



Fisheries and Oceans
Canada

Pêches et Océans
Canada

301-5204 50 Ave
Yellowknife NT X1A 1E2

July 04, 2024

Your file Votre référence
08MN053

Our file Notre référence
07-HCAA-CA7-00050

Nunavut Impact Review Board
PO Box 1360
Cambridge Bay, NU
X0B 0C0

Subject: Baffinland Iron Mines Corp. Annual Report 2023- Mary River Project

Dear Cory Barker,

The Fish and Fish Habitat Protection Program (the Program) of Fisheries and Oceans Canada (DFO) received the request on May 09, 2024, inviting parties to review and provide comments with respect to their jurisdiction and/or area of expertise. DFO has reviewed the above 2022 Annual Report in regards to its mandate, i.e. the management, protection and conservation of fish and their habitats. The Nunavut Impact Review Board (NIRB) invited parties to respond to the following topics:

1) Effects Monitoring

- a) *Whether the conclusions reached by Baffinland in the 2023 Annual Report are valid; and*
- b) *Any areas of significance requiring further supporting information or any changes to the monitoring program which may be required.*

2) Compliance Monitoring

- a) *Provide a summary of any compliance monitoring and/or site inspections undertaken in association with the Project, including specifically;*
 - i) *Identify the terms and conditions from the Project Certificate which have been incorporated into any permits, certificates, licenses, or other approvals issued for the Project, where applicable, and report annually to the NIRB on the status of those incorporated terms and conditions;*
 - ii) *A summary of any inspections conducted during the 2023 reporting period, and the results of these inspections; and*
 - iii) *A summary of Baffinland's compliance status with regard to authorizations that have been issued for the Project.*

DFO has reviewed the Baffinland's 2023 Annual Report and DFO is generally agreeable with Baffinland's reporting. DFO also support comments, relevant to the marine environment, provided by Parks Canada, Transport Canada, and Environment and Climate Change Canada.

DFO appreciates the effort made by Baffinland to work with communities and governments. DFO has attached a table with comments or concerns to provide at this time related to effects monitoring.

Compliance Monitoring

The Proponent currently operates under three *Fisheries Act* Authorizations for the Milne Inlet Tote Road, Milne Inlet Ore Dock, and Milne Inlet Freight Dock (amended to include the offsetting). As a general condition of the Authorizations, Baffinland is required to report on their compliance with all conditions therein to DFO annually. These reports are typically submitted to the NWB and to the NIRB through the Annual Report. Terms and Conditions # 87, 105, 109, 110 and 121 from the Nunavut Impact Review Board's Project Certificate No. 005 for the Mary River Project are directly incorporated into DFO's

Fisheries Act Authorization for the Milne Inlet Ore Dock.

Other terms and conditions from the NIRB Project Certificate No. 005 for the Mary River Project, while not directly incorporated, fall under DFO's mandate and overlap with conditions in Baffinland's existing Fisheries Act Authorizations such as follows:

- Milne Inlet Tote Road: Project Certificate No. 005, Terms and Conditions 19, 26, 45, 47, 48(a);
- Milne Inlet Ore Dock: Project Certificate No. 005, Terms and Conditions 45, 76, 88, 99, 101, 106, 113, 115, 123;
- Milne Inlet Freight Dock: Project Certificate No. 005, Terms and Conditions 14 (a), 45, 76, 88, 99, 101, 113, 115, 123, 128.

Milne Inlet Freight Dock (DFO File # 18-HCAA-00160) and Freight Dock Amendment (DFO File # 23-HCAA-00430)

The *Fisheries Act* Authorization for the Milne Inlet Freight Dock required Baffinland to create 2729 Habitat Equivalent Units (HEUs) of fish habitat to offset for the destruction of 2170 HEUs of fish habitat from the Freight Dock construction. As such, Baffinland placed coarse rock substrate around the perimeter of the ore dock and at moorings to create a rocky reef. The Freight Dock and offsetting is currently in a monitoring phase, DFO plans to conduct a site visit in Summer 2024.

Milne Inlet Tote Road (DFO File # 06-HCAA-CA7-00084 and 24-HCAA-00054)

In 2022, DFO took enforcement action and issued a *Corrective Measures Order*, pursuant to the *Fisheries Act*, requiring Baffinland to develop and submit a targeted Sediment and Erosion Control Plan and a Permanent Crossing Plan for crossings where sediment deposition and barriers to fish passage have previously been reported and identified. Baffinland provided a Sediment and Erosion control plan in 2023 but did not develop a Crossing Plan that was accepted by DFO. Baffinland has been working with DFO through 2024 and has remediated 7 of the 20 crossings identified in the Corrective Measures Order and it is expected additional crossings will be remediated this year. DFO is planning compliance visits of the crossings in the summer of 2024.

If you have any questions with the content of this letter, please contact Paul Harper at 867-444-0983, or by email at Paul.Harper@dfo-mpo.gc.ca. Please refer to the file number referenced above when corresponding with the Program.

Yours sincerely,

José Audet-Lecouffe
Team Lead
Fish and Fish Habitat Protection Program
Fisheries and Oceans Canada



Table 1: DFO Technical Comments on Baffinland's 2023 Annual Report

Comment Number	DFO-1
Subject/Topic	Interpretation of the 2023 narwhal abundance estimated in a delayed shipping season.
References	Appendix G.6.2 of 2023 monitoring report - Mary River Project: 2023 Marine Mammal Aerial Survey Program (MMASP) - Technical Report prepared by WSP Canada Inc
Comment	<p>The final recommendations of the MMASP include not continuing the summer (Legs 1 and 2) surveys in 2024 based on the results of the 2023 surveys.</p> <ul style="list-style-type: none">- The BIM survey averaged abundances are compared to the 2013 abundance survey, after project related shipping began, not the 2004 abundance survey from before project related shipping.- BIM's 2023 abundance estimates can be compared to DFO's 2023 estimates when DFO's estimates have been peer-reviewed.
Conclusion/Requests	DFO believes it is premature to reduce the survey frequency and recommends maintaining annual aerial surveys of the RSA during the open water season (leg 2) to identify longer-term trends that subsequent surveys during following years could detect and until the results of the 2023 DFO aerial survey of the Baffin Bay Narwhal population are published.
Comment Number	DFO -2
Subject/Topic	Pre-Project Related Impact Baseline
References	<p>APPENDIX G.6.2 2023 Marine Mammal Aerial Survey Program Report</p> <p>Davies, R.B. 1987. Hypothesis testing when a nuisance parameter is present only under the alternative. <i>Biometrika</i>, 74:33–43, 1987.</p> <p>Davies, R. B. 2002. Hypothesis testing when a nuisance parameter is present only under the alternative: linear model case. <i>Biometrika</i>, 484-489.</p> <p>Muggeo VMR. 2003. Estimating regression models with unknown break-points. <i>Statistics in Medicine</i>, 22, 3055-3071.</p> <p>Muggeo, V. M. 2008. Segmented: an R package to fit regression models with broken-line relationships. <i>R news</i>, 8(1), 20-25.</p> <p>Taylor, B. L., M. Martinez, T. Gerrodette, J. Barlow, and Y. N. Hrovat. 2007. Lessons from monitoring trends in abundance of marine mammals. <i>Marine Mammal Science</i> 23(1):157–175.</p>
Comment	<p>Fisheries and Oceans Canada takes the position that the baseline for Narwhal populations in Eclipse Sound should be the abundance estimate completed over 2004, before there was Mary River Mine related shipping activity.</p> <p>Baffinland Iron Mines Corporation (Baffinland) is using the data from 2013 as the baseline for Narwhal abundance estimates for the Eclipse Sound Stock. Fisheries and Oceans Canada (DFO) and other Marine Environment Working Group (MEWG) members have identified that there has been consistent project related shipping in Eclipse Sound since 2006. DFO's understanding is that Baffinland is proposing the 2013 data date because it is before the start of commercial ore</p>

shipping in Eclipse Sound and that non-Baffinland ships were previously in the area. With regard to concerns that the Coefficient of Variance (CV) is too high in the 2004 Survey, the CV for the 2004 abundance survey was 0.36 (not 0.56 as stated in the WSP Technical Memo on Project Shipping Levels), which is within the range for typical marine mammal surveys. Taylor et al (2007) highlighted a number of abundance studies and respective CVs.

Beginning in 2006, Mary River Project related shipping went farther into Eclipse Sound, into Milne Port, which is farther than other ships traveled into Eclipse Sound.

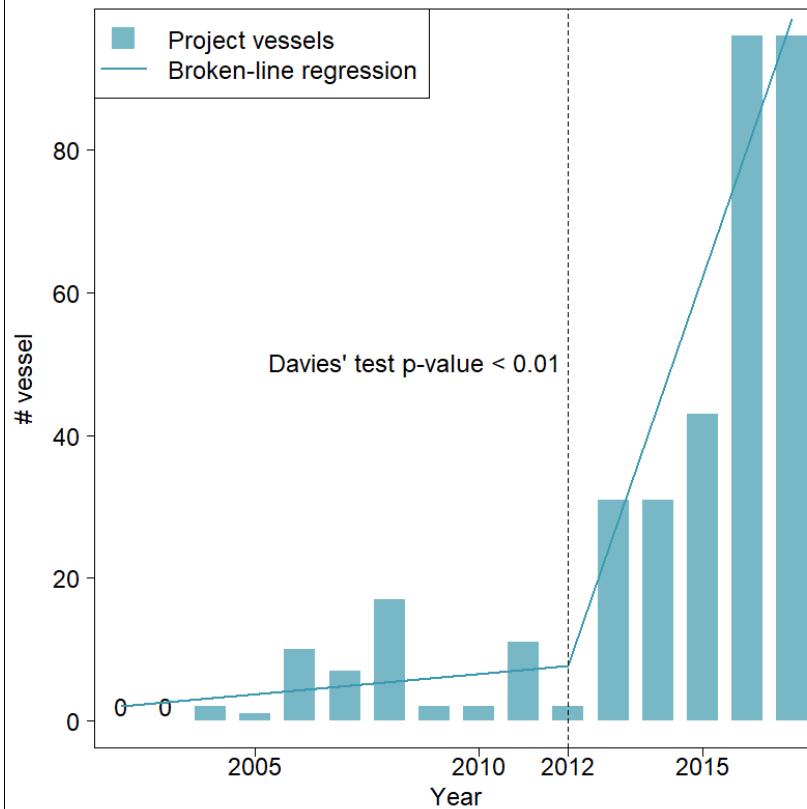
Between 2005 and 2006, Baffinland related activities increased the ship traffic in the area by over 15%, nearly 20% from 2006 to 2007, and 25% from 2007 to 2008 including three (3) ore carriers .

DFO used the data presented in NB102-00181/53-A.01, Memorandum - Mary River Project – Phase - Supplement to Technical Supporting Document 27 - Cumulative Effects Assessment (May 16, 2019). According to the memo, the data presented in the column *Milne Inlet* of Table 5 of the document represents project related vessel and is in the table below.

Year	Milne Inlet
2002	0
2003	0
2004	2
2005	1
2006	10
2007	7
2008	17
2009	2
2010	2
2011	11
2012	2
2013	31
2014	31
2015	43
2016	96

2017 96

DFO ran a Regression Models with Broken-Line Relationships (Muggeo 2003) using the package Segmented in R (Muggeo 2008) to the vessel data from 2002 to 2017. The model found a breakpoint at the year 2012.4 (S.E.= 0.548). We ran a Davis Test for a change in the slope value before and after the breakpoint (Davies 1987, 2002) and found that the change in slope and, as a consequence the breakpoint, were significant ($p=0.0001$).



Therefore, this data suggest that there is a break in the level of shipping before and after 2012. The year 2013 happen after the break and should not be used as a baseline.

Conclusion/Requests	DFO recommends that BIM use the 2004, pre-project, abundance survey as the baseline for the Narwhal population.
Comment Number	DFO-3
Subject/Topic	NIS/AIS Watchlist and species identification
References	APPENDIX G.6.8 2023 Marine Environmental Effects Monitoring Program Report 2023 Milne Port Marine Environmental Effects Monitoring Program (MEEMP) and Non-Indigenous Species/Aquatic Invasive Species (NIS/AIS) Monitoring Program
Comment	<p>DFO appreciates the effort to sample and identify species that may be present around the ports. With robust baseline sampling (i.e. at Steensby), species presence before project related activities should be identified and species detected before project activities begin.</p> <p>Species are being removed from the Watch list based on presence in surrounding regions. For example, <i>Sosane wireni</i> was removed from the Watch List because the probable extension of the range into the Eastern Arctic from the western Canadian Arctic. It would be preferable to include ecoregions where taxa were previously found/known to be distributed. These could be included in brackets after written descriptions (e.g., Ellesmere Baffin Island area) or after the numbered references to help readers in evaluating what is being considered the “surrounding region” for previous occurrence records and to have a more precise understanding of the known distributions of each species. In addition, a review of ocean circulation patterns would provide improved criteria to define ‘surrounding region’ and distribution categories and better identify the natural distribution and range of a species from other areas to Milne or Steensby Ports.</p>
Conclusion/Requests	<ol style="list-style-type: none"> 1. DFO recommends the use of biogeographic information in combination with knowledge of circulation patterns to better develop criteria for “surrounding region” and distribution categories. 2. DFO recommends that BIM continue to work with DFO to revise and improve detection of potential NIA/AIS as well as continued investigation into the long-term effects of the introduction of non-indigenous species and the cumulative effects on the biome, and the development of future mitigation and avoidance of introducing further non-indigenous taxa into Milne Port and Steensby Port.
Comment Number	DFO-4
Subject/Topic	Noise
References	<p>APPENDIX G.6.5. 2023 Underwater Acoustic Monitoring. Program (Open-Water Season) Report. Austin, M.E., K.A. Kowarski, and C.C. Wilson. 2024. Baffinland Iron Mines Corporation — Mary River Project: 2023 Underwater Acoustic Monitoring Program (Open-Water Season). Document 03260, Version 1.0. Technical report by JASCO Applied Sciences for WSP Canada.</p> <p>National Marine Fisheries Service (NMFS). 2013. <i>Marine Mammals: Interim Sound Threshold Guidance</i> (webpage). National</p>

	Marine Fisheries Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.
Comment	BIM is using 120 dB as the general marine noise threshold as defined by the US National Marine Fisheries (NMFS 2013) in the absence of species-specific thresholds. As part of an adaptive management approach, potential impacts that might be observed below previously set threshold levels should be identified and the threshold re-assessed in a precautionary approach to protect the resource.
Conclusion/Requests	DFO would like to see the 100dB level included in reporting to provide a comparison of marine mammal reactions and behaviour at 100dB to provide a precautionary approach and potentially develop a more species-specific noise threshold.
Comment Number	DFO-5
Subject/Topic	Works impacting Freshwater
References	APPENDIX G.2.4.2 2nd 2023 Geotechnical Inspection Report (August 30 – September 5, 2023) APPENDIX G.2.6 Tote Road Fish Habitat Monitoring Annual Report
Comment	Works including the replacement and maintenance of crossing structures, the removal of material from waterbodies/watercourses such as abutments, and armour around waterbodies have the potential to impact fish and fish habitat. Fisheries and Oceans Canada recommends that Baffinland Iron Mines Corporation (BIM) review and follow DFO's Projects Near Water website that provides current guidance for avoiding impacts to fish and fish habitat including Standards and codes of practice (dfo-mpo.gc.ca) with Codes of Practice containing conditions and measures for managing risks to fish and fish habitat or Standards outlining how a specific management measure should be designed and implemented to achieve the objective.
Conclusion/Requests	If the Standards and Codes of Practice can not be followed, work in fish habitat or on watercourses that contribute to fish habitat should be submitted to DFO for review.
Comment Number	DFO-06
Subject/Topic	Alluvial delta complexes and shoreline sensitivity
References	BIM 2024. 2023 NIRB Annual Report APPENDIX G.8.5 2023 Oil Pollution Emergency Plan – Milne Inlet Section 5.3.1 Shoreline Characteristics and Sensitive Zones p 16 of 68 BIM 2024. 2023 NIRB Annual Report APPENDIX G.8.5 2023 Oil Pollution Prevention Plan – Milne Inlet Section 5.1.3 Meteorological Data p 14 of 39 BIM 2024. 2023 NIRB Annual Report APPENDIX G.8.5 2023 Oil Pollution Prevention Plan – Milne Inlet, Section 5 p 11 of 39.
Comment	Information is required to fully understand the alluvial delta complexes and shoreline sensitivity analysis
Conclusion/Requests	DFO requests that BIM respond to questions below regarding the small percentage (1%) of alluvial delta complexes present (p 16 of 68) <ol style="list-style-type: none"> 1. What is BIM's definition of alluvial delta complex? 2. Please confirm whether there are other delta complexes other than Phillips Creek within the study area, and

	whether these areas have been assessed for potential sensitivity. 3. Has spill trajectory modeling been undertaken in the study area? If so, what wave, tide and current parameters were used? What were the results? Were they incorporated into the sensitivity analysis? See also Section 8.
Comment Number	DFO-07
Subject/Topic	Net environmental benefit analysis
References	BIM 2024. 2023 NIRB Annual Report APPENDIX G.8.5 2023 Oil Pollution Emergency Plan – Milne Inlet Section 5.3.1 Shoreline Characteristics and Sensitive Zones p 16 of 68 BIM 2024. 2023 NIRB Annual Report APPENDIX G.8.5 2023 Oil Pollution Prevention Plan – Milne Inlet Section 5 p 12 of 39
Comment	There is no support information to fully understand why the net environment benefit for attempted restoration of these shores would be detrimental (p 18 of 68)
Conclusion/Requests	DFO requests support document documents to be provided to fully understand why the net environment benefit for attempted restoration of these shores would be detrimental
Comment Number	DFO-08
Subject/Topic	Consistency in wind speed description
References	BIM 2024. 2023 NIRB Annual Report APPENDIX G.8.5 2023 Oil Pollution Emergency Plan – Milne Inlet Section 5.3.2 Bathymetric and Marine Data p 18 of 68
Comment	Wind speed description is not consistent throughout the Oil Pollution Emergency Plan. Average winds of 30 km/h were referenced. Elsewhere in this document, wind speeds are described in m/s
Conclusion/Requests	DFO requests that wind speeds are described in a consistent manner
Comment Number	DFO-09
Subject/Topic	Spill at Sea Response Plan (SSRP)-Cape sized vessel
References	Spill at Sea Response Plan (SSRP)-Table 11-1
Comment	Update table and risk assessment to capture current regime of ship size being used. Plan was developed in 2015 Cape Sized vessel have increased fuel capacity. Approx. 4000m3

11 FUEL CHARACTERISTICS

Table 11-1 details the fuel volumes and characteristics that may be onboard transiting vessels under the scope of this SSRP. This table should be used for information only and not for possible spill scenarios. Reference should be made to Section 15, Fuel Spill Risk Assessment (p.59) for credible spill scenarios.

TABLE 11-1 FUEL INVENTORY

Location	Fuel Type	Volume	*API	SG	Viscosity (cSt @ 40°C)	Pour Point (°C)	Wax Content	ITOPF Group
Tanker	IFO	Combined = 17,000m³	17.6	0.949	0.99	-1	0	III
	Low Sulphur Fuel		17.6	0.949	0.99	-1	0	III
	Arctic Diesel		30-37	0.84-088		-17°C - -30°C		II
	Jet A fuel		45	0.8	1-1.9			I
	Marine Diesel		30-37	0.84-088		-17°C - -30°C		II
	Hydraulic Fluid		<35	0.88	100	<0	0	III
Ore Carrier	IFO	Combined = 3,000m³	17.6	0.949	0.99	-1	0	III
	Low Sulphur Fuel		17.6	0.949	0.99	-1	0	III
Tug Boats	Marine Diesel	100m³	30-37	0.84-088		-17°C - -30°C		II
Dry Cargo Vessels	IFO	1500 m³	17.6	0.949	0.99	-1	0	III
	Low Sulphur Fuel		17.6	0.949	0.99	-1	0	III
	Hydraulic Fluid		<35	0.88	100	<0	0	III

Conclusion/Requests DFO requests an update to include current shipping regime requirements

Comment Number DFO-10

Subject/Topic Spill at Sea Response Plan (SSRP)- Steensby

References Steensby Development Plans

Comment The SSRP only refers to a response in the northern shipping route. DFO is aware of BIMs intention to start construction at the Steensby site during the 2024-25 reporting cycle. If this is the case a response plan should be developed for the

	southern route and ensure capacity is in place for spills at sea regarding Steensby operations.
Conclusion/Requests	DFO notes that a Spill at Sea Response Plan for the Southern Shipping Route should be developed in the context of Steensby port operations.
Comment Number	DFO-11
Subject/Topic	Spill at Sea Response Plan (SSRP)- Coast Guard (CCG) Contacts
References	Appendix 1
Comment	Update contact list for CCG and update region to Canadian Coast Guard Arctic Region
Conclusion/Requests	<p>DFO suggests that spill at sea response plan contact list should be updated with the following:</p> <ul style="list-style-type: none"> • Reporting a marine spill in Nunavut goes through the MCTS in Iqaluit: Toll-free: 1-867-979-5269 E-mail: DFO CCG Arctic ERDO or IqaNordreg@innav.gc.ca • Update Region to Arctic Region. https://www.ccg-gcc.gc.ca/contact/emergency-urgence/marine-pollution-marine-eng.html