

Ontario and Prairie Region
Fish and Fish Habitat Protection Program
5204 Franklin Ave
Yellowknife, NT X1A 1E2

Région de l'Ontario et des Prairies
Programme de la protection du poisson et de son habitat
5204 Franklin Ave
Yellowknife, NT X1A 1E2

Your file -Votre référence
08MN053

Our file- Notre référence
07-HCAA-CA7-00050

June 30, 2022

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

Dear NIRB,

Subject: Baffinland Iron Mines Corp. Annual Report 2021- Mary River Project

As requested by the NIRB (date), Fisheries and Oceans Canada (DFO) is providing the following comments

DFO understands that the NIRB would like parties to provide comments regarding:

1) *Effects Monitoring*

- a) *Whether the conclusions reached by Baffinland in the 2021 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.*

DFO has reviewed the Annual Report have attached our technical comments in a table however a general summary regarding the Proponent's conclusions around effects monitoring is provided below:

Aquatic Invasive Species:

DFO recognizes the steps taken by BIM to monitor AIS and ballast water. BIM has made several commitments (DFO 3.6 new) in regards to ballast water tracking during the Phase 2 Process (P2P), that should be considered irrespective of the allowed tonnage. DFO recommends that continue discussion with Transport Canada and DFO on a path forward to ensure the ongoing protection of Arctic Waters from aquatic invasive species.

Given the both the plans for increased shipping levels and that currently 2 potential AIS have been found already and a further 7 taxa flagged for review in 2021, all monitoring programs that may find and identify AIS should continue, at all shipping levels.

Marine Mammals:

The 2021 draft Marine Mammal monitoring reports submitted to the Marine Effects Working Group are referenced in this annual report. These reports indicate a continued decline or displacement of Narwhal within Eclipse Sound. The proponent states that this effect is not likely to be caused by ongoing shipping effects, citing other causes such as climate change, and predation. This is an unfounded and broad conclusion. Given the lack of data, this is best characterized as an hypothesis that does not have more weight than the counter hypothesis: shipping has caused the displacement of narwhals.

In order to address this and other uncertainty, DFO continues to recommend the development of additional early warning indicators. The chosen EWI for narwhal and associated threshold for impact has not been predictive of the observed decline in abundance and/or potential displacement of Eclipse Sound narwhal observed in 2021, although this may be partly due to methodology. On page 363 and table 4.33 for the 2021 NIRB Annual report, BIM indicates a decrease of 24% in the Early Warning Indicator (EWI) Annual Proportion of Immature Narwhal compared to the 2014 to 2015 Baseline Condition. BIM states that this change is not statistically significant. However, BIM also notes that *“The effect size observed in 2021 [...] may be the result of a low sample size in 2021 which may also explain the absence of power to detect a statistically significant decrease in the EWI”*.

We reiterate EWIs may be confounded by inter-annual variability in other factors, so that monitoring of only one EWI is likely insufficient to actually detect early warning signs that potential adverse impacts may be occurring in any given year or set of years, and may not capture the full suite of potential impacts and associated responses in narwhal.

DFO also recommends that Baffinland work with the MEWG and Inuit to select additional EWIs to ensure that the full suite of potential impacts on narwhal are fully captured in monitoring.

Marine Effects Working Group:

DFO appreciates the effort of the proponent in facilitating the Marine Effects Working Group, however DFO continues to have concerns related to the function of the MEWG, including the manner and timeframe in which documents for review are provided. MEWG meetings are generally dominated by proponent presentations of results. While informative, they leave very little time for meaningful discussion. Providing the material in sufficiently in advance for parties to review would allow for more focused and productive discussions on recommendations as well as advice on potential mitigation and adaptive management measures. If this is not possible, then meetings need to be scheduled over multiple days to allow for the review and discussion of the material.

DFO supports BIM and other MEWG member to revise the terms of reference to ensure the MEWG is an effective and meaningful working group. For instance, the creation of an adaptive management plan was a key commitment throughout the proceedings for the Phase 2 process. The MEWG has to be effective to identify the values, objectives, indicators and target that would trigger responses and to support the development of mitigation strategies.

BIM did provide the draft 2021 monitoring reports to the MEWG members prior to submission of the 2021 annual report to NIRB, however the draft annual reports were not submitted to NIRB as supporting documents. These documents have been referenced throughout the annual report, however

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BIM is still finalizing the reports, and have yet to respond to comments provided by the MEWG members. DFO has included these comments as an appendix to this letter.

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;*

The Proponent currently operates under three *Fisheries Act* Authorizations for the Milne Inlet Tote Road, Milne Inlet Ore Dock, and Milne Inlet Freight Dock. 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 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.

ii. *A summary of any inspections conducted during the 2021 reporting period, and the results of these inspections;*

Due to health and travel restrictions associated with the COVID-19 pandemic, DFO did not undertake any inspections of the Mary River Site in 2021. DFO's Conservation & Protection Program did undertake a reconnaissance flight of the Mary River Mine Site, Tote Road, and Milne Port 2021. Overflights have limited use in identifying some fish and fish habitat information however. No compliance issues with the *Fisheries Act* were captured in the overflights, despite numerous issues with the Tote Road being detailed in the annual reporting (see following).

iii. *A summary of Baffinland's compliance status with regard to authorizations that have been issued for the Project.*

Baffinland is operating under three *Fisheries Act* Authorizations for the Mary River Project. 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 MEWG, and to the NIRB through the Annual Report.

The following comments are from DFO's review of Baffinland's submitted reports for 2021.

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Milne Inlet Tote Road (DFO File # 06-HCAA-CA7-00084): Condition 2.2 states “*Culverts shall be appropriately sized and embedded to maintain upstream and downstream fish passage at each crossing.*”

DFO has received and reviewed BIM's annual Tote Road Fish Habitat monitoring report. Several issues that impacted fish passage were noted. DFO has directed BIM to assess the road in totality for ongoing and chronic issues. Several of the fixes from 2017, and 2019 had failed due to fish ladders being washed away, indicating that review, replacement and re embedment of the culverts are required. Priority culverts were assessed and BIM has identified 17 priority crossing for repair. DFO has received an associated Request for Review and will be conducting a site inspection in late June 2022.

Milne Inlet Ore Dock (DFO File # 14-HCAA-00525):

DFO has closed the Authorization and Baffinland is not required to submit further monitoring to DFO on this component of the Mary River Project.

Milne Inlet Freight Dock (DFO File # 18-HCAA-00160): The *Fisheries Act* Authorization for the Milne Inlet Freight Dock requires 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. 2021 was the second of five years of offsetting monitoring to be conducted and reported for the Freight Dock over a 10 year period, and Baffinland submitted a report to DFO on this monitoring in March 2022.

DFO has conducted an initial review of the monitoring, and does not have any concerns with the information and work conducted by BIM.

If you have any questions, please contact Edyta Ratajczyk (edyta.ratajczyk@dfo-mpo.gc.ca) Please refer to the file number referenced above when corresponding with the Program.

Sincerely,

Alasdair Beattie

Team Lead – Mining, Oil & Gas - NORTH
Fish and Fish Habitat Protection Program
Fisheries and Oceans Canada

Attachment: Table 1. DFO Technical Comments on Baffinland's 2021 Annual Report

Table 1. DFO Technical Comments on Baffinland's 2021 Annual Report

Section	Topic/Reference	DFO Questions/ Comments
Project Certificate Condition No. 19/45/ 47	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 No Net Loss and Monitoring Plan (Knight Piésold, 2007). Assessments of fish bearing water crossings will be continued in 2022 as part of the Project's fish habitat monitoring program.	DFO and Baffinland have met on several occasions to discuss on going impacts of sediment and erosion on the tote road. Passage issues on several sites have been identified. DFO notes that culverts need to be maintained as designed to ensure adequate fish passage. Any restriction of flow due to sedimentation or loss of pipe integrity is considered an impact to fish passage. DFO has received a request for review for some remediation work for the Tote road and is conducting a site visit in late June.
Project Condition Certificate No.77	Revisions to the MEWG Terms of Reference (TOR)	DFO supports the continued revisions to the TOR to ensure that the intent and vision as an advisory body is achieved. The ability of the Group to develop key thresholds and suggest mitigations has been discussed throughout the Phase 2 processes.
Project Certificate Condition 86/87	Referencing Draft 2021 MEEMP and NIS/AIS (Golder, 2022a) however it is not in the reference list.	Add draft reports as appendices
Project Certificate Condition 86/87	Of the new taxa, all but one (<i>Tricellaria</i> sp.) had clear records of occurrence in the Canadian Arctic with no record on the AIS databases. Accordingly, <i>Tricellaria</i> sp. was sent for independent verification, and results are pending.	Please inform DFO the results.
Project Certificate Condition 87	NIS/AIS results will continue to be presented to	DFO notes that in the 2021 Marine Environment Effects Monitoring

	<p>the MEWG on an annual basis, and adjustments to the programs will be made as needed. It is recommended that sampling across multiple trophic levels continues in 2022, that the taxonomic inventory for Milne Inlet continue to be expanded upon, and that all flagged specimens continue to be screened for known geographic ranges and NIS/AIS status.</p>	<p>Program and AIS Monitoring Program a modification was made to remove zooplankton sampling. DFO recommends that BIM consult with DFO and the MEWG prior to modifying monitoring programs.</p>
Project Certificate Condition 101.	<p>Lessons Learned: e) Despite the elimination of both potential anthropogenic causal factors (underwater noise from icebreaking and impact pile driving for small craft harbour construction) in 2021 through adaptive management, results from the 2021 monitoring programs again indicated lower narwhal numbers in Eclipse Sound during the 2021 shipping season. Underwater noise from these sources is therefore not considered to be an influencing factor on narwhal abundance in Eclipse Sound during the 2021 season. Open-water shipping, the other Project contributor of noise in the RSA, is also not considered a likely cause of narwhal displacement from the RSA based on the available visual, acoustic, and tagging results collected to date. Given that the combined stock estimate for Admiralty Inlet and Eclipse Sound indicate that</p>	<p>-Provide data or references that are specific to Eclipse Sound and Admiralty Inlet. At the moment, there is no support for the hypothesis that the conditions have changed between Eclipse Sound and Admiralty Inlet and are the cause of the change in distribution of narwhals.</p> <p>Based upon DFO's review of the draft 2021 Marine Mammal Monitoring Report, DFO recommends reassessing how the abundance measurement is calculated. Best practice is to average all the study replicates.</p> <p>Recent publications have indicated effects to Narwhal caused due to anthropogenic noise even if it is below ambient noise levels.</p> <p>Trevo, Blackwell, Ditlevsen, Conrad, Samson, Garde, Hansen and Peter (Nov 2021) Narwhals react to ship noise and airgun pulses embedded in background noise. Biol. Lett. 17: 20210220. https://doi.org/10.1098/rsbl.2021.0220</p>

	<p>the regional narwhal population remains stable relative to pre-shipping conditions, and in consideration of the available IQ regarding the degree of exchange between narwhal groups on their summering grounds, the observed decrease in narwhal relative abundance in Eclipse Sound most likely reflects natural exchange between the two putative stock areas, or alternatively, that animals, at this point in time, are finding more favourable ecological conditions enroute to, and in Admiralty Inlet, due to changing ice conditions, prey availability and/or predation pressure, all of which are known to be influenced by a rapidly changing climate in the Arctic. It is also possible that what is occurring is a combination of the two instances, where a natural exchange of narwhal is being driven by local and temporary ecological differences. To better understand what is occurring additional engagement and monitoring is needed, inclusive of regional scape monitoring that looks at the population dynamics of the Baffin Bay narwhal stock as a whole.</p>	<p>To state that open water shipping is not the likely cause of displacement, is in conflict with the precautionary approach, and is not supported by literature or IQ. Further mitigations should discussed by the MEWG.</p> <p>Currently, DFO recognizes efforts by BIM to further reduce ship interactions with marine mammals, including the proposal to travel within convoys and no ice breaking.</p>
Project Certificate Condition 111	<p>Early warning indicators: During 2021, a total of 80 narwhal groups (comprising 263 individuals) were observed in the Behavioral Study Area, including 19 calves and 7 yearlings. The</p>	<p>On page 363 and table 4.33 for the 2021 NIRB Annual report, BIM indicates a decrease of 24% in the Early Warning Indicator (EWI) Annual Proportion of Immature Narwhal compared to the 2014 to 2015 Baseline Condition. BIM states</p>

	<p>combined annual proportion of immatures relative to the total number of narwhal observed in 2021 was 0.102. This represented a 24% decrease from the 2014 to 2015 baseline condition but did not statistically significantly differ from the 2014 to 2015 baseline (p=0.13)</p>	<p>that this change is not statistically significant. However, BIM also notes that “<i>The effect size observed in 2021 [...] may be the result of a low sample size in 2021 which may also explain the absence of power to detect a statistically significant decrease in the EWT</i>”. In addition, in APPENDIX B Power Analysis - Bruce Head Shore-based Monitoring Program, BIM performs a power analysis and states that “<i>the original analysis did not find a significant difference between 2021 and the baseline 2014-2015 data due to the insufficient power.</i>” Therefore the power analysis shows that the sample size was too small to detect statistical significance. However, the observed 24% decline in the Annual Proportion of Immature Narwhals. The 24% decline should trigger further assessment as it is meant to be an early warning indicator.</p> <p>DFO continues to recommend additional EWIs beyond calf/cow proportion to better mitigate inter annual variation of tracked indices, as stated in our review of the 2020 Annual report.</p>
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