

To: Cory Barker  
Nunavut Impact Review Board

From: Sarah Kemp de Gereda  
200 - 325 25th Street SE  
Calgary AB T2A 7H8

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Date: May 31, 2024

## Reference: Baffinland Dust Audit Committee 2023-2024 Update

The Baffinland Dust Audit Committee (the Dust Audit Committee) was established in September 2021 to observe and understand the present and potential future dust sources at Baffinland's Mary River Mine Site, Milne Inlet Tote Road Corridor, and Milne Port site, and to recommend dust mitigation measures for

Baffinland's consideration. The formation of a Committee was a commitment outlined in Appendix C – Final Table of Post Phase 2 Approval/Regulatory Phase Commitments for the Mary River Project Phase 2 Proposal ([Baffinland 2022](#)).

The commitment of the Dust Audit Committee is to submit Annual Report by January 31 of each calendar year, however, for this 2023-2024 update and through discussions with the Nunavut Impact Review Board, a revised date and approach was agreed upon. Due to a postponed site visit, the Dust Audit Committee has not had the opportunity to review the full annual report. The Annual Report will be submitted by July 31, 2024, once the Dust Audit Committee has had the opportunity to verify the report in English and Inuktitut.

This memo provides a brief summary of activities completed since submission of the Recommendations Report filed in February 2023 ([Nunami Stantec 2023](#)). Five virtual meetings with the Dust Audit Committee have been held, including two meetings with Baffinland to discuss the recommendations and next steps. A site visit occurred in April 2024, where members of the Dust Audit Committee were able to meet with Baffinland and understand the progress of recommendations to date. Table 1 outlines the Dust Audit Committee Activities for 2023-2024.

**Table 1      Dust Audit Committee Meetings since submission of Report**

Date	Dust Audit Committee Activity
March 23, 2023	Dust Audit Committee meeting to discuss preliminary responses to the submission, including commitments to the Dust Audit Committee and blasting. (Part 1)
March 30, 2023	Dust Audit Committee meeting to discuss preliminary responses to the submission, including dust fall monitoring and material handling. (Part 2)
January 11, 2024	Dust Audit Committee meeting to discuss status of recommendations and logistics for site visits to Mary River Mine.
February 8, 2024	Joint meeting and presentation by Baffinland and NRCan to the Dust Audit Committee to discuss pilot project for dust collection.
March 14, 2024	Presentation by Baffinland to the Dust Audit Committee regarding Steensby; field prep meeting.
April 24-25, 2024	Dust Audit Committee Mary River Mine Site Visit

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Since formation, Dust Audit Committee members have stated the importance of collaborative and ongoing discussions with Baffinland to have concerns regarding dust heard, considered, and mitigated. The Dust Audit Committee Recommendation Report identified concerns regarding dust and related impacts to water and water sources, wildlife and wildlife habitat (including wildlife health), human health, as well as the cumulative effects of mining and dust. This report also highlighted the impact that all industrial activity has on the environment and the related effects on communities on Baffin Island ([Nunami Stantec 2023](#)). The Dust Audit Committee remains interested in understanding more about the dust mitigation measures implemented by Baffinland and has reiterated their concerns about dust and related impacts.

Baffinland has committed to providing ongoing funding to continue discussions with the Dust Audit Committee regarding their recommendations, the status of Baffinland's dust mitigation measures, and any additional concerns identified through meetings with the Dust Audit Committee.

## **Status of Recommendations**

As part of the Recommendations Report, 16 recommendations were proposed by the Dust Audit Committee for implementation by Baffinland. In August 2023, Baffinland provided a response to the recommendations ([Baffinland 2023](#)), and in 2024 a site visit (April 2024) and virtual meetings (March 2024) were conducted, during which Baffinland provided additional responses to the Dust Audit Committee. Table 2 provides the status of recommendations as of the April 2024 site visit. A full response from the Dust Audit Committee to status updates provided by Baffinland will follow with the final report.

**Reference: Baffinland Dust Audit Committee 2023-2024 Update**

**Table 2 Summary of Next Steps 2023/2024**

Category	Recommendation	Baffinland August 2023 Response	Baffinland Update
Blasting	Work with explosives supplier and subject matter experts (SME) to identify dust control measures during the blasting process and to refine blasting protocols to reduce dust and nitrogen oxide (NOx) fumes (seen as yellow dust during the blast) for implementation.  Conduct a blast fragmentation size study with explosive supplier and blasting specialists that can be incorporated into the program under develop regarding conditions of high-risk dust dispersion.	Baffinland will review and evaluate its blasting practices to optimize our blasting procedures.  Results will be reported back to the Dust Audit Committee.	High-level slide presented to the Dust Audit Committee on April 24, 2024  Baffinland stated that they are currently collecting baseline data, in anticipation of any changes in dust emissions, as a result of the Blast Optimization Program (BOP) study.  Dust generation data will continue to be captured during the  BOP study, through recorded video and measurements of  airborne particulate. As new blasting parameters are introduced, the effects on dust generation will be evaluated.
	Update draft explosives management plan once the explosive suppliers and SME's have determined the blasting protocols to develop a Standard Operating Procedure (SOP) for blasting.	Baffinland will update the Explosives Management Plan to include the relevant outcomes of study referenced in response to other blasting recommendations within 60 days of the final report's release.	
	Continue conversations with the Dust Audit Committee to integrate Inuit Qaujimagatuqangit (IQ) into the program under development regarding conditions of high-risk dust dispersion and conditions where additional mitigations can be implemented or blasting may be delayed or rescheduled until wind speeds are within identified thresholds	This recommendation will be part of the development of the program under Project Certificate Amendment No. 4 Term and Condition 188... "develop a program for identification of conditions with high risk for dust dispersal and plan for additional mitigation measures that shall be applied at the times the conditions are present."  The above program is in development, with site specific data collection occurring across Project Sites.	During the 2024 site visit, Baffinland stated that they have been working with the Terrestrial Environment Working Group to develop a program for identification of conditions with high risk for dust dispersal and plan for additional mitigation measures that shall be applied at the times the conditions are present is ongoing and acknowledges its importance.  Baffinland stated that their goal to reduce dust generation at the source, and their work is intended to result in consistent dust reduction during all potential conditions, around the clock.  During exceptional environmental conditions (i.e. weather), Baffinland would initiate existing protocols that may dictate operational shutdown. Baffinland continues to welcome IQ input into the relationship between windspeed and natural phenomena.

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<b>Category</b>	<b>Recommendation</b>	<b>Baffinland August 2023 Response</b>	<b>Baffinland Update</b>
Materials Handling	<p>Conduct a run-of-mine (ROM) optimization study to assess the viability of implementing the following processes to be considered for current and future expansion, including Steensby:</p> <ul style="list-style-type: none"><li>• Using a ROM dump pocket</li><li>• Minimizing the use of front-end loaders (FEL) at the ore pad and the port</li><li>• Use of enclosures to collect and minimize dust</li><li>• Increasing the use of conveyors and transfer chutes</li><li>• Using luffing stackers to reduce drop height when forming stockpiles</li><li>• Cover hoppers when loading conveyors, crushers, or screens</li><li>• Load or unload B-Trains within an enclosed area</li></ul>	<p>These recommendations would require fundamental changes to Baffinland's ore processing and material handling circuit that cannot reasonably be implemented as part of the existing Project. However, Baffinland will carry out an optimization study that considers these recommendations as the Steensby Component of the Project is advanced.</p> <p>Baffinland will provide regular status updates to the Dust Audit Committee through 2023 on this initiative.</p>	<p>Baffinland provided a Steensby Update to the Dust Audit Committee in March 2024 outlining dust management enhancements as part of the Steensby project, such as the enclosure of ore crushing facilities at the mine site and the use of additional dust controls at ore stockpiles.</p> <p>Baffinland will continue to provide updates to the Dust Audit Committee through 2024.</p>

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<b>Category</b>	<b>Recommendation</b>	<b>Baffinland August 2023 Response</b>	<b>Baffinland Update</b>
Dust Fall Monitoring	Explore options to implement a continuous sitewide dust monitoring system for Arctic conditions to track the effectiveness of implemented dust mitigations, including: <ul style="list-style-type: none"><li>• measure changes to dust generation associated with changes to blast designs and execution.</li><li>• determine if there are any exceedances of the ambient air quality standards (at the Project Disturbance Area Boundary) due to dust emissions from blasting and/or mining activities.</li><li>• Understand the contribution of blasting activities to dust emissions.</li></ul>	Baffinland is exploring the feasibility of implementing continuous monitoring for dust around the Project Area, including at Deposit No. 1. Results will be reported back to the Dust Audit Committee.	<p>Baffinland has been using PurpleAir monitors within the Project area to determine when to apply the control (suppressant) rather than factors such as wind speed – direct measurement of parameter of concern (dust concentration) rather than indirect. The Dust Audit Committee will continue discussions with Baffinland regarding the PurpleAir monitors and this trial.</p> <p>Baffinland continues to examine satellite images to characterize dustfall extent and to verify Inuit land users' reports of seeing dust beyond what was predicted, including establishing baseline images of Steensby prior to construction. The satellite imagery also provided a visual representation of the extent of dustfall in areas where it is below detection in dust monitors.</p>
	Install additional passive monitors at a greater distance from the mine to capture the broader regional impacts of dust, including up and down wind of prevailing winds.	<p>Baffinland is exploring the feasibility of implementing a joint trial with NRCAN after consultation with the communities that will compare current passive dust fall monitors with newly developed samplers used by NRCAN in multiple locations for comparison. Baffinland will be implementing this program once NRCAN provides materials and the locations for the new dust monitors. In addition to this, BIM is currently expanding the satellite imagery dustfall extent studies. Results will be reported back to the Dust Audit Committee.</p>	<p>Baffinland and representatives from NRCAN met with the Dust Audit Committee in February 2024 to discuss the proposed dust fall monitoring project. The goals of the project are to investigate the dust at Mary River Mine, and to bridge western science, industry monitoring, and IQ. NRCAN demonstrated potential dust monitoring devices that could be used in Arctic conditions.</p>

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<b>Category</b>	<b>Recommendation</b>	<b>Baffinland August 2023 Response</b>	<b>Baffinland Update</b>
Dust Suppression	Conduct a study to assess the amount of watering and road maintenance equipment required for current and future operations.	Baffinland will initiate a review and evaluation of the amount of watering and road maintenance equipment required for current operations. Results will be reported back to the Dust Audit Committee once a full season of data is collected and analysis occurs.	During the 2024 site visit, Baffinland reported that ambient dust was monitored during a trial under a narrow range of weather conditions. Measurements of dust before and after the application of water on the Tote Road will inform the resourcing of equipment and operators for road watering in 2024. The Dust Audit Committee will continue discussions with Baffinland regarding this trial.
	Research the viability of applying sea water on the haul roads and Tote Road, due to the lower freezing point, if Baffinland considers applying water exclusively as dust suppression.	Baffinland will initiate a review and evaluation of the viability of applying sea water as a dust suppression, as well as continue trialing other products as dust suppression. This investigation will include consultation with regulators to confirm required approvals for such activity.	Baffinland discussed that the 'seawater' is more precisely described as brackish water, and as a dust suppressant would not be considered a significant contributor of "salt" as a suppressant. However, seawater would require frequent reapplication, compared to current CaCl <sub>2</sub> application. Also, seawater is not listed as an approved dust suppressant with the Government of Nunavut, whereas CaCl <sub>2</sub> has been extensively studied and appropriate environmental application procedures have been developed across industry and government to mitigate the environmental risks of its use. For these reasons, Baffinland does not consider sea water to be a viable option for dust suppressant.
	Develop a SOP on dust suppression products that includes procedures for the application on and the ongoing maintenance of the active mine haul roads.	Baffinland will develop SOP for application of dust suppressants and the ongoing maintenance for active mine haul roads.	Baffinland has developed SOPs for dust suppression activities on mine haul roads including the tote road that will be implemented in 2024. At the time of the Dust Audit Committee's site visit, dust suppression activities had not started yet due to winter conditions.
	Conduct a study on dust suppressants for utilization on ore that is loaded onto the B-train trucks, instead of covers due to challenges of Arctic winter conditions. The study should also examine which is the most effective dust suppressant for the Arctic weather conditions.	Baffinland will initiate a review and evaluation of the potential benefit of adding dust suppressants along portions of the material handling circuit. Results will be reported back to the Dust Audit Committee once available.	Potential benefit of adding dust suppressants along portions of the material handling circuit are in trial, as seen for example at Crusher C. Baffinland provided an overview of the trial being conducted at Crusher C while the Dust Audit Committee was at site in April 2024.

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<b>Category</b>	<b>Recommendation</b>	<b>Baffinland August 2023 Response</b>	<b>Baffinland Update</b>
Dust Suppression (cont'd)	Analyze aircraft approved dust suppression products for use on the runway. Approved products for runway use should be incorporated into the SOP on dust suppression.	Baffinland will initiate a review and evaluation of the potential benefit of adding dust suppressants or other measures to reduce dust dispersion at the runway. Results will be reported back to the Dust Audit Committee once available.	During the 2024 site visit, Baffinland noted that this evaluation is still underway, and that a water tanker was commissioned in 2023 from June through early September. Water was applied as a dust suppressant to the airstrip and upon before the arrival and departure of 737 passenger and cargo aircraft. During that time, water was applied, as needed, when dry conditions were observed. Baffinland reported that this concentrated effort resulted in the lowest concentrations recorded at the dust fall monitor adjacent to the airstrip since monitoring began.
	Examine the use of wind fences around dust generating infrastructure and complete a feasibility study to determine how to use wind fencing most effectively at both the mine site and the port site, taking into consideration Arctic weather conditions.	Baffinland will initiate a review and evaluation of the potential benefit of installing wind fencing to reduce dust dispersion at Milne Port and other locations across the Project site. Results will be reported back to the Dust Audit Committee once available.	A Feasibility Review was provided to QIA on September 25, 2023. During the 2024 site visit, Baffinland showed maps with current WeatherSolve wind fence locations. Baffinland indicated its concerns about challenges related to ongoing maintenance and operation of these wind fences, as well as the challenges with initial installation. Based on the feasibility study conducted, Baffinland stated that the main technical constraint around the wind fencing included "ice fog" or "rim ice", which could cause significant weight to be applied to these structures.  Baffinland also stated that blowing snow would be blocked by wind fence as well. Baffinland stated that their alternative to wind fences is to use sprays on stockpiles to prevent dust from blowing away.
	Examine areas where water treatment areas can be increased to reduce the amount of dust and particles that enters the drainage basin to reduce the potential effect of dust on the environment, and the reduction of dust that enters the drainage outside of the Project boundaries.	Further discussions between Baffinland and the Dust Audit Committee will continue with regards to this recommendation.	

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<b>Category</b>	<b>Recommendation</b>	<b>Baffinland August 2023 Response</b>	<b>Baffinland Update</b>
Dust Audit Committee	<p>Request:</p> <ul style="list-style-type: none"><li>• Ongoing funding of the Dust Audit Committee.</li><li>• Provision of documents in both English and Inuktitut through accessible means.</li><li>• A transparent process of providing data obtained through ongoing studies conducted by Baffinland, the Terrestrial Environment Working Group and the Marine Environment Working Group.</li><li>• Establish a virtual monitoring website that is accessible to the five Northern communities.</li></ul>	<p>Baffinland will continue to support the Dust Audit Committee to continue to meet and receive updates regarding dust and dust sources, performance of mitigation measures and solicit input regarding potential refinements or improvements.</p> <p>Baffinland will report back to the Dust Audit Committee on the implementation and results of their recommendations.</p> <p>Baffinland will facilitate ongoing site visits to allow the Dust Audit Committee to observe the implementation of recommendations.</p> <p>Baffinland will enhance communications via its existing website with respect to environmental monitoring and mitigations on a more frequent basis than is currently available. The website will be accessible to the five Northern communities.</p>	<p>Baffinland continues to fund the Dust Audit Committee.</p> <p>Baffinland continues to provide interpretation, and translation of requested documents.</p> <p>The Dust Audit Committee will continue discussions with Baffinland regarding the data sharing and the website.</p>



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## **Closing**

Baffinland and the Dust Audit Committee will continue to have ongoing meetings to discuss the implementation of mitigations, and opportunities to review updates to standard operating procedures. These discussions will continue as a result of Baffinland's commitment to ongoing funding of the Dust Audit Committee.

The Annual Report will be submitted in the following months once the Dust Audit Committee has had the opportunity to verify the report in English and Inuktitut.

For any questions related to the information in the memo above, please do not hesitate to contact the undersigned.

**Sarah Kemp de Gereda**

Project Manager

Nunami Stantec

Tel: 403.3545861

Email: [sarah.kempdegereda@stantec.com](mailto:sarah.kempdegereda@stantec.com)

**Christina Poletto**

Facilitator, Indigenous Services

Nunami Stantec

Tel: 403.4737683

Email: [christina.poletto@stantec.com](mailto:christina.poletto@stantec.com)

c. Cortney Oliver, Baffinland