provide financial support for harvesting to Inuit in Pond Inlet through the Harvesters enabling Program and payments to the Tasiuqtiit Working Group.</p> <p>The Inuit Employee Survey continues to indicate working for Baffinland is an enabler of harvesting between rotations.</p>	
	HTO cabin closure	<p>No closures were experienced in 2023. Hunter and visitor support was provided on an as-needed basis.</p>	Effect within FEIS predictions

Project Certificate Term and Condition No. 162

Category	Culture, Resources and Land Use - Public consultation
Responsible Parties	The Proponent, Elders and community members of the North Baffin communities
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To ensure the ongoing and consistent involvement of Elders and community members in developing and revising monitoring and mitigation plans.
Term or Condition	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.
Relevant Baffinland Commitment	97
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtani Inuit Association (QIA), North Baffin Communities
Reference	2023 MEWG Meeting Records 2023 TEWG Meeting Records 2023 Shipping and Monitoring Program Meeting Records
Ref. Document Link	Appendix C.1 Appendix C.2 Appendix B.2.2

METHODS

Baffinland is committed to meaningful engagement with individuals and organizations potentially affected by the Project, including the five (5) North Baffin communities (Arctic Bay, Clyde River, Igloolik, Pond Inlet, and Sanirajak). In support of the Company's focus on continuous improvement and the engagement objectives defined for the Project (Section 2.2), Baffinland implements a variety of engagement mechanisms that are intended to ensure that a broad and comprehensive approach to the identification of interested parties and that the creation of enhanced opportunities for dialogue and input are executed.

Baffinland meets and/or shares Project-related information including monitoring programs implemented annually with various community groups on a regular basis to discuss aspects of the Project and any concerns or recommendations community representatives may have. Baffinland directly funds the participation of the Hunters and Trappers Organization's (HTO) from the five (5) North Baffin communities at both the Terrestrial and Marine Environment Working Groups. Each year, Baffinland meets with the community of Pond Inlet to share what monitoring programs are planned each year, and what the outcomes of previous programs were, Baffinland relies on the Mittimatalik Hunters and Trappers Organization (MHTO) to provide practical insights into the feasibility and value of our marine monitoring programs related to shipping.

Baffinland holds annual pre-shipping and end-of-shipping season meetings with representatives of the Hamlet of Pond Inlet, the MHTO (including Elders) and QIA. During these meetings, various topics are discussed including, though not exclusively, shipping activity levels, relevant mitigation measures, shipping communications, monitoring goals and timing. Information is also shared in writing through email correspondence throughout the year, and more regularly during the shipping season.

Furthermore, through the undertaking of annual monitoring programs, Baffinland strives to leverage as many local resources as required, including the hiring of Inuit (including Elders) during program implementation (e.g., caribou Height of Land and marine mammal aerial surveys), and to provide Inuit training and employment opportunities in a variety of settings. This includes marine vessel safety and field data collection techniques such as marine wildlife observations (marine mammals and seabirds), and physical and biological sampling (e.g., collection of water, sediment, benthos and fish samples). Finally, Baffinland employs Inuit Knowledge Holders who are community Elders in each impacted community.

In 2022 Baffinland hired Inuit Knowledge Holders and Community Relation Guides in each of the five North Baffin communities: Pond Inlet, Sanirajak, Clyde River, Igloolik, and Arctic Bay. In 2023, Baffinland hired additional Inuit Knowledge Holders and Community Relation Guides in the communities of Kimmirut and Kinngait. These positions were created to deepen our understanding of community perspectives and priorities for the communities of the North Baffin. The Inuit Knowledge Holders are grounded in Inuit ways, customs, traditions, and ceremonies. They share their knowledge with Baffinland teams to ensure the Company provides tailored, relevant and culturally appropriate services in their communities. They also contribute to the review and development Inuit Qaujimajatuqangit (IQ) documentation and will support a continuous integration of IQ in our operations and interactions.

The Community Relations Guides are skilled in hunting and harvesting and have deep understanding of local wildlife, in addition to having knowledge and perspective on the socioeconomic state of their community. They provide advice to Baffinland leaders to enhance effective community relations, liaising directly with residents of their community to discuss any concerns, and responding to questions about Company operations.

Baffinland continues to fund the development of the QIA's Inuit Stewardship Plan, which once finalized will focus on the Project's potential effects by Inuit led monitoring programs. Program results will be provided to Baffinland on a regular basis and be reported as appropriate through Baffinland's own monitoring reports. The QIA is also due to issue their Pond Inlet Country Food Security Report in 2024, which will provide additional information that may be reported through Baffinland's annual reporting to NIRB.

RESULTS

Community members and other stakeholders continue to provide valuable input that guides the development of monitoring programs and mitigation measures, as needed. Engagements resumed in-person throughout 2023, with some virtual or hybrid options. A list of meetings held with the public (including with Elders) and with community groups such as the MHTO in 2023 are listed in Table 2.1.

The five (5) North Baffin HTO's were invited to and participated in, both MEWG (February, April, July and December; Appendix C.1) and TEWG (February, April, December; Appendix C.2) in 2023. As part of these meetings, past results and future planned studies were discussed for input. In addition, Baffinland held a pre-shipping season meeting with MTHO and the Hamlet of Pond Inlet, slides were shared during the meeting (Appendix B.2.2). An in-person End of Shipping Season Meeting was held in Pond Inlet with representatives (including Elders) from the MHTO and the

Hamlet on December 7, 2023 (see Appendix B.2.2). During this meeting, Baffinland shared its 2023 shipping activities, reviewed implemented mitigation and management measures such as use of convoys, and summarized the marine monitoring programs. To ensure the community is informed about shipping activities, call in radio shows occur approximately twice a year in the community of Pond Inlet. Additionally, the Shipping Monitors post updates on ship movements up to three times a day on Baffinland's Shipping Facebook page.

In November and December 2023, Baffinland actively engaged with the five (5) North Baffin communities to deliver a comprehensive update on the Steensby Component of the Project. Through workshops held in each community, involving members of the Hunters and Trappers Organizations (HTOs) and Hamlet representatives, Baffinland provided a detailed overview of its current and future operations. This included updates on the plans for the Steensby Component, with dedicated discussions on the incorporation of Inuit Qaujimajatuqangit (IQ) into baseline studies, monitoring, design and construction plans, as well as reviews of archaeology and railway mitigation measures. The sessions facilitated the gathering of feedback from Inuit Elders and community members, with Inuit Knowledge Holders present to convey knowledge back to their respective communities.

In addition, Baffinland hosted a workshop at the Mine Site with Inuit Knowledge Holders and Community Relations Guides in November 2023, to provide an update on the Steensby Component and how IQ was integrated into Steensby baseline studies, monitoring, design and construction plans. Participants had the opportunity to tour the Project and converse with operations leadership and Inuit employees. The delegates took back the knowledge gained at the workshop to share with their communities. The Knowledge Holders and Community Relations Guides are Inuit Elders or community members from the seven (7) Baffin Island communities of Arctic Bay, Clyde River, Igloodik, Kimmirut, Kinngait, Pond Inlet, and Sanirajak.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to provide the results of the key monitoring programs of interest to the communities. Baffinland will continue to seek formal feedback from the HTO's through their involvement as members of both the MEWG and TEWG, through Baffinland-led annual pre-shipping and end-of-shipping season meetings and/or periodic information exchanges. Baffinland will also engage Inuit directly on programs on an ad hoc basis as needed. Furthermore, through anticipated changes to the TEWG and MEWG Terms of Reference, Baffinland intends to include the communities of Kimmirut and Kinngait to the working groups as the Steensby Component of the Project gains momentum. Baffinland will continue training and employing Inuit participants in environmental monitoring programs in 2024 including community members and Elders, as well as will continue to provide project-related updates to communities through the Inuit Knowledge Holders and Community Relations Guides.

Project Certificate Term and Condition No. 163

Category	Culture, Resources and Land Use - Public consultation
Responsible Parties	The Proponent, North Baffin communities
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To involve communities in the development and evolution of management and monitoring plans.
Term or Condition	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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	North Baffin Communities
Reference	2023 Engagement Records 2023 MEWG Meeting Minutes 2023 TEWG Meeting Minutes
Ref. Document Link	Appendix B Appendix C.1 Appendix C.2

METHODS

The methods Baffinland employs to satisfy this term and condition are consistent with those outlined in response to PC Term and Condition No. 162. In addition to those mechanisms, and of specific relevance to this PC Term and Condition relates to various types of engagement methods including more regular public radio shows and individual one-on-one meetings and open houses. This format has continued to reach Nunavummiut from the affected communities to keep the communities broadly informed of the Projects current activities, inclusive of its environmental monitoring and mitigation plans.

Baffinland also further broadened its local 'boots on the ground' in each of the five (5) North Baffin communities by hiring Inuit Knowledge Holders and Community Relations Guides towards the end of 2022. These roles are seen as critical to guiding Baffinland's senior management in its decision making, facilitating knowledge transfer within and between community members and Baffinland staff, and guiding the collection and use of Inuit Qaujimajatuqangit (IQ).

RESULTS

In 2023, Baffinland hosted eleven (11) radio shows (see Table below) and held various meetings in each of the five (5) North Baffin communities. A list of all meetings held with the public and with community groups such as the MHTO in 2023 is provided in Table 4.56. Baffinland continued to provide relevant operational updates to the

communities, including widespread engagement on the Steensby Component of the approved Mary River Project. As part of the engagement plan, Baffinland held a series of meetings in the five (5) North Baffin communities, as well as Kimmirut and Kinngait to the south. Additionally, a workshop was held in the Fall of 2023 to provide an update on the Steensby Component and how Inuit Qaujimajatuqangit (IQ) was integrated into baseline studies, monitoring, design and construction plans. The workshop consisted of Inuit Knowledge Holders and Community Relations Guides from the five (5) North Baffin communities of Arctic Bay, Clyde River, Igloolik, Pond Inlet, and Sanirajak.

For more information on Baffinland's engagements please see section 2.3 and 2.4. For details on Baffinland's engagement and communications related to shipping please see PC Terms and Conditions 102, 166, and 183.

Table 4.56: Summary of Call-In Radio Shows in 2023

Date	Community	Primary Topic
27-Mar-23	Igloolik	Steensby and SOP
29-Mar-23	Sanirajak	Steensby and SOP
10-May-23	Igloolik	Update on Steensby Component of the Project and discussion of fish habitat offsetting options
17-May-23	Sanirajak	Update on Steensby Component of the Project and discussion of fish habitat offsetting options
27-Jun-23	Pond Inlet	Pre-Shipping Season Update
11-Jul-23	Pond Inlet	To provide an update on the Steensby Component of the Mary River Project, and give an overview of the fish habitat offsetting for the South Railway.
29-Nov-23	Igloolik	Mary River Update (as a part of Steensby Engagement)
30-Nov-23	Pond Inlet	Mary River Update (as a part of Steensby Engagement)
04-Dec-23	Pond Inlet	Mary River Update (as a part of Steensby Engagement)
05-Dec-23	Pond Inlet	Post-Shipping Update
06-Dec-23	Clyde River	Mary River Update (as a part of Steensby Engagement)

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to implement a proactive approach to engagement in 2024 with Inuit and various stakeholders, through meetings, workshops, surveys and dissemination of information and reports. This will ensure that Inuit, communities, QIA, regulators and the broader public are informed in a timely and culturally sensitive manner of the Project's progress and the potential environmental and social impacts of ongoing operations. All input received by the Company through its engagements is meaningfully considered and where possible, reported back to those that have provided to it.

Project Certificate Term and Condition No. 164

Category	Socio-Economic Impacts – Shipping notification
Responsible Parties	The Proponent, Elders and community members of the North Baffin communities
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	In order to inform members of North Baffin communities of planned Project shipping transits such that community members' planned travel routing may be adjusted to avoid interaction with Project ships and/or ship tracks.
Term or Condition	The Proponent is required to provide notification to communities regarding scheduled ship transits throughout the regional study area including Eclipse Sound and Milne Inlet, real-time data regarding ships in transit and any changes to the proposed shipping schedule to the MEWG and agencies within Pond Inlet on a weekly basis during open water shipping, and to the RSA communities on a monthly basis.
Relevant Baffinland Commitment	30, 34
Reporting Requirement	The information required shall be provided on a monthly basis at a minimum or more often as the Proponent determines necessary and is to be provided to the Proponent's community liaison officers and those of the Qikiqtani Inuit Association as well as the Hunters and Trappers Organizations and Hamlet organizations of the North Baffin communities, Coral Harbour, and the NIRB's Monitoring Officer. Where deviations from the proposed schedule or routing are required, this information shall be provided as soon as possible.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	Marine Environment Working Group (MEWG) and Mittimatalik Hunter and Trappers Organization (MHTO)
Reference	Marine Shipping and Vessel Management Report (Baffinland, 2023k)
Ref. Document Link	https://www.baffinland.com/operation/shipping-and-monitoring/

METHODS

Baffinland continues to partner with Spire Shipview®, a global vessel monitoring and tracking service based on Automatic Identification System (AIS) data from polar orbiting satellites to track and report on vessel movements. The vessel tracking information is available on Baffinland's website to allow communities to check on vessel coordinates, which direction the vessel is moving, and its destination. Baffinland also installed an AIS tracker system in Baffinland's Shipping Monitor office located on the second floor of the Mittimatalik Hunters and Trappers Organization (MHTO) building on a dedicated laptop and wall-mounted monitor so that live viewing may be made possible for those that may not have access to a computer and internet. Live continuous monitoring of vessels active in the Northern Shipping Route is made available to any visitors during Baffinland's regular office hours (8 am to 5 pm).

As first initiated in 2019, Baffinland continued with its implementation of the Pond Inlet Shipping Monitor Program in 2023. This program consists of employing a minimum of two (2) full-time Shipping Monitors from the community

of Pond Inlet to actively track daily Project vessel movements in the RSA in real-time, and in relation to reported marine mammal sightings (as shared by the community and the monitoring teams). In 2023, twelve (12) Shipping Monitors were hired over the course of the shipping season, 3 of whom continues employment after the shipping season with Baffinland. Shipping Monitors track any feedback they receive over the shipping season and answer questions as needed, and act as a direct liaison between the community of Pond Inlet, hunters and Baffinland's headquarters, including the Shipping and Sustainable Development departments).

Following the direction of the NIRB outlined in the Production Increase Proposal Extension Recommendation Report, Baffinland has submitted a Marine Shipping and Vessel Management Report in advance of each shipping season since 2020. The Report outlines Baffinland's plans for the shipping season in terms of operations (number of vessels, types of vessels, anchorage locations, approximate timing, commencement conditions, etc.), consultation and engagement activities that have occurred with relevant Parties prior to the start of the shipping season and planned monitoring (Ship-based Observer Program, Aerial Survey Program, Shore Based Survey Program, etc.). As in all years, in 2023, the shipping season did not commence until the MHTO has confirmed the close of the floe edge for harvesting, which is a direct indicator of the safety of ice for travel. Confirmation was received via email on July 27.

In addition to the regular communications about daily shipping activity via marine VHF radio, local radio and Facebook, Baffinland initiated the weekly sharing of an anticipated approximate 10-day rolling schedule in 2021. This schedule outlines upcoming Baffinland vessel activity in the Regional Study Area (RSA) and is shared via email with the MHTO and Hamlet of Pond Inlet. Rolling schedules were shared throughout the 2023 shipping season and will continue to be shared in 2024.

RESULTS

The programs described above continued to be actively implemented in 2023.

Since the start of operations, Baffinland has clearly demonstrated its commitment to successfully implementing the various shipping-related mitigation and management measures (e.g., tight adherence to the defined shipping route and vessel speed restrictions) and by adopting new procedures over the years to improve performance based on previous' years results. This includes expanding upon the types of communication methods being employed over the years to inform residents about its activities (e.g., hiring of shipping monitors to communicate vessel locations through use of marine VHF radio, public radio, Facebook) and also by providing updated rolling schedules on anticipated shipping activities on a regular basis in addition to the live online tracking available 24 h/day.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland has found the use of Spire Shipview® to be beneficial in providing information related to ship routing to the public. Baffinland will continue its use of this service. Baffinland will continue to communicate changes to the proposed shipping schedule in weekly emails to rolling 10 day schedules, and will notify should any additional deviations be made to the Northern Shipping Route based on feedback obtained by the MHTO. Furthermore, Baffinland will continue to hire Shipping Monitors based out of Baffinland's office in Pond Inlet in order to maintain communications in the community of Pond Inlet on the presence of vessels along the Northern Shipping Route over the duration of the shipping season and to provide a direct liaison with the community of Pond Inlet, including the MHTO. Baffinland will also remain open to updating its communications methods as informed by community needs.

Project Certificate Term and Condition No. 165

Category	Socio-Economic Impacts - Emergency shelters
Responsible Parties	The Proponent, Elders and community members of the North Baffin communities
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	In order to provide for human safety precautions in the event of adverse weather or other emergency situations along segments of linear transportation infrastructure.
Term or Condition	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. These shelters must be placed along Tote Road and rail routing prior to operation of either piece of infrastructure, and must be maintained for the duration of project activities, including the closure phase.
Relevant Baffinland Commitment	14
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Steensby Rail Corridor – Not Active Milne Inlet Tote Road – Active
Status of Compliance	Steensby Rail Corridor – Not Applicable Milne Inlet Tote Road – In Compliance
Stakeholder Review	Qikiqtani Inuit Association, Nunavut Water Board, Crown-Indigenous Relations and Northern Affairs Canada, Nunavut Impact Review Board
Reference	Emergency Response Plan (Baffinland, 2020j) Roads Management Plan (Baffinland, 2020c)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Baffinland has constructed four (4) refuge stations at KM 33, 40, 60 and 69 along the Tote Road. Each station is available for emergency shelter purposes to employees and land users travelling through the Project Area. The stations are heated and outfitted with beds and bedding, water, an Automatic External Defibrillator (AED), food and a digital radio that provides direct contact with Baffinland security or dispatch. In addition to the four (4) refuge stations, there are eleven (11) heated seacans located at communication towers along the Tote Road, equipped with a fire extinguisher and first aid kits. The communication tower seacans are intended for emergency and temporary use only and do not house radios, food or water.

Baffinland has a trained Emergency Response Team (ERT) at both ends of the Tote Road with emergency vehicles to rapidly respond to any concerns. The ERT also has access to snowmobiles, a side by side and a Sno-Cat® that are capable of moving through snowdrifts and effecting a rescue as required. The Tote Road Travel Procedure is publicly available and outlines the emergency response procedure (Baffinland, 2019i).

Ensuring the health and safety of local hunters on-site is of utmost importance to Baffinland. If travel across or along the Tote Road is required, local hunters are continued to be advised to report to security and request a transport for their equipment and personnel. To prevent potential transfer of the COVID-19 virus and other Infectious diseases including Tuberculosis to Nunavummiut, all camps and accommodations facilities remained closed to non-Project staff, however, the HTO Cabins and Visitor Communication Centers remained available for use by hunters/visitors.

In 2023, Baffinland assisted or was on standby in six (6) separate Search-and-Rescue incidents (March 11, July 11, September 4, September 11, September 27, and October 8, 2023) for people reported missing or in distress. The rescue was often due to boat/ATV/snowmobile mechanical breakdowns and becoming stranded. One incident involved a medical emergency where Baffinland provided helicopter transport. In most cases, Baffinland provided aircraft support, staging, fuel, food, and accommodations.

The Steensby rail line has not yet been constructed and is therefore not applicable at this time.

RESULTS

No Project related safety incidents occurred in 2023 along the Tote Road for visiting hunters which required the use of the emergency shelters, and all emergency shelters were available for use.

TRENDS

Emergency shelters continue to be available for use and no Project related health and safety incidents with hunters and visitors occurred along the Tote Road in 2023 which required the use of the emergency shelters.

RECOMMENDATIONS / LESSONS LEARNED

PC Term and Condition No. 165 was originally intended for the development of the southern railway to Steensby Inlet. For the Emergency Response Plan, use of the Tote Road means that there are multiple types of vehicles readily available to access a person in need of assistance. Construction of emergency shelters along the railway to Steensby Port will be planned in concert with other interested Parties when this phase of the Project becomes active.

Project Certificate Term and Condition No. 166

Category	Socio-Economic Impacts - Public Consultation
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To ensure members of the public are able to access shipping information on an as-required basis in order to inform potential users of the scheduled Project activities, which could require deviations to land users' schedules or routing.
Term or Condition	The Proponent should ensure through its consultation efforts and public awareness campaigns that the public have access to shipping operations personnel for transits into and out of both Steensby Inlet port and Milne Inlet port either via telephone or internet contact, in order that any questions regarding ice conditions or ship movements that could assist ice users in preparing for travel may be answered by Project staff in a timely fashion.
Relevant Baffinland Commitment	30
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Not applicable
Reference	Hunter and Visitor Site Access Procedure (Baffinland, 2020o)
Ref. Document Link	https://www.baffinland.com/operation/shipping-and-monitoring/

METHODS

Baffinland continues to implement a shipping communications protocol with the community of Pond Inlet. Information regarding the communications protocol is shared with the MHTO during the pre-shipping and end of shipping season meetings where feedback is requested for improvements, as needed. Baffinland also made available a Shipping and Marine Monitoring Program Summary brochure that is updated annually incorporating the latest updates, which contained relevant Baffinland staff contact information should community members have any concerns throughout the season.

RESULTS

The public has access to shipping operations personnel via telephone (corporate direct land-line and cell-based, and local cell phone number), and internet contact via a dedicated shipping email address (shipping@baffinland.com) that is monitored by Baffinland staff including Shipping Monitors and other Sustainable Development Department representatives, in addition to having in-person access to Pond Inlet-based Shipping monitors during daily office hours from a dedicated Baffinland office. For additional information on the role of Shipping Monitors, refer to summary sheet for PC Term and Condition No. 102 and 164.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to promote the use of the Hunter and Visitor Site Access Procedure, and the vessel transit web tracking service available on the Baffinland website. Shipping and Marine Monitoring Summary brochure and large maps showing the Northern Shipping Route will continue to be posted in Pond Inlet, and will include staff contact information should community members have any concerns throughout the shipping season.

The communications protocol proved to be an effective method for addressing ongoing community concerns related to shipping throughout the season. Baffinland will continue to make community members aware of the protocol via pre and post shipping radio shows in 2024. This includes the continuation of hiring Shipping Monitors (aiming for up to 10 to cover up to 24 hours/day, 7 days a week over entire shipping season) to act as the liaison between community members, hunters and Baffinland, and tracking of comments and concerns over the shipping season, using a variety of communication methods.

4.7.8 Benefits, Royalties and Taxation (PC Term and Condition 167)

One (1) PC Term and Condition relates to the potential impacts of the Project on benefits, royalties and taxation: that Baffinland negotiates a Development Partnership Agreement with the GN. The GN, however, allowed the DPA Policy to expire and no longer negotiates such agreements.

Inuit & Stakeholder Feedback

Key Inuit organizations and other stakeholders focused on the benefits, royalties and taxation include the following:

- QIA – On behalf of Qikiqtani Inuit, receives IIBA benefits (including a royalty), rent payment for the lease of Inuit Owned Land (IOL), royalties on aggregate from IOL, tipping fees for waste deposited on IOL, water consumption payments, and a portion of royalties paid to NTI under the grandfathered mining lease;
 - Qikiqtani Inuit - Beneficiaries of benefits and royalties that accrue to the QIA, as well as a portion of mineral royalties paid to NTI and then dispensed to the QIA and other regional Inuit organizations; also recipients of royalties or dividends from Regional Inuit Corporations and Co-Operatives;
- NTI - recipient of mineral royalties first payable to the Government of Canada, since Inuit hold sub-surface rights to Deposit No. 1 covered by a grandfathered federal mining lease;
- GN - Recipient of territorial taxes (corporate, fuel, income and payroll taxes);
- Government of Canada – Recipient of corporate, payroll and carbon taxes;
- Other Nunavummiut - Beneficiaries of mineral royalties' payable to NTI and distributed to the Kivalliq and Kitikmeot Regional Inuit Associations; and
- Communities – The five (5) North Baffin communities are recipients of donations under Baffinland's Community Donation Program; the community of Pond Inlet also receives direct payments under the Tasiuqtiit Agreement as well as the Harvesters Enabling Program.

Communities continue to express a desire to maximize benefits of the Project.

Monitoring

Baffinland tracks payments made as benefits, royalties and taxes, and this information is presented in annual monitoring reports. Table 4.57 provides an evaluation of the Project's impacts on benefits, royalties and taxes, based on monitoring activities completed in 2023, relative to predictions presented in the FEIS and FEIS Addendum.

Significant positive benefits have been realized by the stakeholders listed above, as a result of benefits, royalties and taxes paid by the Project in 2023.

Path Forward

Baffinland will continue to meet its commitments with respect to benefits, royalties and taxes. Reporting on PC Term and Condition No. 167 follows.

Table 4.57: Benefits, Royalties and Taxation Impact Evaluation

Component	Effects	Monitoring Program	Impact Evaluation
Benefits and Royalty Payments to Inuit Organizations	Increased revenues that can be dispensed to Inuit beneficiaries	<p>Baffinland paid a total of \$6,859,465 in royalties to QIA in 2023 as well as \$4,349,315 in land leases and fees payments. Baffinland spends \$5.9 million annually to implement the IIBA to support training, business capacity, and community wellness. Spending by Inuit organizations can be tracked at a high level through NTI and QIA annual reporting.</p> <p>A total of \$15,261,379 has been paid to the QIA for the Pond Inlet Training Centre (\$10 million plus inflation and engineering and planning costs). \$3,092,879 of this was paid to the QIA in the 2023 year.</p> <p>The Hamlet of Pond Inlet and MHTO earned \$270,000 in 2023 under the Tasiuqtiit Agreement. Cumulatively, Baffinland has contributed \$1,070,000 in funding to the Working Group since 2018. Residents of Pond Inlet also received \$400,000 (2018 dollars) plus annual inflation adjustment in support through the Harvesters Enabling Program. In 2023, \$441,467 was provided to the Hamlet of Pond Inlet, which accounts for inflation in 2018 dollars, plus an additional \$60,000 in administrative fees.</p>	Within FEIS predictions
Territorial Own-source Revenues	Increased taxes and revenues; Payments of payroll and corporate taxes to territorial government	<p>The Project's effect on revenues flowing to the territorial government is largely established by the value of its payroll and fuel taxes. In 2023, Baffinland paid a total of approximately \$16.7 million in taxes to the Government of Nunavut: \$11.1 million in employee payroll tax and \$5.6 million in fuel tax. The Canada Revenue Agency (CRA) administers and collects Nunavut's income taxes on behalf of the GN, accounting for approximately \$8.1 million of the \$11.1 million categorized as payroll tax to the GN.</p>	Within FEIS predictions

Project Certificate Term and Condition No. 167

Category	Benefits, Royalty and Taxation – Partnership Agreements
Responsible Parties	The Proponent, Government of Nunavut
Project Phase(s)	Construction
Objective	The Proponent and the Government of Nunavut develop a formalized partnership agreement.
Term or Condition	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.
Relevant Baffinland Commitment	43
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Not Active
Status of Compliance	In Compliance
Stakeholder Review	Not applicable
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Baffinland issued an invitation letter to the Government of Nunavut (GN) in September 2013 regarding the negotiation of a Development Partnership Agreement (DPA). However, a DPA between the GN and Baffinland has not yet been formalized. The GN DPA Policy expired on March 31, 2016 and was never extended or replaced. Baffinland and the Government of Nunavut cannot negotiate a Development Partnership Agreement as instructed by PC Term and Condition No. 167 as the program no longer exists.

In lieu of a Development Partnership Agreement, Baffinland and the GN signed a Memorandum of Understanding (MoU) in 2019 on the basis that “Nunavummiut should benefit from resource development within the territory of Nunavut and that, therefore, maximizing their capacity to engage in such development is important”. Through this MoU, GN and Baffinland identified four (4) priority areas for continued collaboration, “Barriers to Employment, Education and Training, Community Wellness, and Infrastructure and Transportation.” The GN and Baffinland continue to engage frequently on many aspects of the Mary River Project to continue collaboration that supports responsible resource development.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

4.7.9 Governance & Leadership (PC Terms and Conditions 168 through 169)

Two (2) PC Terms and Conditions relate to the potential impacts of the Project on governance and leadership, both of which relate to the collection of socio-economic data and annual reporting to NIRB.

Inuit & Stakeholder Feedback

Members of the SEMWG include: Baffinland, the QIA, the GN, and CIRNAC. Each organization has an interest and a role in improving socio-economic conditions within the Qikiqtani Region and Nunavut as a whole. Baffinland has actively engaged the group over the past several years. Baffinland regularly revises its Socio-Economic Monitoring Program based on feedback from this group. Baffinland is also actively involved in the Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and regularly participates in its meetings. A QSEMC meeting was held in Iqaluit May 2 and 3, 2023.

In 2023, Baffinland received input from SEMWG members on the Inuit Employee Survey. The survey was updated to reflect input received from the QIA. Baffinland received a series of suggested edits from the QIA in 2023. Suggested edits included minor revision to wording of questions, increasing answer options respondents can select from, and inclusion of an additional question regarding community well-being (in the Baffinland in your Community) section of the survey (i.e., Question #24). To increase monitoring efforts and understanding of Project impacts on food security, the Company also proposed inclusion of an additional question on food security in the survey. Due to unanimous decision by the SEMWG, the question was included in the 2023 survey (Question #23). The survey was administered from October 23 to December 1, 2023⁸.

Acknowledging the Project has evolved considerably since the 2014 submission of the previous closure planning report (FHW Consulting, 2014b) Baffinland conducted additional planning for socio-economic aspects of temporary closure in 2021. These works are captured in 2022 report *Temporary Closure Planning: Socio-Economic Considerations for the Mary River Project* (JPCSL, 2022).

Monitoring

Baffinland completes a Socio-Economic Monitoring Report annually, which presents monitoring results for aspects of the socio-economic environment that interacts with the Project. No negative regional or cumulative economic effects associated with the Project were identified in 2023 (Aglu and ERM, 2024). As such, no mitigation measures have been proposed to manage negative effects. The Socio-Economic Monitoring Program has been developed in consultation with the SEMWG, and monitoring results are also reviewed by this group and QSEMC annually.

The COVID-19 Pandemic as well as operational uncertainty involving the proposed Phase 2 project and Baffinland's application to maintain 6 Mtpa in 2022, had a major impact on the Mary River Project, and both of these events have been considered in the monitoring.

Path Forward

Baffinland will continue to undertake the collection of socio-economic monitoring data in consultation with the SEMWG and QSEMC, and report this monitoring data annually through its Socio-Economic Monitoring Report. Reporting on each PC Term and Condition follows.

⁸ The 2023 survey can be found in the 2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024).

Project Certificate Term and Condition No. 168

Category	Governance and Leadership - Monitoring program
Responsible Parties	The Proponent, members of the QSEMC
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	Outline variables that are relevant to the Project and which should be adopted by the QSEMC's monitoring program.
Term or Condition	The specific socio-economic 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.
Relevant Baffinland Commitment	45
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024) Draft 2019 Socio-Economic Monitoring Plan (Baffinland, 2019h)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.7.1

METHODS

This Project Certificate Term and Condition is addressed in reporting related to PC Terms and Conditions No. 131, 140, 144, 145, 148, 157, and 154. Additional reporting is provided here, however, those additional PC Terms and Conditions should be reviewed as well when assessing compliance. Socio-economic data collection and analysis methods are described in the Socio-Economic Monitoring Plan (Baffinland, 2019h) and annual Socio-Economic Monitoring Report (Appendix G.7.1). Government data are collected from the Nunavut Bureau of Statistics and Statistics Canada. Change of address information is collected by Baffinland's Community Liaison Officers and through voluntary employee surveys. Other Project-specific information is also presented by Baffinland, as appropriate.

RESULTS

Summary results and trends for relevant socio-economic monitoring data are presented in Table 4.58. Detailed results are presented in the 2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024), including additional information where appropriate community level indicator data are currently unavailable (e.g., for the topics of childcare availability and costs, Project harvesting interactions and food security, prevalence of gambling issues, prevalence of family violence).

Table 4.58: 2023 Monitoring Results and Trends for Selected Socio-Economic Indicators

Indicator / Topic	Summary and Trend
Known in-migrations of non-Inuit Project employees and contractors	Cumulative Baffinland data (i.e., Baffinland Human Resources data and BCLO survey) since 2015 indicates a net of one non-Inuit employee/contractor is known to have in-migrated to the North Baffin LSA.
In-migration of non-Inuit to the North Baffin LSA	While LSA-level migration data is not available, the proportion of Inuit to non-Inuit in LSA communities has remained relatively similar to pre-development levels.
Known out-migrations of Inuit Project employees and contractors	Cumulative Baffinland data (i.e., Baffinland Human Resources data and BCLO migration survey) since 2015 indicates a net negative migration (out-migration) of 31 Inuit workers from the North Baffin LSA, which includes a net out-migration of seven (7) Inuit employees/contractors in 2023.
Out-migration of Inuit from the North Baffin LSA	While LSA-level migration data is not available, the proportion of Inuit to non-Inuit in LSA communities has remained relatively similar to pre-development levels.
Nunavut annual net migration	Nunavut net migration was -88 people in 2019, continuing a negative trend over the past 5 years.
Employee and contractor changes of address, housing status, and migration intentions	Based on 2023 Inuit Employee Survey results, declared migration intentions for 2023 align with the past several years of movement, with five respondents expressing an intention to move from one community within Nunavut to another in the next year.
Project female employment	The project had 187 female FTEs in 2023, representing 11% of the total workforce, a decrease in number (10 fewer female FTEs) from 2022. However, proportion of female employees remained the same from 2022 to 2023, at 11% in both years. This represents a decrease in both number and proportion from 2021.
Childcare availability and costs	Comments on the lack of childcare in LSA communities have been made previously by Project stakeholders. For instance, during the 2023 QSEMC it was noted that there is a lack of daycare availability, as well as a lack of knowledge surrounding health and safety code and regulation that must be adhered to in order for one to open a licences facility. The majority of Nunavut-based Inuit employee survey respondents reported that there was not sufficient (67%) and/or affordable (61%) options and access to childcare in their communities. This represents an increase in Nunavut-based respondents who felt that there were sufficient and affordable options and access to childcare in their community compared to 2022 (40% [affordable] and 33% [sufficient] compared to 11% in 2022). This topic continues to be tracked through the QSEMC process and community engagement conducted for the Project.
Project harvesting interactions and food security	In the 2023 Inuit Employee Survey, the majority of respondents (89%) indicated some degree of food insecurity, with 8 respondents (11%) indicating that they were never worried that food would run out before they got money to buy more. This is the first year this question was included in the survey, as such, no trends can be discerned at this time. This topic will continue to be tracked through the QSEMC process, community engagement conducted for the Project, and related information.

Indicator / Topic	Summary and Trend
Number of drug and alcohol related contraband infractions at Project sites	Fourteen (14) drug and alcohol-related contraband infractions occurred at Project sites among Baffinland and contractor employees in 2023, representing a decrease from 2022 (20).
Number of impaired driving violations	Impaired driving violations have increased in the North Baffin LSA during the post-development period. However, the trend is not significantly different than the trend in all of Nunavut when comparing the different periods.
Number of drug violations	Both Iqaluit and Nunavut have seen rapid decreases in drug violations during the post-development period, while North Baffin LSA has only seen a slight decrease.
Prevalence of gambling issues	These topics continue to be tracked through the QSEMC process and community engagement conducted for the Project.
Prevalence of family violence	
Number of secondary school graduates	Graduation rates steadily declined in the Qikiqtani region from 2009 to 2014 but have risen quickly since then. School attendance rates in the North Baffin LSA region have gradually decreased since 2013, with an uptick in 2019, however mirror changes seen in the rest of Qikiqtani and Iqaluit. While data disaggregated by region was not available for the 2021/2022 school year, the attendance rate for Nunavut as a whole increased significantly from 57.7% to 74.5% between the two school years. This was likely influenced by a gradual return to in-person learning, although all schools were not fully open to in-class instruction for the entire year (Nunavut Department of Education 2023). Many factors affect school attendance and graduation rates, and the data does not suggest a significant effect of the Project.
Secondary school graduation rate	

TRENDS

Trends in the monitoring data are presented in the ‘Results’ section above with additional detail in the Socio-Economic Monitoring Report.

RECOMMENDATIONS / LESSONS LEARNED

In response to feedback received from the NIRB and Pond Inlet, Baffinland has updated its Inuit Employee Survey to explore motivations for completed or planned moves to different communities and the extent to which they may or may not be connected to Project activities.

Baffinland continues to provide information on socio-economic effects of the Project through its annual Socio-Economic Monitoring Report. In instances where appropriate community-level indicator data are currently unavailable (e.g., for the topics of childcare availability and costs, Project harvesting interactions and food security, prevalence of gambling issues, prevalence of family violence), these topics continue to be tracked through the QSEMC process and community engagement conducted for the Project.

Baffinland is open to discussing with the SEMWG and QSEMC how improved monitoring data may be obtained, understanding that some data is outside of industry’s ability or responsibility to collect. The SEMWG Terms of

References acknowledged this point as it outlines each member's (Baffinland, Government of Canada, GN, and QIA) roles and responsibilities, including what type of data is most appropriate for each organization to provide.

Project Certificate Term and Condition No. 169

Category	Governance and Leadership – Monitoring economic effects
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To maintain transparency inform communities in relation to economic benefits associated with the Project.
Term or Condition	The Proponent provide an annual monitoring summary to the NIRB on the monitoring data related to the regional and cumulative economic effects (positive and negative) associated with the Project and any proposed mitigation measures being considered necessary to mitigate the negative effects identified.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and Mary River Socio-Economic Monitoring Working Group (SEMWG)
Reference	2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.7.1

METHODS

Baffinland has provided a summary of monitoring data related to regional and cumulative economic effects associated with the Project in its annual 2023 Socio-Economic Monitoring Report (Aglu and ERM, 2024).

RESULTS

The Project continues to make positive contributions to Nunavut's economy. Some highlights include that 225 Inuit FTEs were employed by the Project in 2023, earning a combined total of \$24,556,098. A total of \$171.3 million in contracts was awarded to Inuit Firms in 2023. Since Project development, a total of \$1.69 billion dollars in contracts has been awarded to Inuit Firms.

Mining remains an important contributor to the Nunavut economy. Nunavut's real gross domestic product (GDP) for all industries in 2022 was \$3,741.4 million, an increase of 0.2% from 2021⁹ (Statistics Canada, 2023). Of this amount, 'iron ore mining' was responsible for contributing \$439.3 million (or 11.7%, an increase from 11.0% in 2021). Iron mining may also make economic contributions to supporting industries such as 'construction' (\$214.8 million contribution to the Nunavut economy in 2022), 'transportation and warehousing' (\$72.4 million contribution to the

⁹ All GDP statistics represent chained (2017) dollars; current dollars for 2023 is not available.

Nunavut economy in 2022), and ‘accommodation and food services’ (\$49.9 million contribution to the Nunavut economy in 2022), among others.

TRENDS

The Project continues to provide positive regional and cumulative economic effects.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland continues to provide information on regional and cumulative economic effects of the Project through its annual Socio-Economic Monitoring Report. No negative regional or cumulative socio-economic effects directly associated with the Project were identified in 2023.

4.8 PERFORMANCE ON OTHER TERMS AND CONDITIONS

4.8.1 Accidents & Malfunctions (PC Terms and Conditions 170 through 177)

Eight (8) PC Terms and Conditions relate to accidents and malfunctions. Two (2) of these Terms and Conditions relate to the TEMMP, four (4) relate to spill response planning, one (1) relates to implementing adaptive management measures for hunter safety around ice tracks (not applicable to Northern Shipping Route), and one (1) relates to the use of foreign flagged vessels. Baffinland's updates to these PC Terms and Conditions are provided in the pages that follow.

Project Certificate Term and Condition No. 170

Category	Accidents and Malfunctions - Terrestrial Wildlife Management and Monitoring Plan
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	Updates to plan in order to better understand the potential for, and to minimize possible caribou-railway interactions.
Term or Condition	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.
Relevant Baffinland Commitments	Not applicable
Reporting Requirement	To be included in the Annual Report submitted to the NIRB.
Responsible Party	Baffinland
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable
Stakeholder Review	Terrestrial Environment Working Group (TEWG), Nunavut Impact Review Board
Reference	Terrestrial Environment Mitigation and Monitoring Plan (TEMMP; Baffinland, 2016a) Draft Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2023e) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

The purpose of snow track surveys is to monitor the patterns of movement and response of caribou and other wildlife to Project-related activities based on their observable tracks in proximity to roadways. As such, the ability to perform snow track survey is linked to the conditions being present that allow for the observation of tracks. Snow track surveys were conducted on March 6, May 5, October 14, October 25, November 1, and November 7 and 9 in 2023, within 48 hrs following a fresh snowfall. Two or three Baffinland personnel led the surveys, which were conducted along the Tote Road from a light truck at a speed of ~30 km/hr. If/when wildlife tracks were suspected, personnel would further investigate on-foot to confirm the identity of the species and follow the tracks (to or from the roadway) to document the patterns of movement, behaviour, and habitat use (if/where possible). The following information was recorded:

- geo-referencing (latitude and longitude) at the location of the tracks/wildlife crossing;
- species identity;
- number of distinct sets of tracks (i.e., group size);
- description of the pattern of movement (e.g., deflected, travelled along, or crossing the road);
- height of the snowbank measured at either the crossing point or likely point of deflection (i.e., the point where the animal redirected its path away from the road); and,
- site photo-documentation and other miscellaneous survey observations (if/where applicable).

Snow track surveys generally occur in early winter and late spring; they are dependent on light availability and snow conditions, so they are somewhat unpredictable in frequency. Based on a commitment resulting from the SOP application regarding snow track frequency, Baffinland has agreed to implement snow track surveys and will make best efforts to conduct them at a frequency of once per week along the Tote Road during the 2023/2024 snow cover seasons when environmental conditions permit the surveys to be conducted effectively and safely. The conditions criteria include fresh snowfall (within the last 48 hours) and suitable light conditions. Survey condition criteria will be the ultimate driver of the number of surveys conducted each month which may be less than the frequency of once per week and due to darkness will not generally be possible in December, January, and February. The draft Terrestrial Environment Mitigation and Monitoring Plan (TEMMP; Baffinland, 2023e) includes a plan to increase the frequency of the snow track surveys when caribou populations increase to a level that supports robust statistical analysis.

RESULTS

No caribou tracks were observed during snow track surveys in 2023. Results of the snow track surveys are presented in the 2023 Terrestrial Environment Annual Monitoring Report (TEAMR; EDI, 2024a; Appendix G.5.1).

TRENDS

Caribou density is still too low and observations too infrequent to warrant increased survey frequency.

RECOMMENDATIONS / LESSONS LEARNED

Project Certificate Term and Condition No. 170 refers to better understanding and minimizing caribou interactions with the Railway. Construction for the Railway for the Steensby Port phase of the Project has not been begun, and the railway associated with the Phase 2 Proposal is not currently under consideration since the Phase 2 Proposal was not approved. Therefore, these monitoring activities have not been triggered. Rail specific monitoring programs will be re-evaluated once plans for railway construction and operation are determined and associated construction activities begin. Caribou density remains too low and observations too infrequent to warrant increased survey frequency.

Project Certificate Term and Condition No. 171

Category	Accidents and Malfunctions - Terrestrial Wildlife Management and Monitoring Plan
Responsible Parties	The Proponent
Project Phase(s)	Pre-Construction
Objective	Updates to plan in order to minimize potential for caribou-railway interactions.
Term or Condition	The Proponent shall include within its updated Terrestrial Wildlife Management and Monitoring Plan, a commitment to establish deterrents along the railway and Tote Road embankments at any areas where it is determined that caribou are utilizing the embankments or transportation corridors to facilitate movement and where such movement presents a likelihood of caribou mortality to occur.
Relevant Baffinland Commitments	Not applicable
Reporting Requirement	To be included in the Annual Report submitted to the NIRB.
Responsible Party	Baffinland
Status of PC Term and Condition	Steensby Rail Corridor – Not Active Milne Inlet Tote Road – Active
Status of Compliance	Steensby Rail Corridor – Not Applicable Milne Inlet Tote Road – In Compliance
Stakeholder Review	Terrestrial Environment Working Group (TEWG)
Reference	Draft Terrestrial Environment Mitigation and Monitoring Plan (Baffinland, 2023e) FEIS Terrestrial Wildlife Baseline Report (EDI, 2012) 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.5.1

METHODS

Areas along the Tote Road that may be used for caribou movement were identified in the FEIS Terrestrial Wildlife Baseline Report (EDI, 2012). Successive Height of Land (HOL) surveys and driver observations have continued to provide information on potential areas of use by caribou along the Tote Road. Results of terrestrial monitoring programs that support the protection of caribou are included in the 2023 Terrestrial Environment Annual Monitoring Report (EDI, 2024a).

Section 3.3.3 and Section 3.3.4 of the draft Terrestrial Environment Mitigation and Monitoring Plan (TEMMP; Baffinland, 2023e) outline specific mitigation and management measures concerning caribou movement and mitigating mortalities. Any new trail crossings will be identified and reviewed with QIA, Elders and hunters, such that any adjustments to the embankments facilitate the desired wildlife movement. Refer to the TEMMP for further discussion on management measures and adaptive management. An update to the TEMMP was submitted to NIRB in May 2023 for public review. We received comments from QIA and are working towards agreement on certain adaptive management elements of the TEMMP and will provide to NIRB once complete.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

To date, the implementation of deterrents along the Tote Road has not been required given the relatively low abundance of caribou. Existing mitigation and monitoring as outlined in the TEMMP is considered adequate to meet the Project Certificate Terms and Conditions (Baffinland, 2023e).

Project Certificate Term and Condition No. 172

Category	Accidents and Malfunctions – Overwintered fuel vessel
Responsible Parties	The Proponent
Project Phase(s)	Construction
Objective	To provide evidence that vessel to be used is fit and insured for proposed use.
Term or Condition	The Proponent is encouraged to provide the Government of Nunavut with evidence that the vessel that it intends to use for the overwintering of fuel has been designed and certified for use under the conditions which it is expected to operate, and that it be required to provide copies of the vessel owners' insurance policies.
Relevant Baffinland Commitment	8
Reporting Requirement	The required information is to be provided to the Government of Nunavut as soon as possible, and at a minimum, at least 60 days prior to the commencement of any construction related shipping.
Status of PC Term and Condition	Not Active
Status	Not applicable
Stakeholder Review	Not applicable
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Not applicable in 2023. Baffinland did not require the overwintering of fuel via vessel in 2023.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

If overwintering of fuel is required, Baffinland will provide the Government of Nunavut with the requested information.

Project Certificate Term and Condition No. 173

Category	Accidents and Malfunctions - Use of best practices
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Closure
Objective	To provide additional spill contingency measures for spills in marine areas.
Term or Condition	The Proponent shall employ best practices and meet all regulatory requirements during all ship-to-shore and other marine-based fuel transfer events.
Relevant Baffinland Commitment	9
Reporting Requirement	To be determined following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Environment and Climate Change Canada, Qikiqtani Inuit Association, Nunavut Water Board, Crown-Indigenous Relations and Northern Affairs Canada, Nunavut Impact Review Board.
Reference	Spill Contingency Plan (Baffinland, 2021h) 2023 Oil Pollution Emergency Plan – Milne Inlet (OPEP; Baffinland, 2024j) 2023 Oil Pollution Prevention Plan – Milne Inlet (OPPP; Baffinland, 2024i) 2022 Shipping and Marine Wildlife Management Plan (Baffinland, 2022d) Spill at Sea Response Plan (SSRP; Baffinland, 2015)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.8.5 Appendix G.8.6

METHODS

Baffinland maintains a Transport Canada approved Oil Pollution Emergency Plan (OPEP) for ship to shore fuel transfers at Milne Port, which is currently a Class 2 Oil Handling Facility. The OPEP was updated in 2023 (Baffinland, 2024j). Training of Baffinland staff on the Milne Inlet OPEP was conducted by qualified marine spill response contractor Navenco Marine between July 14 to 16, 2023. Baffinland is committed to undertaking fuel transfer from vessels under good weather conditions. Baffinland also maintains a Transport Canada approved Oil Pollution Prevention Plan (OPPP) for Milne Port (Baffinland, 2023i), which is specifically designed to prevent the discharge of oil during bulk fuel transfers at Milne Port.

Baffinland also maintains the Spill at Sea Response Plan (SSRP) that outlines procedures for dealing with the unlikely event of a spill at sea, including during ship-to-ship fuel transfers. Each vessel under contract to Baffinland also maintains its own Shipboard Oil Pollution Emergency Plan (SOPEP), which outlines the vessel's protocol for dealing with a spill event, and includes an inventory of spill response equipment onboard the vessel.

RESULTS

OPEP training occurred in 2023. A mock spill exercise was performed to ensure spill readiness. Required equipment for a Class 2 Oil Handling Facility was met. No spills occurred during fuel transfers.

TRENDS

As in previous years, Transport Canada's Guidelines for Baffinland's Class 2 Oil Handling Facility were adhered to.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to conduct routine training exercises and strategically place resources and equipment on site for spill response during ship-to-shore fuel transfer events.

Project Certificate Term and Condition No. 174

Category	Accidents and Malfunctions - Community level spill response
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Closure
Objective	To improve community ability to assist in spill response
Term or Condition	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.
Relevant Baffinland Commitment	108,110
Reporting Requirement	To be determined following approval of the Project by the Minister.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Environment Climate Change Canada (ECCC), Qikiqtani Inuit Association (QIA), Nunavut Water Board (NWB), Crown-Indigenous Relations and Northern Affairs Canada, Nunavut Impact Review Board (NIRB).
Reference	2023 Oil Pollution Emergency Plan – Milne Inlet (OPEP; Baffinland, 2024j) 2023 Oil Pollution Prevention Plan – Milne Inlet (OPPP; Baffinland, 2024i) 2022 Shipping and Marine Wildlife Management Plan (Baffinland, 2022d) Spill at Sea Response Plan (Baffinland, 2015)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix G.8.5 Appendix G.8.6

METHODS

In a January 29, 2015 letter from the Canadian Coast Guard (CCG) to the NIRB, the CCG noted that the provision of spill response equipment and training to communities was the responsibility of CCG.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 175

Category	Accidents and Malfunctions – Ship track markers in ice cover
Responsible Parties	The Proponent, Qikiqtani Inuit Association, Hunters and Trappers Organizations of the North Baffin region and Coral Harbour
Project Phase(s)	Construction, Operations, Closure and Post-Closure Monitoring
Objective	To ensure that measures taken to mark the shipping track(s) during periods of ice cover are effective in advising ice-based travelers, and that, where necessary, revisions to this practice can be made to ensure public safety.
Term or Condition	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 Wildlife 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 travelers.
Relevant Baffinland Commitment	34, 57
Reporting Requirement	To be determined following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable
Stakeholder Review	Not applicable
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Not applicable in 2023. There is no winter shipping associated with the current active phase of the Project. Furthermore, action on this PC Term and Condition is deferred until the Steensby Port is developed and transits through ice are scheduled.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 176

Category	Accidents and Malfunctions - Revised spill modeling
Responsible Parties	The Proponent
Project Phase(s)	Pre-Construction, Construction Operations, Closure
Objective	To improve community ability to assist in spill response.
Term or Condition	The Proponent is required to revise its spill planning to include additional trajectory modeling for areas of Hudson Strait, such as Mill Island, where walrus concentrate, as well as for mid-Hudson Strait during winter conditions as well as for the northern shipping route, including Milne Inlet, Eclipse Sound and Pond Inlet.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	The updated modeling shall be provided to the NIRB, Fisheries and Oceans Canada, and Environment Canada for review at least 3 months prior shipment of bulk fuel to Steensby Inlet or Milne Inlet.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Transport Canada, Canadian Coast Guard, Fisheries and Oceans Canada, Environment and Climate Change Canada
Reference	Milne Inlet Spill Modelling Report Fuel Spill Modelling: Northern Shipping Route Open Water Season - Milne Inlet, Eclipse Sound, Pond Inlet (AMEC Foster Wheeler, 2015) Spill at Sea Response Plan (Baffinland, 2015) Emergency Response Plan (Baffinland, 2020j) 2023 Oil Pollution Emergency Plan – Milne Inlet (Baffinland, 2023j) 2023 Oil Pollution Prevention Plan – Milne Inlet (Baffinland, 2023i) Spill Contingency Plan (Baffinland, 2021h) Diesel Environmental Emergency (E2) Plan – Mine Site (Baffinland, 2020p). Diesel Environmental Emergency (E2) Plan - Milne Port (Baffinland, 2020k). Exploration Spill Contingency Plan (Baffinland, 2014e)
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/

METHODS

Not applicable to the Steensby Components of the Approved Project for 2023. Revised oil spill modelling was conducted for shipping from Milne Port in 2015 that satisfies this condition. Leading up to this modelling, a fuel spill preparedness workshop was held in April 2014 with Transport Canada and the Canadian Coast Guard (CCG). This workshop established the following credible spill scenarios for modelling:

- For arctic diesel - two (2) compartments of a double-hull, multi-compartment fuel tanker, which amounts to 4,000 m³ (4 mL). The expected maximum size of the fuel tanker is 15 <L.
- For Intermediate Fuel Oil (IFO) - half of the IFO fuel remaining in the ship when sailing into Milne Inlet which amounts to 2,000 m³ (2 mL) of IFO.

The spill assessment considered the open-water season, and the month of September was selected as representative in terms of meteorological and oceanographic conditions. Five (5) potential spill locations along the shipping route were selected considering community recommendations.

Two (2) scenarios were modelled at each of the five (5) locations using the software OST, which computes spill probability distributions to indicate geographical regions (e.g., Pond Inlet, Eclipse Sound, Navy Board Inlet and Milne Inlet) which might be affected as a result of a spill, how frequently and how soon.

In addition, ten (10) (two fuel types by five locations) simulations were run with a September 'P50' wind condition defined as the average wind speed conditions and the associated most frequent wind direction. Finally, a sensitivity run considering a full fuel tanker loss of 15 mL arctic diesel cargo at a location in Eclipse Sound was also prepared. For these scenarios, RPS Applied Science Associates (ASA's) 2014 OILMAP was used to provide additional estimation of spill weathering and fate. This includes slick characteristics, estimate of fuel concentrations in the surface layer, amounts evaporated and that have reached shore, and remaining amounts of fuel, and fuel and water (mousse) volume. The spill modelling completed in this study assumes no intervention, response or containment and that the slick is assumed to freely discharge (during a very short duration) from the damaged vessel.

The OILMAP oil spill model and response system introduced above was used to provide additional estimates of spilled fuel fate, in particular, slick characteristics and weathering. OILMAP calculates the evaporation, dispersion and remaining percentage for a given spill scenario where the user defines a fuel product type, weather conditions, properties of the receiving water, and the amount of fuel released.

The fate or weathering processes considered were evaporation, the conversion of liquid fuel into gaseous component, and natural dispersion, the breakup of a fuel slick into small droplets that are mixed into the sea by wave action. These are two important weathering processes that typically occur over the first five days following a spill and act to remove fuel from the sea surface. Fuel will also be brought to shore depending on the prevailing currents and winds at the time as well as the type and amount of fuel, and type of shoreline. Consideration of the amounts lost due to these processes yields an estimate of the remaining amount of fuel on the surface at any time. These are the key fates modeled and tracked by OILMAP. No containment or recovery of spilled fuel was assumed in the simulations.

Further spill modelling was carried out in 2018 for shipping activities along the Northern Shipping Route from Baffin Bay through Pond Inlet, Eclipse Sound, and Milne Inlet that could be occurring in the presence of ice.

Two spill scenarios are included that release 1 ML of intermediate fuel oil from an ore carrier at locations along the Northern Shipping Route. These include a mid-July sea ice break-up scenario in Eclipse Sound and a mid-October sea ice freeze-up scenario at the mouth of Milne Inlet. A spill distribution probability map for each spill scenario location is presented showing the probability that fuel would reach any particular location on the map, should a spill occur.

For the mid-July scenario at Eclipse Sound, the majority of the simulated trajectories reach shore. For these scenarios, ice temporarily keeps the fuel offshore and delays any drift to the shorelines. As the break-up season progresses, the spill trajectories spend increasingly more time in ice of lesser concentrations, approaching open water. For the mid-October scenario, the number of trajectories reaching shore decreases steadily as freeze-up progresses. The ice keeps the fuel offshore and effectively traps the fuel in the ice as it freezes.

The spill modelling results highlight the importance of spill prevention and fuel spill response plan preparedness to minimize any adverse effects in the unlikely event of a fuel release of any size during vessel traffic into Milne Inlet. The 2015 spill model informed the development of Baffinland's Spill at Sea Response Plan (Baffinland, 2015).

See also PC Term and Condition No. 97 and No. 98.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

The spill modelling results highlight the importance of spill prevention, the OPPP and the Spill at Sea Response Plan preparedness to minimize any adverse effects in the unlikely event of a fuel release of any size during vessel traffic into Milne Inlet.

The Spill at Sea Response Plan was recently updated to append the results of additional fuel spill modelling carried out in 2018. The OPPP and OPEP for ship to shore fuel transfers at Milne Port are updated on an annual basis and approved by Transport Canada.

Updated spill trajectory modelling will be provided for areas of Hudson Strait prior to the commencement of bulk fuel shipping to the Steensby Port area.

Project Certificate Term and Condition No. 177

Category	Accidents and Malfunctions - Foreign flagged vessels
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Closure and Post-Closure Monitoring
Objective	To ensure foreign flagged ships operating in Canadian waters are held to the same standard as domestic ships with regard to emergency response planning.
Term or Condition	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.
Relevant Baffinland Commitment	13, 37
Reporting Requirement	To be determined following approval of the Project by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Transport Canada
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Ship owners / operators are responsible for enrolling their foreign flagged vessel with the appropriate program. Baffinland incorporates this requirement into contract terms and conditions with all vessels contracted directly by Baffinland.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

4.8.2 Alternatives Analysis (PC Term and Condition 178)

One (1) PC Term and Condition relates to alternatives analysis. Baffinland's updates to this PC Term and Condition are provided in the pages that follow.

Project Certificate Term and Condition No. 178

Category	Alternatives Analysis - Mill Island shipping route consideration
Responsible Parties	The Proponent, Qikiqtani Inuit Association, Nunavut Impact Review Board, Marine Environment Working Group
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance
Objective	To prevent disturbance to walrus and walrus habitat on the northern shore of Mill Island.
Term or Condition	Subject to safety considerations and the potential for conditions, as determined by the crew of transiting vessels, to result in route deviations, the Proponent shall require 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.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	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. The Proponent shall summarize all incidences of deviations from the nominal shipping route as presented in the FEIS to the NIRB annually, with corresponding discussion regarding justification for deviations and any observed environmental impacts.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) - Not Applicable
Stakeholder Review	Not applicable
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Not applicable in 2023. Shipping iron ore through Steensby Inlet is not active and has yet to be part of the Project's operations.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

4.8.3 Operational Variability (PC Term and Condition 179)

Three (3) PC Terms and Conditions relate to Baffinland's production and transportation limits. One (1) PC Term and Condition relates to auditing of project commitments and terms by a third party to confirm compliance against the relevant topic areas. Baffinland's updates to these PC Term and Conditions are provided in the pages that follow.

Project Certificate Term and Condition No. 179

Category	Operational Variability
Responsible Parties	The Proponent
Project Phase(s)	Operations
Objective	To apply the precautionary principle in respect of potential effects on marine wildlife and marine habitat from changes to shipping frequency that may result from a significant increase in mine production for an extended period of time.
Term or Condition	Baffinland shall not exceed 20 ore carrier transits to Steensby Port per month during the open water season and 242 transits per year in total.
Relevant Baffinland Commitment	4
Reporting Requirement	To be developed following approval by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active
Status	Southern Transportation Corridor (Steensby Port) – Not Applicable
Stakeholder Review	Not applicable
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Not applicable in 2023. Shipping iron ore through Steensby Inlet is not active and has yet to be part of the Project's operations.

RESULTS

Not applicable.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 179 (a)

Category	Operational Variability/Flexibility
Responsible Parties	The Proponent
Project Phase(s)	Operations
Objective	To ensure that there are appropriate limits on the Milne Inlet marine shipping component in order to limit and manage likely project effects, while balancing the need for operational flexibility.
Revised Term or Condition	Until December 31, 2024, the Proponent is approved to ship up to six (6) Mtpa of iron ore through Milne Port during the open water season. In the 2023 and 2024 shipping seasons the Proponent is also approved to ship up to 0.9 Mtpa of “stranded ore.” The Board defines “stranded ore” to be iron ore that was delivered in the previous year to Milne Port but that was not shipped in that year’s shipping season due to weather or other shipping constraints. In each of the 2023 and 2024 shipping seasons the Proponent will use no more than 84 ore carriers per year. After December 31, 2024, the maximum total volume of all ore shipped via Milne Inlet in a calendar year returns to 4.2 million tonnes per year, unless this condition has been further modified under Section 112 of <i>Nunavut Planning and Project Assessment Act</i> , S.C. 2013, c. 14, s. 2.
Relevant Baffinland Commitment	4
Reporting Requirement	For each year after the Proponent commences shipping ore via Milne Inlet under the Early Revenue Phase Proposal, the Proponent shall include in the Annual Report to the NIRB, a summary of the total amount of ore shipped via Milne Inlet for the previous calendar year.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Nunavut Impact Review Board (NIRB)
Reference	Not applicable
Ref. Document Link	

METHODS

The total volume of ore shipped via Milne Inlet is tracked annually by Baffinland.

RESULTS

Baffinland shipped a total a total of 6.1 million tonnes (Mt) of iron ore during the 2023 shipping season, which is the most ore shipped in a season. Figure 4.21 below shows the tonnage shipped since 2015.

TRENDS

The total volume of ore shipped via Milne Inlet increased between 2015 (~0.92 Mt) and 2019 (~5.9 Mt), but decreased slightly in 2020 (~5.5 Mt), 2021 (~5.6 Mt), and 2022 (~4.7 Mt) in comparison to volumes reached in 2019 (Figure 4.21). In 2023, Baffinland shipped 6.1 Mt with the approval of the Sustaining Operations Proposal (SOP).

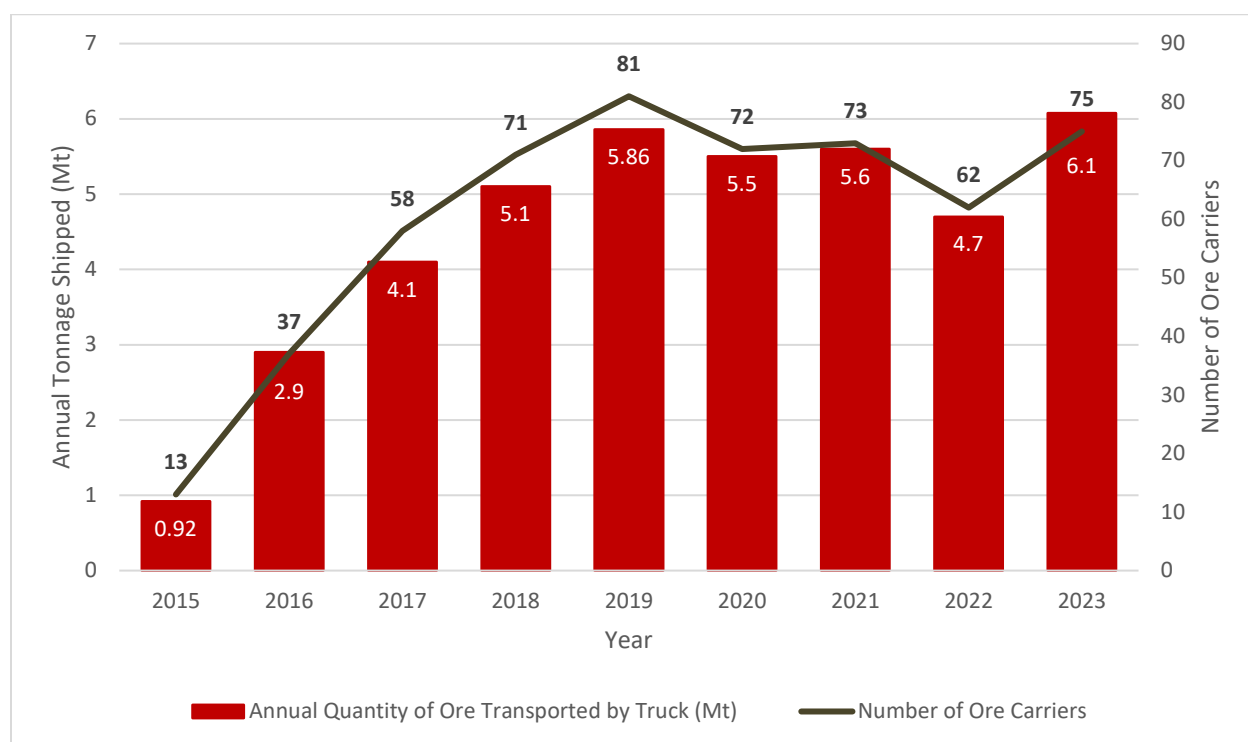


Figure 4.21: Comparison of Tonnage Shipped by Year and Number of Ore Carriers between 2015-2023

Baffinland continues to operate within the existing allowance for shipping limits outlined in PC Term and Condition No. 179(a).

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to track ore volumes shipped on a yearly basis. The approved SOP allows Baffinland to ship 6 Mt of ore plus up to 900,000 t of stranded ore until December 2024. Baffinland will apply for another amendment to PC No. 005 to sustain these shipping limits.

Project Certificate Term and Condition No. 179 (b)

Category	Operational Variability/Flexibility
Responsible Parties	The Proponent
Project Phase(s)	Operations
Objective	To ensure that there are appropriate limits on the Milne Inlet Tote Road land transportation component in order to limit and manage likely project effects, while balancing the need for operation flexibility.
Revised Term or Condition	Until December 31, 2024, the total volume of ore transported by truck on the Milne Inlet Tote Road may exceed 4.2 million tonnes per year, but must not exceed 6.0 million tonnes in any calendar year. After December 31, 2024, the maximum total volume of ore transported by truck on the Milne Inlet Tote Road in a calendar year returns to 4.2 million tonnes per year, unless this condition has been further modified under Section 112 of <i>Nunavut Planning and Project Assessment Act</i> , S.C. 2013, c. 14, s. 2.
Relevant Baffinland Commitment	
Reporting Requirement	For each year after the Proponent commences shipping ore via Milne Inlet under the Early Revenue Phase Proposal, the Proponent shall include in the Annual Report to the NIRB, a summary of the total amount of ore shipped via Milne Inlet for the previous calendar year.
Relevant Baffinland Commitment	4
Status of PC Term and Condition	Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	Nunavut Impact Review Board (NIRB)
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

The total volume of ore transported by truck on the Tote Road is tracked annually by Baffinland.

RESULTS

In 2023, a total of ~5.5 Mt of iron ore was transported by ore haul trucks along the Tote Road.

TRENDS

From 2017 to 2020, the amount of ore transported by truck on the Milne Inlet Tote road was increased from ~4.5 to 6 Mt. With ~5.5 Mt of ore transported by truck on the Tote Road in 2023, Baffinland continues to operate within the existing allowance for trucking limits outlined in PC Term and Condition No. 179(b). The quantity of iron ore generated and transported by truck on the Tote Road since 2015 is provided in Figure 4.22.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to track ore volumes transported by truck on the Tote Road on a yearly basis. Baffinland will apply for another amendment to PC No. 005 to sustain these trucking limits.

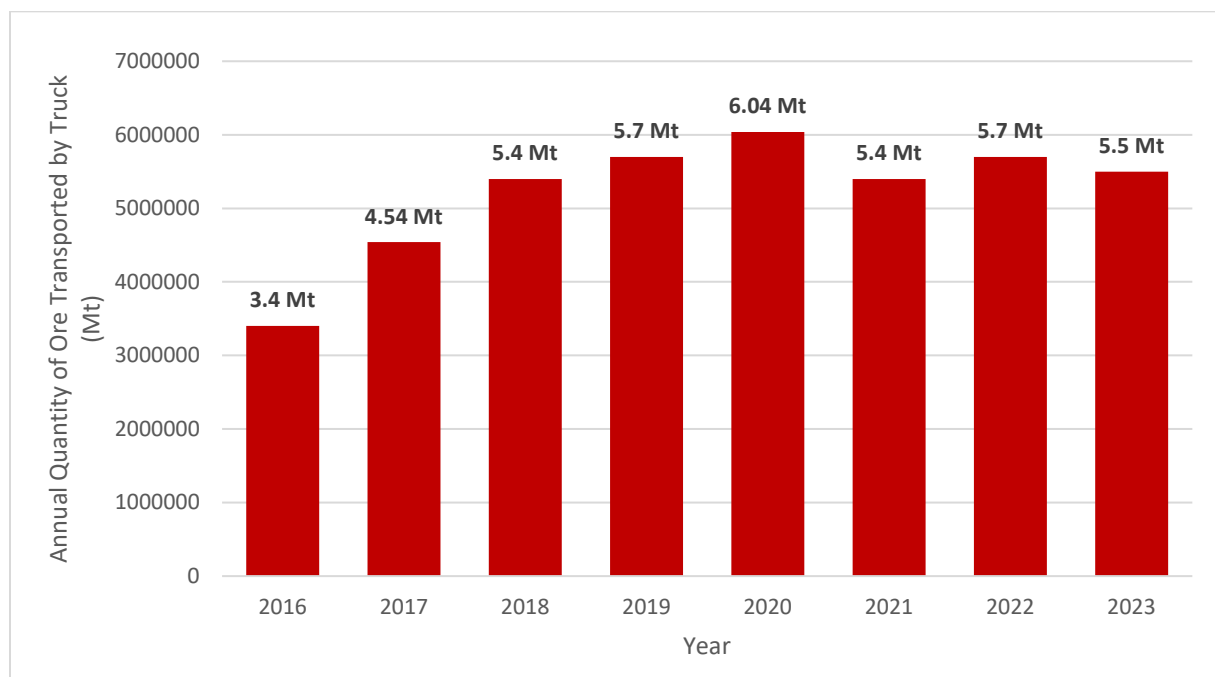


Figure 4.22: Annual Quantities of Ore Transported Via the Tote Road in 2016-2023

Project Certificate Term and Condition No. 179 (c)

Category	Operational Variability/Flexibility
Responsible Parties	The Proponent
Project Phase(s)	Operations
Objective	To ensure commitments made by the Proponent with respect to the 2018 production increase and delivery of benefits to Inuit are adhered to, and can be determined through a body of evidence.
Revised Term or Condition	The Proponent shall be required to resource and support a third party to conduct bi-annual performance audits of commitments made by the proponent in relation to both the IIBA and every proponent commitment and every term or condition of the Project Certificate relating to environmental management of the Tote Road component or environmental management related to shipping. The Proponent shall file Performance Audit Reports with the NIRB on or before March 31 and September 30 of each calendar year.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	On a bi-annual basis, the Proponent shall file a Performance Audit Report with the NIRB on or before March 31 and September 30 of each calendar year. This report shall include the findings of the third-party auditor, and Baffinland's commitment to addressing findings of the auditor. This term and condition will remain in force for the duration of the Mary River Project, unless it is modified under the <i>Nunavut Planning and Project Assessment Act</i> .
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Not applicable
Reference	Agree-Upon Procedures on the Commitments Audit Protocol Report to the Nunavut Impact Review Board for the period ending June 30, 2023. (BDO, 2023; NIRB Registry No. 347321) Agree-Upon Procedures on the Commitments Audit Protocol Report to the Nunavut Impact Review Board for the period ending December 31, 2023. (BDO, 2024)
Ref. Document Link	Not applicable

METHODS

Since 2018, Baffinland has retained a consultant to complete an audit that would meet the specific objectives of the terms and conditions of Project Certificate Term and Condition No. 179 (c). Prior to its implementation, the audit template was shared with the Qikiqtani Inuit Association (QIA) to confirm the scope. A contract was established with BDO Canada LLP (BDO) to conduct two (2) audits in 2023 in relation to both the IIBA, Project Commitments, and the Terms and Conditions of the Project Certificate relating to the operation of the Tote Road and shipping activities.

RESULTS

The first Performance Audit Report for the 2023 year, was submitted to the NIRB in October 2023, for the period between January 1, 2023 and June 30, 2023 (BDO, 2023; NIRB Registry No. 347321). For the IIBA section of the audit

report, Baffinland had a 96% completion rate, 4% increase. For the PC No. 005 Terms and Conditions section, Baffinland had a 100% completion rate.

The second Performance Audit Report for the 2023 year, which covers the period of July 1, 2023 to December 31, 2023, was submitted on March 31, 2024 (BDO, 2024). For the IIBA section of the audit report, Baffinland received a 96% completion rate. For the PC No. 005 Terms and Conditions section, Baffinland maintained a 100% completion rate.

TRENDS

In 2023, Baffinland maintained its completion rate for the Project Certificate Commitments at 100 %, as well as for the IIBA Commitments at 96% (Figure 4.23).

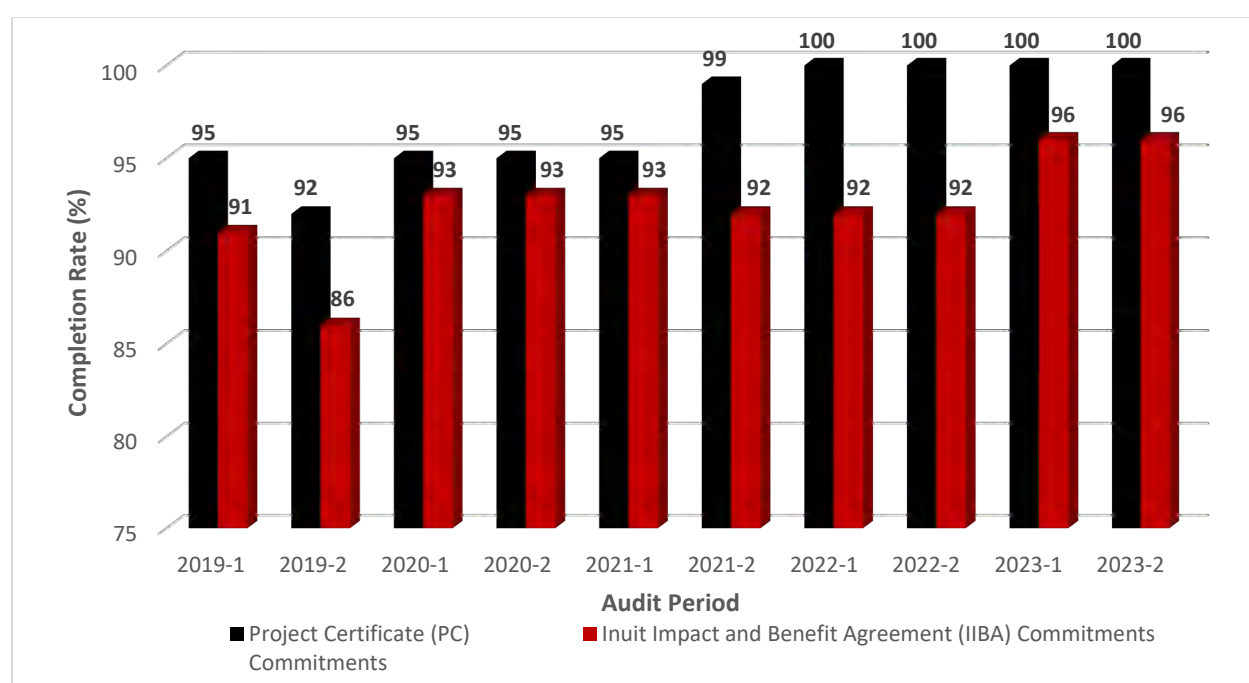


Figure 4.23: Baffinland's Audit Performance Year Over Year (2019-2023)

Note:

Audit period is defined by '1' January 1 to June 30, or '2' July 1 to December 31.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to execute the bi-annual audits required under Project Certificate Term and Condition No. 179(c) in 2024.

4.8.4 Transboundary Effects (PC Terms and Conditions 180 through 182)

Three (3) PC Terms and Conditions are related to the potential for transboundary effects. Baffinland's updates to these conditions are found below.

Project Certificate Term and Condition No. 180

Category	Transboundary Effects - Makivvik Corporation involvement in the Marine Environment Working Group (MEWG)
Responsible Parties	The Proponent, members of the Marine Environment Working Group
Project Phase(s)	Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To enable Makivvik Corporation and Nunavik communities near shipping lanes to remain informed and involved in those shipping activities which could affect the marine environment and marine mammals.
Term or Condition	The Marine Environment Working Group established for this Project shall invite a representative from Makivvik Corporation to be a member of the Group.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – In Compliance
Stakeholder Review	Marine Environment Working Group (MEWG)
Reference	2023 MEWG Meeting Minutes Register of Consultation With Makivvik Corporation
Ref. Document Link	Appendix C.1 Appendix C.5

METHODS

Makivvik is a member of the MEWG, which was established in 2013. Presentation materials and meeting minutes for MEWG engagements are distributed to all members and observers, regardless of whether the organization is able to actively participate in the meetings. If a representative of Makivvik is unable to attend a meeting, they are informed of Project plans through the sharing of meeting presentation slides [Inuktitut and English] and meeting records (draft and final versions [Inuktitut and English]) via email. Refer to Appendix C.5 for a summary of all Makivvik engagements to date related to the MEWG.

RESULTS

Makivvik was sent MEWG meeting presentation slides and meeting minutes for all scheduled meetings, in addition to other technical information (e.g., latest drafts of annual monitoring reports) in 2023. Additionally, one (1) Makivvik representative had partial, virtual attendance at the December 11th and 12th, 2023 MEWG meetings. On December 14th, 2023, Baffinland's Senior Manager of Environmental Social Governance provided six (6) Makivvik representatives with a letter relating to the Steensby component of the Mary River Project. In this letter, Baffinland representatives extended an invitation to Makivvik to host a virtual meeting in Q1 of 2024 and respond to any questions related to Project development and ongoing operations. This letter included a slide deck related to the Steensby development highlighting all proposed construction and monitoring activities in the coming years. A register of consultation with Makivvik was also provided in tabular format.

TRENDS

Not applicable

RECOMMENDATIONS/LESSONS LEARNED

Baffinland will continue to update Makivvik on Project activities through the MEWG meetings and distribution of technical documentation.

Project Certificate Term and Condition No. 181

Category	Transboundary Effects - Marine Environment Working Group (MEWG) reporting
Responsible Parties	The Proponent, members of Marine Environment Working Group
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To enable Makivvik Corporation and Nunavik communities near shipping lanes to remain informed and involved in those shipping activities which could affect the marine environment and marine mammals.
Term or Condition	Regardless of whether Makivvik Corporation participates as a member of the Marine Environment Working Group, the Marine Environment Working Group will provide Makivvik Corporation with regular updates regarding the activities of the Marine Environment Working Group throughout the Project life cycle.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – In Compliance
Stakeholder Review	Marine Environment Working Group (MEWG)
Reference	2023 MEWG Meeting Records Register of Consultation With Makivvik Corporation
Ref. Document Link	Appendix C.1 Appendix C.5

METHODS

Makivvik is a member of the MEWG, which was established in 2013. Presentation materials and meeting minutes for MEWG engagements are distributed to all members and observers, regardless of whether the organization is able to actively participate in the meetings. If a representative of Makivvik is unable to attend a meeting, they are informed of Project plans through the sharing of meeting presentation slides [Inuktitut and English] and meeting records (draft and final versions [Inuktitut and English]) via email. Refer to Appendix C.5 under Project Certificate Term and Condition No. 180 for a summary of all Makivvik engagements to date related to the MEWG.

RESULTS

Makivvik was sent MEWG meeting presentation slides and meeting minutes for all scheduled meetings, in addition to other technical information (e.g., latest drafts of annual monitoring reports) in 2023. Additionally, one Makivvik representative had partial, virtual attendance at the December 11th and 12th, 2023 MEWG meetings. There are currently three Makivvik representatives on the MEWG distribution list who will receive meeting invitations and relevant materials for all future engagements related to the Working Group. On December 14th, 2023, Baffinland's Senior Manager of Environmental Social Governance provided six Makivvik representatives with a letter relating to the Steensby Component of the Mary River Project. In this letter, Baffinland representatives extended an invitation to Makivvik to host a virtual meeting in Q1 of 2024 and respond to any questions related to Project development and ongoing operations. This letter included a slide deck related to the Steensby development highlighting all

proposed construction and monitoring activities in the coming years. A register of consultation with Makivvik was also provided in tabular format.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to update Makivvik on Project activities through the MEWG meetings and distribution of technical documentation via email.

Project Certificate Term and Condition No. 182

Category	Transboundary Effects - Reporting to Marine Environment Working Group (MEWG)
Responsible Parties	The Proponent, Makivvik Corporation
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To enable Makivvik Corporation and Nunavik communities near shipping lanes to remain informed and involved in those shipping activities which could affect the marine environment and marine mammals.
Term or Condition	Baffinland shall make available to Makivvik Corporation any ship route deviation reports provided to the NIRB in accordance with the terms and conditions set out in Section 4.12.4 of the Final Hearing Report.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	To be developed following approval by the Minister.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – In Compliance
Stakeholder Review	Marine Environment Working Group (MEWG)
Reference	Register of Consultation With Makivvik Corporation
Ref. Document Link	https://www.baffinland.com/operation/shipping-and-monitoring/ Appendix C.5

METHODS

This condition is focused on shipping through the shared waters of Hudson Strait from Steensby Port. The Project has not utilized the Southern Shipping Route to transport ore to date. However, vessel transit information for all vessels (non-Baffinland and Baffinland-procured vessels) with Automatic Identification System (AIS) tracking data and travelling within the RSA along the active Northern Shipping Route is publicly available on a 24-hour basis on the Baffinland website over the entire shipping season. Accordingly, online tracking is available prior to start of shipping and remains in place until after shipping has ended (typically set to provide data from July to October, inclusively). Baffinland will provide relevant ship route deviation reports to Makivvik when required.

Baffinland engaged with Makivvik on December 14th, 2023 (Appendix C.5) to provide an update on the Steensby Component of the Mary River Project. Makivvik was informed that the planned Southern Shipping Route through Hudson Strait has not changed from the approved Project and continues to be in relative proximity to several northern coastal communities in Nunavik. An update on the progression of the Steensby Component was also provided to give insight into Baffinland's existing operations and future plans.

RESULTS

There were no changes to the ship route in 2023 that would be relevant to the Southern Shipping Route since the portion of the Project is not active.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to make ship route information publicly available through its online website and will provide Makivvik with any ship route deviation reports when relevant to the Southern Shipping Route when the Steensby portion becomes active.

4.8.5 Verification of Project Monitoring and Mitigation for Potential Effects on Marine Mammals (PC Terms and Condition 183 through 189)

Seven (7) PC Terms and Conditions relate to project monitoring and mitigation of impacts specific to marine mammals. Four (4) of these Terms and Conditions were added to the Project Certificate No. 005 in 2022 (Term and Condition No. 185 to 189) as a result of approval of Baffinland's production increase proposal renewal to allow for shipment of 6 Mtpa of ore through Milne Inlet until December 31, 2022. Baffinland's updates to these PC Terms and Conditions are provided in the pages that follow.

Project Certificate Term and Condition No. 183

Category	Project monitoring of impacts to marine mammals
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To address concerns associated with the potential for impacts to marine mammals, and compliance and enforcement of terms and conditions in Project Certificate No. 005 relating to ship-based observer programs, noise exposure assessment, and the identification of other mitigation measures that have the potential to further reduce potential impacts to marine mammals.
Term or Condition	<p>The Proponent shall collaborate with the Marine Environment Working Group (MEWG) to develop impact avoidance or mitigation strategies for the protection of the marine environment, and shall implement these strategies.</p> <p>The Proponent shall implement any direction from the Department of Fisheries and Oceans (DFO), issued in furtherance of their mandate, for any avoidance or mitigation measures, including cessation of any activity, for the protection of the marine environment.</p> <p>The Proponent shall, every six months, provide to DFO a tracking table of (i) collective recommendation of the other members of the working group, and (ii) any directions from DFO. For each, the table must show the Proponent's means of implementation. Where any direction or recommendations are not fully implemented, the Proponent shall include the rationale.</p>
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	<p>Results of the observer program shall be provided in the Annual Report to the Board. Further, Baffinland shall report all data it generates from the implementation of monitoring of marine impacts it is required to implement pursuant to the Terms and Conditions of the Project Certificate.</p> <p>Baffinland shall provide the tracking table referenced above to Fisheries and Oceans Canada and the other members of the Marine Environment Working Group within six months following the NIRB's issuance of Amendment No. 04 to the Project Certificate No. 005 and shall provide subsequent updates to the table every 6 months thereafter.</p>
Status of PC Term and Condition	Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Northern Transportation Corridor (Milne Port) - In Compliance
Stakeholder Review	Marine Environment Working Group (MEWG), Department of Fisheries and Oceans (DFO)
Reference	<p>Draft 2023 Shipping and Marine Wildlife Management Plan (Baffinland, 2023i)</p> <p>2023 Marine Shipping and Vessel Management Report (Baffinland, 2023k)</p> <p>2023 MEWG Meeting Minutes</p>
Ref. Document Link	https://www.baffinland.com/media-centre/document-portal/ Appendix C.1

METHODS

Baffinland has regularly consulted with the, DFO, MEWG and Inuit stakeholders when developing or enhancing impact avoidance and mitigation strategies for the protection of the marine environment.

The MEWG provides a valuable forum for ongoing Project communication and reporting between Baffinland and other interested parties. The MEWG also serves as an advisory group to provide recommendations on appropriate management approaches and actions related to the Project. Any recommendations received by the MEWG are recorded in meeting minutes as action items, which Baffinland must respond to. These meeting minutes are provided to the MEWG following each meeting.

Any new or modified/enhanced mitigation measures related to shipping or port operations are documented in Baffinland's Shipping and Marine Wildlife Management Plan (SMWMP; Baffinland, 2022d) and the Annual Marine Shipping and Vessel Management Report (Baffinland, 2023k).

Baffinland conducted engagements with several Parties throughout 2023, most of which are provided in Section 4.3 and Table 4.2 of Baffinland's 2023 Marine Shipping and Vessel Management Report (Baffinland, 2023k). Below is a list of primary engagements with the MEWG that occurred throughout 2023. Note that this list is not exhaustive and does not include routine correspondence related to meeting planning, minute distribution, presentation requests, action item follow-ups, and the distribution of presentation materials.

MEWG Communications (including DFO)

1. On January 5th, 2023, Baffinland's Environmental Monitoring Specialist circulated an Action Tracker file to the MEWG, outlining all complete and incomplete action items pertaining to the MEWG within the 2018-2023 period.
2. Baffinland virtually met with representatives from the QIA and Government of Canada on January 19th, 2023, to discuss the role of the Project Monitor within the MEWG Terms of Reference.
3. On February 1st, 2023, Baffinland's Environmental Monitoring Specialist distributed the 2022 Vessel Convoy Analysis Preliminary Report to the MEWG. The Inuktitut executive summary was distributed on February 7th, 2023.
4. Baffinland held a meeting with the MEWG on February 15th and 16th, 2023 to provide an update on 2022 convoy operations for ore carriers, and a summary of preliminary 2022 marine monitoring results and proposed 2023 marine monitoring programs. These meetings took place from 9:00 am – 5:00 pm in-person in both Ottawa and Iqaluit. Members from the five HTOs from the affected communities were present in-person in Iqaluit and virtually linked to the meetings in Ottawa simultaneously. Presentation materials circulated to the MEWG members occurred on February 9th, 2023 in both English and Inuktitut.
5. Baffinland circulated the revised Terms of Reference for the MEWG (dated April 4th, 2023) to the MEWG on April 14th, 2023.
6. Baffinland held a virtual meeting with the MEWG on April 19th, 2023 to discuss the April 4th, 2023 revision of the Terms of Reference. The discussion resulted in an additional review period for the MEWG, which was to close May 1st. Baffinland extended the comment period on the Terms of Reference to May 5th, 2023 to accommodate members.

7. Baffinland's Environmental Monitoring Specialist circulated comments received on the April 2023 Terms of Reference from the Government of Canada, QIA, and MHTO to the MEWG on May 8th, 2023.
8. Baffinland provided the MEWG copies of all its 2022 Final Marine Monitoring Reports on May 3rd, 2023.
9. Baffinland submitted its 2022 Annual Monitoring Report to the Nunavut Impact Review Board (NIRB) on May 3rd, 2023, with comments expected back from interested Parties on July 11th, 2023.
10. Baffinland's Environmental Monitoring Specialist circulated the DRAFT Shipping and Marine Wildlife Management Plan and Adaptive Management Plan to the MEWG on June 9th, 2023.
11. Baffinland's Environmental Monitoring Specialist circulated the DRAFT Marine Monitoring Plan to the MEWG on June 19th, 2023.
12. On July 5th, 2023, Baffinland's Environmental Monitoring Specialist circulated the 2023 Shipping and Marine Monitoring Summary to the MEWG, inclusive of the 2023 proposed marine monitoring program schedule and communications protocol.
13. On July 12th, 2023, Baffinland held a MEWG meeting to provide and operations update for the 2023 shipping season, as well as an overview of confirmed marine monitoring programs. A question and answer period covering the 2023 shipping season, marine monitoring programs, and the 2022 annual monitoring reports was included in the agenda, but time restrictions prevented all topics from being covered. Members were told that outstanding questions could be provided to Baffinland in writing.
14. On July 13th, 2023, Baffinland received intervenor comments on the 2022 NIRB Annual Report. Comments were submitted from various MEWG members and observers, including the QIA, ECCC, Parks Canada, Transport Canada, and DFO.
15. On August 14th, 2023, Baffinland provided responses to the NIRB for all intervenor comments that were submitted in relation to the 2022 NIRB Annual Report with appended final 2022 marine, terrestrial, and fresh water reports.
16. On August 17th, 2023, Baffinland confirmed the use of Capesize vessels with the MEWG.
17. Baffinland virtually met with representatives from the CIRNAC, NPMO and the QIA on October 26th, 2023, to discuss the role of the Project Monitor within the MEWG ToR.
18. Baffinland held an in person meeting with the MEWG in Iqaluit on December 11th and 12th, 2023 to discuss: completed 2023 marine monitoring programs, 2023 shipping operations, statuses of PIPR and SOP commitments, future operations related to Steensby, outstanding questions on the final 2022 marine monitoring reports, and to discuss the selection of an appropriate baseline year for MMASP studies.

Other Communications

1. Baffinland met with three DFO representatives on January 5th, March 6th, and March 20th, 2023 to discuss opportunities to collaborate in 2023 with regards to marine mammal aerial surveys.
2. Baffinland representatives met with the Hamlet of Pond Inlet in person on February 6th, 2023, to discuss proposed fisheries offsetting measures associated with the existing freight dock at Milne Port, inclusive of the development of a rocky reef.

3. Baffinland representatives held an in person question and answer period at the Sauniq Hotel in Pond Inlet on February 7th, 2023 to answer any community questions related to Baffinland shipping operations and marine monitoring programs.
4. Baffinland representatives held the 2022 End of Shipping Season Meeting in Pond Inlet on February 8th, 2023, with representatives from the MHTO, Hamlet, QIA, and Legislative Assembly of Nunavut.
5. Baffinland hosted a 2022 End of Shipping Season radio show in Pond Inlet on February 8th, 2023 to answer any questions related to the 2022 shipping season.
6. Baffinland representatives met with the Hamlet of Arctic Bay in person on February 8th, 2023, to discuss proposed fisheries offsetting measures associated with the existing freight dock at Milne Port, inclusive of the development of a rocky reef.
7. Baffinland representatives held an in person question and answer period at the Sauniq Hotel in Pond Inlet on February 9th, 2023 to answer any community questions related to Baffinland shipping operations and marine monitoring programs.
8. Baffinland met with DFO representatives on March 23rd, 2023 for an initial discussion on the 2023 collaborative ballast water program. Note that these bilateral discussions were held at monthly, bi-weekly and weekly frequencies leading up to the program and therefore an exhaustive list is not presented.
9. Baffinland and WSP representatives met with DFO on April 20th, 2023 to discuss DFO recommended modifications for the 2023 zooplankton monitoring program. These suggestions were incorporated into the 2023 Marine Environmental Effects Monitoring Program (MEEMP) and results can be found in Appendix G.6.8 –2023 Marine Environmental Effects Monitoring Program Report of this document.
10. Baffinland’s Environmental Monitoring Specialist and Engagement Lead met virtually with Clyde River HTO MEWG representatives on May 4th, 2023 to provide more clarity on the Terms of Reference, noting they are new members.
11. Baffinland participated in the NIRB’s Marine Monitoring and Marine Mitigation Workshop held in-person in Pond Inlet May 24th – 25th, 2023. The focus of this engagement was to provide opportunity for Pond Inlet residents to discuss community-related concerns for project impacts to the marine environment and monitoring activities. Regulatory agencies in attendance were the Department of Fisheries & Oceans Canada (DFO), Transport Canada (TC), and the Canadian Northern Economic Development Agency’s Northern Projects Management Office (CANNOR – NPMO). Representatives of the QIA also attended to receive and respond to community feedback and understand the issues of priority for the community with respect to the marine environment.
12. On May 26th, 2023, Baffinland met with members of the MHTO to discuss an in-person meeting date for the Pre-Shipping Season meeting. MHTO indicated they would be available the week of June 26th, 2023. Baffinland also discussed options for the research vessel transfer to the MHTO, as per the IIBA. The MHTO elected to receive cash payment in lieu of the research vessel transfer.
13. Baffinland’s Sr. Manager of Environment & Social Governance, Sustainability Specialist and Environmental Engagement Lead flew to Pond Inlet on June 26th, 2023 to meet with community members, representatives

of the MHTO, council members of Hamlet of Pond Inlet, and deliver initial training for the Pond Inlet Community-based Shipping Monitors.

14. On June 27th, 2023, Baffinland held a radio call-in show to provide updates to the community on its 2023 shipping season with a question and answer period.
15. On June 28th, 2023, Baffinland's Sr. Manager of Environment Social Governance, Sustainability Specialist and Environmental Engagement Lead met in-person with representatives of the MHTO, members of the Hamlet Council to deliver a presentation on plans for the 2023 shipping and subsequent mitigation measures.
16. On June 29th, 2023, Baffinland met with the Chair of the MHTO in-person to discuss potential participation of a MHTO participant for Leg 2 of the 2023 Marine Aerial Survey Program. A request for a letter of support from the MHTO for WSP's marine monitoring work & initial discussion of support from the MHTO for a proposed Narwhal Cortisol Sampling Program, and a potential in-person meeting in August 2023 to discuss participation in a workshop for the Milne Inlet Fish Health Program was also discussed at this time.
17. Baffinland virtually met with DFO representatives on November 7th, 2023 to discuss lessons learned from the 2023 collaborative ballast water monitoring program.
18. Baffinland's Sr. Manager, Environmental Social Governance held a 2023 post-shipping season meeting in Pond Inlet on December 7th, 2023 with representatives from the MHTO and Hamlet.
19. Baffinland's Sr. Manager, Environmental Social Governance held a 2023 post-shipping season radio show in Pond Inlet on December 8th, 2023 to answer any community questions related to the 2023 shipping season.

This is not an exhaustive list of all Baffinland engagements. This list only includes engagements related to shipping operations for the northern component of the Project and does not include meeting requests that were rejected or left unacknowledged by external parties.

RESULTS

DFO has not issued any direction to Baffinland via the MEWG recommendation process in furtherance of their mandate, including recommendations related to mitigation measures, the cessation of any activity, or for the protection of the marine environment. DFO has submitted various technical comments through the NIRB public registry during production increase applications and reporting periods, but these are separate submissions from MEWG recommendations. Specific technical comments have resulted, or will result, in subsequent MEWG engagement, including but not limited to: technical comments DFO-TRC-01(1) and DFO-TRC-02(2), which are outlined in Table 4.59 below. DFO-TRC-01(1) was discussed at the December 2023 MEWG meetings and a technical memorandum, inclusive of available project shipping data prior to 2013, was circulated in advance of the meeting for review.

Table 4.59: Appendix D Commitments Issued by DFO Related to the MEWG

Technical Comment ID	Commitment
DFO-TRC-01(1)	<p>DFO recommends the Proponent clarifies when baseline conditions existed.</p> <ul style="list-style-type: none"> Baffinland will provide a data package and analysis of available project shipping data from prior to 2013 by August 31, 2023. Baffinland will include the following item on the next MEWG agenda: “Discussion regarding Baffinland’s proposed baseline years. Baffinland will put into the meeting agenda, after discussion with DFO, a sufficient amount of time to ensure fulsome discussion of this topic can be had at the MEWG. Baffinland will prepare and distribute to MEWG 2 weeks prior to meeting a comparison table and figures showing the difference in outcomes of the current vs DFO suggested baseline years and implications for the Eclipse Sound Stock. Baffinland will provide a plain language summary of the issues including definitions and BIM will submit the plain language summary to DFO for review weeks prior to wider distribution to the MEWG members. If adopted by Baffinland according to the MEWG Terms of Reference, changes to baseline years to be implemented for 2023 Annual Reporting.
DFO-TRC-01(2)	<p>DFO recommends taking the average of the survey repeats and the Proponent discussing their data analysis practices with the MEWG.</p> <ul style="list-style-type: none"> Baffinland will include “Discussion regarding DFO proposed aerial survey repeats averaging” to the next MEWG meeting agenda, and is willing to produce reports averaging aerial surveys in one or more future years, provided certain survey conditions are met (i.e., based on standard scientific methodology). Baffinland will put into the meeting agenda, after discussion with DFO, a sufficient amount of time to ensure fulsome discussion of this topic can be had at the MEWG. Baffinland will prepare, for the MEWGs benefit, a comparison table showing the difference in outcomes of the current vs DFO suggested methods of survey analysis. Baffinland will provide a plain language summary of the issues including definitions/descriptions of “certain survey conditions” at least 2 weeks prior to the next MEWG for all MEWG members. Baffinland will submit the plain language summary to DFO for review and comment 2 weeks prior to wider distribution to the MEWG members. If adopted by Baffinland according to the MEWG Terms of Reference, new analytical methodologies to be adopted by the 2024 shipping season or as recommended by the MEWG.

In addition to DFO, no other MEWG members or observers submitted formal recommendations via the MEWG throughout 2023. Therefore, a tracking table has not been required. Baffinland has, however, begun circulating an action tracker that includes all outstanding actions for members within the groups from previous meetings. These trackers are sent to member organizations independently in the weeks leading up to the meetings to ensure that actions are closed prior to the next session. The action tracker was sent to the entire MEWG by Baffinland's Sustainability Specialist (now Environmental Monitoring Specialist) on January 5th, 2023 via email. Baffinland recognizes that the ToR to be released in 2024 will streamline the MEWG recommendation process and likely increase the number of formal recommendations received through this platform.

With regards to adaptive management, Baffinland regularly communicates with many parties and receives advice regarding marine monitoring and mitigation measures. On May 24th and 25th, 2023, Baffinland participated in a marine monitoring and mitigation workshop in Pond Inlet, which was held by the NIRB. This workshop highlighted all historical marine mitigation measures, as well as marine mitigation measures that were planned for the 2023 shipping season. Completed 2022 marine monitoring program results were shared with community members and workshop attendees, as well as 2023 proposed marine monitoring programs. Through these consultation efforts, Baffinland received, at a high level, the following feedback regarding marine mammal mitigations from the MEWG and other interested Parties (Table 4.60).

Recognizing the value of the Eclipse Sound narwhal stock to the residents of Pond Inlet, and that there are unknown and/or unmitigated cumulative activities occurring in the Marine RSA that could have continued in 2023, Baffinland took a precautionary approach and added additional mitigations to its shipping activities in 2023, while continuing with routine mitigation measures from previous years.

Similar to 2021 and 2022, the 2023 shipping season did not commence until a continuous path of 3/10ths or less ice concentration was available along the Northern Shipping Route. The mitigation measure delayed the commencement of the shipping season until August 9th, eliminated icebreaking activities during the early shoulder season, and shortened the overall number of shipping days available to Baffinland in the 2023. Baffinland also committed to chartering no more than 84 ore carriers during the 2023 shipping season and continued with the use of vessel convoys as a method to reduce total sound exposure, which is further outlined below and in the 2023 Convoy Technical Memo (JASCO, 2022). Baffinland also continued to implement all other existing mitigation measures as described in Section 6 of the Shipping and Marine Wildlife Management Plan (Baffinland, 2022d) and summarized below.

All vessels are instructed to follow the nominal shipping route to the fullest extent possible, however there may be a need for slight deviations from the nominal route to avoid interactions with ice. Any notable deviations will be communicated to hunters on the water and in the communities via the Baffinland's Shipping Monitors. A deviation report is created for all vessels that deviate more than one (1) nm from the shipping route, which indicates rationale for the deviation, and allows the Port Captain to communicate with the vessel captain regarding follow-up actions. In all cases vessels will continue to be instructed to avoid Koluktoo Bay, the western shoreline near Bruce Head and ten (10) Km from the shoreline of Pond Inlet to minimize effects on marine mammals and interference with hunting activities.

Table 4.60: Summary Of Engagement Outcomes Related to the MEWG

Summary of Comment/ Recommendation	Baffinland Response / Outcomes
Recommendations from MHTO to further reduce shipping	<p>Baffinland will opportunistically implement convoys throughout the 2023 shipping season to reduce the total number of vessel transits within the RSA. Additional details pertaining to convoys are included in Appendix F the draft 2023 SMWMP (Baffinland, 2023i).</p> <p>Baffinland has committed to allowing no more than 84 ore carriers enter the RSA if approved to ship 6.0+ Mtpa in 2023.</p>
Recommendations from MHTO and the community of Pond Inlet to discontinue the use of acoustic monitors in the RSA	<p>Baffinland deployed two acoustic recorders in July of 2023 to ensure there were no data gaps related to the use of larger ore carriers.</p> <p>Baffinland re-deployed the acoustic monitors after downloading the data in October, 2023 to overwinter and capture dual icebreaker transits at the end of the 2023 shipping season.</p> <p>Baffinland discussed the use of acoustic recorders at the 2023 Pre-shipping Meeting held in Pond Inlet on June 28th, 2023 with representatives from the Hamlet of Pond Inlet and the MHTO. No objections or concerns were raised relating to the deployment of acoustic recorders in 2023.</p>
Recommendations from Hamlet of Pond Inlet, Parks Canada, DFO and QIA on enhancements to Baffinland's existing and proposed monitoring programs.	<p>Baffinland has committed to working with these Parties on further refinements of these programs (i.e., analysis of Early Warning Indicator [EWI] monitoring at Bruce Head). Baffinland also reaffirmed the need for, and importance of, strengthened regional monitoring that will enhance Baffinland's ability to discriminate Project-related effects from other anthropogenic activities or environmental changes that could be affecting the Eclipse Sound narwhal stock. Baffinland attempted to implement a narwhal tagging program for the 2022 shipping season, but did not receive support from the MHTO to proceed. For the 2023 shipping season, the DFO conducted aerial surveys to provide updated abundance estimates for regional narwhal stocks. Baffinland continued to conduct marine mammal aerial surveys within the RSA throughout the 2023 shipping season, and extended an invitation to MHTO to participate. Participation was not granted due to delayed tuberculosis results that prevented site access. Baffinland purchased higher resolution cameras for the 2023 MMASP, which will allow DFO to identify individual narwhals using the software WhaleSeeker, should DFO wish to collaborate on the aerial survey monitoring. This helps address community concerns related to whether narwhals are being double-counted, and eliminates observer bias, fatigue, and human error. Additionally, Baffinland expanded its Aquatic Invasive Species/Non-Indigenous Species (AIS/NIS) monitoring program in 2023 to include a 2-week biological ballast water sampling pilot program conducted by DFO with support from Baffinland.</p>
Recommendations from the MHTO to include an MHTO representative on the marine mammal aerial surveys.	<p>Baffinland met with the MHTO on May 26th and June 28th, 2023 to inquire about MHTO participation on Leg 2 of the 2023 MMASP. The MHTO verbally confirmed that they would send a representative, however, screening requirements for site deployment were not met</p>

Summary of Comment/ Recommendation	Baffinland Response / Outcomes
	and participation could not be secured. Likewise, Baffinland corresponded with the MHTO regarding participation on the Leg 3 aerial survey, but tuberculosis results required for site access were not provided in time for the survey. Baffinland will continue to correspond with MHTO regarding participation in future aerial studies.
Recommendations from DFO that Baffinland develop a more robust zooplankton monitoring program.	Baffinland's 2022 zooplankton monitoring program involved both the use of settlement plates and vessel-based net tows. DFO offered to provide Baffinland a more robust methodology. DFO met with Baffinland and WSP representatives on April 20 th , 2023 to discuss the 2023 proposed zooplankton study design. DFO provided multiple recommendations, all of which were subsequently incorporated into the 2023 study design, with the exception of a single recommendation that presented logistical constraints that deemed it infeasible for this field season. Modifications to the zooplankton monitoring program include: an increase in the number of sampling sites, and an increase in the number of sampling events to allow for more temporal variability.
Multiple organizations from the MEWG recommended that the comment and response system for monitoring reports be revised to correspond with Annual Report dates.	Baffinland revised its annual reporting process in 2023 so marine monitoring reports are submitted as final in tandem with the NIRB Annual Report. The final 2022 marine monitoring reports were appendices in the 2022 NIRB Annual Report (Baffinland, 2023c), which was submitted on April 30 th , 2023.
Various MEWG members had concerns related to convoys, including whether these convoys will minimize noise, what the maximum number of vessels per convoy will be, and what the approximate percentage of vessels travelling in convoy will be.	A Convoy Operational Guide is included in Appendix F of the draft 2023 SMWMP (Baffinland, 2023i). Additional details pertaining to acoustic monitoring results for convoys conducted throughout the 2022 season can be found in the Preliminary Analysis of Noise From Vessel Convoys Report and the 2022 Underwater Acoustic Monitoring Program (Open-Water Season) Report; Appendix G.6.5 and G.6.6 of the 2022 NIRB Annual Report, respectively (Baffinland, 2023c). The 2022 annual monitoring reports were available for public comment until July 11 th , 2023. No concerns related to the use of vessel convoys were raised in intervenor comments.
At the February 16 th , 2023 MEWG meeting, a member from the IHTA voiced concerns about whether Baffinland Project vessels had thrusters.	Baffinland confirmed with the IHTA via email on April 4 th , 2023 that Project vessels do not have thrusters.
At the 2023 NIRB Mitigation Workshop, community members raised concerns about aquatic invasive species studies being completed by the same consultant group on an annual basis.	While Baffinland continued with its routine AIS/NIS studies as part of the MEEMP in 2023, the company also launched its first collaborative biological ballast water sampling program with the DFO. This pilot program ran for a total of two weeks at Milne Port and was conducted entirely by DFO and Pond Inlet representatives. The study will run again in 2024 for a minimum of 4 weeks. In 2023, 97% of Baffinland Project vessels had both ballast water exchange

Summary of Comment/ Recommendation	Baffinland Response / Outcomes
	and treatment (D-2 standard), which exceeds the D-1 standard regulated by Transport Canada, requiring exchange only.
At the 2023 NIRB Mitigation Workshop, community members questioned how old the majority of Baffinland Project vessels are, because they are of the understanding that older vessels create more noise pollution.	Baffinland began reporting on the age of its ore carriers in 2023 to address this concern. Results were shared at the December 2023 MEWG meeting, which has members from the five (5) HTOs within the COIs. Baffinland confirmed that its oldest ore carrier was built in 2010 (13 years old); that the youngest was built in 2022 (1-year-old); and the majority of vessels were built in 2021 (2 years old; 22% of Project vessels). 82.7% of Baffinland ore carriers were constructed in the past ten years. Baffinland intends to continue to share this information with community members, should it remain a subject of interest.
At the 2023 NIRB Mitigation Workshop, community members voiced concerns about unnecessary noise pollution being created through the use of sonars in the shipping lane and vessels running their engines while at anchorage.	Baffinland includes various controls within the Standing Instructions to Vessel Masters, one of which requires all vessels to power off their main engines and rely on auxiliary power while at anchorage, unless warranted for safety purposes (refer to Table 5.1 in Baffinland, 2023i). Additionally, vessels are only permitted to use sonars if required for safe navigation, or where bathymetric data is not available in the event of a route deviation due to adverse conditions.
Baffinland MEWG members requested that the use of cape sized vessels for 2023 be confirmed once schedules and details were determined.	Baffinland's Environmental Monitoring Specialist confirmed the use of cape sized vessels and responded to all inquiries related to this recommendation via email on August 17 th , 2023.
MEWG members requested that the make and type of each ballast water treatment method for Project vessels be provided.	On December 11 th , 2023, Baffinland's Environmental Monitoring Specialist shared a list of all 2023 ballast water treatment system types/ makes via email with the MEWG.
MEWG members have had various requests throughout 2023 related to the MEWG Terms of Reference, including but not limited to: including a definition of operational feasibility, including dispute resolution timelines, better clarifying the role of the Project Monitor, incorporating virtual participation into meetings, and outlining the process of verbal recommendations for HTO members.	Baffinland has held two review periods for the recent Terms of Reference, which has involved the incorporation of member feedback and development of a Table of Concordance. There were also numerous engagements on the ToR pre-COVID, dating back to 2019. Baffinland has incorporated all member suggestions where feasible, and has provided rationale for all recommendations that were not incorporated within the Table of Concordance. Baffinland has arranged a joint meeting with the MEWG/TEWG in April 2024 to discuss the final version of the ToR and has clarified that there will not be another review period. Baffinland has committed to a two-year review of the ToR to ensure that any new concerns that arise in the future can be addressed, and that the TOR can be re-opened should there be room for improvements. All action items related to the TOR are captured in the action tables at the start of each MEWG meeting minute record, found in Appendix C.1 of this report.

All Project vessels will restrict speed to nine (9) knots when transiting along the established shipping corridor, and will be operated in such a way as to avoid separating an individual member(s) of a group of marine mammals from other members of the group. 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 move away from the immediate area. All vessels are instructed to maintain a minimum distance of 300 m from all wildlife, as indicated in the Standing Instructions for Vessel Masters. A detailed description of mitigations for minimizing Project-related activities on marine mammals are available for review in Baffinland's Shipping and Marine Wildlife Management Plan (Baffinland, 2022d). Table 4.61 below summarizes these mitigations. It is important to note that none of the aforementioned mitigations related to vessel movement, should be read in any way as overriding the Master's authority and responsibility for safe navigation and management of the vessel.

TRENDS

The MEWG, including DFO, has successfully provided input into the Baffinland annual marine monitoring programs and shipping related mitigation measures.

DFO has not provided any directions to Baffinland with respect to Terms and Conditions No. 183. DFO identified on March 22, 2021 in response to MHTO written questions for the Phase 2 Public Hearing that "to date, there has not been a situation, within DFO's mandate, that provided sufficient evidence that there would be imminent negative impacts to the marine environment such that it required a direction".

Table 4.61: 2023 Mitigation Measures For Marine Mammals

Project Activity	Mitigation Measure(s)	Species
Vessel traffic to/from Milne Port	<ul style="list-style-type: none"> Maintain constant speed and course when possible. Reduce vessel speed to 9 knots. Reduce vessel idling. No more than 3 ore carriers anchoring at Ragged Island and/or drifting in Eclipse Sound. Drifting to be avoided unless warranted for safety reasons. No icebreaking to commence the 2023 shipping season. Ore carriers will not begin their transit to Milne Port until 3/10ths or less ice is present along the entire shipping route through the Nunavut Settlement Area (NSA) from the entrance of Eclipse Sound and Milne Port. No breaking of landfast ice will occur. When marine mammals appear to be trapped or disturbed by Project vessel movements, the vessel will implement appropriate measures to mitigate disturbance, including stoppage of movement until wildlife move away from the immediate area (as safe navigation allows). All Project vessels will be provided with standard instructions to operate their vessel in a manner that avoids separating an 	Ringed Seal, Bearded Seal, Walrus, Beluga, Narwhal, Bowhead Whale, Polar Bear, Sea birds

Project Activity	Mitigation Measure(s)	Species
	<p>individual member(s) of a group of marine mammals from other members of the group.</p> <ul style="list-style-type: none"> All Project vessels will be provided with standard instructions to not approach within 300 m of a walrus, polar bear, or large aggregations of sea birds observed on sea ice; Vessels awaiting instructions from the Port Captain to enter the RSA will be instructed to wait in Baffin Bay at least 40 Km east of the NSA. No more than 84 ore carriers will be chartered during the shipping season, pending approval of the Sustaining Operations Proposal (SOP). This is two (2) ore carriers less than the maximum anticipated and approved in the previous Production Increase Proposal (PIP) and Extension (PIPE) requests, but up to four (4) more ore carriers than the maximum anticipated in and approved in the Production Increase Proposal Renewal (PIPR) request. The use of Capesize vessels may allow for fewer transits to reach targeted shipments, resulting in a shorter duration of sound exposure within the RSA. Use of convoys throughout the 2023 season to further reduce total sound exposure. Acoustic monitoring data indicates that if ore carriers transit in convoys with inter-vessel separation less than 10 km, there is an overall reduction of the total sound exposure in the Regional Study Area compared to multiple individual transits of an equivalent number of vessels. Slight increases of instantaneous sound levels in the regions between the vessels are compensated for by shorter exposure duration, resulting in a net decrease of noise exposure (see Appendix F in Baffinland, 2023i). Continued implementation of established “no-go zones” along the western shore of Milne Inlet and Koluktoo Bay. Limiting the number of vessels anchored or drifting at Ragged Island to a maximum of three vessels at any time throughout the shipping season, unless there is a need for safety reasons. Continued restriction of drifting within Eclipse Sound. Establishment of voluntary speed restrictions (9 knots) for all Project vessels travelling along the Northern Shipping Route to minimize ship wake and disturbance to marine mammal harvesting activities. Restricting the discharge of grey water by ore carriers or the MSV <i>Botnica</i> anywhere in the RSA; no disposal of waste overboard. 	

Project Activity	Mitigation Measure(s)	Species
	<ul style="list-style-type: none"> Establishment of a nominal shipping route for all Project-vessels to follow to increase predictability and safe passage for hunters while Project-vessels are present in the Northern shipping corridor. Restricting the use of scrubbers within the RSA. Instructing vessels to power off main engines and rely on auxiliary power at anchorage, unless warranted for safety purposes. 	

Note:

All vessels ranging in size from Capesize to Newcastlemax will be collectively referred to as Capesize*, equivalent to vessel sizes of Deadweight Tonnage (DWT) range of 200,000 – 220,000, and carrying capacity range of approximately 200,000 to 215,000 metric tonnes.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to work with the MEWG to review and guide marine monitoring programs and shipping mitigation and management strategies on an annual basis. These will be reported through MEWG meetings, the annual Marine Shipping and Vessel Management Report to the NIRB, and annual year end reporting to the NIRB. Where monitoring indicates the need for adaptive management, Baffinland will provide additional reporting to remain transparent and accountable. These venues more than satisfy the twice per year requirement of the Term and Condition, as written.

Project Certificate Term and Condition No. 184

Category	Project monitoring of impacts to marine mammals
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To address concerns associated with the potential for impacts to marine mammals, and compliance and enforcement of Terms and Conditions in Project Certificate No. 005 relating to ship-based observer programs, noise exposure assessments, and the identification of other mitigation methods that have the potential to further reduce potential impacts to marine mammals.
Term or Condition	The proponent shall collaborate with the Marine Environmental Working Group to review the status of compliance with, and implementation of, all of the Terms and Conditions in Project Certificate No. 005 related to marine environmental protection.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	Results of the observer program shall be provided in the Annual Report to the Board. Further, Baffinland shall report annually all data it generates from the implementation of monitoring of marine impacts it is required to implement pursuant to the Terms and Conditions of the Project Certificate.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	Marine Environment Working Group (MEWG), Department of Fisheries and Oceans (DFO)
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Refer to summary for PC Term and Condition No. 77, 179(c) and 183.

RESULTS

Refer to summary for PC Term and Condition No. 77, 179(c) and 183.

TRENDS

Refer to summary for PC Term and Condition No. 77, 179(c) and 183.

RECOMMENDATIONS / LESSONS LEARNED

Refer to summary for PC Term and Condition No. 77, 179(c) and 183.

Project Certificate Term and Condition No. 185

Category	General
Responsible Parties	The Proponent, Nunavut Impact Review Board, Qikiqtani Inuit Association, Mittimatalik Hunters and Trappers Organization, Hamlet of Pond Inlet
Project Phase(s)	Construction, Operations, Temporary Closure / Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To provide certainty and predictable timelines for shipping for the project, and to better define criteria for the commencement and closing of the shipping season. Certainty and predictability will increase safety for traditional use of sea ice, and mitigate impacts to marine wildlife.
Term or Condition	<p>All project related shipping associated with the Northern Shipping Route shall observe the following conditions, subject to the variances and/or exceptions below:</p> <ol style="list-style-type: none"> The Proponent must avoid breaking landfast ice at all times during the shipping season. The Proponent shall confirm a continuous path of 3/10th ice concentrations along the Northern Shipping route is available prior to commencement of the shipping season. The Proponent is required to plan for and cease all shipping from Milne Port by October 31. <p>The Proponent may proceed with a variance to condition (b) above, or under exceptional circumstances that may occur from time to time seek an exception to condition (c).</p> <p>Variances and exceptional circumstances require the direct engagement of Qikiqtani Inuit Association (QIA), as well as the written confirmations obtained from the Hamlet of Pond Inlet, the Mittimatalik HTO (MHTO) and QIA as described below. Examples of a variance may include: sea ice coverage changing from 3/10th or less to greater than 3/10th due to changes in environmental conditions such as wind, or a generally later forecast for ice break up.</p> <p>Exceptional circumstances include events that are unforeseen and occur outside of Baffinland's control but will not include contingencies that the Proponent should reasonably have planned for. Examples of unforeseen events may include: a breakdown in loading equipment, weather disruptions to shipping schedules, or a later than expected ice break up past July 15.</p> <p>In the event a need for variance or an exceptional circumstance arises, the Proponent is required to provide a detailed written description to the NIRB, QIA, Hamlet of Pond Inlet and MHTO clearly demonstrating how it will meet each of the following criteria before continuing with operations:</p> <ol style="list-style-type: none"> a description of the rationale for variation or exceptional circumstances and anticipated duration of the extended shipping season; <ul style="list-style-type: none"> a description as to whether the anticipated ice conditions during the shipping period are consistent with Appendix B commitments and the Shipping and Marine Wildlife Management Plan; a description confirming that shipping will proceed in full compliance with all Project Certificate Terms and Conditions and Appendix B commitments (including but not limited to the 6 Mtpa limits described in PC Terms and Conditions No. 179(a) and (b) and the requirement not to break landfast ice);

	<ul style="list-style-type: none"> a description of any additional mitigation or monitoring efforts being undertaken as a result of the variation or exceptional circumstance; <ol style="list-style-type: none"> a description of how the Proponent has made best efforts to meet with the Hamlet, MHTO and the QIA to discuss and consider the variation or exceptional circumstance; copies of all public communications relating to the variation or exceptional circumstance; and written confirmation (or evidence of verbal confirmation) from the Hamlet and the MHTO that sea ice overlapping the shipping route is not being used for travel or harvesting by harvesters or community members, and that the proposed shipping activity will not result in additional safety risks to hunters or the community that cannot be mitigated, for instance, by transiting through a path of less consolidated ice in Eclipse Sound and Milne Inlet <p>The Qikiqtani Inuit Association, Hamlet of Pond Inlet and Mittimatalik Hunters and Trappers (MHTO) agree to review and respond to requests of the Proponent within a reasonable timeframe that will not unduly delay shipping activities. The Proponent is required to review and respond to items raised by QIA, Hamlet of Pond Inlet and MHTO including requested changes to monitoring, mitigation and compensation associated with the variance or exceptional circumstance. All determinations related to variances and exceptional circumstances will be communicated to NIRB.</p> <p>For greater clarity, this condition applies to all ships supporting the Mary River Project including ore carriers and supply ships.</p>
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	Proponent to report annually on commencement and closing of shipping season. Proponent will include conditions leading to decisions to commence and cease shipping for the year.
Status of PC Term and Condition	Southern Transportation Corridor (Steensby Port) – Not Active Northern Transportation Corridor (Milne Port) – Active
Status of Compliance	Southern Transportation Corridor (Steensby Port) – Not Applicable Northern Transportation Corridor (Milne Port) – In Compliance
Stakeholder Review	Mittimatalik Hunters and Trappers Organization, Qikiqtani Inuit Association, Hamlet of Pond Inlet
Reference	2022 Shipping and Marine Wildlife Management Plan (Baffinland, 2022d) 2023 Shipping Season Meeting Records
Ref. Document Link	Appendix B.2.2

METHODS

Several mitigation measures, including those relevant to shipping operations and icebreaking activities associated with the current Project committed to by Baffinland to avoid and/or minimize adverse effects from shipping on marine mammals along the Northern Shipping Route, are adhered to by Baffinland and are identified in Baffinland's Shipping and Marine Wildlife Management Plan (Appendix G.8.5 of Baffinland, 2022d). This includes:

- Avoidance of breaking landfast ice at all times during the shipping season.
- Confirmation of a continuous path of 3/10th ice concentrations along the Northern Shipping route is available prior to commencement of the shipping season.

- Plan for and cease all shipping from Milne Port by October 31.

Baffinland has also developed an internal communications protocol that summarizes the need for a confirmation by the Mittimatalik Hunters and Trappers Organization (MHTO) or the Hamlet of Pond Inlet that the floe edge has been closed to hunters. Note that no floe edge remains when ice concentrations have degraded to 3/10ths or less this is no longer a necessity.

RESULTS

Baffinland's shipping season commenced on August 9, 2023 and ended on October 31st when the last vessel exited the Regional Study Area. The duration of the 2023 shipping season was 83 days and consisted of 75 ore carriers. Baffinland hosted a call in radio show on June 27th, 2023 outlining plans for the 2023 shipping season. Additionally, Baffinland held a joint pre-season shipping meeting with the Hamlet and MHTO on June 28, 2023 in Pond Inlet. Two (2) end of season meetings were held on December 7th, 2023 with the Hamlet Council and MHTO Board, respectively. A call in radio show was held December 8th, 2023 and highlighted the outcomes of the shipping season for the community of Pond Inlet. For a summary of shipping season records of communication please see Appendix B.2.2.

Confirmation was received via email that Hunters were off the ice and that the Floe Edge was closed on July 27th, 2023. Baffinland commenced shipping on August 9, 2023 once it was confirmed by an ice analyst that ice concentrations met the requirements of Term and Condition No. 185. This year, the ice decay was very slow compared to previous years and the shipping season started about two weeks late. Based on the last 15 years of regional ice data, the average date by which the 3/10ths ice conditions criteria for transiting through Eclipse Sound was met is July 30, with the latest date being August 7. In 2023, as of August 7, ice concentrations remained at 9/10ths through Eclipse Sound and the ice charts, satellite imagery and weather forecasts indicated that a continuous path of 3/10ths may not appear through Eclipse Sound until the week of August 14.

For these reasons, Baffinland proposed a variance to TC No. 185 on August 8th from the Hamlet and MHTO seeking to contract the Canadian Coast Guard to provide escort through the heavy ice conditions. Letters of support were provided to Baffinland on August 9th from the Hamlet and MHTO. On that day, a continuous path of 3/10ths concentration was present and the first convoy of two tugs and a resupply vessel proceeded to Milne Inlet. However, on August 10th, the conditions rapidly changed. The second convoy of vessels (3 ore carriers and 1 fuel re-supply) encountered a shift in ice conditions preventing safe passage to Milne Inlet. These vessels remained drifting in Eclipse Sound while waiting for conditions to change. They made a second attempt to proceed to Milne Port in the evening but were unsuccessful. Given these circumstances, the Canadian Coast Guard (CCG) was notified and began making its way into Eclipse Sound. The first convoy of two tugs and the re-supply vessel arrived at Milne Port on August 10th, at 6:16 am, without the use of escort and within the ice conditions required under Term and Condition No. 185.

The CCG and vessel captains were instructed to maintain the 9 kn speed restriction. Additionally, Baffinland's aerial survey team flew the western section of Eclipse Sound with the intent to provide ship captains with the most optimal navigational path through the ice. When the CCG arrived on August 11th, the ice conditions shifted again to allow safe passage without ice breaking. Confirmation was obtained by Baffinland from the CCG that they did not break ice during this excursion. Aerial photos from that day show clear open water in Milne Inlet and reports from vessel captains indicated no pack ice present with pack ice having shifted to the western shores in Eclipse Sound.

A second exploratory request was sent to the MHTO and Hamlet on September 28 requesting feedback on the concept of shipping past October 31st (variance to TC No. 185(c)) due to the unanticipated delays with the start of season. The request was to ship past October 31st but no later than November 15th should ice conditions to make up

the lost time at the beginning of the season. Baffinland did not extend the season past October 31st. The last vessel left Milne Port on October 30th and cleared the RSA on October 31st, concluding the 2023 shipping season.

TRENDS

Not applicable

RECOMMENDATIONS / LESSONS LEARNED

Baffinland will continue to implement its Shipping and Marine Wildlife Management Plan which is consistent with this Term and Condition and which stipulates that start of shipping be delayed until a continuous path of no greater than 3/10ths ice exists along the Northern Shipping Route, that it will cease its shipping activities no later than October 31 on every calendar year, and at all times shipping through landfast ice will be avoided. Should unforeseeable conditions arise, like this year, Baffinland will follow the steps to seek a variance and will report on such in following annual reports.

Project Certificate Term and Condition No. 186

Category	Terrestrial Environment – Hunters’ Access Route(s)
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To establish a safe access route for hunters to travel within the project area thereby reducing the shared use of the Milne Inlet Tote Road.
Term or Condition	The proponent is required to construct and maintain hunters access route(s) in and around the Milne Inlet Tote Road. The specific location of hunters’ access route(s) shall be confirmed based upon input from the Mittimatalik Hunters and Trappers Organization and the Qikiqtani Inuit Association. The responsible parties shall also develop and jointly approve an Access Route Operations and Maintenance Procedure and/or Plan.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	All hunters’ access route(s) developed under this section and a summary of related engagement activities are to be reported in the proponent’s annual monitoring report.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	QIA, MHTO
Reference	Not applicable
Ref. Document Link	Not applicable

METHODS

Baffinland has continued to work with the MHTO to advance the proposed trail modification adjacent to the Project Area along the Tote Road at KM 13. This proposed work is what prompted the development of this term and condition between Baffinland and the QIA. This item was most recently discussed between Baffinland and the MHTO in Pond Inlet in February 2023 and again in July where the MHTO provided a motion to support the work at KM 13. Based on these engagements, Baffinland understands the MHTO’s preference remains to modify a section of trail on the opposite side of Phillips Creek from where the Tote Road exists, in an area outside the Commercial Lease. To ensure the trail is constructed as envisioned, and to ensure all requisite permits are in place, Baffinland requested the MHTO provide the GPS coordinates of the route. In the spring of 2023, members of the MHTO and Baffinland staff travelled the proposed route and collected GPS coordinates, which were provided in a Land Use Permit Application to CIRNAC in December 2023. Once approved, construction of the trail will occur during frozen conditions in spring or fall 2024.

Baffinland developed a draft Access Route Operations and Maintenance Procedure and provided it to the Qikiqtani Inuit Association (QIA) in January 2024 for review. The draft Procedure outlines a process whereby members of the MHTO can identify the need for a modified or new trail in areas adjacent to and/or over project infrastructure for MHTO Board consideration, how the Board can refer works to Baffinland, how Baffinland will evaluate the feasibility of the proposed works and respond to the MHTO, and how Baffinland and the MHTO will implement the proposed works. Baffinland, the QIA and the MHTO must jointly approve the Procedure before it is finalized.

RESULTS

Pending the issuance of the required Land Use Permit and the existence of frozen water conditions, construction of the KM 13 trail will begin. Baffinland will continue to work with the QIA and MHTO to finalize the Access Route Operations and Maintenance Procedure.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Not applicable.

Project Certificate Term and Condition No. 187

Category	Terrestrial Environment – Dust Audit
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To consistently assess and monitor impacts of dust from project activities for the purpose of assessing the efficacy of project mitigation measures and to examine alternative mitigation and management options.
Term or Condition	The Proponent is required to resource an annual audit of dust impacts and mitigations associated with project activities to be completed by a third party acceptable to the responsible parties. The dust audit shall evaluate effectiveness of current measures and if necessary, contain recommendations and options to reduce the spread and impacts of dust from project activities.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	Each year a dust audit shall be completed and shared with NIRB by the Proponent not later than January 31st.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	North Baffin Hamlets and HTO's; Qikiqtani Inuit Association
Reference	Baffinland Dust Audit Report – Final Recommendations Report (Nunami Stantec, 2022.)
Ref. Document Link	Not applicable

METHODS

In June 2021, Baffinland submitted a Notice and Request to five (5) North Baffin communities of Arctic Bay, Clyde River, Igloolik, Pond Inlet, and Sanirajak regarding a commitment to the NIRB to resolve outstanding issues with the Phase 2 Proposal identified by the Pond Inlet Hamlet Council, including dust-related issues. The Dust Audit Committee was formed in response to a commitment outlined in Appendix C – Final Table of Post Phase 2 Approval/Regulatory Phase Commitments for the Mary River Project Phase 2 Proposal issued on January 24, 2022. This commitment was later integrated into Amendment No. 04 to Project Certificate No. 005 as Term and Condition No. 187, which allowed for the operation to continue at a transportation rate of 6 Mtpa for 2022 (NIRB, 2022a).

Baffinland contracted Nunami Stantec to conduct a third-party audit involving the five (5) Inuit communities on North Baffin to identify the greatest sources of fugitive dust at the Mary River Project and any modifications or controls that could effectively reduce the generation or spread of dust.

The Dust Audit Committee is comprised of nominated representatives from the hamlets and their Hunter and Trappers' associations including Arctic Bay, Clyde River, Igloolik, Pond Inlet, and Sanirajak, as well as representatives from the QIA, and facilitators and engineering subject matter experts from Nunami Stantec and CWA Engineers Inc. (CWA).

The objectives and deliverables of the Dust Audit were established in alignment with the commitment from Baffinland and through collaborative discussions with the Dust Audit Committee. The study was facilitated by Nunami Stantec, involving engagement specialists and engineers and supported by CWA. The methodology used to develop recommendations included discussions on key components of dust and dust sources, such as:

- Known current sources of dust.
- Known and current mitigations for dust suppression at the Mine Site, Milne Port, and the Tote Road on which ore is hauled from the mine to the port.
- Potential future sources of dust.
- Harvested species or resources impacted by dust.
- Timing or seasons for harvesting that are impacted by dust (if applicable).
- Changes to land access due to perceived impacts of dust.

The methodology considers Baffinland's commitment to identify present and future sources of dust and mitigations, to ensure proper dust controls are in place, and the approach to include Inuit Qaujimajatuqangit (IQ) in understanding and recording recommendations of the Dust Audit Committee.

In 2023, Nunami Stantec facilitated three Dust Audit Committee meetings and continues to meet and review recommendation implementations for the next report.

RESULTS

The Dust Audit Committee submitted a final report (Nunami Stantec, 2023) to the NIRB in February, 2023, after completing an evaluation of existing and proposed dust controls and identifying where improvements or additional measures are required. The final report evaluated the effectiveness of the current measures and put forward recommendations and options to reduce the spread and impacts of dust from the project activities. In August, 2023, Baffinland provided a response to the Dust Audit Committee's final report and continues to provide updates on the progress of mitigations for the Committee's review.

Baffinland has also committed to provide sufficient funding for the Dust Audit Committee to continue to support the annual dust audit and associated reporting for the life of the Project, and for any other work of the Dust Audit Committee where it supports other areas of the project. (QIA TC# AE-4 – Appendix B Project Certificate No. 005). Nunami Stantec continues to facilitate the Dust Audit Committee and will provide a second annual dust audit report to be submitted to the NIRB in 2024. The Dust Audit Committee is planning a third site visit to Mary River Project in 2024.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland intends to continue to maintain the Dust Audit Committee in support of the annual dust audit required of Term and Condition No. 187. Updates with respect to the implementation of recommendations contained within the Final Recommendations Report will be provided to the NIRB annually and on an as needed basis. Baffinland will encourage community participants to the Dust Audit Committee to communicate what they contribute to and learn from these engagements. Baffinland will include frequent updates on dust mitigation and monitoring, inclusive of

the progress towards meetings the recommendations of the Dust Audit Committee in public engagements, working group meetings, and other regulatory processes.

The Dust Audit Committee has communicated to NIRB its intention to submit a 2023 Recommendation Report in Q2 2024.

Project Certificate Term and Condition No. 188

Category	Terrestrial Environment – High Risk Conditions for Dust Dispersion
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	To establish a program to identify high risk conditions for dust dispersal, and a plan for additional measures to be taken at the times the conditions are present, which may include the use of additional dust suppression and operational staged decreases in dust generating site activities. Baffinland, working with the TEWG will establish site specific thresholds for conditions that may increase dust dispersion (i.e., wind speed), and corresponding mitigations to implement when thresholds are met.
Term or Condition	The Proponent working with the TEWG is required to develop a program for identification of conditions with high risk for dust dispersal and plan for additional mitigation measures that shall be applied at the times the conditions are present. The program shall also include the use of dust suppressants.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	The program shall be developed and implemented with the advice of the TEWG not later than December 31, 2022 with annual reports on implementation and any modifications to this plan presented through annual reporting.
Status of PC Term and Condition	Active
Status of Compliance	In Progress
Stakeholder Review	Not applicable
Reference	Not applicable
Ref. Document Link	Appendix G.5.3

METHODS

Baffinland continued to develop the program to identify high risk conditions for dust dispersal throughout 2023. This involved various data collection throughout 2023 to support establishing thresholds for each monitoring trigger against ‘high risk conditions’.

RESULTS

See Appendix G.5.3 below that outlines the draft program that will be reviewed with the QIA and TEWG. Meetings between Baffinland and QIA that occurred as per QIA-FE-1 commitment and ongoing feedback have been incorporated into the program development. The monitoring program involves continuous dust monitoring at various points along the material handling chain, visual assessments and various meteorological conditions.

TRENDS

Not applicable

RECOMMENDATIONS / LESSONS LEARNED

Further investigations and trials in 2024 are planned to assess effectiveness of mitigations as well as to further define data collection and responses incorporating feedback from the QIA. Baffinland will also continue to provide updates on the progress for this program development to the NIRB, QIA and the TEWG.

Project Certificate Term and Condition No. 189

Category	General
Responsible Parties	The Proponent
Project Phase(s)	Construction, Operations, Temporary Closure /Care and Maintenance, Closure and Post-Closure Monitoring
Objective	There is a need to ensure that Proponent commitments which are made on the public record but not recorded in Project Certificate Terms and Conditions are carried out as agreed to. An interim Project Monitor, appointed on agreement of the Responsible Parties, will review and report on a bi-annual (twice yearly) basis regarding the Proponent's performance of Project Certificate Terms and Conditions and the Proponent commitments listed in Appendix B to this Project Certificate No. 005.
Term or Condition	The Proponent is to carry out all commitments listed in Appendix B to this Project Certificate No. 005. Performance of these commitments will be evaluated by an interim Project Monitor appointed on agreement of the Responsible Parties. Where the Proponent has not carried out a commitment the Proponent is required to provide a detailed written description to the NIRB, clearly explaining why they were unable to carry out the condition and how it will meet the condition going forward.
Relevant Baffinland Commitment	Not applicable
Reporting Requirement	Reports including the findings of the interim Project Monitor shall be provided to NIRB no later than March 31st and September 30th of each calendar year.
Status of PC Term and Condition	Active
Status of Compliance	In Compliance
Stakeholder Review	QIA; Government of Canada
Reference	Mary River Project Certificate 005 Appendix B Commitments, Interim Status Update
Ref. Document Link	Appendix F.2

METHODS

Two (2) interim status updates on efforts to implement the commitments contained within Appendix B of Project Certificate No. 005 were jointly developed by Baffinland and the QIA and submitted to the NIRB on March 31, 2023 (Baffinland and QIA, 2023; NIRB Registry No. 344398) and September 29, 2023 (Baffinland and QIA, 2024; NIRB Registry No. 347322) and are available on the NIRB registry. A third status update was jointly developed by Baffinland and the QIA and submitted to the NIRB on March 31, 2024 (Appendix F.2). The status updates submitted in 2023 were limited to the commitments agreed to through the PIP Renewal reconsideration process as they were the only commitments contained in Appendix B of Project Certificate No. 005 Amendment No. 04 at the time of reporting. The status update submitted in 2024 included additional commitments agreed to through the Sustaining Operations Proposal reconsideration process and reflected in Table 2 of Appendix B in Project Certificate No. 005, Amendment No. 05 (NIRB, 2023a).

The reports include a summary table that provided a current status update for each commitment, a designation of compliance (In Compliance or Not) and a qualifier (Complete, In Progress).

RESULTS

There are currently a total of 103 distinct commitments that are tracked on an ongoing basis by Baffinland and the QIA since the issuance of Project Certificate No. 005, Amendment No. 05. Currently, 41 of the commitments are now “Complete” while 61 are “In Progress” and only 1 remains “Not Applicable”. Baffinland and QIA are considered “Compliant” with 101 of the 103 total commitments, with only one assignment of “Non- Compliant” and one assignment of “Not Applicable”.

Baffinland and QIA will continue to report regularly to the NIRB to support transparency and understanding that commitments made during the PIP Renewal and the SOP NIRB Reconsideration Processes held in 2022 and 2023, respectively, are being implemented by Baffinland and QIA.

TRENDS

Not applicable.

RECOMMENDATIONS / LESSONS LEARNED

Baffinland and QIA have worked together to establish a Terms of Reference and election of an Interim Project Monitor to support the Mary River Project. Once the position has been finalized, Baffinland and the QIA will introduce the Interim Project Monitor via letter to the NIRB for their reference.

In parallel with the items described above, Baffinland, QIA, and the Government of Canada have been working together since November 2022 to develop a new role which, if established, would replace the Interim Project Monitor. All parties are working to ensure that impacted communities’ views are represented in the development of the final Terms of Reference. To that end, the GoC, QIA and Baffinland hosted a two-day workshop as recently as March 26-27, 2024 with representatives from all five impacted communities.

A further status report (including on community engagement initiatives) will be provided to NIRB in the coming months.

5 NIRB CORRESPONDENCE

5.1 NIRB SITE VISITS AND INSPECTIONS

The objective of the NIRB's site visits to the Mary River and Milne Port sites is to determine whether, and to what extent, the land or resource use in question is being carried out within the predetermined PC Terms and Conditions as set out in the amended Project Certificate issued for the Mary River Project, in accordance with Section 12.7.2(b) of the Nunavut Agreement. As described by the NIRB, the observations resulting from the site visits shall, wherever possible, be incorporated into the measurement of the relevant effects of the Project, provide the information necessary for agencies to enforce PC Terms and Conditions of land or resource use approvals, and will be further used to assess the accuracy of the predictions contained in the project impact statements in accordance with Section 12.7.2 of the Nunavut Agreement, and s. 135 (3) of the *Nunavut Planning and Project Assessment Act* (NuPPAA); NIRB, 2023d;).

In 2023, the NIRB conducted two (2) in-person site inspections at both the Mine Site and Milne Port, which took place on the following days:

- April 17 to 19, 2023 and;
- October 3 to 5, 2023.

Upon completion of the 2023 site visits, NIRB Monitoring Officers met with Baffinland staff to discuss observations noted during the site visit. These meetings allowed for Baffinland Operations staff to directly engage with NIRB, and for NIRB to provide an overview of their findings, including specific areas of the Project where improvement could be made, or where adjustments to environmental mitigation measures could be implemented. Baffinland's senior management team was present for these meetings, such that any concerns identified could be addressed and corrected with the appropriate department in a timely and effective manner.

It was noted by NIRB staff following the April 2023 site visit that based on the on-site observations, "Mary River Project facilities in operation appear to be generally well maintained and well sorted with adequate environmental protection measures and procedures in place." (NIRB, 2023d)

Specific areas of the operations or other topics of concern were noted by NIRB staff:

- NIRB noted that the snowmobile crossing at KM 90 was not clearly identified and could not be observed. Also, a culvert was opened for future steaming beside the crossing. The trench was observed to be unsafe and should be flagged off and that the crossing should be opened and clearly delineated. The area was signed and hazards were identified. All concerns were addressed by May 11, 2023.
- NIRB did observe dust dispersal and/or distribution along the Tote Road and at Milne Inlet from the air. Baffinland and NIRB discussed Baffinland's strategies for the Tote Road and the Ore Piles and NIRB staff did observe DusTreat® being applied to the Ore Piles. NIRB did note that the dust and distribution of dust throughout the surrounding areas is a continued concern based on the Community Update Session and will continue to consider the issue through the monitoring year.

Following NIRB's completion of the October 2023 site visit, NIRB staff noted that "Baffinland appears to have a well-managed and well-maintained site including adequate environmental protection measures and procedures in place as per the Project Certificate and their Management Plans. Including some additional trials ongoing to explore alternative options for dust suppression." (NIRB 2023e; NIRB Registry No. 348404)

A summary of the conclusions from these monitoring inspections, in addition to general performance related to the PC No. 005 is also provided in The Nunavut Impact Review Board's 2022-2023 Annual Monitoring Report for Baffinland Iron Mines Corporation's Mary River Project (NIRB, 2024; NIRB Registry No. 348734).

5.2 COMMENTS ON THE 2022 ANNUAL REPORT TO THE NIRB

Baffinland submitted its 2022 Annual Monitoring Report (the 2022 NIRB Annual Report; Baffinland, 2023c; NIRB Registry No. 345091) to the NIRB on May 3rd, 2023. The NIRB subsequently sent a notification to its Mary River Distribution List on May 26, 2023 indicating that the report was now accessible on NIRB's online public registry and requested comments from all interested parties with respect to their jurisdiction and/or area of expertise by July 11, 2023. On July 13, 2023, the NIRB provided Baffinland with all comments submissions received related to the 2022 NIRB Annual Report and requested that the Proponent provide responses to all comments by August 11, 2023.

Comments were submitted by Qikiqtani Inuit Association (QIA; NIRB Registry No. 346057), Government of Nunavut (GN; NIRB Registry No. 346055), Crown Indigenous Relations and Northern Affairs Canada (CIRNAC; NIRB Registry No. 346050), Fisheries and Oceans Canada (DFO; NIRB Registry No. 346051), Environment and Climate Change Canada (ECCC; NIRB Registry No. 346052), Parks Canada (PCa; NIRB Registry No. 346053), Transport Canada (TC; NIRB Registry No. 346054) and Health Canada (HC; NIRB Registry No. 346056) on Baffinland's 2022 NIRB Annual Report. On August 5, 2023, Baffinland provided itemized responses to 153 comments received, from QIA (102), GN (3), CIRNAC (11), ECCC (9), DFO (3), PCa (18), HC (4) and TC (3). Baffinland did not offer any additional suggestions to the NIRB, as done in previous years.

5.3 NIRB'S ANNUAL MONITORING REPORT AND BOARD RECOMMENDATIONS

On January 16, 2024 the NIRB issued its 2022 to 2023 Annual Monitoring Report for Baffinland Iron Mines Corporation's Mary River Project and the Board's Recommendation (NIRB, 2024; NIRB Registry No. 347912). The report included one instruction on page 75 that reads: *Board Staff noted that on several occasions, as part of Baffinland's response to Parties Comments on the 2022 Annual Report, Baffinland would be providing follow-up analysis and updates to specific inquiries. Board staff expect these commitments to be tracked by Baffinland and suggests a summary table be provided to the Board within 60 days of issuance of the Monitoring Report to ensure these are follow-up with and Parties are receiving the information requested.*

Baffinland provided a response including the required updates on March 20, 2024 (Baffinland, 2024k; NIRB Registry No. 348762). It was posted on the NIRB registry March 22, 2024. No other recommendations were provided.

6 MANAGEMENT PLAN UPDATES

Appendix G.8 provides a list of the Management Plans for the Project.

Baffinland's Environmental Management Plans relevant to the Annual Report are available on the document web portal: <https://www.baffinland.com/media-centre/document-portal/>.

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