

To: Nunavut Impact Review Board

From: Baffinland Iron Mines

File: 08MN053 (124701)

Date: September 9, 2021

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**Reference: Update to the Preliminary Summary of 2020 Marine Mammal Monitoring and 2021 Adaptive Management**

In response to several questions and comments received during the NIRB facilitated review of the Preliminary Summary of 2020 Narwhal Monitoring Programs (Preliminary Summary, NIRB Registry No. 334440), and consistent with Baffinland's adaptive management procedures, on July 14<sup>th</sup> Baffinland submitted a 2021 Narwhal Adaptive Management Response Plan (NAMRP) to the Nunavut Impact Review Board (NIRB). The 2021 NAMRP was submitted with Baffinland's 2021 Marine Shipping and Vessel Management Report and is presented here for convenient reference as Attachment A along with the covering letter, which accompanied that submission (these materials are also located at NIRB Registry No. 336317).

The 2021 NAMRP was developed based on several rounds of consultation, including a written review period of the Preliminary Summary facilitated by the NIRB, two teleconferences with the Marine Environment Working Group (MEWG), and a series of bilateral meetings with government agencies and community groups. Details of these engagements are summarized in the 2021 NAMRP. The 2021 NAMRP also includes updates on the outcomes of additional desktop studies that were identified as follow up works planned in the Preliminary Summary, and a description of follow-up monitoring programs planned for the 2021 marine monitoring season.

**As a result of the feedback Baffinland received from the Community of Pond Inlet and the Mittimatalik Hunters and Trappers Association (MHTO), and in consideration of the ongoing completion the Pond Inlet Small Craft Harbour and associated pile driving and dredging activities, Baffinland modified its operations to delay the start of the 2021 shipping season and avoid ice-breaking.** This was achieved by requiring confirmation of a continuous path of 3/10ths or less ice concentrations between the entrance of Eclipse Sound and Milne Port before shipping could commence. This enhanced mitigation is further described in the 2021 NAMRP, and was communicated directly to the 5 North Baffinland communities on July 13, 2021 (see Attachment B).

Since the release of the 2021 NAMRP Baffinland has continued to advance its investigation into the 2020 narwhal monitoring program results. This includes the implementation of all identified 2021 follow-up monitoring programs, ongoing discussions with community groups and regulators, and the issuance of all Final 2020 marine monitoring program reports following opportunity for thorough review and comment by the MEWG.

## ATTACHMENT A

July 14, 2021

Karen Costello  
Nunavut Impact Review Board  
P.O. Box 1360  
Cambridge Bay, NU  
X0B 0C0

**Re: 2021 Marine Shipping and Vessel Management Report, including Follow-up to Preliminary Summary of 2020 Narwhal Monitoring Programs**

Dear Ms. Costello,

Please find attached Baffinland Iron Mine Corporation's ("Baffinland") 2021 Marine Shipping and Vessel Management Report ("the Report"), as required to reflect the approved changes and activities associated with the Production Increase Proposal Extension Request (the 'Project'). In addition to the information outlined for inclusion in Section 3.1 of Project Certificate 005, this year's submission also includes a 2021 Narwhal Adaptive Management Response Plan (NAMRP), as committed to through Baffinland's responses to written comments received on the Preliminary Summary of 2020 Narwhal Monitoring Programs ("the Preliminary Summary").

Baffinland has worked diligently since the release of the Preliminary Summary to engage Intervenors, and respond in a meaningful way to the questions, comments and recommendations it has received. The 2021 NAMRP reflects the culmination of these activities, as well as Baffinland's commitment for implementing precautionary mitigation measures that factor in the direct input of Inuit, and other Project stakeholders, in particular those representing the community of Pond Inlet. **Importantly, Baffinland has elected to strengthen the mitigation measures for the 2021 shipping season in direct response to Inuit input and the recognition of an important community project occurring (i.e., construction of the small craft harbour) which overlaps with the planned start of the Baffinland shipping season. In an effort to reduce potential cumulative impacts of the Project to narwhal during this sensitive time period, Baffinland aims to further reduce potential impacts by electing to delay the start of the shipping season until ice-breaking is no longer required for vessels transiting towards Milne Port.** A brief summary of Baffinland's engagement efforts and planned mitigations for 2021 are provided below, and explained in more detail in the Report.

#### **Engagement with Inuit, Regulators and Other Interested Parties**

On April 7, 2021, in advance of what was expected to be the final Public Hearing on Baffinland's Phase 2 Proposal, Baffinland released a Preliminary Summary of 2020 Narwhal Monitoring Programs (the 'Preliminary Summary'), as well as a covering letter providing an overview of the key findings and proposed monitoring and mitigation plans for the 2021 shipping season. Acknowledging the relevance of

the Preliminary Summary to the on-going assessment of the Phase 2 Development proposal, the Nunavut Impact Review Board (NIRB) directed Parties to submit written comments by May 17, 2021 and for Baffinland to respond by June 4, 2021.

During the review and response period, Baffinland engaged with Intervenor both individually, and as a collective through the Marine Environment Working Group (MEWG). Two meetings of the MEWG were held where the Preliminary Summary was discussed, the first being a dedicated meeting that took place on May 13, 2021, and the latter being a regularly scheduled meeting on June 29, 2021. Additionally, on May 13, 2021 Baffinland supplemented the Preliminary Summary with the distribution of the DRAFT 2020 marine monitoring reports to the MEWG.

As part of Baffinland's responses to comments, submitted on June 4, 2021, a commitment was made to develop and submit a formal adaptive management response plan to the NIRB prior to the commencement of the 2021 shipping season, and that relevant Parties would be directly engaged in the development of this Plan. Between June 17, 2021 and June 26, 2021, the draft 2021 NAMRP (included in this submission as Appendix D to version 8 of the Shipping and Marine Wildlife Management Plan) was shared with the following organizations for review and comment, as well as an invitation to meet for further discussion:

- Fisheries and Oceans Canada (DFO);
- Qikiqtani Inuit Association (QIA);
- Hamlet of Pond Inlet (the 'Hamlet'); and
- Mittimatalik Hunters and Trappers Organization (MHTO).

Of the organizations listed above, DFO and the Hamlet agreed to meet with Baffinland for further discussion, and the Hamlet and the MHTO provided written feedback directly to the NIRB between June 25, 2021 and June 28, 2021. The recommendations received through the written comment period, as well as the above mentioned meetings and written feedback were critical for consideration during development of the final 2021 NAMRP.

All engagement activities are described in the 2021 Marine Shipping and Vessel Management Report and the final 2021 NAMRP. Copies of letters issued directly to communities have also been attached to the Marine Shipping and Vessel Management Report for reference.

### **2021 Mitigation and Monitoring**

In the April 7, 2021 covering letter to the Preliminary Summary, Baffinland committed to taking a precautionary approach and modifying its shipping activities on an interim basis for 2021. Specifically, Baffinland proposed to delay shipping until the opening of a continuous path of less than 9/10ths ice concentrations between the entrance of Eclipse Sound and Milne Port. This decision was made 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 Regional Study Area (RSA) that

are likely to continue in 2021. This mitigation is consistent with Option 2 from the Preliminary Summary, which was one of the most precautionary options identified.

Through written comments and meetings with the MEWG and individual Intervenors, Baffinland received several recommendations and requests to implement even stronger mitigations than what was already proposed on April 7, 2021. Through development of the 2021 NAMRP, **Baffinland considered each request carefully and is electing to avoid icebreaking for the Spring of 2021. Operationally, the trigger to commence the beginning of the 2021 shipping season will be the presence of a continuous path of 3/10ths or less ice concentrations between the entrance of Eclipse Sound and Milne Port.** Based on historical ice conditions, waiting for a continuous path of 3/10ths or less ice concentrations represents an approximate 2-week delay from when landfast ice would otherwise be completely broken across the Northern Shipping Route and normal shipping operations would regularly commence.

There is a strong basis for the use of 3/10ths or less ice concentrations as a measure to avoid icebreaking as it is described by Transport Canada as ‘very open drift’ where “water dominates over ice”. For the purposes of implementing Baffinland’s transit restriction system and reducing potential noise disturbance to narwhal in both 2019 and 2020, 3/10ths or less ice concentrations is the conditional requirement for allowing regular shipping operations to begin on the basis that ice can generally be avoided. While the icebreaker, MSV Botnica, will still be present during the shipping season, and continue to be available for escorts as a precaution, vessels may not require it to register positive ice numerals to enter the area by Transport Canada. Note that shipping operations will continue as in previous seasons into the Fall, inclusive of some icebreaking activity.

Further details and information related to ice conditions and Baffinland’s planned shipping activities are included in the 2021 NAMRP.

### **Commitment to Adaptive Management and Inuit Input**

In making the decision to further delay the 2021 shipping season, the feedback provided by organizations representing Pond Inlet was crucial. Baffinland understands the importance of narwhal to Pond Inlet, as well as the completion of the Small Craft Harbour. Without knowing what, if any, additional mitigations will be placed on the construction activities associated with the Small Craft Harbour in 2021, Baffinland is committed to modifying its own activities in the Regional Study Area (RSA) for the benefit of Pond Inlet, and for the integrity of the Eclipse Sound summer narwhal stock.

The decision to further delay shipping in 2021 is not without significant risk to the operation and the ability to transport this year’s planned 5.75 Mt of iron ore from Milne Port. The current outlook on summer ice conditions along Baffinland’s approved Northern Shipping Route indicates a heavier ice year than experienced in 2020, with Baffin Bay total ice coverage looking more similar to 2018. The consequences of losing tonnage this year are amplified by the fact that Baffinland is in the process of implementing significant cost restructuring measures aimed at repaying debt and lowering the financial exposure of the operation, understanding that the Mary River Project, in its current configuration, is not feasible at lower

iron ore prices forecasted for 2022 and beyond, as previously made public on April 30, 2021. This decision is also being made while continuing to recover from impacts to the operation due to COVID-19, and in the face of continued regulatory uncertainty, and on the premise.

Baffinland accepts the risks of a delayed shipping season in 2021 because it is committed to listening and responding to the concerns and priorities of the community of Pond Inlet, which most closely experiences consequences of potential Project-related and cumulative effects. As previously indicated, Baffinland is implementing additional mitigations in 2021 as a precaution, without the benefit of completing an additional investigation into the 2020 monitoring results and establishing causality. The arctic marine environment is dynamic and influenced by many factors, and understanding the interactions that occur within it requires the expertise of multiple parties, and multiple years of study. Baffinland's 2021 mitigations do not attribute causality of observed changes in narwhal abundance to Baffinland operations.

Baffinland appreciates the time and effort dedicated by Intervenors for participating in the Preliminary Summary review process. Through this contribution, Baffinland has developed a strong response to its 2020 narwhal monitoring program findings for implementation during 2021 shipping operations, clearly demonstrating a sincere, rapid and flexible commitment towards operating in a protective, precautionary and adaptive manner.

Regards,

A handwritten signature in black ink, appearing to read "Lou Kamermans".

Lou Kamermans  
Senior Director, Sustainable Development  
Baffinland Iron Mines Corporation

Cc: Tara Arko, NIRB  
Guillaume Daoust, NIRB  
Cory Barker, NIRB  
Joshua Arreak, Hamlet of Pond Inlet  
Enookie Inuarak, MHTO  
David Lee, NTI  
Thomas Hoggarth, DFO  
Natalie O'Grady, Government of Nunavut  
Jared Ottenhof, QIA  
Megan Lord-Hoyle, Baffinland

*Attachments*

*Attachment 1: 2021 Marine Shipping and Vessel Management Report to the NIRB*

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# **Baffinland Iron Mines Corporation**

## **Mary River Project**

**2021 NARWHAL ADAPTIVE MANAGEMENT RESPONSE PLAN**



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## ATTACHMENTS

Attachment 1 – Summary of Engagement

## **1 INTRODUCTION**

Baffinland Iron Mines Corporation (Baffinland) has prepared this 2021 Narwhal Adaptive Management Response Plan (the Plan) for the purpose of sharing information with interested Parties on Baffinland's interim mitigation measures for the 2021 shipping season and its marine mammal monitoring programs. The contents of this Plan have been informed by discussions and consultations with Inuit, notably representatives of the Hamlet of Pond Inlet and the Mittimatalik Hunter and Trappers Organization (MHTO), Fisheries and Oceans Canada and the Marine Environmental Working Group (MEWG).

## 2 BACKGROUND

On April 8 2021, Baffinland provided to the NIRB a Technical Memo prepared by Baffinland's marine mammal monitoring technical consultants, Golder Associates Ltd. (Golder), entitled Preliminary Summary of 2020 Narwhal Monitoring Programs (the Memo) (Doc ID: 334991). The Memo outlined key results of Baffinland's 2020 marine mammal monitoring programs, notably that through the 2020 marine mammal aerial survey, Golder had recorded a statistically significant decline in the stock estimate for the Eclipse Sound summer narwhal stock. The Memo also included a preliminary investigation of several factors that may have contributed to the recorded decline in the stock estimate, including icebreaking activities associated with Baffinland's 2020 shipping season.

Given the inability to determine the primary cause of the decline in the stock estimate, Baffinland committed to following up with the NIRB and interested Parties on these results. Actions committed to included: seeking feedback on the Memo, engaging with Parties and requesting input on the proposed additional mitigations Baffinland would implement during the 2021 shipping season, providing copies of the program-specific technical monitoring reports that substantiated the preliminary summary of results presented in the Memo, as feasible, completing additional investigations into potential causal factors, and providing an Adaptive Management Response Plan.

### 3 SUMMARY OF ENGAGEMENT AND OUTCOMES

#### 3.1 ENGAGEMENT ACTIVITIES

Subsequent to Baffinland's April 8, 2021 submission, the NIRB facilitated a comment and response period for interested Parties on the Memo. On or before May 17, 2021, the NIRB received comments from:

1. Qikiqtani Inuit Association (QIA; Doc ID: 335352);
2. Hamlet of Pond Inlet (Doc ID: 335355 & 335356);
3. Ikajutit Hunters and Trappers Organization (IHTO; Doc ID: 335354);
4. Government of Canada;
  - a. Department of Fisheries and Oceans Canada (DFO; Doc ID: 335350)
  - b. Parks Canada (PC; Doc ID: 335353)
5. Oceans North (ON; Doc ID: 335351).

On June 4, Baffinland provided responses to comments from these Parties (Doc ID: 335788).

In addition to NIRBs facilitated exchange of written comments on the Memo, Baffinland conducted its own engagements with several Parties. A summary of these engagements have been captured in Attachment A. Details of these engagement activities will also be captured in Baffinland's 2021 Annual Report to the NIRB.

#### 3.2 KEY OUTCOMES

Through these consultation efforts, to-date Baffinland has received at a high level, the following feedback.

**Table 1: Summary Of Engagement Outcomes**

Summary of Comment/Recommendation	Baffinland Response / Outcomes
Recommendations from Hamlet of Pond Inlet, Parks Canada, DFO and QIA on enhancements to Baffinland's existing and proposed monitoring programs.	Baffinland has committed to working with these Parties further on the refinement of these programs (i.e. analysis of 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 summer narwhal stock.
DFO and QIA identified the need for additional details on the methodology and analysis undertaken for each of Baffinland's 2020 marine mammal monitoring program in order to provide more fulsome feedback.	Baffinland distributed copies of all of its draft 2020 marine monitoring programs to the MEWG on May 13, 2021. Comments were submitted by MEWG members on July 8, 2021. Responses to all comments received will be provided as an appendix to the final versions of these monitoring reports, which will incorporate comments from the MEWG as relevant.
Hamlet of Pond Inlet and QIA requested additional information on pile driving activities associated with the SCH construction and icebreaking activities, respectively.	Baffinland noted that requests for additional information on SCH activities were directed to the GN and DFO. Baffinland has submitted information requests to these Parties that would assist in answering in some of the Hamlet's inquiries, however no information has been provided by these Parties to-date. In response to the QIA, Baffinland provided an appendix to its June 4 2021 responses to comments that breaks down the distance travelled by vessels in various ice



Summary of Comment/Recommendation	Baffinland Response / Outcomes
	concentrations along the shipping route in 2017, 2018, 2019 and 2020.
QIA and DFO sought additional information regarding how Baffinland had accounted for the SCH in its cumulative effects assessment.	Baffinland provided clarity to these Parties on its responsibilities with respect to cumulative effects assessment and monitoring. Baffinland also requested DFO formally describe what its mandated responsibilities are for cumulative effects monitoring on a regional scale with respect to managing cumulative effects on marine mammals in Canadian Arctic waters and provide its proposed strategy for cumulative effects assessment in this regard, and describe what level of cumulative effects monitoring has been completed by the Government of Canada to date in support of this work.
Recommendations from MHTO and Hamlet of Pond Inlet to eliminate icebreaking activities from Baffinland's operational activities.	Baffinland proposes to avoid icebreaking at the beginning of the 2021 shipping season. The trigger to begin shipping will be a continuous path of 3/10ths ice concentrations between Baffin Bay and Milne Port. The icebreaker will still be present throughout the season, however, it will only serve as a precaution at the beginning of the shipping season. Icebreaking may still be required at the end of the shipping season, depending on ice conditions. However, Baffinland will continue to close the shipping season to avoid breaking landfast ice.

## 4 DESKTOP INVESTIGATION

Since the submission of the Memo, Baffinland has conducted additional analyses of two of the anthropogenic factors (icebreaking and construction noise from the small craft harbour) that were identified as potential causal activities for the reported decline in the stock during 2020 monitoring. Baffinland also remains committed to additional work on the two natural factors identified in the Memo (regional sea ice conditions and increased killer whale presence).

### 4.1 REGIONAL SEA ICE CONDITION

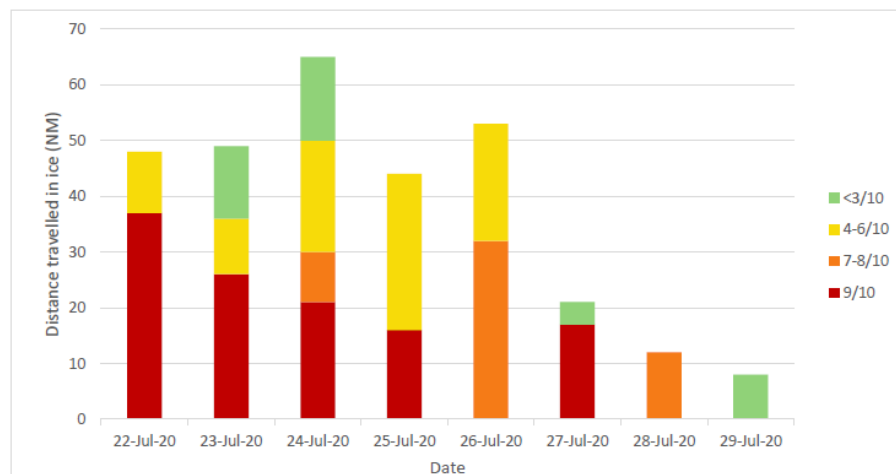
Procurement of detailed remote sensing imagery will provide a more accurate representation of sea ice conditions on an annual scale that can be compared to annual shipping and icebreaking activities. The following information will provide a greater understanding of how narwhal distribution is affected by differences in sea ice conditions:

- Total ice cover of ice field (km<sup>2</sup>) in Eclipse Sound from time landfast ice is gone to <3/10 ice concentration
- Temporal persistence of ice leads
- Range in size of ice floes (max diameter and area (km<sup>2</sup>))

This information will provide a more accurate representation in terms of how long sea ice persists in Eclipse Sound during ice break-up and may be used to refine the proposed mitigation measures related to seasonal ice concentrations. This information and subsequent analysis will be included in Baffinland's 2021 reporting.

### 4.2 ICEBREAKING

As part of Baffinland's responses to comments on June 4, Baffinland provided additional information on the distance (expressed in nautical miles) travelled by Baffinland's chartered vessels along the shipping route across multiple shipping seasons. This information is supplemental to what was presented in the Memo, which described the time (number of hours) that Baffinland vessels travelled through different ice regimes. As shown in Figure 1, vessels travelled approximately 110nm through 9/10 ice concentrations in the 2020 season, compared to approximately 43nm in 9/10 ice concentration in the 2019 season.



**Figure 1: Distance (Nm) Travelled By Vessels In Various Ice Concentrations Along The Established Shipping Route, Withing The RSA, In 2020**

It is being considered that decreasing ice concentrations serve to minimize conflicts with narwhal that could potentially be staging in ice leads, given that as ice concentrations decrease, more leads will be present, which allows

for multiple 'options' for vessels and narwhal to travel southwest along the shipping route with lower rates of interaction. Baffinland can use ice imagery as well as aerial surveys combined with information provided by the community of Pond Inlet to continue to monitor narwhal movements in the earlier part of the shipping season.

#### 4.3 CONSTRUCTION NOISE FROM SMALL CRAFT HARBOUR

Baffinland is awaiting information from the Government of Nunavut to support this analysis. Once received, updated information will be provided in a Technical Memorandum that will be posted to the NIRB Registry.

#### 4.4 INCREASED KILLER WHALE PRESENCE

It is Baffinland's understanding that DFO currently implements a community-based killer whale sightings program in both Arctic Bay and Pond Inlet that Baffinland hopes to build upon for addressing this critical data gap in the RSA. Underwater acoustic data collected from the Bruce Head, Bylot Island and Ragged Island recorders in 2020 will be used to identify seasonal occurrence and location of killer whales in the RSA to supplement the available 2020 sightings record (combined DFO/community and Baffinland sightings). This will help identify the earliest arrival of killer whales in the RSA for comparative purposes to previous years, to inform how killer whales may have influenced narwhal space use patterns at the time of the 2020 aerial surveys.

## 5 FOLLOW-UP MONITORING

### 5.1 PROJECT MONITORING PROGRAM OVERVIEW 2021

#### 5.1.1 PROJECT SPECIFIC MONITORING PROGRAMS

As was outlined in the Memo, Baffinland has several marine mammal monitoring programs designed to assess the effects of Project shipping activities on marine mammals. In 2021, Baffinland will implement the following marine mammal monitoring programs that will further our understanding of project related and cumulative effects to narwhal in the Regional Study Area:

**Table 2: Summary Of 2021 Narwhal Monitoring Programs**

Program	Basic Description	2021 Follow-up Monitoring Priorities/Considerations
Bruce Head Shore-Based Monitoring Program (Visual)	Visual Observations: <ul style="list-style-type: none"> <li>Relative Abundance and Distribution (RAD)</li> <li>Group Composition and Behaviour</li> <li>Human Activity               <ul style="list-style-type: none"> <li>Vessel Traffic</li> <li>Hunting</li> </ul> </li> <li>Weather and Anecdotal Observations</li> </ul> *Project-related vessels tracked via both satellite and shore-based AIS Estimated Start Date: July 30 <sup>th</sup> Estimated Duration: 4 weeks	<ul style="list-style-type: none"> <li>Monitor for local change in relative abundance and animal distribution including interannual variation</li> <li>Monitor behavioural responses to shipping and other stressors (hunting, predation)</li> <li>Monitor Early Warning Indicator (EWI): change in the proportion of immature narwhal between years – was calving or calf survival potentially affected in 2020</li> </ul>
Bruce Head Shore-Based Monitoring Program (UAV)	UAV Observations: <ul style="list-style-type: none"> <li>Focal Follows – Northern Shipping Route, Koluktoo Bay</li> <li>Systematic Survey – Stratified Study Area (SSA)</li> <li>Morphometrics – Body Condition</li> </ul> *Proposed system by InDro Robotics: DJI M300 Estimated Start Date: July 30 <sup>th</sup> Estimated Duration: 4 weeks	<ul style="list-style-type: none"> <li>Monitor narwhal behaviour in the presence and absence of vessels – do individual narwhal or narwhal pods modify their behaviour in the presence/absence of vessels in the open-water shipping season (multiple response variables examined)</li> <li>Does the distance at which individual narwhal or narwhal groups react to vessels differ from past years, irrespective of the overall abundance of narwhal in the RSA? do narwhal react to vessels in similar manner to previous years?</li> <li>Monitor narwhal body condition (beginning in 2021). The photogrammetric data collection of narwhal (morphometric baseline data) using UAV will be used to monitor for</li> </ul>

Program	Basic Description	2021 Follow-up Monitoring Priorities/Considerations
		potential interannual and seasonal changes in narwhal body condition (variable length/width measurements along body) that would indicate food/foraging success and/or stress response.
Marine Mammal Aerial Survey Program (Leg 1)	<ul style="list-style-type: none"> <li>Open-water and floe edge area east of Pond Inlet; Pond Inlet and Baffin Bay strata</li> <li>Line-transect surveys – data recorded by onboard MMOs</li> <li>Transition to photographic surveys when large animal aggregations encountered (same as 2019-2020 survey design)</li> </ul> <p>Estimated Start Date: July 18<sup>th</sup>; Estimated Duration: 19 days</p>	<ul style="list-style-type: none"> <li>Monitor narwhal relative abundance and distribution in the Regional Study Area (RSA) prior to and during the early part of the season. Allows comparison to previous year(s) (interannual variation). Collect simultaneous data on sea ice conditions and killer whale data which allows for these factors to be considered in the analysis.</li> <li>The 2021 Leg 1 aerial surveys have been extended by 1 week (now 3 weeks total) and will merge directly into the Leg 2 aerial surveys (separate 3-week survey). Will allow for abundance estimates in the RSA throughout the season from the start of shipping operations.</li> <li>Narwhal sightings data will be used to inform shipping schedule and shipping routing such to avoid concentrations of narwhal in ice leads (if present)</li> </ul>
Marine Mammal Aerial Survey Program (Leg 2)	<ul style="list-style-type: none"> <li>Same strata as 2016 DFO photographic aerial survey and 2019-2020 BIM aerial survey</li> <li>Line-transect surveys – data recorded by onboard MMOs</li> <li>Transition to photographic surveys when large animal aggregations encountered (same as 2019-2020 survey design)</li> </ul> <p>Estimated Start Date: August 6<sup>th</sup> Estimated Duration: 19 days</p>	<ul style="list-style-type: none"> <li>Updated abundance estimate for the Eclipse Sound and Admiralty Inlet narwhal summer stocks – compare abundance estimates to previous years.</li> <li>Extend Leg 2 to by 1 week to 3 weeks total in 2021 to cover a great spatial extent and track potential changes in narwhal distribution and abundance during shipping operations (now merges directly with Leg 1 aerial survey).</li> </ul>
Marine Mammal Aerial Survey Program (Leg 3)	<ul style="list-style-type: none"> <li>2-3 days of narwhal clearance flights in Regional Study Area (RSA) at end of shipping season</li> </ul>	<ul style="list-style-type: none"> <li>Visual clearance survey to confirm that no narwhal entrapment events have occurred in the RSA following</li> </ul>

Program	Basic Description	2021 Follow-up Monitoring Priorities/Considerations
	<ul style="list-style-type: none"> <li>Line-transect surveys – data recorded by onboard MMOs</li> <li>Transition to photographic surveys when large animal aggregations encountered (same as 2019-2020 survey design)</li> </ul> <p>Estimated Start Date: End of Shipping Season Estimated Duration: 2 days</p>	<p>completion of Baffinland's 2021 shipping operations along the Northern Shipping Route.</p>
Passive Acoustic Monitoring Program	<p>Early August: deployment of 3 recorders</p> <ul style="list-style-type: none"> <li>Bruce Head</li> <li>Ragged Island anchorage</li> <li>Pond Inlet (Small Craft Harbour Construction)</li> </ul> <p>September</p> <ul style="list-style-type: none"> <li>Retrieval of 3 recorders deployed in August</li> <li>Re-deployment of 2 recorders at the floe edge               <ul style="list-style-type: none"> <li>Record late shoulder season transits in 2021</li> <li>Sleep overwinter</li> <li>Start recording in early July 2022: Record narwhal at floe edge and early shoulder season transits</li> </ul> </li> </ul> <p>Estimated Start Date: Early August Estimated Duration: 2020 open water and Fall shoulder season; 2022 Spring shoulder season</p>	<ul style="list-style-type: none"> <li>Measure and characterize ambient noise levels along the Northern Shipping Route – compare the data to previous years.</li> <li>Acoustically monitor for narwhal and killer whale presence along the shipping corridor – document spatial and temporal variability in the RSA.</li> <li>Evaluate underwater noise levels from Project shipping and icebreaking noise levels in relation to established marine mammal underwater acoustic thresholds for injury and onset of disturbance.</li> <li>Estimate the extent of listening range reduction (LRR) associated with vessel transits along the Northern Shipping Route relative to ambient noise conditions.</li> <li>Compare measured sound levels of shipping/icebreaking to estimated (modelled) sound levels.</li> <li>Evaluate vessel noise signatures and potential changes in narwhal vocal behaviour in relation to shipping.</li> <li>Measure pile driving and other construction sound levels near the Small Craft Harbour Construction site in August 2021.</li> </ul>
2022 Narwhal Tagging Program (Planning in 2021)	<ul style="list-style-type: none"> <li>Deployment of high-resolution location (satellite) tags and dive loggers on narwhal in ice leads in Eclipse Sound during early July 2022.</li> </ul>	<ul style="list-style-type: none"> <li>Will provide detailed 3-dimensional movements of narwhal in relation to ice conditions and vessel movements in RSA. Studying narwhal behavioural</li> </ul>

Program	Basic Description	2021 Follow-up Monitoring Priorities/ Considerations
	<ul style="list-style-type: none"> <li>No tagging of narwhal will occur near floe edge (no interference with Inuit hunting activities)</li> <li>No live capture involved. Remote deployment of tags. Tags will fall off animal after several weeks.</li> </ul> Estimated Start Date: July 05 2022 Estimated Duration: 14 days	responses to shipping/icebreaking – includes 12 response variables (e.g. surface time, bottom time, dive velocity, travel speed, travel orientation, etc).

Each monitoring program has its own objectives and scope, which includes studying potential effects of shipping on marine mammal density, abundance or distribution in the RSA, fine-scale behavioural responses of marine mammals to vessel presence, and duration and scale of noise generated by Project vessels relative to marine mammal thresholds for injury and noise disturbance. These programs provide relevant information independently as well as providing complementary information to provide a holistic approach to studying the Regional Study Area. All programs can benefit from additional information including community knowledge and other initiatives led by government or other parties if and when shared with Baffinland.

Detailed information on Baffinland's 2021 marine monitoring programs were presented to representatives from the Hamlet of Pond Inlet and the MHTO on May 28, 2021 and to the MEWG for feedback on June 29, 2021.

#### 5.1.2 CUMULATIVE EFFECTS MONITORING

Baffinland's responsibility with respect to cumulative effects monitoring for the Project is prescribed in Project Certificate conditions 110, 111 and 112. These terms and conditions require Baffinland to study the cumulative effects of vessel noise. Under Section 7.8 of the EIS Guidelines, a cumulative impact (or effect) is defined as the impact on the environment that results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions. The scope of Baffinland's cumulative effects monitoring is therefore focused on studying the additive effects of anthropogenic activities on marine mammal populations, which is adequately addressed by Baffinland's ongoing monitoring programs and those planned for future years (i.e. a 2022 narwhal tagging study).

#### 5.1.3 ECLIPSE SOUND NARWHAL STOCK ASSESSMENT

The Government of Canada, through the Oceans Act (1997) is committed to the integrated management of human activities in or affecting Canada's marine ecosystems. Eclipse Sound narwhal are specifically subject to the Integrated fisheries management plan for narwhal in the Nunavut Settlement Area. This integrated plan identifies that DFO maintains an active scientific research program, aimed at an increased understanding of narwhal population processes (e.g. seasonal distribution, movements and diving behaviour, habitat use, diet analysis), environmental factors that influence narwhal distribution and numbers, and the role of narwhal in marine ecosystems. Specific research and information needs have been identified to improve narwhal stock assessments, and include:

- conduct aerial surveys to estimate abundance for the Northern Hudson Bay and Baffin Bay management units to develop the time series necessary for risk analysis of various harvest scenarios
- assess other methods of estimating narwhal stock abundance (e.g mark/recapture)

- gather TEK regarding Parry Channel/Jones Sound/Smith Sound narwhal
- use telemetry data to develop robust methods required to adjust counts for animals under water
- gather biological samples from harvests in as many communities as possible to assess stock status.
- conduct fishery independent monitoring to determine loss rates

Baffinland will engage with the Department of Fisheries and Oceans and Parks Canada through the Marine Environment Working Group (MEWG) prior to and during the 2021 shipping season to determine what federal led or supported monitoring programs are planned to improve the collective understanding of the Eclipse Sound summer narwhal stock, consistent with the Integrated fisheries management plan for narwhal in the Nunavut Settlement Area.

#### 5.1.4 COMMUNITY BASED MONITORING PROGRAMS

Baffinland has established the Wildlife Monitoring Program through the Mary River Inuit Impact Benefit Agreement. This Program is specific to the research interests of the community of Pond Inlet and makes up to \$200,000 available on an annual basis to support eligible proposals. Results and data summaries generated through the Program may be used by Baffinland and/or QIA to support other Mary River project monitoring and mitigation plans.

Prior to implementing any programs in a given year, the community of Pond Inlet is responsible for developing an annual work plan, which is then presented to the Joint Executive Committee (Baffinland and QIA) for review and approval. To date the JEC has not received any project plans, however, Baffinland plans to engage directly with the Hamlet of Pond Inlet and the MHTO to discuss their intentions towards the Wildlife Monitoring Program for 2021, and if there are any opportunities for community led programming to support Baffinland's follow-up monitoring initiatives.

### 5.2 PROJECT MITIGATION AND ADDITIONAL ADAPTIVE MANAGEMENT MEASURES FOR 2021

#### 5.2.1 BAFFINLAND APPROACH TO ADAPTIVE MANAGEMENT

Recognizing the value of the Eclipse Sound summer narwhal stock to the residents of Pond Inlet, and that there are unknown and/or unmitigated cumulative activities occurring in the Marine RSA that are likely to continue in 2021, Baffinland is committed to taking a precautionary approach and adding additional mitigations to its shipping activities in 2021 on an interim basis.

#### 5.2.2 ENHANCED SHIPPING MITIGATIONS

Baffinland has elected to implement an additional mitigation measure during the 2021 shipping season as a precaution. Baffinland has committed that the 2021 shipping season will not commence until a continuous path of 3/10ths or less ice concentration is available along the Northern Shipping Route. Based on historical ice conditions, this additional mitigation could delay the start of shipping between 2 and 3 weeks from when landfast ice has broken along the Northern Shipping Route, and is more conservative than all 5 options recommended by Golder in the Preliminary Summary of 2020 Narwhal Monitoring Programs (the Memo), including Option 5, which is based on a recommendation by the Hamlet of Pond Inlet.

The additional mitigation measure will serve to delay the commencement of the shipping season, eliminate icebreaking activities, and shorten the overall number of shipping days available to Baffinland in the 2021 season. The scale of the delay in the shipping season and reduction in shipping days will not be known with certainty until operations commence.



Baffinland will continue to implement all other existing mitigation measures as described in Section 6 of the Shipping and Marine Wildlife Management Plan (2021).

### 5.3 ROLES AND RESPONSIBILITIES

The roles and responsibilities of Baffinland Shipping Team and Contractors will be consistent with those outlined in Section 2 'Roles and Responsibilities' of the Shipping and Marine Wildlife Management Plan (2021).

### 5.4 REPORTING

All marine and Project operations monitoring activities and reports will be issued in accordance with Section 7 of the Shipping and Marine Wildlife Management Plan (2021).

# **ATTACHMENT A**

## **SUMMARY OF ENGAGEMENT**

1. Meeting with DFO on April 9 2021 to provide an overview of information contained within the Memo.
2. Sent an information request to DFO on April 22 2021 to obtain additional information on the 2020 Small Craft Harbour (SCH) construction activities for the purpose of conducting additional investigations into potential causal factors.
3. Provided the Marine Environmental Working Group (MEWG) copies of all its 2020 Draft Marine Monitoring Program Reports on May 13, 2021, with comments expected back from the MEWG on June 24, 2021.
4. Submitted to the Nunavut Impact Review Board (NIRB) its 2020 Annual Monitoring Report as of May 6, 2021, with comments expected back from interested Parties on July 6, 2021.
5. Held a meeting with the MEWG on May 13, 2021 to provide an opportunity for members to ask questions regarding the Technical Memo in advance of their written submissions. A copy of the draft minutes from the May 13 2021 MEWG Meeting and the relevant presentation materials were provided to the NIRB as part of Baffinland's June 4 2021 submission (Doc ID: 335788).
6. Met with representatives from the Mittimatalik Hunter and Trappers Organization (MHTO) and the Hamlet of Pond Inlet to discuss plans for the 2021 shipping season on May 28, 2021,
7. Hosted a radio show in Pond Inlet with a question and answer period on June 2, 2021.
8. Met with representatives from DFO on June 22, 2021 to provide an opportunity for follow-up questions on Baffinland's responses to comments submitted by DFO on the Memo and to discuss the Draft version of the 2021 Narwhal Adaptive Management Response Plan.
9. Held a meeting with the MEWG on June 29, 2021 where details regarding Baffinland's 2021 monitoring programs and an overview of shipping season were provided.
10. Met with representatives from the Hamlet of Pond Inlet on June 30, 2021 and July 12, 2021 to discuss Baffinland's Draft version of the 2021 Narwhal Adaptive Management Response Plan
11. Sent an information request to the Government of Nunavut on July 7, 2021, with follow-up on July 12, 2021 to obtain additional information on the 2020 Small Craft Harbour (SCH) construction activities for the purpose of conducting additional investigations into potential causal factors.

Baffinland also requested additional meetings with the QIA and MHTO to discuss the Memo, however, neither Party responded with an intention to meet.



**✓ 13, 2021**

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$$L\Delta\zeta \quad \Delta^b\wedge\triangleleft^c\zeta^b$$

[mayorab@qiniq.com](mailto:mayorab@qiniq.com)

$${}^{\epsilon}\mathbf{b} \triangleright \mathbf{L} \prec {}^{\epsilon}\mathbf{b} \quad \triangleright \prec \mathbf{d} \neg \mathbf{b}$$
$$\Delta^b \gamma \triangleleft \triangleright C^{\mathfrak{c}_b}, \Delta b \gamma^{\mathfrak{c}_b} \dot{\cap}^c \triangleleft^a J_{\mathfrak{a}} \gamma^b \supset c \cap \gamma^b d^c$$

[ikajutit@baffinland.ca](mailto:ikajutit@baffinland.ca)

$$\sigma^{\epsilon_b} \rho^{\epsilon_c} \sigma^{\epsilon_d} \triangleright \sigma^{\epsilon_e} \sigma^{\epsilon_f} \sigma^{\epsilon_g} \sigma^{\epsilon_h} \sigma^{\epsilon_i} \sigma^{\epsilon_j} \sigma^{\epsilon_k} \sigma^{\epsilon_l} \sigma^{\epsilon_m} \sigma^{\epsilon_n} \sigma^{\epsilon_o} \sigma^{\epsilon_p} \sigma^{\epsilon_q} \sigma^{\epsilon_r} \sigma^{\epsilon_s} \sigma^{\epsilon_t} \sigma^{\epsilon_u} \sigma^{\epsilon_v} \sigma^{\epsilon_w} \sigma^{\epsilon_x} \sigma^{\epsilon_y} \sigma^{\epsilon_z}$$

LDZ 6<sup>a</sup> 7<sup>b</sup> 8<sup>c</sup> 9<sup>d</sup> 10<sup>e</sup>

[mayor@clyderiver.ca](mailto:mayor@clyderiver.ca)

 $\triangle \wedge \triangleright \neg \quad \triangle \dot{<} \neg^b$ 
$$\Delta^b \gamma \otimes \Delta^c, \quad \alpha^a \Delta^b \otimes \Delta^c \rightarrow \Delta^a \gamma \otimes \Delta^b \otimes \Delta^c$$

[htoclyde@giniq.com](mailto:htoclyde@giniq.com)

σ<sup>5b</sup>ρ<sup>5</sup>α<sup>5</sup>σ<sup>α</sup> Δζ<sup>5</sup>L<sup>5</sup> Δℓ<sub>5</sub>

$$L\Delta\triangleright\triangleleft\triangleright b^b\supset^b \quad \Delta^b\supset\supset^b$$

[mayor@igloolik.ca](mailto:mayor@igloolik.ca)

$$\subset \Delta \delta^c \quad \Delta^{\epsilon \omega} \cup \triangleright^c$$
$$\Delta^b \rho \otimes \Delta^c \rho, \Delta^b \rho \otimes \Delta^a \rho \otimes \Delta^c \rho$$

[igloolikhto@qiniq.com](mailto:igloolikhto@qiniq.com)

$$\sigma^{\mathfrak{c}_b} \rho^{\mathfrak{c}_a} \underline{\sigma}^{\mathfrak{a}_b} \quad \dot{\mathfrak{z}}^{\mathfrak{c}_a} \rho^{\mathfrak{c}_b} \quad \dot{\mathfrak{z}}^{\mathfrak{a}_b} \rho^{\mathfrak{a}_a}$$
 $L\Delta \nabla \Gamma^c \cap LC_c^b$ 

[mayor@pondinlet.ca](mailto:mayor@pondinlet.ca)

Δ<sub>β</sub> Δ<sub>α</sub>Δ<sub>γ</sub><sup>αβ</sup>

$$\Delta^b \Gamma \otimes \Delta^c \Gamma^c \supseteq \Delta^b \Gamma^c, \Gamma^c \cap \Delta^c \Gamma^c \subseteq \Delta^c \Gamma^c \supseteq \Delta^c \Gamma^c$$

[pond@baffinhto.ca](mailto:pond@baffinhto.ca)

$$\sigma^{\epsilon_b} \rho^{\epsilon_a} \sigma^{\epsilon_c} \in \Delta \wedge \nabla \in \mathcal{C}^{\epsilon_p} \Delta^{\epsilon_b}$$

LΔ<sup>7</sup> ካሚናል<sup>6</sup>

[mayorhbhamlet@giniq.com](mailto:mayorhbhamlet@giniq.com)

 $\angle_c \quad a^a L c^b$ 
$$\Delta^b \Gamma^a \triangleright C^b, \text{ ካሚናሊት } \triangleleft^a \text{ህዝብ}^b \supset \text{ሥልጣን}^b \delta^c$$

[hbhta@baffinhto.ca](mailto:hbhta@baffinhto.ca)

$$L\Delta^b_m, \Delta^b_{\mathcal{P}} \triangleleft C_m,$$

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[illegible][illegible]

## ATTACHMENT B



[illegible]
$$\Delta r \ll (1)$$



July 13, 2021

His Worship Moses Oyukuluk  
Mayor Arctic Bay  
[mayor\\_ab@qiniq.com](mailto:mayor_ab@qiniq.com)

Qaumayuq Oyukuluk  
Chairperson, Ikajutit HTO  
[ikajutit@baffinhto.ca](mailto:ikajutit@baffinhto.ca)

His Worship Jerry Natanine  
Mayor Clyde River  
[mayor@clyderiver.ca](mailto:mayor@clyderiver.ca)

Apiusie Apak  
Chairperson, Nangmautaq HTO  
[htoclyde@qiniq.com](mailto:htoclyde@qiniq.com)

His Worship Erasmus Ivvalu  
Acting Mayor Igloodik  
[mayor@igloodik.ca](mailto:mayor@igloodik.ca)

David Irngaut  
Chairperson, Igloodik HTO  
[igloodik\\_hto@qiniq.com](mailto:igloodik_hto@qiniq.com)

His Worship Joshua Arreak  
Mayor Pond Inlet  
[mayor@pondinlet.ca](mailto:mayor@pondinlet.ca)

Enookie Inuarak  
Vice Chairperson, Mittimatalik HTO  
[pond@baffinhto.ca](mailto:pond@baffinhto.ca)

His Worship Jaypeetie Audlakiak  
Mayor Sanirajak  
[mayor\\_hbhamlet@qiniq.com](mailto:mayor_hbhamlet@qiniq.com)

Paul Nagmalik  
Chairperson, Sanirajak HTO  
[hbhta@baffinhto.ca](mailto:hbhta@baffinhto.ca)

Dear Mayors and Chairpersons,

I am writing to you all today to provide an update on Baffinland's shipping plans for the 2021 shipping season for the Mary River Project.

On April 7, 2021, in advance of what was expected to be the final Public Hearings on the Phase 2 Proposal, Baffinland released a Preliminary Summary of 2020 Narwhal Monitoring Programs. Echoing what we have heard from Inuit, this preliminary summary showed a decline in the Eclipse Sound summer narwhal stock in comparison to earlier estimates. This summary noted that there were several potential factors that may have contributed to the decline in the narwhal stock including underwater pile driving activities in Pond Inlet related to the Small Craft Harbour Project, increased killer whale presence, heavier ice conditions, and increased icebreaking activities.

**As a result of the feedback Baffinland has received from the Community of Pond Inlet and the ongoing completion of an important community Project, Baffinland has made the decision to alter its operations and will be delaying the start of the 2021 shipping season to avoid ice-breaking. With this decision, the trigger to commence the beginning of the 2021 shipping season will be the presence of a continuous path of 3/10ths or less ice concentrations between the entrance of Eclipse Sound and Milne Port.** This concentration of ice is considered water with very little drift ice that does not require icebreaking. Based on historical ice conditions, waiting for a continuous path of 3/10ths or less ice concentrations represents an approximate 2-week delay from when landfast ice would otherwise be completely broken across the Northern Shipping Route and normal shipping operations would regularly



commence. Attached to this letter is detailed information about our enhanced mitigation measures for the 2021 shipping season.

Community members will see that the icebreaker, MSV Botnica, will still be present for the shipping season to be available for escorts as a precaution, but it will not be engaged in active icebreaking activities nor will it enter Eclipse Sound until 3/10ths or less ice concentrations between the entrance of Eclipse Sound and Milne Port are present. Baffinland plans to continue to use the MSV Botnica for some icebreaking activities in the fall, as in previous years.

Baffinland has made the decision to avoid icebreaking for the Spring 2021 season. This decision is based on direct response to Inuit input and the recognition of an important community based project occurring which overlaps with the planned start of the Baffinland shipping season. As a result, we are applying the precautionary principle that is the foundation of our adaptive management plan.

With construction of the Small Craft Harbour continuing this year, and without knowing what mitigation measures might be placed on that activity, our decision to halt icebreaking for the Spring is based on an abundance of caution, for the benefit of Pond Inlet and to preserve the integrity of the Eclipse Sound summer narwhal stock through any cumulative activities.

The decision to delay shipping in 2021 does present significant risk to the Company and its ability to ship the planned tonnage. The consequences of losing tonnage this year are heightened by the fact that Baffinland is in the process of implementing significant cost restructuring measures aimed at repaying debt and lowering the financial exposure of the operation. This is being done in light of continued regulatory uncertainty, and on the premise that the Mary River Project, at current production levels, is not feasible at lower iron ore prices forecasted for 2022 and beyond, as previously made public by the Company on April 30, 2021.

Baffinland accepts the risks of a delayed shipping season in 2021 because it is committed to responding to the concerns and priorities of Inuit and the community of Pond Inlet, and to the results of its monitoring programs. We are taking a proactive and precautionary approach to environmental management without the benefit of completing an investigation into the 2020 monitoring results and considering all factors that may have contributed to the decline in narwhal.

Baffinland's is listening to Inuit, is flexible in its decision-making and can respond rapidly to concerns in a proactive way, putting environmental protection above operational needs, following the underlying principles of our adaptive management plan.

As always, should any of you have any questions about this information or any other matter please do not hesitate to contact me at [megan.lord-hoyle@baffinland.com](mailto:megan.lord-hoyle@baffinland.com) or 1-416-346-4533.

Sincerely,



Megan Lord-Hoyle  
Vice-President, Sustainable Development  
Baffinland Iron Mines Corporation

c.c. Hon. Joe Savikataaq, MLA, Premier of Nunavut  
Members of Nunavut's Legislative Assembly for Aggu, Quttiktuq, Amittuq, Uqqummiut, Tununiq  
Hamlet Chief Administrative Officers  
Mr. Jeremiah Groves, Qikiqtani Inuit Association  
Ms. Udlu Hanson, Vice President Community and Strategic Development, Baffinland

Encl (1)

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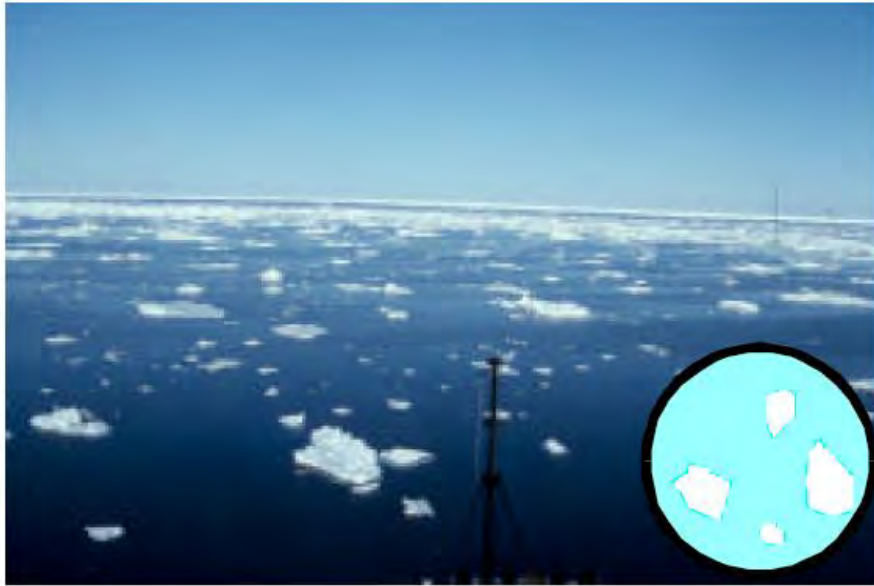
- Baffinland will delay the start of shipping to avoid icebreaking.
- Operationally, the trigger to commence the beginning of the 2021 shipping season will be the presence of a continuous path of 3/10ths or less ice concentrations between the entrance of Eclipse Sound and Milne Port.

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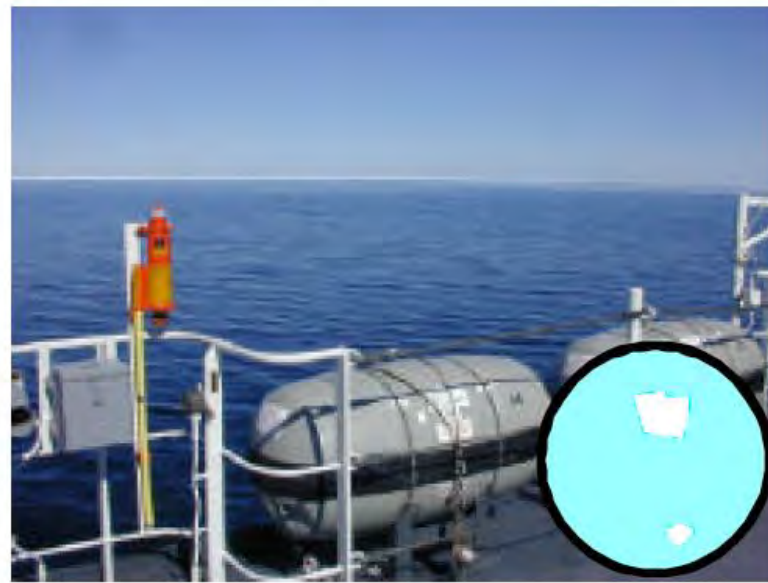
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⏸ Paused in 2021 | ይኸው ዓመት በጥቅምት 2021



**1 - 3 tenths**  
*very open drift*

1/10 ምስ 3/10 ምስ  
ጥፋት  
ፈጠራዊነት



በጣም 1/10 ጥፋት  
ፈጠራዊነት  
**less than 1 tenth**  
*open water*



4/10 ምስ 6/10 ምስ ጥፋት  
ፈጠራዊነት ጥፋት

**4 - 6 tenths**  
*open drift*







**7 - 8 tenths**  
*close pack/drift*



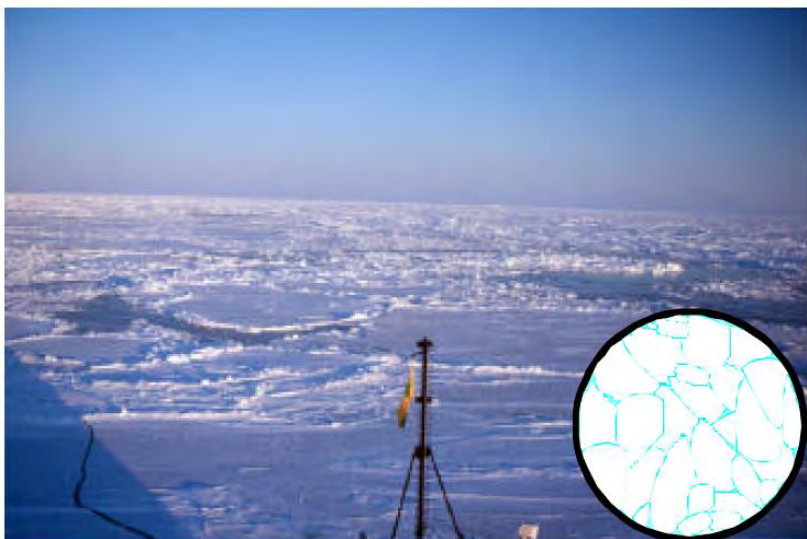
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**9 tenths**  
*very close pack*



**9+ tenths**  
*very close pack*



9/10 རྟུམ་ཅེ་



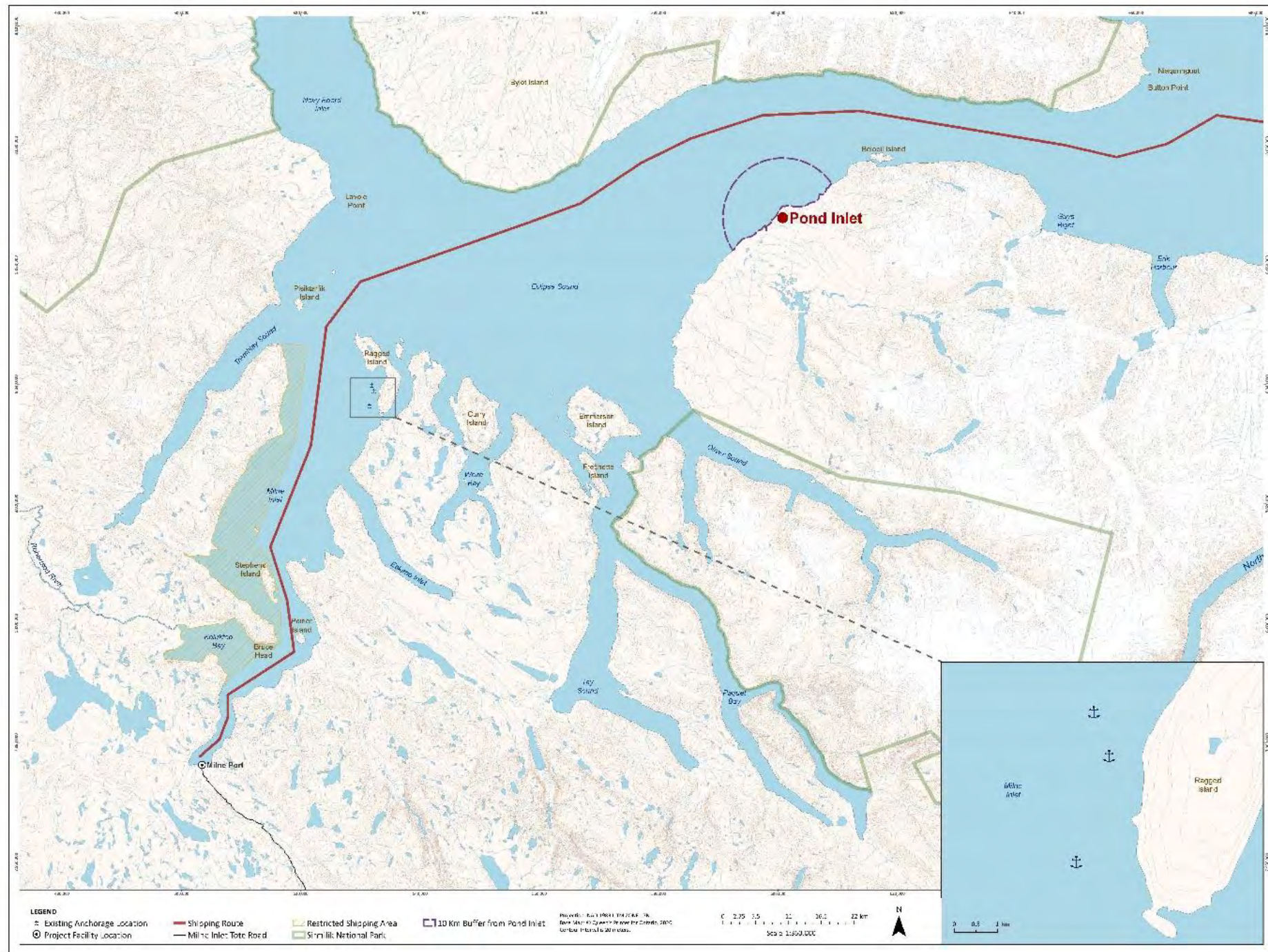
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**10 tenths**  
*compact/consolidated ice*



- To avoid icebreaking it is possible that vessels may have to depart from the nominal shipping route
- Any departures would continue to avoid agreed upon restricted areas (yellow hash marks), and maintain a good distance from Pond Inlet



# Implications of Enhanced Mitigation

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- The decision to further delay shipping in 2021 creates significant risk to the operation and the ability to transport this year's planned 5.75 Mt of iron ore from Milne Port
- Based on current ice reports, ice conditions are expected to be heavier this year than in 2020, which may cause an even longer delay to shipping



# Implications of Enhanced Mitigation

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- Baffinland acknowledges that the construction of the Small Craft Harbour will continue to overlap with our shipping season; additional mitigations in 2021 will serve to reduce potential combined effects of these projects
- Commitments for the 2021 shipping season reflect our commitment to adaptive management and the Company's respect for Inuit input