

June 5, 2024

Leah Klaassen
Impact Assessment Officer
Nunavut Impact Review Board
P.O Box 1360
Cambridge Bay, NU X0B 0C0

Sent VIA Email: info@nirb.ca

Re: Comment Request for Agnico Eagle's Meliadine Project 2023 Annual Report

Dear Leah Klaassen,

The Government of Nunavut (GN) would like to thank the Nunavut Impact Review Board (NIRB) for the opportunity to provide comments on Agnico Eagle's 2023 Annual Report for the Meliadine Project, NIRB File # 11MN034.

The GN has reviewed the proposed project and related documents and has fourteen (14) 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.

Qujannamiik,



Justin Buller
Interim Avatiliriniq Coordinator
Government of Nunavut

GN AR # 01	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Terrestrial Advisory Group (TAG) Annual Report
Terms and Conditions	44, 132
References	<ul style="list-style-type: none"> Agnico Eagle: Meliadine Gold Mine, Appendix 32 – 2023 TAG Annual Report (March 2024)
IDENTIFICATION OF ISSUE	
<p>Agnico Eagle Mines Ltd.'s (AEM or the Proponent) Appendix 32 - 2023 Terrestrial Advisory Group (TAG) Annual Report (Appendix 32) summarizes the TAG's activities and the status of various action items.</p> <p>The Government of Nunavut (GN) notes that Appendix 32 may not reflect the views or opinions of all TAG members. Specifically, the GN disagrees with the status of several action items as reported by AEM in Appendix 32.</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>TAG annual reports should accurately reflect the input provided by its members. Maintaining transparency in annual report documentation will help inform the Nunavut Impact Review Board (NIRB) on the status of monitoring for the Meliadine Project (the Project) and help the TAG function as an effective advisory body.</p> <p>Table 2 in Appendix 32 summarizes the status of action items concerning the TAG in 2023. The GN disagrees with the reported status of two items in this table as follows:</p> <ol style="list-style-type: none"> 1) Action item number 2022-8 in Appendix 32 states that: <p>“AEM should circulate a work plan for the TAG showing the priority items for the next few years” (Page 9).</p> 	

It is the GN's understanding that the intent of this workplan was to focus the activities of the TAG on items deemed to be of greatest importance regarding project monitoring and management. In Appendix 32, AEM reports the status of this action as "Resolved." However, the GN wishes to indicate that action item 2022-8 is an unresolved action item from 2022. To date, a workplan has not been developed and/or reviewed with the TAG.

2) Action item number 2022-14 in Appendix 32 states that:

"Annual TEMMP report: Discuss in advance what should be included in the annual TEMMP report in terms of its structure and content." (Page 13)

The GN notes that this recommendation was to ensure that the Terrestrial Environment Mitigation and Monitoring Plan (TEMMP) Annual Report was discussed by the TAG in advance of its preparation. This discussion would afford the TAG an opportunity for meaningful input regarding the presentation and analyses of data relevant to monitoring Project impacts on wildlife and the effectiveness of mitigation measures. In Appendix 32, AEM lists the status of this action item as "Resolved."

The TAG received an overview of the 2022 TEMMP Annual Report, but this occurred on April 14th, 2023, after the report had been drafted.

The content of the 2023 TEMMP Annual Report was not discussed with the TAG in advance of its preparation. Instead, the TAG only received an overview of the draft 2023 TAG Annual Report (i.e., one component of the TEMMP Annual Report) and was allotted the opportunity to comment in January and February 2024. As such, in the GN's view, action item 2022-14 is unresolved.

RECOMMENDATION(S)

The GN recommends the following regarding the above concerns:

- 1) The Proponent should endeavour to reach consensus with members of the TAG on future TAG reports. Additionally, the Proponent should record where unanimous agreement or differences of opinion exist amongst TAG members regarding specific action items or related materials. Where differing opinions exist, this should be summarized in the TAG report along with any plans for resolution.
- 2) The Proponent should revise the status action items 2022-8 and 2022-14 in Table 2 to read as "Unresolved".

GN AR # 02	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Raptor Surveys
Terms and Conditions	59, 71, 72
References	<ul style="list-style-type: none"> • Agnico Eagle: Meliadine Division. Terrestrial Environment Management and Monitoring Plan. Version 4 (April 2022) • Agnico Eagle Mines Limited: Meliadine Division, Appendix 25 – 2023 Terrestrial Environment Management and Monitoring Plan Annual Report (March 2024)
IDENTIFICATION OF ISSUE	
Appendix 25 does not provide information on raptor nest productivity in the vicinity of the Project despite being a listed objective in section 4.9.2 in the Project's TEMMP.	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>Per section 4.9.2 of the TEMMP (AEM, 2022), objectives of the raptor monitoring program are as follows:</p> <p><i>The raptor monitoring program will be completed on an annual basis with the following objectives:</i></p> <ul style="list-style-type: none"> • <i>annual occupancy survey of all known nesting sites;</i> • <i>first year survey of high quality habitat to search for new nesting sites;</i> • <i>monitor distribution and breeding density;</i> • <i>monitor clutch size and productivity; and marking individual adults and nestlings to identify site fidelity and mortality causes (Page 56).</i> <p>Pursuant to the above objectives, Appendix 25 indicates that “[s]tudy design included two surveys: one to assess the location of occupied territories during the pre-incubation and incubation periods, and one to assess site productivity during the late brood rearing period” (Page 171). Appendix 25 presents an analysis of 2022-2023 raptor data to examine nest occupancy as a function of distance from sources of anthropogenic</p>	

disturbance to test whether the Project may be affecting nest occupancy. However, the GN notes that Appendix 25 does not present a similar analysis for nest productivity.

RECOMMENDATION(S)

The GN recommends the following regarding the above concerns:

- 1) The Proponent provide an explanation as to why an analysis of raptor nest productivity in relation to anthropogenic disturbance is not included in Appendix 25.
- 2) The Proponent provide information on what plans are in place to assess Project effects on raptor nest productivity.

GN AR # 03	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Caribou Behavior Study Results and Road Mitigation
Terms and Conditions	57
References	<ul style="list-style-type: none"> • Agnico Eagle Mines Limited: Meadowbank Division. Meadowbank Division Terrestrial Ecosystem Management Plan, Version 7. (June 2019) • Boulanger, J., Kite, R., Campbell, M., Shaw, J., Lee, D., & Atkinson, S. (2024). Estimating the effects of roads on migration: a barren-ground caribou case study. <i>Canadian Journal Zoology</i>, 102, 476–493. https://doi.org/10.1139/cjz-2023-012 • Nunavut Impact Review Board. Project Certificate No. 006, Amendment 002 (March 2022) • Severson, J.P., Vosburgh, T.C., & 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. https://doi.org/10.1002/eap.2923 • Smith, A., & 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. https://doi.org/10.1007/s10531-023-02637-4 • Agnico Eagle Mines Limited: Meliadine Division, Appendix 25 – 2023 Terrestrial Environment Management and Monitoring Plan Annual Report (March 2024)
IDENTIFICATION OF ISSUE	
<p>Results from the Project's caribou behaviour monitoring program, as detailed in Appendix 25, have not been used to inform adaptive management for the Project despite this being required under Project Certificate (No. 006, Amendment No. 002) Term and Condition 57 (NIRB, 2022).</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	

Term and Condition 57 of the Project Certificate (No. 006, Amendment No. 002) directly links the results of wildlife monitoring programs to adaptive management where adverse effects are found.

Term and Condition 57 states:

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

a. An examination for trends in the measured natural variability of Valued Ecosystem Components in the region relative to the baseline reporting;

b. A detailed analysis of wildlife responses to operations with emphasis on wildlife behaviour, mortalities and displacements (if any), responses to operations of the all-weather access road and associated access roads/trails, and the waterlines;

c. A demonstration and description of how the monitoring results, including the all-weather access road, associated access roads/trails, and waterlines contribute to cumulative effects of the project; and

d. Any proposed changes to the monitoring survey methodologies, statistical approaches or proposed adaptive management stemming from the results of the monitoring program (NIRB, 2022).

(emphasis added by reviewer)

Appendix 25 provides an update on the Project's caribou behavior monitoring program, stating that:

Groups within 300 m of the road tended to have higher proportions of response behaviours than those further away..... These results support that within 300 m of the road, caribou are more alert and active. Following a disturbance event, the proportion of response behaviours in a group of caribou increased, but typically returned to baseline behaviours within two sampling periods (i.e., six minutes). Caribou were statistically more likely to be walking, alert, or running in sampling periods where a disturbance occurred (Page 35).

Despite finding that groups of caribou are visibly disturbed by traffic on the Project's All-Weather-Access-Road (AWAR) and that this disturbance occurs amongst caribou that are at least within 300m of the AWAR, the report does not make any recommendations for adaptive management.

AEM continues to only implement its traffic suspension protocol when 50 or more caribou are within 100m of the road (Section 4.2.1, AEM, 2022). However, results from behaviour monitoring indicate that this distance threshold is insufficient to prevent disturbance of caribou and justifies a distance threshold beyond 300m. In comparison, the threshold for road closure at AEM's Meadowbank-Whale tail mine is 1500m (section 3.4; AEM, 2019). Studies have also demonstrated that caribou movements at this mine are affected by roads at distances of between 3 to 17 km (Boulanger et al., 2024) with the presence of traffic significantly reducing the probability of road crossing by caribou. This finding is supported by other recent studies of barren-ground caribou (e.g. Severson et al. 2023; Smith and Johnson 2023).

The GN notes that, despite the findings of the Project's caribou behavior studies, recent peer-reviewed research on barren-ground caribou responses to roads and traffic, and on-going concerns regarding distance thresholds voiced by TAG members (e.g., during the current review of the Project's TEMMP V5), AEM continues to implement a road closure distance threshold that is, in the GN's view, insufficient to prevent significant disturbance to caribou.

RECOMMENDATION(S)

The GN recommends the following regarding the above concerns:

- 1) The Proponent increase the distance threshold for closure of the Project's AWAR to reflect results from project-specific behaviour monitoring studies, relevant peer reviewed studies, and discussion with the TAG.

GN AR # 04	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Caribou Behavior Study Design
Terms and Conditions	57
References	<ul style="list-style-type: none"> • Government of Nunavut (GN). (2023). Government of Nunavut review of the Agnico Eagle Mines (AEM) Ltd (Meliadine Division) Annual Report, 2022. • Agnico Eagle Mines Limited: Meliadine Division, Appendix 25 – 2023 Terrestrial Environment Management and Monitoring Plan Annual Report (March 2024)
IDENTIFICATION OF ISSUE	
<p>As detailed in section 12 and Appendix F of Appendix 25, the Project's caribou behaviour monitoring program categorizes behaviour observation data into distance categories for analyses examining the relationship between distance from Project infrastructure and response behaviours. The GN notes that the use of distance as a categorical variable is necessary when sample sizes are limited but can result in loss of important information on the effect of distance on caribou behaviour.</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>Section 12 and Appendix F of Appendix 25 provide details on the Project's caribou behaviour monitoring program. For analyses of caribou response behaviours, the Proponent modelled the effect of caribou distance from infrastructure (distance) as a categorical variable using distance bins of 0-50, 50-100, 100-300, 300-1000, > 1000 m. Appendix F provides justifies the use of categorical variables due to inconsistent distance measurements in 2020, which was rectified in subsequent years (2021-2023) through the use of a rangefinder (Page 14).</p> <p>The GN acknowledges that the use of distance bins may be necessary to retain power when sample sizes are low; However, the results of analyses can be biased by the number and size of the bins utilized. In the case of Project's caribou behaviour study,</p>	

Figure 6.3-1 of Appendix F illustrates that most of the survey observations occurred in the 300-1000 and >1000m bins (Page 15). These are the two largest bins in terms of absolute distance – e.g., 300-1000m represents 700m, compared with 0-50m and 50-100m intervals (50m each). By pooling a majority of the data into these large bins, the analyses may have underestimated the effect of distance on caribou response behaviour thus losing important information relevant to Project effects and the effectiveness of mitigation.

RECOMMENDATION(S)

The GN recommends the following regarding the above concerns:

- 1) In accordance with the GN's recommendation (GN AR # 03) for the 2022 TEMMP annual report (GN, 2023), future analyses of the caribou behaviour monitoring data should treat distance from infrastructure as a continuous variable or, if sample size is insufficient, additional bins should be used in the 300-1000m and >1000m ranges.

GN AR # 05	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Total Estimated Caribou Harvest
Terms and Conditions	46
References	<ul style="list-style-type: none"> Nunavut Wildlife Management Board. (2004). Final report – Nunavut Wildlife Harvest Study. Agnico Eagle Mines Limited: Meliadine Division, Appendix 25 – 2023 Terrestrial Environment Management and Monitoring Plan Annual Report (March 2024)
IDENTIFICATION OF ISSUE	
<p>Section 13 of Appendix 25 provides details on the Proponent's Hunter Harvest Study (HHS). However, the GN notes that the total caribou harvest, as estimated by the Proponent within this section, does not account for growth in the number of hunters in Rankin Inlet since the Nunavut Wildlife Harvest Study (NWHS) was conducted by the Nunavut Wildlife Management Board (NWMB) between 1996 and 2001.</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>In Appendix I of Appendix 25, the proponent describes the following methods used to complete the Rankin Inlet HHS:</p> <p><i>The number of hunters interviewed during the comprehensive 5-year Nunavut Wildlife Harvest Study (NWMB 2005) was 327, which apparently represented 97% of all hunters in Rankin Inlet (NWMB 2005). For the purposes of this annual report, and in the absence of more specific details on hunter numbers, the total number of active hunters in Rankin Inlet was estimated to be 300 to 350. Future discussions with KHTO members and other community groups in 2024 will focus on obtaining a better estimate of current numbers of active hunters in the Hamlet of Rankin Inlet (Page 11).</i></p> <p>Using the methods indicated above, the Proponent estimates that the total number of caribou harvested by Rankin Inlet residents in 2023 was between 4,025 to 4,390 animals. However, this estimate is based on the 2023 HHS recorded harvest levels of 37 hunters</p>	

and an assumption that the total number of hunters in Rankin Inlet is roughly unchanged from the estimate of 327 derived from the Nunavut Wildlife Management Board's (NWMB) NWHS, 1996-2001 (NWMB, 2004). This assumption is unrealistic as Statistics Canada census data for 2021 indicates that the population Rankin Inlet increased by 4.7% from 2016 to 2021. As such, it is reasonable to assume that the number of hunters has grown in proportion to the community's population.

RECOMMENDATION(S)

The GN recommends the following regarding the above concerns:

- 1) In future reports, total annual caribou harvest estimated by the HHS should utilize an estimate of total Rankin Inlet hunter numbers adjusted from 1996-2001 levels to account for population growth. In addition, any information gathered from discussions with local organizations including Hunter and Trappers Organization(s), as planned by the Proponent in 2024, should also be included in these estimates.

GN AR # 06	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Regional Caribou Monitoring
Terms and Conditions	44, 45
References	<ul style="list-style-type: none"> Nunavut Impact Review Board. Project Certificate No. 006, Amendment 002 (March 2022) Agnico Eagle Mines Limited: Meliadine Division, Appendix 25 – 2023 Terrestrial Environment Management and Monitoring Plan Annual Report (March 2024)
IDENTIFICATION OF ISSUE	
<p>Based on information provided in Appendix 25, it is unclear whether terms and Conditions 44 and 45 of the Project Certificate (No. 006, Amendment No. 002) are being fully implemented. Specifically, the report does not demonstrate how AEM has; (a) increased caribou monitoring efforts within the Project's Regional Study Area (RSA), since the Project began, or (b) contributed to existing regional caribou monitoring programs, such as those operated by the GN.</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>Throughout the Project's life to date, concerns about potential impacts on caribou have been a major topic dominating project-related screenings, reviews, and hearings. Terms and Conditions 44 and 45 of the Project Certificate (NIRB, 2022) are key components of the Project Certificate intended to address these concerns. To ensure compliance and the protection of caribou, it is crucial that the Project's annual report provides specific information about how these terms and conditions have been implemented.</p> <p>Term and Condition 44 states that:</p>	

...[T]he Proponent shall further develop its Terrestrial Environment Management and Monitoring Plan (TEMMP) to include increased caribou monitoring across the regional study area and additional details on the scope and design of monitoring programs. The Proponent shall also demonstrate consideration for contributing to existing and planned regional monitoring initiatives associated with terrestrial wildlife and wildlife habitat...

(emphasis added by reviewer)

The reporting requirements associated with Term and Condition 44 are as follows:

Results of discussions, implementation of measures, updates to the Plan, and monitoring results shall be reported and discussed in the Proponent's annual report to the NIRB.

Term and Condition 45 states that:

The Proponent shall demonstrate consideration for cooperating with existing and planned regional and/or community-based monitoring initiatives associated with terrestrial wildlife and wildlife habitat that produce information pertinent to mitigating project-induced impacts. The Proponent shall give special consideration for supporting regional studies of population health and harvest programs for Qammanirjuaq caribou which help address areas of uncertainty for Project impact predictions.

(emphasis added by reviewer)

The reporting requirements associated with Term and Condition 45 are as follows:

The Proponent shall provide a summary discussion of its implementation of this term and condition, including the results of monitoring, adaptive management strategies, consultation, and contribution efforts undertaken, to the NIRB through the Proponent's annual monitoring report.

Table 1 of Appendix 25 is a concordance table indicating which sections of the report fulfill requirements of the various terms and conditions of the project certificate. This table indicates that information on implementation of terms and conditions 44 and 45 is located in section 3.0 of Appendix 25. However, this section of the report does not provide any information on AEM's efforts to increase monitoring of caribou in the Project's RSA or contributions by AEM to existing or planned regional monitoring programs for caribou that interact with the Project, since the Project began in 2017.

Section 12 of Appendix 25 discusses the Project's caribou behaviour monitoring and remote camera programs. However, these are AEM-run programs monitoring caribou at a local rather than regional scale. Road and height-of-land (HOL) surveys are conducted by AEM for the purpose of detecting approaching caribou and triggering mitigation measures, such as road closures or operational shutdowns at the mine (see Appendix 25, section 12.4). These surveys are similarly conducted at a local scale. These surveys do not contribute to the assessment of impacts in the report, do not represent an increase in monitoring effort in the RSA, and/or are not a contribution to existing regional scale caribou monitoring programs.

Overall, the GN is concerned that Terms and Conditions 44 and 45 of the Project Certificate are not being fully implemented by AEM. Specifically, as is required by the project certificate, the annual report does not demonstrate how caribou monitoring in the RSA has increased and what contributions have been made to existing or planned regional caribou monitoring programs since the Project began in 2017; programs “for Qammanirjuaq caribou which help address areas of uncertainty for Project impact predictions” (NIRB, 2022).

RECOMMENDATION(S)

The GN recommends the following regarding the above concerns:

- 1) To provide evidence of compliance with Terms and Conditions 44 and 45, the GN requests that AEM provide the following summary tables in all future annual TEMMP reports:
 - a. A table detailing AEM's caribou monitoring efforts in the RSA, by year, since 2017 for programs linked to Project impact monitoring; a link that should be demonstrated through analyses presented in the report.
 - b. A table detailing all AEM's in-kind and/or financial contributions to existing or planned regional monitoring programs for the Qammanirjuaq caribou herd, by year, since 2017.

GN AR # 07	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Commitment 38 – Record of Events
Terms and Conditions	44
References	<ul style="list-style-type: none"> • Agnico Eagle: Meliadine Gold Mine, Appendix 32 – 2023 TAG Annual Report (March 2024) • Nunavut Impact Review Board. Project Certificate No. 006, Amendment 002 (March 2022) • Nunavut Impact Review Board. Waterline FEIS Addendum List of Commitments as of June 17, 2021 Saline Effluent Discharge to Marine Environment. Exhibit 21 (June 2021)
IDENTIFICATION OF ISSUE	
<p>Commitment 38 originated from the NIRB's reconsideration for AEM's Saline Effluent Discharge to Marine Environment Proposal (Application No. 125515; NIRB, 2021). The analyses to be conducted by AEM to fulfill Commitment 38 are also required under Term and Condition 44 of the Project Certificate (No. 006, Amendment No. 002).</p> <p>The GN wishes to clarify inaccurate statements made by AEM in Appendix B – Commitment 38 Analyses: Addendum (Commitment 38 Addendum) found in Appendix 32 of the annual report, concerning the record of events surrounding the dissemination of the Commitment 38 Addendum and the status of Commitment 38.</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>Section 1.0 of the Commitment 38 Addendum states:</p> <p>“On June 27, 2023 Agnico Eagle hosted a TAG meeting in Rankin Inlet, NU, where the results of Commitment 38 analysis were presented to the KivIA, GKD, GN, and Athabasca Denesuline Nene Land Corporation (ADNLC). The TAG members verbally provided comments at this meeting, which are summarized in Table 1. The GN committed to providing recommendations for the Commitment 38 analysis in writing; however,</p>	

written recommendations from the GN were not received by Agnico Eagle at the time of this report. Many comments did not require additional analyses and were therefore integrated into the final version of the Commitment 38 analysis report distributed to TAG members on July 14, 2023 (WSP 2023b). Distribution of the final version of the report (i.e., WSP 2023b) completes the requirements of Commitment 38.” (Page 287)

The GN notes that AEM’s above description regarding the process through which the Commitment 38 analysis report was shared with the TAG does not accurately capture the sequence of events nor the opportunities for input made available to the TAG. At the June 2023 TAG meeting, the GN did commit to providing written recommendations on the Commitment 38 analysis. However, at the time of this June meeting, TAG members did not receive a digital or hard copy of the memo or draft study report. Instead, TAG members were given a PowerPoint presentation of study results only. The GN anticipated that a memo or draft study report would be provided to the TAG to facilitate the GN’s generation of fulsome written recommendations. However, these materials were not provided by AEM. On July 14, 2023, AEM distributed the final Commitment 38 Study Report to TAG members. On July 17, 2023 AEM then submitted the Commitment 38 Study Report to the NIRB. As such, TAG members were not allotted the opportunity to review this report, in full, prior to submission.

During the October 2023 TAG meeting, the Commitment 38 Addendum was presented. However, many TAG members had difficulty accessing materials through AEM’s OneDrive shared folder due to permission restrictions. TAG members raised this issue during the meeting. Access to the OneDrive was not resolved before the conclusion of the meeting.

During the January 2024 TAG meeting, and correspondence immediately after, several members expressed their intent to submit written comments on the Commitment 38 Addendum. The GN submitted written comments to AEM on February 29, 2024.

Finally, the above text in section 1.0 of the Commitment 38 Addendum states that Commitment 38 has been completed. However, the GN does not agree that this commitment is completed.

RECOMMENDATION(S)

The GN recommends that AEM revise the Commitment 38 Addendum, so it accurately reflects the sequence of events concerning Commitment 38, as clarified above.

Additionally, the GN recommends that AEM revise the text within the Commitment 38 Addendum to clearly indicate that it is AEM's position that Commitment 38 is complete and that other TAG members do not share this position.

GN AR # 08	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Commitment 38 – Definition (Deflection)
Terms and Conditions	44
References	<ul style="list-style-type: none"> • Agnico Eagle: Meliadine Gold Mine, Appendix 32 – 2023 TAG Annual Report (March 2024) • Nunavut Impact Review Board. Project Certificate No. 006, Amendment 002 (March 2022) • Nunavut Impact Review Board. Waterline FEIS Addendum List of Commitments as of June 17, 2021 Saline Effluent Discharge to Marine Environment. Exhibit 21 (June 2021)
IDENTIFICATION OF ISSUE	
<p>Commitment 38 originated from the NIRB's reconsideration for AEM's Saline Effluent Discharge to Marine Environment Proposal (Application No. 125515; NIRB, 2021). The analyses to be conducted by AEM to fulfill Commitment 38 are also required under Term and Condition 44 of the Project Certificate (No. 006, Amendment No. 002).</p> <p>The GN notes that the Commitment 38 Addendum, found in Appendix B of Appendix 32 – TAG Annual Report, does not provide clear rationale as to how the revised definition of deflection (when compared to the original definition of deflection developed by the TAG and used in the original Commitment 38 Report) better describes caribou movements.</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>In section 2.0 of the Commitment 38 Addendum, the text states:</p> <p>“Deflection steps followed the same definition applied in the Commitment 38 analysis except deflection steps were assigned between subsequent four-hour steps for addendum analyses rather than a 28-hour moving window.” (Page 290)</p>	

However, the Commitment 38 Addendum does not provide any rationale or analysis to demonstrate how this revised definition of deflection better describes caribou movements relative to the original definition that was developed in conjunction with the TAG and featured in the Commitment 38 Report. Instead, section 2.0 of the Commitment 38 Addendum says:

“This change was made to better align deflection steps with what a human eye may classify as ‘deflection’; when reviewing caribou movement animations.” (Page 290)

As discussed during the April 2023 TAG meeting (Pages 28–77) and in the GN's written comments on the Commitment 38 Addendum (submitted to AEM in February 2024), limiting deflection steps to a comparison of two sequential steps where the turn angle is greater than 60 degrees will capture rapid deflections. However, this approach will not necessarily capture deflections that occur more gradually over a series of steps (i.e., > 2). In this latter scenario, step-to-step turn angles may be less than 60 degrees, but the combined outcome of multiple steps results in a turn greater than 60 degrees from the prevailing direction of recent movements.

RECOMMENDATION(S)

The GN recommends that AEM revise the Commitment 38 Addendum to demonstrate the improved performance of the new deflection definition through additional analysis.

Additionally, the GN recommends that the analyses presented in the Commitment 38 Addendum be repeated using the original definition of deflection that was developed with the TAG and is provided in Table 1 of the original Commitment 38 Report:

Covariate(s)	Source	Brief Description and/or Definition
Deflection step	Calculated from telemetry data, in reference to AWAR and Mine	<ul style="list-style-type: none"> Coded as a binary covariate, which describes whether step was a deflection step (1) or not (0). Both used and available steps were assigned a 0 or 1 for deflection. Occurs only within five km of the AWAR and/or Mine. Deflection is defined as a turning angle $\geq 60^\circ$ between the heading of the step and the average heading of the individual caribou's movement. The general direction of the individual caribou's movement was calculated using a moving window, over the 20-hour period

		preceding and four-hour period following each step and reflect the mean turning angle during this period (i.e., moving window).
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**Based on Table 1: Proposed Movement Covariates for Inclusion in Integrated Step Selection Analyses (iSSA) (Appendix 32, Page 241), modified for brevity.*

GN AR # 09	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Commitment 38 – Parallel Step Thresholds
Terms and Conditions	44
References	<ul style="list-style-type: none"> • Agnico Eagle: Meliadine Gold Mine, Appendix 32 – 2023 TAG Annual Report (March 2024) • Nunavut Impact Review Board. Project Certificate No. 006, Amendment 002 (March 2022) • Nunavut Impact Review Board. Waterline FEIS Addendum List of Commitments as of June 17, 2021 Saline Effluent Discharge to Marine Environment. Exhibit 21 (June 2021)
IDENTIFICATION OF ISSUE	
<p>Commitment 38 originated from the NIRB's reconsideration for AEM's Saline Effluent Discharge to Marine Environment Proposal (Application No. 125515; NIRB, 2021). The analyses to be conducted by AEM to fulfill Commitment 38 are required under Term and Condition 44 of the Project Certificate (No. 006, Amendment No. 002).</p> <p>In Section 2.0 of the Commitment 38 Addendum, found in Appendix B of Appendix 32 – TAG Annual Report, AEM has provided a new definition of a parallel step (i.e., when a caribou takes steps paralleling the AWAR and/or Mine). However, the GN notes it is unclear what informed the use of 0.15 as the threshold value for parallel steps.</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>In Section 2.0 of the Commitment 38 Addendum, AEM has provided a new definition of a parallel step. In this document, a parallel step occurs where $\Delta d/sl \leq 0.15$.</p> <p>The GN notes it is unclear how the threshold value of 0.15 was selected. Additionally, the GN notes that the Commitment 38 Addendum does not indicate if alternative thresholds were examined.</p>	

RECOMMENDATION(S)

The GN recommends that AEM revise the Commitment 38 Addendum in the following ways:

- Provide details on how the threshold value of 0.15 was selected, such as what analyses (i.e., any analyses using alternative thresholds) were performed to arrive at this threshold.
- Demonstrate the effectiveness of this threshold value in describing caribou movements relative to alternative thresholds.

GN AR # 10	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Commitment 38 – Definitions and Interpretation (Interactions and Downstream Steps)
Terms and Conditions	44
References	<ul style="list-style-type: none"> • Agnico Eagle: Meliadine Gold Mine, Appendix 32 – 2023 TAG Annual Report (March 2024) • Nunavut Impact Review Board. Project Certificate No. 006, Amendment 002 (March 2022) • Nunavut Impact Review Board. Waterline FEIS Addendum List of Commitments as of June 17, 2021 Saline Effluent Discharge to Marine Environment. Exhibit 21 (June 2021)
IDENTIFICATION OF ISSUE	
<p>Commitment 38 originated from the NIRB's reconsideration for AEM's Saline Effluent Discharge to Marine Environment Proposal (Application No. 125515; NIRB, 2021). The analyses to be conducted by AEM to fulfill Commitment 38 are also required under Term and Condition 44 of the Project Certificate (No. 006, Amendment No. 002).</p> <p>In Section 2.0 of the Commitment 38 Addendum, found in Appendix B of Appendix 32 – TAG Annual Report, the GN notes missing or unclear definitions regarding downstream steps (i.e., when a caribou takes steps away from the AWAR and/or Mine) and interactions with the mine and or the AWAR.</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>Section 2.0 of the Commitment 38 Addendum states that:</p> <p>“Downstream steps were assumed to be any steps taken once the caribou interacted with the Mine and/or AWAR until the caribou moved more than 5 km from the Project. Steps that interacted with the Mine and/or AWAR were assigned ‘crossing’ steps, which were mutually exclusive from upstream and downstream steps.” (Page 290)</p>	

The use of the phrase “interacted with the Mine and/or AWAR” requires additional information (e.g., distance to infrastructure) to understand its meaning.

Additionally, the definition provided for downstream steps is unclear. Using this definition, a caribou that approached and subsequently deflected away from the road would be classified as downstream despite the fact the caribou failed to cross and is still upstream (based on its intended direction of movement across the Project).

RECOMMENDATION(S)

The GN recommends that AEM revise the Commitment 38 Addendum to clarify the meaning of the phrase “interacted with the Mine/and or Meliadine”, such as by indicating the distance of the individual to the Project component(s).

Additionally, the GN recommends that AEM revise the Commitment 38 Addendum to clarify the definition of downstream steps.

GN AR # 11	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Commitment 38 – Models
Terms and Conditions	44
References	<ul style="list-style-type: none"> • Agnico Eagle: Meliadine Gold Mine, Appendix 32 – 2023 TAG Annual Report (March 2024) • Nunavut Impact Review Board. Project Certificate No. 006, Amendment 002 (March 2022) • Nunavut Impact Review Board. Waterline FEIS Addendum List of Commitments as of June 17, 2021 Saline Effluent Discharge to Marine Environment. Exhibit 21 (June 2021)
IDENTIFICATION OF ISSUE	
<p>Commitment 38 originated from the NIRB's reconsideration for AEM's Saline Effluent Discharge to Marine Environment Proposal (Application No. 125515; NIRB, 2021). The analyses to be conducted by AEM to fulfill Commitment 38 are also required under Term and Condition 44 of the Project Certificate (No. 006, Amendment No. 002).</p> <p>In Section 2.0 of the Commitment 38 Addendum, found in Appendix B of Appendix 32 – TAG Annual Report, the GN notes concerns regarding the models presented. Generally, these concerns are regarding the candidate models tested, the number of covariates included in models (which may prove too complex for the stratified data) and redundancy amongst covariates.</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>Section 2.0 of the Commitment 38 Addendum details that the data available for the analyses presented in this document were more constrained than data used in the Commitment 38 analysis. This was primarily due to the stratification of data into approaching (upstream) and departing (downstream) and limitation to the summer period only. As such, this reduced dataset did not permit the estimation of individual models per</p>	

caribou-year, as was done in the Commitment 38 Report. However, the same candidate models from the Commitment 38 Report were applied to the Commitment 38 analysis.

Additionally, the GN notes the following initial concerns in the models presented in Table 2 and 3 of the Commitment 38 Addendum:

- These models contain between 6-8 covariates. The data may be unable to support models of this complexity.
- The Habitat model is used as a submodel in Models 1 to 8. In doing so, models 1 to 8 each contain as many as four habitat covariates and three movement covariates. This may introduce an excessive number of covariates and potential redundancy. For example, the Habitat model includes Turn Angle, which is itself a component of Deflection step. It also includes step length which is part of Parallel step. The concern is that these models are too complex given the available data and that any potential effects are diluted. Ultimately, the reduced data pool available for the addendum analysis might warrant the investigation of simpler models.

RECOMMENDATION(S)

The GN recommends that the candidate model structure be discussed further with the TAG.

GN AR # 12	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Commitment 38 – Base Habitat Model
Terms and Conditions	44
References	<ul style="list-style-type: none"> • Agnico Eagle: Meliadine Gold Mine, Appendix 32 – 2023 TAG Annual Report (March 2024) • Nunavut Impact Review Board. Project Certificate No. 006, Amendment 002 (March 2022) • Nunavut Impact Review Board. Waterline FEIS Addendum List of Commitments as of June 17, 2021 Saline Effluent Discharge to Marine Environment. Exhibit 21 (June 2021)
IDENTIFICATION OF ISSUE	
<p>Commitment 38 originated from the NIRB's reconsideration of AEM's Saline Effluent Discharge to Marine Environment Proposal (Application No. 125515; NIRB, 2021). The analyses to be conducted by AEM to fulfill Commitment 38 are required under Term and Condition 44 of the Project Certificate (No. 006, Amendment No. 002).</p> <p>In Section 2.0 of the Commitment 38 Addendum, found in Appendix B of Appendix 32 – TAG Annual Report, the GN notes concerns regarding the base habitat model with respect to the data used in it and its performance which differs with the original Commitment 38 Report.</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>The addendum analyses utilized the same Base Habitat model developed in the Commitment 38 Report rather than developing one that was specific to the data used in the addendum. In contrast to the Commitment 38 Report, where the Base Habitat model was the top model in all the analyses performed, the Base Habitat model in the Commitment 38 Addendum was not the top model in any of the analyses and was not well supported (see Tables 4 and 6).</p>	

This is an important finding that is not discussed in the Commitment 38 Addendum. Lack of support for the Base Habitat model raises a concern about its inclusion as a submodel in all the other candidate models tested (i.e., models 1 to 8). Potentially significant and relevant results may have been confounded by forcing a sub-model into all the analyses that explains little about caribou movements.

RECOMMENDATION(S)

The GN recommends that the Commitment 38 Addendum analyses be repeated without the Base Habitat Model and/or with a redeveloped Base Habitat Model that is specific to the data used.

GN AR # 13	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Commitment 38 – Sample Size and Power
Terms and Conditions	44
References	<ul style="list-style-type: none"> • Agnico Eagle: Meliadine Gold Mine, Appendix 32 – 2023 TAG Annual Report (March 2024) • Nunavut Impact Review Board. Project Certificate No. 006, Amendment 002 (March 2022) • Nunavut Impact Review Board. Waterline FEIS Addendum List of Commitments as of June 17, 2021 Saline Effluent Discharge to Marine Environment. Exhibit 21 (June 2021)
IDENTIFICATION OF ISSUE	
<p>Commitment 38 originated from the NIRB's reconsideration for AEM's Saline Effluent Discharge to Marine Environment Proposal (Application No. 125515; NIRB, 2021). The analyses to be conducted by AEM to fulfill Commitment 38 are also required under Term and Condition 44 of the Project Certificate (No. 006, Amendment No. 002).</p> <p>As written, the GN notes that the Commitment 38 Addendum, found in Appendix B of Appendix 32 – TAG Annual Report, lacks analyses and/or discussion regarding sample size issues and power to detect effects.</p>	
SUPPORTING RATIONALE	
<p>Section 4.0 of the Commitment 38 Addendum concludes that caribou exhibited similar behaviour and movement patterns when approaching and departing the project. However, the Commitment 38 Addendum does not present any discussion about sample size issues and power to detect effects. Discussion of these items is particularly important as the data used in this analysis was stratified into approaching (upstream) and departing (downstream) and limitation to the summer period only.</p>	

RECOMMENDATION(S)
The GN recommends that AEM include analyses and/or discussion of sample size issues and power to detect effects into the Commitment 38 Addendum.

GN AR # 14	
Department	Environment
Organization	Government of Nunavut
Subject/Topic	Commitment 38 – Deflection Threshold
Terms and Conditions	44
References	<ul style="list-style-type: none"> • Agnico Eagle: Meliadine Gold Mine, Appendix 32 – 2023 TAG Annual Report (March 2024) • Agnico Eagle: Meliadine Division. Terrestrial Environment Management and Monitoring Plan. Version 4 (April 2022) • Nunavut Impact Review Board. Project Certificate No. 006, Amendment 002 (March 2022) • Nunavut Impact Review Board. Waterline FEIS Addendum List of Commitments as of June 17, 2021 Saline Effluent Discharge to Marine Environment. Exhibit 21 (June 2021)
IDENTIFICATION OF ISSUE	
<p>Commitment 38 originated from the NIRB's reconsideration for AEM's Saline Effluent Discharge to Marine Environment Proposal (Application No. 125515; NIRB, 2021). The analyses to be conducted by AEM to fulfill Commitment 38 are also required under Term and Condition 44 of the Project Certificate (No. 006, Amendment No. 002).</p> <p>The GN notes that the Commitment 38 Addendum, found in Appendix B of Appendix 32 – TAG Annual Report, discusses and provides analyses for deflection of caribou. However, Commitment 38 Addendum does not assess whether caribou deflection has exceeded the action threshold recommended by the TAG.</p>	
IMPORTANCE TO REVIEW AND SUPPORTING RATIONALE	
<p>In the currently approved TEMMP, section 4.2 Action Thresholds states the following:</p> <p>“The following action thresholds are suggested as a starting point for adaptive management and TEMMP Refinement...</p>	

A threshold of no more than 10% deflection of caribou groups has been suggested as a possible measure of indirect habitat loss.” (Page 24)

The GN notes that the Commitment 38 Addendum does not assess whether this threshold has been exceeded.

RECOMMENDATION(S)

The GN recommends that the Commitment 38 Addendum assess whether this 10% deflection threshold has been exceeded.