

Appendix

GN Comment # 01	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Snowbank Height Monitoring
Terms and Conditions	53a(i), 53c
References	<ul style="list-style-type: none"> • Baffinland Iron Mines (BIM). (2020). 2019 Annual Report to the Nunavut Impact Review Board. • Environmental Dynamics Inc. (EDI). (2020). 2019 Mary River Project Terrestrial Environment Annual Monitoring Report.
IDENTIFICATION OF ISSUE	
<p>The Proponent conducted snowbank height monitoring from November 2018 to April 2019 with one survey conducted in each of these months. The Proponent does not provide details regarding the timing of these monthly surveys relative to road maintenance activities in any of Appendix G.12 of the 2019 Annual Report (BIM 2020), or the 2019 Mary River Project Terrestrial Environment Annual Monitoring Report (EDI 2020). It is therefore, challenging to assess how representative the survey results are of the average snowbank height conditions present along the road.</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>Excessively high or deep snowbanks may pose a risk to wildlife by several mechanisms. High banks may obstruct drivers' viewing range and increase risk of vehicle collisions with wildlife; wildlife on roads may be trapped within steep banked sections of road; and high/deep banks may deter wildlife from crossing roads.</p> <p>The snowbank height monitoring results reported in the draft report indicate that 97% of snowbanks were less than 1m high when measured. The general inference from this result is that compliance with snowbank height limits is high and snowbanks are therefore unlikely to pose a risk to wildlife. However, the methods section of the report does not provide details regarding the timing of monthly snowbank monitoring surveys relative to road maintenance activities; specifically snowplowing and snowbank management (EDI 2020, Section 5.2.1). It is thus unclear whether the timing of this monitoring activity is occurring independently of road management activities. Without this information, it is difficult to assess whether snowbank monitoring results provide an unbiased assessment of prevailing conditions along the Tote Road.</p>	

RECOMMENDATION(S)

The GN requests that the Proponent, in the methods section, explain the how the timing of each monthly snowbank survey was determined. In the particular, the GN recommends that the following questions be answered:

- Was the date within each month selected at random or the same day each month?
- Was the survey within each month timed to coincide with certain weather or road maintenance events?
- Prior to selecting the date and time of day for each survey, were survey staff aware of planned road maintenance activities during the selected date and time?
- Similarly, were road maintenance staff aware of the timing of snowbank surveys before they occurred?
- In other words, was snowbank monitoring independent of snow management activities and therefore unbiased?

GN Comment # 02	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Marine Shipping Routes
Terms and Conditions	103, 104
References	<ul style="list-style-type: none"> • Baffinland Iron Mines (BIM). (2012). Final Environmental Impact Statement (FEIS) for the Mary River Mine, volume 8, Marine Environment • Baffinland Iron Mines (BIM). (2020). 2019 Annual Report to the Nunavut Impact Review Board. • Baffinland Iron Mines (BIM). (2018). Final Environmental Impact Statement (FEIS) Addendum for the Mary River Phase 2 Project Proposal. Technical Service Document 24 – Marine Mammals
IDENTIFICATION OF ISSUE	
<p>The routes used by the Project’s marine shipping during 2019 cover an area considerably larger than the nominal shipping route used in the Project’s final environmental impact statement (FEIS) to assess impacts on marine wildlife. The 2019 annual report does not discuss this deviation from the nominal shipping route and does not provide an assessment of the spatial extent of the shipping zone of influence, as required under Project certificate terms and conditions 103 and 104. The GN further notes that no definition is provided for the term “significant deviation” as used to describe ships that do not follow the nominal shipping route.</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>In assessing the effects of Project shipping on marine mammals in the FEIS, the Proponent used a nominal shipping route to and from Milne Inlet (see Figure 1, below) and employed mitigation measures to minimize the spatial extent of disturbance such as the assumption that transiting vessels would adhere to the same route during round-trips (FEIS, Volume 8).</p>	

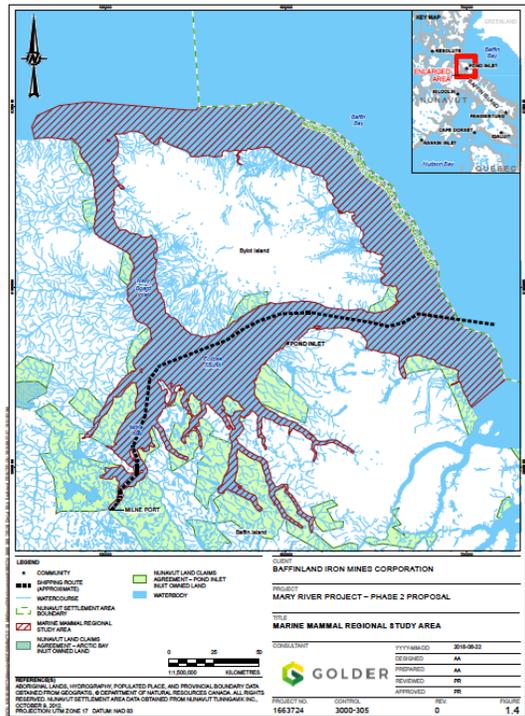


Figure 1. Nominal marine shipping route for Milne Inlet port (Source: Technical Service Document 24, Marine Mammal Effects Assessment, FEIS Addendum)

Project certificate, term and condition #103 states that:

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

- (c) A comparison of recorded ship tracks to the expected nominal shipping route, and probable (if any) extent of year-round shipping during periods of ice cover and open-water;
- (d) An assessment of the level of adherence to the nominal shipping route and the spatial extent of the shipping zone of influence.”

Project certificate term and condition #104 part (b) states that:

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

The GN is concerned that the 2019 annual report (BIM 2020) is not fully compliant with terms and conditions 103(c), (d) and 104(b). The Proponent provides a map of ship tracks (see Figure 2, below) in the annual report and concludes that there were no significant deviations from the nominal shipping route in 2019 and have been no significant deviations during the first 5 years (2015-2019) of shipping (BIM 2020, Section 4.6.11).

Figure 2. Ship tracks for the Mary River Project's 2018 operations. (Source: BIM (2020), Figure 4.16)

RECOMMENDATION(S)

Similar to recommendations offered in response to the 2018 annual report, the GN offers the following recommendation to address these issues:

1. That the NIRB provide a definition of the term 'significant deviation' as used to describe the tracks taken by Project shipping relative to the nominal shipping route used in the FEIS. In future annual reports, Project shipping activity should be reported under terms and conditions 103 and 104 using this definition. The need to provide this definition is made more important by the increase in shipping associated with proposed Phase 2 project.
2. That the Proponent, in accordance with term and condition 104(b), summarize instances of deviation from the nominal shipping route (as depicted in maps presented in the FEIS, see Figure 1 above) that occurred in 2019 in accordance with the definition of 'significant deviation' provided by NIRB. That Baffinland also provide justification for significant deviations and the observed environmental impacts.
3. That the Proponent, in accordance with term and condition 103(d), provide an assessment of the spatial extent of the shipping zone of influence in 2019. This assessment should be quantitative in nature using results from marine mammal behavioural monitoring that has revealed the range over which marine mammals such as narwhal respond to Project-related shipping. It is recommended that the assessment include estimates of the total area over which noise from Project shipping influences marine mammal behaviour, in particular for narwhal. Estimates should be expressed in absolute terms and as a proportion of the marine Local Study Area (LSA) and Regional Study Area (RSA). This area should also be mapped to illustrate the cumulative disturbance footprint of shipping in 2019.

GN Comment # 03	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Caribou Monitoring Methods
Terms and Conditions	53, 58
References	<ul style="list-style-type: none"> • Baffinland Iron Mines (BIM). (2020). 2019 Annual Report to the Nunavut Impact Review Board. • Environmental Dynamics Inc. (EDI). (2020). 2019 Mary River Project Terrestrial Environment Annual Monitoring Report. • Government of Nunavut (GN). (2019). Comments on Baffinland Iron Mines 2018 Annual Report to the Nunavut Impact Review Board.

IDENTIFICATION OF ISSUE

In section 4.6.8 of its Annual Report, the Proponent provides an overview of its 2019 monitoring activities to address terrestrial concerns, with note of particular emphasis on its caribou monitoring (BIM 2020). Table 4.20 of the annual report (see below) lists the possible Project effects on the terrestrial environment and the monitoring programs used to assess these effects.

Component	Effects	Monitoring Program	Impact Evaluation
Habitat Loss	Direct habitat loss due to the Project footprint, and indirect habitat loss due to sensory disturbances	Height of Land monitoring; snow track and snow bank monitoring; incidental observations.	Within FEIS predictions
Restriction of Movement	Project infrastructure and the tote road act as a barrier to the movement of caribou		
Mortality	Mortality resulting from vehicle collisions or project-induced hunting	Incidental observations; biologists and other staff on-site: no mortalities observed	Within FEIS predictions

Figure 3. Table 4.20 from BIM 2019 Annual Report.

The Proponent concludes that the Project's effects on the distribution and movements of caribou are within FEIS predictions. This conclusion is based largely on the results of two monitoring programs; height-of-land (HOL) surveys and snow track surveys. The Proponent describes the methods and amount of time employed in conducting these surveys, and the results of the surveys. The Proponent states that in 2019 a total of 24 hours 20 minutes of HOL survey effort and 3 one-day snow track surveys were undertaken, and that no caribou were detected during either type of survey (see Terrestrial Monitoring Report (EDI 2019)). These surveys have failed

to detect caribou since 2013.

The GN also detailed these same concerns in comments on the Proponent' 2014, 2015, 2017, and 2018 annual reports. The Government of Nunavut (GN) has repeatedly expressed concern that these surveys continue to fail in meeting the objective of detecting caribou for the purposes of mitigating and monitoring project related effects on caribou. The fact that no caribou were observed during the last 6 years of these surveys could be a result of the following:

- 1) Caribou were not detected because they are simply not present in the area during the survey, owing to low population density or low survey effort; or
- 2) Caribou were not detected due to avoidance behaviour and/or deflection from Project infrastructure and activities.

The GN is concerned that the current study design and level of survey effort does not offer the power to distinguish between these two possibilities. As such, the GN deems BIM to be non-compliant with Project terms and conditions 53 (b) and (c), and 58 (b).

IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE

Project certificate term and condition 53 part (b) states that:

“The Proponent shall demonstrate consideration for the following:

- b. Monitoring and mitigation measures at points where the railway, roads, trails and flight paths pass through caribou calving areas, particularly during caribou calving times. The details of these monitoring and mitigation measures shall be developed in conjunction with the Terrestrial Environment Working Group. “

Term and condition 53(b) refers to monitoring and mitigation measures for caribou and appears to contemplate that one of the purposes of monitoring will be to trigger mitigation measures, such as road traffic or aircraft management, when caribou are detected near the Project. The 2019 annual report (BIM 2020) points to the results from height-of-land monitoring as evidence of compliance with this term and condition. For 2019, a total of 24 hours and 20 minutes of height-of-land surveys were conducted during which no caribou were observed (EDI 2020, Section 5.3.2). This level of monitoring represents 0.3% of the time when caribou could be present near the Project. For the remaining 99.8% of the time there was no dedicated monitoring program to detect caribou near the Project in 2019. As previously noted by the GN in response to the 2014, 2015, 2017 and 2018 annual reports, this level of monitoring is insufficient and does not appropriately “demonstrate consideration” as required under term and condition 53.

Project certificate term and condition 53 part (c) states that:

“The Proponent shall demonstrate consideration for the following:

- c. Evaluation of the effectiveness of proposed caribou crossings over the railway, Milne Inlet Tote Road and access roads as well as the appropriate number.”

As evidence of compliance with this term and condition, the 2019 report points to the results of

caribou snow track monitoring. During 2019, the Proponent conducted three one-day snow track surveys during which no caribou tracks were recorded (EDI 2019, Section 4.2.2). These one-day samples are presented as evidence that caribou are not interacting with the Project and are therefore not experiencing problems in crossing roads. As previously noted by the GN in response to the 2017 and 2018 annual reports, this level of monitoring is insufficient and does not adequately “demonstrate consideration” as required under term and condition 53.

Snow track surveys are intended to “monitor caribou interaction with the Tote Road to determine if they cross it or deflect their paths of movement”, yet they are only conducted 3 out of 365 days annually. Detecting presence/absence of an animal requires multiple visits within a season and even then, only allows inference of animal activity in the biologically relevant season for a species. Furthermore, since snow tracks can be altered or erased by wind, snowfall, and temperature changes, this method requires a measure of the length of time that tracks may have accumulated since a clearing event. Additionally, assessing snow tracks from the tote road serves to limit the ability of the program to assess deflection. Observers are limited by their line of sight, and if caribou are deflected from the road or exhibit avoidance behaviour that keeps them – and their tracks – outside of the observers’ line of sight from the road, then these impacts would remain undetected by the snow track survey. The current study design only captures one example of deflection, whereby the snowbank height doesn’t allow for caribou to cross the road, so they closely parallel the road until finding a suitable place to cross it or turn away and do not cross.

Project certificate term and condition 58 part (b) states that:

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

(b) A detailed analysis of wildlife responses to operations with emphasis on calving and postcalving caribou behaviour and displacements (if any), and caribou responses to and crossing of the railway, the Milne Inlet Tote Road and associated access roads/trails.”

As evidence of compliance with this term and condition, the 2019 annual report notes that this term and condition is”:

“[A]ddressed in the terrestrial environment annual monitoring program annually through height-of-land surveys, snow bank height management and monitoring, and snow track surveys. However, caribou displacement has not yet been observed on-site.” (BIM 2020, Section 4.6.8)

As discussed above, the GN maintains that the 24 hours and 20 minutes of HOL surveys and 3 one-day snow track surveys, conducted in 2019, is an inadequate level of sampling to support the conclusion that caribou are not being displaced from the Project and are freely crossing the Tote Road. These surveys have failed to collect any caribou observations in the last 6 years. At this level of monitoring effort, it is not possible to determine whether the lack of caribou observations in the vicinity of the Project is due to low caribou densities, lack of survey effort and/or caribou avoidance of the Project. Although the GN acknowledges that caribou density in north Baffin is low, this does not preclude the Project from having significant effects on the movements and distribution of caribou. It does, however, mean that the level of sampling effort required to detect potentially significant Project effects will necessarily be relatively high; much

higher than the current effort. The study designs rely on behavioural observations to indicate how caribou might be interacting with Project infrastructure and activities. This approach is only effective when caribou are frequently observed, such as in instances of high caribou population density.

The requirement, under term and condition 58 (b), to conduct a detailed analysis of wildlife responses to operations cannot be fulfilled because BIM has not, since 2013, applied appropriate monitoring effort and/or an appropriate methodology to: (1) Collect the data necessary for this analysis; or (2) Prove, statistically, that such data cannot be collected due to lack of caribou interactions with the Project. The GN thus maintains that the Proponent is non-compliant with term and condition 58 (b).

In summary, the caribou monitoring programs implemented by the Proponent since 2013 do not provide an adequate basis for detecting caribou for the purpose of implementing day-to-day mitigation measures nor do they provide a means for accurately and reliably monitoring Project effects on caribou in-order to facilitate adaptive management.

RECOMMENDATION(S)

The GN again reiterates its previous requests made over the last 5 years that the Proponent monitor Project effects on caribou as required by the Terms and Conditions by:

- Significantly increasing the HOL survey effort such that a large, statistically defensible portion of the year when caribou may be present along the road corridor is being observed (similar to what the Proponent does for monitoring narwhal at Bruce Head)

Or, given the low densities of caribou in the PDA and the survey area, the Proponent could alternatively:

- Invest the effort of an improved HOL survey into regional monitoring programs led by the GN, including aerial surveys and collaring programs, so as to increase effort in areas of the PDA where caribou may be present.

Of these two options, the GN favors the latter based on technical considerations.

The GN expects the Proponent to work closely with the GN and the Project's Terrestrial Ecosystem Working Group (TEWG) when developing and/or modifying mitigation and monitoring programs. The GN has worked via the TEWG to bring forward these concerns with support from other members. However, responsiveness on the part of the Proponent, in terms of revising monitoring plans, has been minimal.

The GN requests that clear direction be provide by the NIRB to the Proponent on this matter.

GN Comment # 04

Department	Economic Development and Transportation
Organization	Government of Nunavut
Subject/Topic	Changes in Migration of Inuit Employees and Contractors
Terms and Conditions	133, 168
References	200521-08MN053 Mary River Project 2019 NIRB Annual Report, May 2020 <ul style="list-style-type: none"> Section No. 4 Performance on PC Conditions, pp. 456-458 Tables 4.37 and 4.39; p. 555 Table 4.62

IDENTIFICATION OF ISSUE

The Government of Nunavut (GN) has identified an inconsistency in the Proponent's reporting of data results from the 2019 Inuit Employee Survey for the migration changes of Inuit employees and contractor residence and community.

The Proponent has provided tables of these results.

Table 4.37: Changes in Inuit Employee and Contractor Residence and Community (2019_Inuit Employee Survey Results)

Type of Change	Number of Respondents	Percentage of Respondents
Residence changed in the past 12 months, within existing community	1	1.4%
Residence changed in the past 12 months, moved to new community	2	2.8%
Residence did not change in the past 12 months	53	74.6%
Unknown	15	21.1%
Total	71	99.9%

Table 4.39: Inuit Employee and Contractor Migration Intentions (2019 Inuit Employee Survey Results)

Migration Intentions	Number of Respondents	Percentage of Respondents
Plan to move residences in the next 12 months, within existing community	4	5.6%

Plan to move residences in the next 12 months, to a new Community	8	11.3%
Do not plan to move residences in the next 12 months	46	64.8%
Unknown	13	18.3%
Total	71	100.0%

In comparison, the corresponding results are summarized in Table 4.62.

Table 4.62: 2019 Monitoring Results and Trends for Selected Socio-Economic Indicators

Indicator / Topic	Summary
Employee and contractor changes of address, housing status, and migration intentions	5.4% of respondents to the 2019 Inuit Employee Survey changed residences in the past 12 months. 3.6% moved to a different community and 1.8% moved within their existing community. 13.8% planned to move to a different community in the next 12 months. 6.9% planned to move away from the North Baffin LSA. Data on the housing status of respondents were not collected in 2019 due to a survey administration error.

The GN has identified the data sources for Tables 4.37, Table 4.39, and Table 4.62 are from the same topics in the 2019 Inuit Employee Survey, however, the percentages are inconsistent where they should be equal.

IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE

The GN recognizes the Proponent is compliant in their Project Certificate requirements to report on population movement data and the administration of a voluntary survey (Project Certificate No. 005 Amendment 3, Terms and Conditions No. 133 and 168). The migration of Inuit workers from Nunavut to other communities and to southern Canada is of high importance as it may impact communities permanently. Clarification of Inuit employee and contractor migration data for 2019 will ensure the efficacy of the Proponent's socio-economic monitoring program.

A revision of the figures provided is recommended to ensure consistency and clarity. The percentages given in the largest box of page 555 differ from those found on pages 456 & 458, although their definitions and sources appear identical. If these changes are not required, please add clarity on the origin of this data. From the information presented, the figures above seem to all come from a unique *2019 Inuit Employee Survey*.

RECOMMENDATION(S)

The GN requests that the Proponent:

1. Make revisions to the percentages outlined in Table 4.62 to reflect the results in Table 4.37.
2. Provide clarity on the origin of the data relating to whether the recommended changes are not required.

GN Comment # 05	
Department	Education
Organization	Government of Nunavut
Subject/Topic	Childcare Availability in Affected Communities
Terms and Conditions	145, 146
References	<ul style="list-style-type: none"> • 2019 Annual Report for the Mary River Project, Section 4 (p. 489)
IDENTIFICATION OF ISSUE	
<p>The Government of Nunavut (GN) acknowledges the Proponent's efforts to consult with the Department of Family Services regarding childcare availability, and the various initiatives and priorities addressed on the topic of childcare in the affected communities. Despite these efforts, the GN has identified a gap in the communication between the Proponent and the GN Department of Education (GN-EDU), Early Childhood Education division.</p> <p>The 2019 Annual Report for the Mary River Project states that "Appropriate community-level indicator data are currently unavailable for the topic of childcare availability and costs[...] Inadequate access to childcare in the Local Study Area (LSA) may be creating some barriers to increased employment of women at the Project."</p> <p>The Proponent is not adequately consulting with the GN-EDU, Early Childhood Education division to mitigate this issue.</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>The GN-EDU, Early Childhood Education division is responsible for licensing childcare facilities, and offers funding to support start-up costs, operation and maintenance, and training. However, facilities are operated by communities and/or non-profit organizations in the territory.</p> <p>The GN-EDU, Early Childhood Education Division collects information that may further contribute to understanding childcare availability in communities. Through the Qikiqtaaluk Socio-Economic Monitoring Committee (QSEMC) and the Socio-Economic Monitoring Working Group (SEMWG), the GN-EDU, Early Childhood Education Division can provide this information to support the Proponent and other stakeholders with their child care initiatives in the Baffin LSA.</p> <p>In addition, given the foregoing, the GN-EDU, Early Childhood Education division has funding and training opportunities to assist in the successful operation of community child care facilities.</p>	

To operate safely and effectively, childcare facilities in Nunavut must meet specific licensing criteria. As the licensing body for childcare facilities, the GN-EDU, Early Childhood Education division should be consulted prior to the allocation of funds towards the development of floor plans in an effort to meet these criteria. This will ensure all funding sources are applied efficiently, either to enhance existing child care facilities which require upgrades, or towards start up costs, training support, or operation and maintenance of a new facility.

RECOMMENDATION(S)

The Proponent should more actively consult and collaborate with the GN-EDU Early Childhood Education division in respect of childcare facilities in the LSA. Such additional consultation and collaboration will allow the GN to adequately provide guidance and licensing requirements to the Proponent for child care facilities in the LSA.

GN Comment # 06	
Department	Economic Development and Transportation
Organization	Government of Nunavut
Subject/Topic	Migration Intentions of Inuit Employees and Contractors
Terms and Conditions	133
References	200521-08MN053 Mary River Project 2019 NIRB Annual Report, May 2020 <ul style="list-style-type: none"> • Section No. 4 Performance on PC Conditions, pp. 458 Table 4.39
IDENTIFICATION OF ISSUE	
<p>The Government of Nunavut (GN) has identified an opportunity for data collection through the Inuit Employee Survey. The Inuit Employee Survey was administered only to the Inuit residing in the North Baffin Local Study Area (LSA). The next versions of the Inuit Employee Survey should also be administered to Inuit residing in Iqaluit and non-Nunavut communities.</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>The GN recognizes the Proponent is compliant in their Project Certificate requirements to report on population movement data and the administration of a voluntary survey (Project Certificate No. 005 Amendment 3, Terms and Conditions No. 133 and 168). The migration of Inuit workers from Nunavut to other communities and to southern Canada is of high importance as it may impact communities permanently. will ensure the efficacy of the Proponent’s socio-economic monitoring program.</p> <p>Table 4.39 provides us with valuable information. In its footnotes, we find reference to Iqaluit and non-Nunavut communities. To increase the clarity and usefulness of this table, it would be desirable to be more specific with the destinations of the migrants. Presenting the number of respondents considering ‘non-Nunavut communities’ and ‘Iqaluit’ would give the reader a much better grasp of the situation. It would increase the precision of this table.</p>	
RECOMMENDATION(S)	
<p>The GN recommends that the Proponent modify the Inuit Employee Survey to be administered to Inuit employees residing in “non-Nunavut communities” and “Iqaluit, and report on the number of respondents.</p>	