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Re: Final Review Comments on the Ekati Diamond Mine Updated Wildlife Management and Monitoring Plan

Dear Ryan Fequet and Kathy Unger,

The Independent Environmental Monitoring Agency (Agency) has reviewed Arctic Canadian Diamond Company Ltd.'s (Arctic Canadian) November 2022 submission of the Ekati Diamond Mine updated Wildlife Management and Monitoring Plan (WMMP). The Agency provided initial comments and recommendations on December 14, 2022. The Agency also participated in Arctic Canadian-led workshops on the WMMP held on February 3 and 10, 2023. Based on those workshops and discussions, we restate our initial comments and recommendations for the record, and provide post-workshop updates respecting each topic summarized under '***Outcome***', for your consideration:

1. **Topic: Inclusion of Sable Road**

Comment: Many sections of the proposed WMMP refer to traffic issues or monitoring along the Misery and Lac du Sauvage roads (e.g., S 5.4, pg 39; Table 5.4-1, pg 44). The Agency is unclear why the Sable Road has been left off the list of roads. This WMMP should be operational in late 2023. The life of mine plan from the 2021 Environmental Agreement and Water Licence Annual Report suggests mining of the Sable Pit will continue into late 2024, while recent communications with Arctic Canadian suggest this date may be pushed back to early 2025.

Recommendation: Arctic Canadian should include information about traffic issues, monitoring and mitigation of the Sable Road in the WMMP, or clarify why the Sable Road has not been included when addressing roads at the mine site.

Outcome: Arctic Canadian has agreed to change the phrasing in the plan to include the Sable Road.

2. **Topic: Evaluation of the effectiveness of caribou crossings (ramps)**

Comment: Construction of caribou crossing structures (ramps) is one of the core mitigation measures used at the mine (S 5.4, pg 39; S 6.4.6, pg 61). Caribou ramps have been long claimed by the mine as an effective mitigation strategy to facilitate caribou movement through the mine site, yet there has been no robust examination of the effectiveness of these structures. The effectiveness of caribou ramps is

especially questionable given the findings of the camera study[1] that indicated roadside slope or rock sizes did not affect caribou crossing success – in other words, caribou did not preferentially cross in areas with low roadside slope or fine surface crush rock size. Since the caribou ramps are designed with low side slope and finer surface crush, then the camera study findings do not directly support caribou ramps as an effective mitigation tool for caribou movement.

Recommendation: Arctic Canadian should conduct an assessment of the effectiveness of caribou crossing structures to facilitate caribou movement through the mine site.

Outcome: Arctic Canadian argues that low data resolution will not allow for quantification of the effectiveness of crossing structure mitigation, especially if the roads themselves are not a barrier to crossing. The Agency believes that the effectiveness of caribou crossing structures can be evaluated using a well-designed (likely camera-based) study. The Agency supports the initial examination of study design power and effect size to address this issue.

3. **Topic: Adaptive management and the comprehensive telemetry project**

Comment: S 5.4.1.1 (pg 41) states that "*Adaptive management will be informed by the results of the comprehensive telemetry project that will determine the effectiveness of mitigation measures for caribou at a regional scale*". The Agency is unclear why the "regional scale" has been added to this statement (although it may be related to end-point assessments whether caribou successfully attain the calving grounds and winter range). Most stakeholders reviewing progress of the current telemetry project are concerned with caribou movements near and through the Ekati mine site, the scale of which is <15 km or even <3 km from mine infrastructure.

Recommendation: Arctic Canadian should ensure that the current telemetry project provides an assessment of caribou movements near and through the Ekati mine site, not just movements at a regional scale.

Outcome: Arctic Canadian clarified that the telemetry analysis will also examine movements close to and through the mine. The Agency suggests that at this finer scale, a dose versus response type of examination (such as using distance from mine infrastructure as the 'dose'), may be more enlightening than comparing movement parameters to some distant control/reference movements.

4. **Topic: Caribou road mitigation and monitoring: Action Level triggers**

Comment: The Caribou Road Mitigation Plan (CRMP) uses collared caribou as an Action Level (trigger) to initiate intensified levels of monitoring and mitigation (Table 5.4-1, pg 44), but how often and when these collars have been used as triggers is not provided. Triggers include the approach of collared caribou or observations of caribou near infrastructure. As it is, there is no way to evaluate the effectiveness of monitoring methods to trigger enhanced mitigation and of the applied mitigation, limiting the ability to evaluate adaptive management.

[1] Ekati Diamond Mine 2020 Wildlife Camera Monitoring Summary Report, prepared by Arctic Canadian Diamond Company Ltd. and released on 24 June 2021.

Recommendation: Arctic Canadian should ensure that the WMMP will present data on the triggers to changes in, or maintenance of, alert levels in order to assess monitoring effectiveness.

Outcome: To clarify, the Agency is looking for more detailed reporting on the actual day to day triggers to changes in or maintenance of Alert Levels. For example, Table 4.1-3 (given as an example in the Arctic Canadian presentation response to IEMA #4), lumps 9 months of Alert Level Red into a single row. How and when collar data versus observations contributed to this ongoing Alert Level would be useful in order to assess monitoring effectiveness.

5. **Topic: Caribou distance thresholds and speed limits**

Comment: Table 5.4-2 (pg 45) provides caribou distance thresholds and speed limits. The basis for the distance thresholds and speed guidelines are not provided. Level 2 (Orange) states that when "*0.25% of total cows in the Bathurst caribou herd are observed at 200 to 500 m from the road*" there is a speed reduction to 40 kph (S 5.4.1.5, pg 47). [Based on the 2021 estimate of 3,800 Bathurst cows (Adamczewski et al. 2022), the current threshold should be ~10 cows]. The larger Beverly/Ahiak caribou herd has been near Ekati more often in recent years, often during winter, but the smaller size of the Bathurst herd provides a conservative threshold for a trigger level. However, since the road surveys are only conducted daily (Table 5.4-1, pg 44), much of the judgement calls will rest on the truck drivers to adequately review caribou presence, sex, and numbers out to 500 m distance, which seems like a tall order for a driver focussed on safely moving a heavily loaded truck along a gravel road.

The WMMP states "*As a general rule for drivers, speed limits are decreased to 40 km/h along sections of the Lac du Sauvage or Misery roads when 0.25% of total cows in the Bathurst caribou herd are observed at 200 to 500 m from the road*" (S 5.4.1.5, pg 47), again neglecting Sable Road.

Recommendation: Arctic Canadian should provide the basis for the distance thresholds and speed limits provided in the WMMP and clarify how the distance thresholds will be adequately monitored with daily road surveys.

Outcome: The Agency reiterates that more objective-based mitigation should be developed, for example, by conducting research to determine distance and/or vehicle speed thresholds that will facilitate crossing by the majority of caribou that approach within a certain distance of roads.

6. **Topic: Level 3 (Red) triggers**

Comment: Level 3 is triggered "*when 0.25% or more of total cows in the Bathurst herd are within 200 m of the Misery or Lac du Sauvage roads (**i.e., the maximum stopping distance of a loaded haul truck travelling 60 km/h**)* [emphasis added]*, or one or more caribou are crossing or attempting to cross the Misery or Lac du Sauvage roads*" (S 5.4.1.6, pg 47). This statement suggests that the distance trigger is based primarily on haul truck stopping distance to reduce risk of vehicle strike, and not to facilitate movement across the roads.

Recommendation: Arctic Canadian should clarify how the 200 m trigger is used to limit the effects of semi-permeable barriers to caribou movement from roads.

Outcome: Acknowledging that the mine has demonstrated an excellent record of physical safety to caribou, the Agency would prefer to see mitigation triggers linked to effectiveness monitoring to limit the effects of semi-permeable barriers to caribou movement from roads.

7. Topic: Short-term or long-term road closures

Comment: Road closures are triggered when "*0.25% of total cows in the Bathurst herd is within 200 m of the Lac du Sauvage or Misery roads*" (S 5.4.1.6, pg 48). The difference between Level 2 (Orange) and Level 3 (Red) is a simple (and sometimes rapid) movement of caribou from 200–500 m to <200 m from the road. The Agency is unclear how the shift to Level 3 can occur fast enough to facilitate caribou crossing of roads. Deciding to close roads when caribou are already less than 200 m of a road is likely too late, leading to delays or deflections at distances greater than 200 m distance. Indeed, decisions by caribou whether to cross roads may be made at much greater distances (Poole et al. 2021)[2]. Also, many of the decisions appear to be "*determined by the Environment Department*" and "*based on the discretion of the Environment Department*", which are uncomfortably vague. This discretion includes when "*it is anticipated that the caribou intend to cross the road*" (S 5.4.1.6, pg 48).

Recommendation: Arctic Canadian should:

1. clarify how a change from Level 2 to Level 3 will happen rapidly enough to facilitate caribou passage through roads;
2. clarify how it is determined that the caribou intend to cross the road; and
3. provide in annual reporting specific data on triggers for work stoppage or road closures, location and length of road segments affected, and mitigation outcomes.

Outcome: Arctic Canadian seems to rely on best professional judgement and experience to facilitate the best outcome for caribou. The Agency maintains our concern that with the current mitigation triggers, it is difficult to see how the shift from Level 2 to Level 3 (which include short-term or long-term road closures) can occur fast enough to facilitate caribou crossing of roads.

8. Topic: Mitigation for the Lac du Sauvage Road

Comment: This paragraph clarifies how the Lac du Sauvage Road will be modified to "*further facilitate caribou passage while supporting future uses of the road*" (S 5.4.1.7, pg 48). The Agency is unclear why a similar section is not provided to address the Sable Road.

Recommendation: Arctic Canadian should provide a section on modifications to the Sable Road following cessation of mining at the Sable open pit to encourage caribou passage and reduce sensory disturbance.

Outcome: The Agency believes that the Sable Road area is far more heavily used than passage through the Lac du Sauvage Road, which in itself is an important historical movement area. The Agency wants to ensure that the Sable Road is fully considered for modification following cessation of mining at Sable Pit.

[2] Poole, K.G., A. Gunn and G. Pelchat. 2021. Influence of the Ekati Diamond Mine on migratory tundra caribou movements. Prepared for Independent Environmental Monitoring Agency, Yellowknife, NT.

9. **Topic: Examination of use of convoys**

Comment: There is no mention in the WMMP of convoying haul trucks to increase the interval between road disturbance events and possibly facilitate caribou passage through the site.

Recommendation: The WMMP should include examination of the effectiveness of convoying haul trucks to facilitate caribou movement through the mine site.

Outcome: Arctic Canadian stated that convoys are not a sustainable operating practice for the mine, but clarified that traffic data are now being collected to quantify traffic patterns.

10. **Topic: Traffic monitoring**

Comment: Section 6.4.7 (pgs 64–65) provides methodology for monitoring traffic in 2023. Traffic counters will be used, which will "*record time and date of each vehicle passage and* ***will not differentiate among types of vehicles*** *or direction of travel* [emphasis added]". The Agency believes that differentiating a pickup truck from a long-haul train is an essential component to mitigating sensory disturbance from road traffic.

Recommendation: Arctic Canadian should use a traffic monitoring system that can differentiate haul trucks from other vehicles.

Outcome: Arctic Canadian stated that they will be unable to determine vehicle type from the current method of camera data being examined by Artificial Intelligence. However, ERM clarified that they may be able to quantify vehicle type from the current system. The Agency would like to see differentiation of vehicle types in the traffic data if analysis permits.

11. **Topic: Caribou occurrence around the Ekati mine**

Comment: Table 1.2-1 (pg 4) states "*In 2021, Arctic Canadian produced a technical report that used an innovative analytical approach to test the theory that caribou occurrence is strongly determined by the distribution of higher quality habitat (ERM 2021a)*[3]*. Overall, the analyses indicated that the occurrence of caribou on the landscape can reasonably be explained by the percent of land cover classes (i.e., habitat quality) alone*". The conclusions of the ERM report have been criticized on a number of fronts as being not supported by the analysis (Boulanger et al. 2021)[4].

Recommendation: The Agency believes it is inaccurate and inappropriate to include this statement in the WMMP.

[3] ERM. 2021a. Ekati Diamond Mine and Diavik Diamond Mine. Evaluating the Role of Habitat in Caribou Distribution Relative to a Potential Zone of Influence around Mines. Prepared for Arctic Canadian Diamond Company Ltd. by ERM Consultants Canada Ltd Yellowknife, Northwest Territories.

[4] Boulanger, J., K. Poole, and A. Gunn. 2021. Review of Zone of Influence Analysis in "Evaluating the Role of Habitat in Caribou Distribution Relative to a Potential Zone of Influence around Mines". Unpublished report for Government of the Northwest Territories, Department of Environmental and Natural Resources.

Outcome: The Agency maintains that the statement referenced above is inappropriate and should therefore be removed from the WMMP.

12. Topic (new): Monitoring of annual Zone of Influence

Comment: The proposed WMMP no longer includes a section on estimation of the annual Zone of Influence that the mine may have on caribou distribution and relative abundance, instead indicating that the current telemetry analysis replaces previous methodological approaches including Zone of Influence monitoring.

Recommendation/Outcome: The Agency believes that past survey and collar data adequately demonstrate that in most years when the caribou herds approach the broader mine area, the mine does influence caribou distribution and relative abundance (i.e., a measurable Zone of Influence occurs), but that this Zone of Influence is annually variable in distance and magnitude. The Agency does not, at this point, see a value in continuing to measure annual Zone of Influence, and supports other examinations of the potential influence of the mine on caribou movements and distribution, including the current telemetry analysis being carried out by Arctic Canadian.

Should you have any questions concerning these comments, the Agency is pleased to discuss these at your convenience.

Sincerely,

Emery Paquin
Chairperson

Cc: Arctic Canadian – Harry O'Keefe, Dustin Chaffee, Sheila Chernys, Tommy Thorsteinsson
Tłı̨chǫ Government – Violet Camsell-Blondin, Brett Wheler
Yellowknives Dene First Nation – Ryan Miller, Johanne Black
Łutsel K'e Dene First Nation – LKDFN Lands Manager, Doris Enzoe
North Slave Metis Alliance – Jessica Hurtubise, Noah Johnson
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