

July 4, 2024

Cory Barker  
Manager, Project Monitoring  
Nunavut Impact Review Board  
P.O Box 1360  
Cambridge Bay, NU X0B 0C0

**Sent VIA Email: [info@nirb.ca](mailto:info@nirb.ca)**

**Re: Comment Request for Baffinland Iron Mines Corporation's Mary River Project 2023 Annual Report**

Dear Cory Barker,

The Government of Nunavut (GN) would like to thank the Nunavut Impact Review Board (NIRB) for the opportunity to provide comments on Baffinland Iron Mines Corporation's 2023 Annual Report for the Mary River Project, NIRB File # 08MN053.

The GN has reviewed the proposed project and related documents and has eight (8) comments to share with the Board, which are appended to this letter.

The GN appreciates participating in the ongoing review and monitoring of this project through the NIRB process. Should there be any concerns or need for follow-up, please do not hesitate to contact me at [jbuller@gov.nu.ca](mailto:jbuller@gov.nu.ca).

Qujannamiik,



Justin Buller  
Interim Avatiliriniq Coordinator  
Government of Nunavut

GN AR # 01	
<b>Department</b>	Environment
<b>Organization</b>	Government of Nunavut
<b>Subject/Topic</b>	Snow track surveys
<b>Terms and Conditions</b>	54dii, 58f (Project Certificate No. 005, Amendment No. 004).
<b>References</b>	<ul style="list-style-type: none"> <li>• Baffinland Iron Mines Corporation. Appendix G.5.1 – Mary River Project Terrestrial Environment 2023 Annual Monitoring Report (March 2024).</li> <li>• Baffinland Iron Mines Corporation. Appendix G.5.1 – Mary River Project Terrestrial Environment 2022 Annual Monitoring Report (April 2023a).</li> <li>• Baffinland Iron Mines Corporation. Terrestrial Environment Mitigation and Monitoring Plan, BAFPH-830-P16-0027 (March 2016).</li> <li>• Baffinland Iron Mines Corporation. Draft Terrestrial Environment Mitigation and Monitoring Plan, BAFPH-830-P16-0027 (March 2023b).</li> <li>• Boulanger, J., Kite, R., Campbell, M., Shaw, J., Lee, D., &amp; Atkinson, S. (2024). Estimating the effects of roads on migration: a barren-ground caribou case study. <i>Canadian Journal Zoology</i>, 102, 476–493. <a href="https://doi.org/10.1139/cjz-2023-012">https://doi.org/10.1139/cjz-2023-012</a></li> <li>• Chen, H.L., &amp; Koprowski, J.L. (2019). Can we use body size and road characteristics to anticipate barrier effects of roads in mammals? A meta-analysis. <i>Hystrix: The Italian Journal of Mammalogy</i>, 30(1),1–7. <a href="https://doi.org/10.4404/hystrix-00185-2019">https://doi.org/10.4404/hystrix-00185-2019</a></li> <li>• Severson, J.P., Vosburgh, T.C., &amp; Johnson, H.E. (2023). Effects of vehicle traffic on space use and road crossings of caribou in the Arctic. <i>Ecological Applications</i>, 33(8): e2923. <a href="https://doi.org/10.1002/eap.2923">https://doi.org/10.1002/eap.2923</a></li> <li>• Smith, A., &amp; Johnson, C.J. (2023). Why didn't the caribou (<i>Rangifer tarandus groelandicus</i>) cross the winter road?</li> </ul>

	<p>The effect of industrial traffic on the road-crossing decisions of caribou. <i>Biodiversity and Conservation</i> 32, 2943–2959.  <a href="https://doi.org/10.1007/s10531-023-02637-4">https://doi.org/10.1007/s10531-023-02637-4</a></p> <ul style="list-style-type: none"> <li>• Agnico Eagle Mines Limited: Meliadine Division, Appendix 25 – 2023 Terrestrial Environment Management and Monitoring Plan Annual Report (March 2024).</li> </ul>
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## IDENTIFICATION OF ISSUE

The Government of Nunavut (GN) has identified three concerns with the snow track survey study design and results presented in Baffinland Iron Mines Corporation’s (Baffinland, BIMC, or the Proponent) Mary River Project Terrestrial Environment 2023 Annual Monitoring Report, Appendix G.5.1 (Appendix G.5.1; Baffinland, 2024). Specifically, these concerns include:

- 1) the definitions used to categorize data;
- 2) the presentation/assessment of interannual trends; and,
- 3) the absence of a distance metric in the study design to determine the effective detection range of snow tracks by observers.

As the snow track surveys aim to evaluate potential project impacts on caribou and other terrestrial wildlife, it is crucial to ensure that study designs and subsequent analyses are robust.

## IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE

### Definitions

The methodology in the Appendix G.5.1, indicates that wildlife snow tracks recorded by observers driving along the Tote Road were categorized as “deflected, travelled along, or crossing the road,” and the point of deflection was defined as “the point where the animal redirected its path away from the road (Page 148; BIMC, 2024).” Appendix G.5.1 summarizes that in 2023:

*11% of recorded Ptarmigan, 15% of Arctic hare and 2% of foxes deflected from the road, whereas 67% of Ptarmigan, 40% of lemming, 23% of Arctic hare and 54% of foxes travelled along the Tote Road... [o]nly 4.3% of all tracks were recorded as deflections the Tote Road (Page 149; Baffinland, 2024)*

The GN has concerns with two of the definitions (i.e., deflections and “traveling along the road”) used for categorizing snow tracks.

The GN suggests that tracks approaching the Tote Road and then turning to run parallel without crossing it could be categorized as deflections. Indeed, in Baffinland's Draft Terrestrial Environment Mitigation and Monitoring Plan (Draft TEMMP; Baffinland 2023b), caribou deflection is defined as, "[c]aribou that fail to cross the Railway or Tote Road after approaching it (Page 25; Baffinland, 2023)." By this definition, caribou that approach and then parallel the road, without crossing it, would be categorized as deflectors regardless of whether they are observed turning away from the road. As such, this same definition should be applied to the categorization of snow tracks. If wildlife tracks are seen approaching a road and then turning to move parallel to it (without crossing), they should be classified as deflections.

A high percentage of wildlife tracks were categorised as travelling "along the Tote Road" (Page 149; Baffinland, 2024). However, the photographic evidence presented in Appendix G.5.1 illustrate that the tracks are seen moving alongside the Tote Road (Photo 9-3) and parallel to the Tote Road (Photo 9-1), rather than on the road itself. In categorizing snow tracks, a distinction should be made between tracks travelling on the road itself versus those traveling alongside it. The latter may reflect animals that have avoided crossing (i.e., deflected from) the road, while the former are likely those using the road for ease of travel.

### **Presentation/Assessment of Interannual Trends**

Figure 9-2. 2023 interannual trends — snow track survey (2014 to 2023) in Appendix G.5.1 summarizes the number of tracks observed by species across years. The data presented in this figure do not account for variation in survey effort. For example, in 2022 4 snow track surveys were conducted (Baffinland, 2023) while in 2023, 6 snow track surveys were conducted (Baffinland, 2024). The exclusion of this information impacts the interpretation of interannual trends.

### **Detection Range**

The stated purpose of snow track surveys is to, "[m]onitor the patterns of movement and response of caribou and other wildlife to Project-related activities based on their observable tracks in proximity to roadways" (Page 148; BIMC, 2024).

Section 9.1.1 of Appendix G.5.1 describes the data recorded for each track observed during surveys. However, the methodology does not include recording the distance of a track from the road when it was first observed. Recording this distance metric would help determine the effective detection range of snow track surveys and assess the power of these surveys to detect road impacts on wildlife.

Species are expected to react to roads at differing spatial scales, with response distance potentially linked to species size (Chen and Koprowski, 2019). For instance, larger

species like caribou may alter their movements in response to roads and traffic at distances ranging from hundreds of meters to several kilometers (e.g., AEM 2024; Boulanger et al., 2024; Severson et al. 2023; Smith and Johnson, 2023). In contrast, small species, like lemmings, may respond to roads at distances of only a few meters. Therefore, the GN believes that the specified distance metric would be valuable in helping assess whether the detection range of snow track surveys aligns with potentially differing species-specific response distances. Ultimately, it is crucial that snow track surveys achieve their intended purpose.

### **RECOMMENDATION(S)**

The GN recommends the following regarding the above concerns:

- 1) In this and future reports, the Proponent should ensure the definition of deflection used in snow track surveys mirrors the definition provided in the Draft TEMMP (Baffinland, 2023).
- 2) In this and future reports, the Proponent should distinguish (during data collection, subsequent analyses, and data visualization) between tracks found moving parallel to the road versus those moving along the road itself when categorizing snow tracks.
- 3) In this and future reports, the Proponent should present snow track frequency data adjusted for survey effort.
- 4) In future surveys the Proponent should record the distance of track from the road at the time of first observation. This information should be summarized by species in future annual reports.

GN AR # 02	
<b>Department</b>	Environment
<b>Organization</b>	Government of Nunavut
<b>Subject/Topic</b>	Caribou Aerial Survey
<b>Terms and Conditions</b>	53b, 54b, 58b (Project Certificate No. 005, Amendment No. 004)
<b>References</b>	<ul style="list-style-type: none"> <li>• Baffinland Iron Mines Corporation. Appendix G.23 –Mary River Project 2021 Annual Report, Caribou Monitoring Triggers and Recommendations Report. (March 2022)</li> <li>• Baffinland Iron Mines Corporation. Appendix G.5.1 – Mary River Project Terrestrial Environment 2023 Annual Monitoring Report. (March 2024)</li> </ul>
IDENTIFICATION OF ISSUE	
<p>As described in Section 9.5 Aerial Caribou Survey of Appendix G.5.1 (Baffinland, 2024), the stated objective of the caribou aerial survey was to estimate the abundance and density of North Baffin caribou within the survey study area. However, the GN notes that this result is not reported. Additionally, the GN requests clarity on the Proponent's modeling process, specifically, the stated assumption of independence of observations made by the primary and secondary observers.</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>The objective of the aerial survey conducted by the Proponent and described in Section 9.4 of Appendix G.5.1 was:</p> <p><i>[to] estimate the abundance and density of North Baffin caribou in the northern (i.e., active Project area) and southern (i.e. planned/future Project area) subregions of the wildlife RSA (EDI Environmental Dynamics Inc. 2022b). (Page 171; Baffinland, 2024)</i></p> <p>However, Appendix G.5.1 appears to lack a subsection discussing the estimated abundance and density of caribou resulting from this aerial survey. The GN notes that the last subsection presented on this topic in Appendix G.5.1 is section 9.5.2.2 Modeling</p>	

Outcomes. While this omission may be an editorial oversight, the GN emphasizes that providing complete information in annual reports is essential for a thorough review and promotes transparency for all stakeholders. Additionally, the GN wishes to highlight the relevancy of these results with respect to Baffinland's 2022 Caribou Monitoring Triggers and Recommendations Report which states:

*... a sample of 35 collared caribou per year is most likely required for a study informing potential Project impacts on caribou. The collaring program and analyses require at least 350 caribou, or 35 groups, to be present within the study area(s) (Baffinland, 2022).*

In section 9.5.1.3 of Appendix G.5.1, the Proponent states "An MRDS model was developed with the following assumptions: (1) independence of observation made by the primary and secondary observers and (2) point independence" (Page 176; Baffinland, 2024). The GN requests justification for this approach as the detections made by one observer may influence the detections of the other observer in double-observer studies through various modalities like body language.

#### **RECOMMENDATION(S)**

The GN recommends the following regarding the above concerns:

- 1) The Proponent should revise Appendix G.5.1 to include the results on caribou abundance and density.
- 2) The Proponent should provide justification (or additional clarification) for the assumption of independence of observations made by the primary and secondary observers.

GN AR # 03	
<b>Department</b>	Environment
<b>Organization</b>	Government of Nunavut
<b>Subject/Topic</b>	Tote Road Traffic
<b>Terms and Conditions</b>	179(b) (Project Certificate No. 005, Amendment No. 004).
<b>References</b>	<ul style="list-style-type: none"> <li>• Baffinland Iron Mines Corporation. Baffinland Iron Mines Corporation Mary River Project – 2023 Annual Report to the Nunavut Impact Review Board (May 2024a).</li> <li>• Baffinland Iron Mines Corporation. Appendix G.5.1 – Mary River Project Terrestrial Environment 2023 Annual Monitoring Report (March 2024b).</li> <li>• Baffinland Iron Mines Corporation. NIRB Application for Screening #125893 Sustaining Operations Proposal 2 (March 2024c).</li> <li>• Severson, J.P., Vosburgh, T.C., &amp; Johnson, H.E. (2023). Effects of vehicle traffic on space use and road crossings of caribou in the Arctic. <i>Ecological Applications</i>, 33(8): e2923. <a href="https://doi.org/10.1002/eap.2923">https://doi.org/10.1002/eap.2923</a></li> <li>• Smith, A., &amp; Johnson, C.J. (2023). Why didn't the caribou (<i>Rangifer tarandus groelandicus</i>) cross the winter road? The effect of industrial traffic on the road-crossing decisions of caribou. <i>Biodiversity and Conservation</i> 32, 2943–2959. <a href="https://doi.org/10.1007/s10531-023-02637-4">https://doi.org/10.1007/s10531-023-02637-4</a></li> </ul>
IDENTIFICATION OF ISSUE	
<p>Baffinland's 2023 Annual Report to the Nunavut Impact Review Board (NIRB) (Annual Report) indicates that Baffinland transported approximately of 5.5 million tonnes of ore via the Tote Road (Page 568, Baffinland, 2024a). Additionally, Appendix G.5.1 indicates that the mean number of ore haul transits in 2023 is near the predicted value presented in the Final Environmental Impact Statement (FEIS) Addendum for the Production Increase Proposal (PIP) (Page 39; Baffinland, 2024b) necessary for transporting 6 Mtpa.</p>	



As such, the GN is concerned that haul truck traffic necessary to transport the target of 6 Mtpa may exceed FEIS Addendum predictions.

### **IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE**

In 2023, approximately 5.5 million tonnes of ore were hauled via the Mary River Project's (the Project) Tote Road (Page 568, Baffinland, 2024a). As such, the total amount of ore hauled via the Project's Tote Road in 2023 was less than the Proponent's target of 6 Mtpa as described in Baffinland's FEIS Addendum for the PIP (Page 39; Baffinland, 2024b). Additionally, the Annual Report indicates that the mean number of haul truck transits (i.e., one-way trips) per day in 2023 was 234.2/day (Page 219; Baffinland, 2024a). Appendix G.5.1 indicates that the mean number of ore haul transits in 2023 is near the predicted value presented in the necessary for transporting 6 Mtpa (i.e., 236/day) (Page 39; Baffinland, 2024b).

These findings suggest that if the Project's goal of transporting 6 Mtpa are achieved, ore truck traffic rates on the Tote Road are likely to exceed FEIS Addendum predictions. Based on 2023 data, a simple calculation suggests that transport of 6 million tonnes would require an 8.3% increase in traffic above FEIS predictions. However, neither the 2023 Annual Report nor Appendix G.5.1 discusses this likely exceedance of predictions, any required mitigation(s) or its potential impacts on the terrestrial environment, in terms of dustfall and disturbance of wildlife.

Recent studies have demonstrated that industrial roads can impact the behaviour and movements of wildlife, such as barren-ground caribou, at traffic rates of less than 15 vehicles per hour (e.g., Severson et al., 2023; Smith and Johnson, 2023). Traffic rates on the Tote Road are already more than an order magnitude greater than this rate, suggesting that the road likely presents a major barrier to wildlife movement in North Baffin. As such, any exceedances of predicted traffic rates should be rigorously scrutinized.

Figure 6-1 of Appendix G.5.1 (Page 40; Baffinland, 2024b) indicates that the Project has not consistently transported 6 Mtpa on the Tote Road. However, Table 6-1 in Appendix G.5.1 (Page 39; Baffinland, 2024b) indicates that mean daily ore haul truck traffic rates have regularly been near or exceeded the FEIS Addendum prediction for the transport of 6 Mtpa (e.g., 2019, 2020, 2022). Updated and accurate predictions of Tote Road traffic rates using project-specific data should be provided to the NIRB and other parties. This recommendation is being provided in light of the Proponent's awareness of the Project's repeated exceedance of the FEIS prediction and their recent application to the NIRB to continue shipping 6 Mtpa via Milne Inlet, until such time as the southern railway is operational (Baffinland, 2024c).

The GN notes an error in Figure 6-1 found in Appendix G.5.1 (Page 40; Baffinland, 2024b). In this figure, the mean total (both ore haul and non-haul vehicle) daily traffic

rate for 2023 is reported as less than 250. Meanwhile, the Table 6-1 in Appendix G.5.1 (Page 39; Baffinland, 2024b) indicates that the combined vehicle transits for 2023 was 258.7.

### **RECOMMENDATION(S)**

The GN recommends the following regarding the above concerns:

- 1) Based on project-specific traffic data, the Proponent should provide revised haul truck and non-haul truck traffic predictions necessary for the transport of 6 Mtpa of ore on the Tote Road in future years.
- 2) The Proponent should describe any additional mitigation or monitoring that will be implemented in response to any predicted exceedance of Tote Road traffic rates provided in the FEIS.
- 3) The Proponent should provide a revised version of Figure 6-1 (Baffinland, 2024b) showing corrected mean daily traffic rates.

GN AR # 04	
<b>Department</b>	Environment
<b>Organization</b>	Government of Nunavut
<b>Subject/Topic</b>	Passive Dustfall Monitoring
<b>Terms and Conditions</b>	36, 50, 54d, 58c, 187, and 188 (Project Certificate No. 005, Amendment No. 004).
<b>References</b>	<ul style="list-style-type: none"> <li>Baffinland Iron Mines Corporation. Appendix G.5.1 – Mary River Project Terrestrial Environment 2023 Annual Monitoring Report. (March 2024)</li> </ul>
IDENTIFICATION OF ISSUE	
<p>Appendix G.5.1 presents results of the Project's passive dustfall sampling in 2023. Results indicate that annual dustfall exceeded predictions at most monitoring sites. However, these exceedances and their causes are not discussed in the Appendix G.5.1.</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>Table 7-4. Annual dustfall accumulation for sites sampled throughout 2023 of Appendix G.5.1 shows that annual dustfall exceeded dustfall modelling predictions at 24 of 43 (56%) of monitoring sites in 2023 (Pages 72-73; Baffinland, 2024). The frequency of these exceedances suggests significant deficiencies in the dustfall modeling for the Project, resulting in inaccurate predictions.</p> <p>Additionally, discussion of the above exceedances is concerningly absent from text presented elsewhere in Appendix G.5.1. For example, Table 0. Summary of environmental effects monitoring and research activities at the Mary River Project in 2023 in Appendix G.5.1. does not cite the exceedances at monitoring sites. Instead, Table 0 concludes that "2023 dustfall results were consistent with predictions that the highest dustfall would be within the PDA" (Page xvi; Baffinland, 2024).</p>	
RECOMMENDATION(S)	

The GN recommends the following regarding the above concerns:

- 1) That the Proponent provide an explanation as to what deficiencies or invalid assumptions in the Project's dustfall modelling could have resulted in the exceedances presented in Table 7-2.
- 2) That the Proponent provide an explanation as to how future dustfall modelling for the Project will be modified to account for the current inaccuracy that exists.

GN AR # 05	
<b>Department</b>	Environment
<b>Organization</b>	Government of Nunavut
<b>Subject/Topic</b>	Dustfall Imagery Analysis
<b>Terms and Conditions</b>	36, 50, 54d, 58c, 187, and 188 (Project Certificate No. 005, Amendment No. 004).
<b>References</b>	<ul style="list-style-type: none"> <li>• Baffinland Iron Mines Corporation. Appendix G.5.1 – Mary River Project Terrestrial Environment 2023 Annual Monitoring Report (March 2024).</li> <li>• Government of Nunavut. Government of Nunavut Comments on the Mary River Project 2022 Annual Report (July 2022).</li> </ul>
IDENTIFICATION OF ISSUE	
<p>Appendix G.5.1 presents the results of the Project's satellite-based dustfall imagery analysis study. The GN notes two concerns regarding this study.</p> <ol style="list-style-type: none"> <li>1) Estimates of dust fall extent across the dustfall study area showed a marked peak in 2019 compared to other years. The report does not discuss or otherwise investigate factors that potentially contributed to this peak. This information could inform future management of dust fall.</li> <li>2) A pilot study looking at the satellite image-derived Snow Darkening Index (SDI) and Total Suspended Solids (TSS) in snow samples did not detect a significant relationship between the two metrics. However, limited sampling, especially in the higher end of the TSS range likely affected statistical power. Additional sampling is needed.</li> </ol>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>As detailed in section 7.4 Dustfall Imagery Analysis of Appendix G.5.1, the Project's dust fall monitoring program includes conducting studies which examine dust fall extent in the vicinity of the Project through satellite imagery. The use of imagery is being developed by calibrating the satellite-derived Snow Darkening Index (SDI) against two methods of</p>	

direct 'on-the-ground' dust fall measurement; (a) dust fall (g/m<sup>2</sup>) from passive collection canisters, and (b) Total Suspended Solids (TSS) (mg/L) from snow samples. In reviewing the Project's annual report regarding dust fall monitoring, the GN notes the following:

### **Interannual Trends**

Figure 7-23 presents satellite-derived dustfall extents from 2004; 2013-2023 which illustrates a spike in 2019 (Baffinland, 2024, figure 7-23). However, Appendix G.5.1 does not discuss or investigate potential factors that may have contributed to this peak in 2019. Information that contributed to this spike in 2019 could inform future dust monitoring and mitigation and should be presented.

### **Snow Sampling Pilot Study**

An update on the pilot study exploring at the relationship between the satellite image-derived SDI and measurements of TSS in snow samples is provided in 7.4.4 Snow Sampling Pilot Study of Appendix G.5.1 (Baffinland, 2024). A significant relationship between these two metrics was not detected, despite pooling data from 2022 and 2023 (Page 117; Baffinland, 2024). The GN notes, that the sample size used in this study to date has been limited by the total number of snow samples collected, the availability of satellite images corresponding to the dates of snow sampling and cloud cover on sampling days (Page 117; Baffinland, 2024). Additionally, the GN notes that, as demonstrated in Figure 7-25, sampling in the higher portion of the range of TSS measured to date (i.e., > 200 mg/L) has been limited to only two data points (Page 117; Baffinland, 2024).

Furthermore, Section 7.4.4 of the report states that:

*Continuation of the pilot study is being evaluated in relation to the need for and viability of improvements to experimental design, including increased data/image capture and improved geolocation of snow sampling in relation to available satellite imagery. (Page 117; Baffinland, 2024)*

The GN maintains its position, as noted in comments on Baffinland's 2022 Annual Report (GN-AR-03; GN, 2023), that this pilot should continue, and that increasing sample size is a viable means to improve the study design. Additional sampling is needed to increase sample size and provide more data points in the higher part of TSS range. The GN believes this could be achieved by increasing the overall number of snow samples collected, broadening the sampling window to spread sampling over a range of dates greater than in 2022 (May 1 to 9) and 2023 (May 6 to May 15), as well as focusing sampling on days with minimal cloud cover.

## **RECOMMENDATION(S)**

The GN recommends the following regarding the above concerns:

- 1) That the Proponent provide discussion, further investigation, and supporting evidence regarding factors which may have contributed to the sharp peak in dustfall extent detected in 2019 by satellite imagery.
- 2) That the Proponent continue the snow sampling pilot study in 2024. In 2024, more samples should be collected during a broader sampling period. Additionally, the GN recommends that snow sampling should target days with minimal cloud cover.

GN AR # 06	
<b>Department</b>	Environment
<b>Organization</b>	Government of Nunavut
<b>Subject/Topic</b>	Helicopter Traffic
<b>Terms and Conditions</b>	59, 71 and 72 (Project Certificate No. 005, Amendment No. 004).
<b>References</b>	<ul style="list-style-type: none"> <li>• Baffinland Iron Mines Corporation. Appendix G.5.1 – Mary River Project Terrestrial Environment 2023 Annual Monitoring Report (March 2024).</li> <li>• Baffinland Iron Mines Corporation. Terrestrial Environment Mitigation and Monitoring Plan, BAFPH-830-P16-0027 (March 2016).</li> <li>• Baffinland Iron Mines Corporation. Draft Terrestrial Environment Mitigation and Monitoring Plan, BAFPH-830-P16-0027 (March 2023).</li> <li>• Wolfe, S.A., Griffith, B. &amp; Wolfe, C.A.G. (2000). Response of reindeer and caribou to human activities. <i>Polar Research</i>, 19, 63–13. <a href="https://doi.org/10.1111/j.1751-8369.2000.tb00329.x">https://doi.org/10.1111/j.1751-8369.2000.tb00329.x</a></li> <li>• Wilson, S. F., &amp; Wilmshurst, J. F. (2019). Behavioural responses of southern mountain caribou to helicopter and skiing activities. <i>Rangifer</i>, 39(1), 27–42. <a href="https://doi.org/10.7557/2.39.1.4586">https://doi.org/10.7557/2.39.1.4586</a></li> </ul>
IDENTIFICATION OF ISSUE	
<p>Section 5 Helicopter Overflights of Appendix G.5.1 summarizes helicopter traffic supporting Project operations in 2023. After reviewing this section, the GN has three key comments regarding this material. These concerns include:</p> <ol style="list-style-type: none"> <li>1) the number of low-level flights;</li> <li>2) the definition used to justify short distance flights; and,</li> <li>3) the need for a review of helicopter flight corridors to incorporate areas that may be of significance for caribou.</li> </ol>	



## IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE

### 1) Low-level Flights

In 2023, between May and September, 1,799 helicopter flights (totalling 1,041 hours of flying) were made to support Project-related activities (Tables 5-2 and 5-3; Baffinland 2024). Table 5-5 illustrates that of these flights, 72.53% were below the minimum altitudes set by Project terms and conditions for reducing disturbance of migratory birds and other wildlife (e.g., Term and Conditions 71) and established in the TEMMP (Baffinland, 2016) and draft TEMMP (Baffinland, 2023) to avoid disturbance of other wildlife. However, ~68% of these low-level flights had a rationale for flying below minimum altitude thresholds. Consequently, the Proponent deemed these flights to be compliant with Project terms and conditions. Nevertheless, low-level helicopter flights are a potential source of disturbance to wildlife such as caribou (e.g., Wilson and Wilmhurst, 2019; Wolfe et al., 2000).

With respect to helicopter traffic reported in 2023, the GN notes several comments as follows.

### 2) Short Distance Flights

In Appendix G.5.1, the Proponent provides a summary of the various rationales provided by pilots to justify flying below the minimum altitude thresholds. As per Table 5-7, the second most common justification provided was the short distance of a flight; this justification accounted for ~19% of total flight hours in 2023 (Page 33; Baffinland, 2024). In Table 5-6, the Proponent provides pilot rationales for low-level flights. In this table, the description for short distance flights is as follows:

*At the discretion of the pilot who is operating the aircraft during the flight, by considering the distance travelled during a flight as well as other contributing factors, it is determined that gaining an altitude of 650 magl is unreasonable, unsafe, or impractical. These types of trips are generally associated with specific monitoring programs that are MANDATORY and there are no other practical ways of completing them (e.g., water sampling locations not accessible by foot or boat, dustfall sampling, wildlife observations, noise sampling, prospecting) (Page 32; Baffinland, 2024).*

The GN notes that the description of this category of low-level flights appears to combine activities where low-level flying is either a safety or regulatory requirement with those where it is preferred by the Proponent for time and cost savings. Consequently, this category should be subdivided into flights where low-level flying is specifically required

for safety, regulatory purposes, or to complete an aerial-based monitoring activity, versus those where it is done solely for efficiency.

For instance, it is the GN's understanding that activities listed in Table 5-6, such as dustfall sampling, water sampling, and noise sampling, do not typically require low-level flying, as the sampling itself is not conducted while airborne. In contrast, some aerial-based wildlife monitoring (e.g., aerial surveys) specifically requires low-level flying to maintain detection probabilities. Distinguishing between low-level flights that are necessary, versus those that are preferred by the Proponent, is essential for reviewers and the NIRB to fully understand the trade-offs being made by the Proponent in terms of operational efficiency versus wildlife disturbance.

### **Flight Corridors**

Term and condition 59 of the Project Certificate states that:

*The Proponent shall ensure that aircraft maintain, whenever possible (except for specified operational purposes such as drill moves, take offs and landings), and subject to pilot discretion regarding aircraft and human safety, a cruising altitude of at least 610 metres during point-to-point travel when in areas likely to have migratory birds, and 1,000 metres vertical and 1,500 metres horizontal distance from observed concentrations of migratory birds (or as otherwise prescribed by the Terrestrial Environment Working Group) and use flight corridors to avoid areas of significant wildlife importance...*

With respect to the flight corridors for avoiding areas of significant wildlife importance, section 5.2.1 of the report states that:

*Only the key moulting area for Snow Geese was identified for helicopter avoidance in 2023. No locations or boundaries of areas prescribed explicitly by the TEWG or areas of observed concentrations of other migratory birds were identified in 2023 (Baffinland, 2024).*

The Project has accumulated 9 years of helicopter flight corridor data. Given the ongoing concerns about the status of North Baffin caribou combined with the availability of current data on caribou distribution and movements provided by the Proponent's recent aerial survey (e.g., 9.5 Aerial Survey; Baffinland, 2024) and the GN's collaring program, flight corridors currently used by the project should be evaluated to ensure they are avoiding areas of highest caribou use. This evaluation should be undertaken by the Proponent in collaboration with the Terrestrial Environment Working Group (TEWG).

### **RECOMMENDATION(S)**

The GN recommends the following regarding the above concerns:

- 1) The Proponent should provide additional details on what is meant by “unreasonable” and “impractical” in the justifications for low-level flights in Table 5-6 of the Appendix G.5.1.
- 2) In this, and future annual reports, the Proponent should ensure that the category for short distance flights is subdivided to distinguish between flights where low-level flying is: (a) Itself a specific regulatory requirement of the activity being undertaken; (b) Necessary for safety; (c) Necessary to collect the samples, themselves, during a monitoring activity; (d) Being justified solely on the preference to save time, fuel or other factors.
- 3) In this and future annual reports, the Proponent should provide data summarizing the distance of low-level flights that are classified as short distance according to the subdivisions specified in the above recommendation. Pursuant to this recommendation, the Proponent should provide the mean, maximum and minimum distances of low-level flights.
- 4) In collaboration with the TEWG, the Proponent should undertake an evaluation of the Project’s helicopter flight corridors in relation to the distribution and movements of caribou. Using Inuit Qaujimatugangit and Inuit Qaujimaningit and recent scientific data (collected via aerial surveys and satellite collaring) the TEWG should determine whether areas of significant wildlife importance can be delineated and avoided.

<b>GN AR # 07</b>	
<b>Department</b>	Economic Development & Transportation
<b>Organization</b>	Government of Nunavut
<b>Subject/Topic</b>	Language Protection
<b>References</b>	NIRB Project Certificate No. 005 2023 Mary River Socio-Economic Monitoring Report
<b>SUMMARY OF PROPONENT'S CONCLUSIONS</b>	
Baffinland is implementing a program that will enable the company to comply with Nunavut's language laws.	
<b>REVIEWER'S COMMENTS AND SUPPORTING RATIONALE</b>	
"In 2023 the Company launched Aulatijiit, the Inuit Leadership and Development Program (ILDPA) at the Mary River Project". This program integrates Inuit cultural aspect and the use of Inuktitut. Can Baffinland give more details about the use of Inuktitut on its site? Is Aulatijiit complying with the <i>Inuit Language Protection Act</i> , (ILPA), especially section 3 of this Act?	
<b>REVIEWER'S RECOMMENDATIONS</b>	
<p>The GN makes the following recommendations:</p> <ul style="list-style-type: none"> <li>- That the proponent provide additional details in the annual report about the use of Inuktitut across the project sites.</li> <li>- That the proponent include in its annual reports an assessment of how its Aulatijiit program supports compliance with the <i>Inuit Language Protection Act</i>, (ILPA), especially section 3 of this Act</li> </ul>	

<b>GN AR # 08</b>	
<b>Department</b>	Economic Development & Transportation
<b>Organization</b>	Government of Nunavut
<b>Subject/Topic</b>	Gender-based differences in employee retention rates
<b>References</b>	NIRB Project Certificate No. 005 2023 Mary River Socio-Economic Monitoring Report
<b>SUMMARY OF PROPONENT'S CONCLUSIONS</b>	
Baffinland's 2023 report shows that the proportion of Inuit women who keep their jobs is higher than that of men in the region.	
<b>REVIEWER'S COMMENTS AND SUPPORTING RATIONALE</b>	
The proportion of Inuit women working on the site from 2022 to 2023 has increased, compared to the previous year. This means in the Qikiqtaaluk region; women are more likely to keep their jobs at the mine. In the same period, and compared with the Kivalliq region, the opposite trend is observed.	
<b>REVIEWER'S RECOMMENDATIONS</b>	
The GN makes the following recommendation: <ul style="list-style-type: none"> <li>- That the proponent provide an assessment or explanation of which of the proponent's strategies or programs put in place which help to set and maintain this trend. Information on successful efforts are valuable for Inuit, stakeholders, and proponents alike.</li> </ul>	