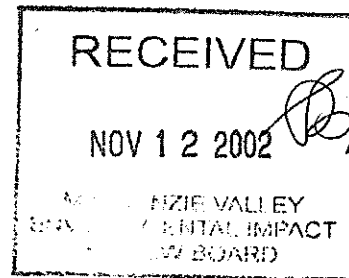


DE BEERS

File:7.2.14.2

November 06, 2002

Mackenzie Valley Environmental Impact Review Board
Box 938
5102-50th Ave
Yellowknife
X1A 2N7
BY HAND



Attention: Louie Azzolini

Dear Louie:

SUBJECT: Response to 01 November 2002 Information Requests of the De Beers Canada Mining Inc. Snap Lake Diamond Project

Attached are De Beers' responses to the Information Requests for the Snap Lake Diamond Project, issued by the Mackenzie Valley Environmental Impact Review Board on 01 November 2002, for submission to the public record.

Sincerely,

SNAP LAKE DIAMOND PROJECT

Robin Johnstone PhD
Senior Environmental Manager
De Beers Canada Mining Inc.



DE BEERS CANADA MINING INC.

#300 - 5102 50th AVENUE
YELLOWKNIFE NT X1A 3S8 CANADA
TEL (867) 766-7300 FAX (867) 766-7347

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**De Beers Canada Mining Inc. (De Beers)
Snap Lake Diamond Project**

**Supplementary Information Request No. 3b
(November 1, 2002)**

**Submitted to the Mackenzie Valley Environmental Impact Review Board
November 6, 2002**

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Review Board Information Request No. 4

- 4.12.1 Reference:** *EAR, Section 10.4.1.1, page 10-116*
ToR Line: *414-417*
To: *De Beers Canada Mining Inc.*
Preamble: *It is stated that qualitative information on wildlife species was collected prior to 1999. The presence and distribution of wildlife was based on observation by exploration staff. However, the collection of information was not standardized, making comparison and interpretation difficult.*
Request: *How is this information going to be used and to what capacity is it expected to contribute to baseline data?*

RESPONSE 4.12.1

Qualitative information collected prior to 1999 was used to help identify and focus baseline studies of Valued Ecosystem Components (VECs) in the Snap Lake area. These studies, combined with data from baseline surveys, were also used to select routes for the winter and esker access roads that would cause the least disturbance to important wildlife habitat (e.g., eskers, heath tundra, spruce and riparian / birch seep habitats).

- 4.12.2 Reference:** *EAR, Section 10.4.1.2, page10-116*
ToR Line: *414-417*
To: *De Beers Canada Mining Inc.*
Preamble: *The LSA and RSA were selected to capture the maximum zone of influence.*
Request: *Please explain how the zone of influence was delineated.*

RESPONSE 4.12.2

The zone of influence is defined as the geographic (spatial) extent of a project or activity that results in a change to the abundance, distribution or behaviour of a wildlife population.

Based on previous analysis and experience with the EKATI? diamond mine, and predictions from the EA for the Diavik diamond mine, the maximum zone of influence around the Snap Lake Diamond Project was expected to be within 10 – 15 km of the mine footprint (*i.e.*, radius of 10 – 15 km from edge of mine site). Current studies at the EKATI? mine suggest that caribou groups with calves change their behaviour within 5 – 7 km of the mine footprint (BHP Billiton 2002). In addition, data from satellite-collared grizzly bears suggest that there is a marked decrease in the frequency of movement of individuals within 10 km of the core mine area at EKATI? (BHP Billiton 2002). Disturbance coefficients for predicting the influence of the Diavik mine on caribou movement were built on the prediction that the maximum zone of influence would be 7 km from the ends of the airstrip (Diavik 1998).

Reference

- BHP Billiton. 2002. EKATI? Diamond Mine 2001 Wildlife Effects Monitoring Program. Prepared by Golder Associates Ltd. for BHP Billiton Inc.
- Diavik. 1998. Diavik Diamonds Project. Environmental Effects Report, Wildlife. September 1998.

**De Beers Canada Mining Inc. (De Beers)
Snap Lake Diamond Project**

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4.12.19 Reference: EAR, Section 10.4.2.2.3, page 10-154	27

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Qualitative information collected prior to 1999 was used to help identify and focus baseline studies of Valued Ecosystem Components (VECs) in the Snap Lake area. These studies, combined with data from baseline surveys, were also used to select routes for the winter and esker access roads that would cause the least disturbance to important wildlife habitat (e.g., eskers, heath tundra, spruce and riparian / birch seep habitats).

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Request: *Please explain how the zone of influence was delineated.*

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The zone of influence is defined as the geographic (spatial) extent of a project or activity that results in a change to the abundance, distribution or behaviour of a wildlife population.

Based on previous analysis and experience with the EKATI™ diamond mine, and predictions from the EA for the Diavik diamond mine, the maximum zone of influence around the Snap Lake Diamond Project was expected to be within 10 – 15 km of the mine footprint (*i.e.*, radius of 10 – 15 km from edge of mine site). Current studies at the EKATI™ mine suggest that caribou groups with calves change their behaviour within 5 – 7 km of the mine footprint (BHP Billiton 2002). In addition, data from satellite-collared grizzly bears suggest that there is a marked decrease in the frequency of movement of individuals within 10 km of the core mine area at EKATI™ (BHP Billiton 2002). Disturbance coefficients for predicting the influence of the Diavik mine on caribou movement were built on the prediction that the maximum zone of influence would be 7 km from the ends of the airstrip (Diavik 1998).

Reference

BHP Billiton. 2002. EKATI™ Diamond Mine 2001 Wildlife Effects Monitoring Program. Prepared by Golder Associates Ltd. for BHP Billiton Inc.

Diavik. 1998. Diavik Diamonds Project. Environmental Effects Report, Wildlife. September 1998.

- 4.12.3 Reference:** *EAR, Section 10.4.1.2, page 10-116 to 10-117*
ToR Line: *414, 415*
To: *De Beers Canada Mining Inc.*
Preamble: *The LSA and RSA were selected to assess direct and indirect effects of the mine on individual animals and wildlife habitat. The LSA included the project footprint and a 500-meter buffer zone. To assess the validity of individual study designs, a brief explanation of criteria associated with LSA and RSA is required.*
Request: *Please provide the following information:*
- a) Explain the biological relevance of the criteria used in the delineation of the LSA. Specifically discuss the biological relevance for choosing a buffer zone of 500 meters?*
 - b) Wolf denning habitat was included as a criterion for the RSA; however bear, wolverine, and raptor habitats were not. Please explain the reason for this.*

RESPONSE 4.12.3 (a)

Delineation of the Local Study Area (LSA) (expected mine footprint plus 500 m buffer) was primarily based on the expected direct loss of wildlife habitat associated with the mine footprint. Direct loss of habitat from construction and operation of the mine has the potential to impact individuals of wildlife Valued Ecosystem Components (VECs), although the magnitude will be higher for species with relatively smaller home ranges. The addition of a 500 m buffer around the footprint was meant to capture any additional immediate indirect habitat losses that may occur as a result of dust settling on snow and vegetation.

RESPONSE 4.12.3 (b)

Although the definition of the Regional Study Area (RSA) provides examples using wolf denning habitat and historical caribou migration routes, it also states "The scale of the RSA also provides a biologically relevant means of determining the distribution of habitat types available to wildlife species during their seasonal and annual movements." (page 10-117 of the EAR). In this context, the RSA was meant to capture a representative distribution of habitats in the regional area for all wildlife VECs, including grizzly bears, wolverines, raptors, upland breeding birds and waterfowl.

- 4.12.4 Reference:** *EAR, Section 10.4.1.2, page 10-117*
ToR Line: *414-417, 428-429*
To: *De Beers Canada Mining Inc.*
Preamble: *In 2000, in order to provide additional coverage during caribou surveys, the number of transects was doubled within a 11 km radius of the mine.*
Request: *Please provide the following information:*
- a) What are the implications of increasing search effort over only part of the survey area?*
 - b) If search effort differs between the two areas, is it appropriate to pool or compare the two?*
 - c) How will this affect overall survey results?*

RESPONSE 4.12.4 (a)

For the purpose of gathering baseline information, the implications of increasing survey effort around the proposed mine site results in greater coverage and an associated increase in the likelihood of locating caribou.

RESPONSE 4.12.4 (b)

No comparison of caribou numbers between the two areas was conducted because the Regional Study Area (RSA) was treated as one area, the core of which was more intensively surveyed. Because the RSA was treated as one area, it was considered appropriate to pool survey data.

RESPONSE 4.12.4 (c)

Intensifying the survey effort around the proposed mine site increases the confidence in predicting the distribution and abundance of caribou in the RSA, particularly within the zone of influence.

- 4.12.5 Reference:** *EAR, Section 10.4.1.3.2, page 10-119*
ToR Line: *414-417, 428-429*
To: *De Beers Canada Mining Inc.*
Preamble: *During caribou surveys within the RSA, the distance between transects was 8 km. The maximum transect width was approximately 2-3 km. It has been suggested that the maximum distance that observers are able to locate wildlife from a helicopter using the naked eye is about ½ km. A skilled observer may be able to extend this to 1 km.*
Request: *Please provide the following information:*
- a) During aerial surveys of the RSA, what distance were observers expected to be able to accurately locate, identify, and enumerate caribou?*
 - b) Was this distance verified in any way prior to the start of the surveys? Please explain.*

RESPONSE 4.12.5 (a)

As stated in the EAR, surveys were unbounded which means that all animals seen were recorded (page 10-119 of the EAR). It is recognized that depending on observer skill, weather conditions, and time of day (light conditions), the distance surveyed could range from 600 m to 1000 m (or even greater for some aboriginal observers). However, for data analysis it was assumed that aboriginal observers and wildlife biologists could locate, identify and estimate the number of caribou in a group within 1 km on either side of the aircraft.

RESPONSE 4.12.5 (b)

Based on the experience of aboriginal observers and wildlife biologists to locate and estimate the number of caribou within 1 km of the aircraft, no verification of this distance was performed.

- 4.12.6 Reference:** *EAR, Section 10.4.1.3.2, page10-122*
ToR Line: *414-417, 428-429*
To: *De Beers Canada Mining Inc.*
Preamble: *Long-term data on the home range, migration routes and calving grounds of the Bathurst caribou herd are available from RWED. There is mention that this information was used during the 1999 and 2000 survey period. However it is unclear whether this information was used during the interpretation of overall survey results.*
Request: *Was RWED's historical data on long-term caribou movement used to supplement DeBeer's survey data? If so, how was this integrated into the survey data?*

RESPONSE 4.12.6

Information supplied by RWED on the movement and distribution of satellite-collared caribou from 1999 and 2000 was used to support results from aerial survey data (page 10-129 of the EAR). As discussed in the EAR, the RWED data was consistent with observations and information provided by the Elders. Information on satellite-collared caribou prior to 1999 was not presented in the EAR.

- 4.12.7 Reference:** *EAR, Section 10.4.1.3.3, page 10-122*
ToR Line: *414-417, 428-429*
To: *De Beers Canada Mining Inc.*
Preamble: *Esker surveys were conducted to collect information on carnivores. Little detail is provided with regards to choice of study design and the skill level required of observers.*
Request: *Please provide the following information:*
- a) What training was provided to observers in order that they would be able to effectively differentiate between canid and bear dens during aerial surveys?*
 - b) Given the available information on the selection and use of denning habitat by the barren-ground grizzly, why were surveys not conducted off eskers in addition to on eskers?*
 - c) Was the current literature consulted in this regard? If not, how was the information integrated into the design of the survey design? If not, please explain why.*

RESPONSE 4.12.7 (a)

Esker surveys for canid and bear dens were conducted using the experience and skill of Elders and aboriginal technicians from communities, and experienced wildlife biologists.

RESPONSE 4.12.7 (b)

Searches for grizzly bear dens along eskers were based on the present accepted methods used in the EKATI™ diamond mine study area (BHP 1999). Information on habitat and den site selection from satellite-collared bears was not available until after surveys for grizzly bear dens were conducted in spring 1999 (McLoughlin *et al.* 1999). In 2000, surveys for dens were limited to eskers because it represented the same systematic approach that was used in 1999. Also, even though McLoughlin *et al.* (1999; 2002) found few dens on eskers (7 of 56 den sites), esker habitat was still preferentially selected based on availability. Given the large size of the Regional Study Area (RSA) and the amount of effort needed to survey primary denning habitats, it was decided that a consistent approach for den surveys would be maintained across the two years. To monitor the long-term presence of grizzly bears in the RSA, it should be noted that beginning in 2001, De Beers adopted similar survey techniques and methods to the work currently conducted in EKATI™ study area (BHP Billiton 2002). These studies target preferred grizzly bear habitat types (sedge wetland in spring, riparian / tall shrub in the summer) as reported in McLoughlin *et al.* (1999).

RESPONSE 4.12.7 (c)

Please see 4.12.7 (b).

Reference

McLoughlin, P.D, F. Messier, R.L. Case, R.J. Gau, R. Mulders and H.D. Cluff. 1999. The spatial organization and habitat selection patterns of barren-ground grizzly bears (*Ursus arctos*) in the Northwest Territories and Nunavut. Final Report to the West Kitikmeot/Slave Study Society (November 1999).

McLoughlin, P.D., H.D. Cluff, and F. Messier. 2002. Denning ecology of barren-ground grizzly bears in the central Arctic. *Journal of Mammalogy* 83: 188-198.

BHP. 1999. EKATI™ Diamond Mine 1998 Wildlife Effects Monitoring Program. Construction Phase, EKATI™ Diamond Mine. Prepared by Golder Associates Ltd. for BHP Diamonds Inc.

BHP Billiton. 2002. EKATI™ Diamond Mine 2001 Wildlife Effects Monitoring Program. Prepared by Golder Associates Ltd. for BHP Billiton Inc.

- 4.12.8 Reference:** *EAR, Section 10.4.1.3.3, page 10-122*
ToR Line: *414-417, 425*
To: *De Beers Canada Mining Inc.*
Preamble: *During esker surveys, helicopters landed to verify potentially active bear den sites. Clarity regarding definition of terms and field procedures related to this methodology is required.*
Request: *Please provide the following information:*
- a) What level of training was provided to observers in order that they were able to effectively identify a bear den during aerial surveys?*
 - b) What criteria were used to denote whether a den was “grizzly bear” den, or to denote whether a den was “active”?*
 - c) When did a “den” warrant landing the helicopter to verify its status? Was a formalized set of criteria used?*
 - d) Were all potential dens ground checked or only those that were known or suspected to be bear dens or fulfilled certain criteria?*

RESPONSE 4.12.8 (a)

Esker surveys for bear dens were conducted using the experience and skill of Elders and aboriginal technicians from communities, and experienced wildlife biologists.

RESPONSE 4.12.8 (b)

Bear dens were identified based on the dimensions of the entrance and inner chamber, in addition to the experience and knowledge of the aboriginal observers and wildlife biologists. Status of the den (*i.e.*, active or occupied during previous winter) was determined through observations of fresh dirt at the entrance and fresh bedding material in the inner chamber.

RESPONSE 4.12.8 (c)

All dens, including wolf dens, were checked on the ground to determine if a grizzly had occupied the den during the previous winter.

RESPONSE 4.12.8 (d)

Please see 4.12.8 (c).

- 4.12.9 Reference:** *EAR, Section 10.4.1.3.4, page 10-123*
EAR, Section 10.4.1.4.3, page 10-142
- ToR Line:** *414-417, 430*
- To:** *De Beers Canada Mining Inc.*
- Preamble:** *There is a general lack of detail in the methods section, 10.4.1.3.4 and the results section, 10.4.1.4.3. A better understanding of the wolverine track survey is required to appropriately review the document.*
- Request:** *Please provide the following information:*
- a) Did De Beers use supplementary information (RWED, Ekati) on wolverines to help design the survey?*
 - b) In order to effectively find, discern, and read snow tracks, field workers need to understand wolverine behaviour, be familiar with the terrain and be able to identify snow tracks. To what degree or how were field workers familiar or trained in these areas?*
 - c) Ability to locate existing tracks is imperative in snow tracking surveys. What speed did the snowmobiles travel during the surveys? What was the visibility criterion for surveys?*
 - d) Were tracks distinguished between individuals? According to sex or age? If so, how?*
 - e) What was the biological relevance for the distance and path chosen for the survey route?*
 - f) Why was there a difference of approximately two weeks between surveys?*
 - g) At least one survey was conducted 17 days after the last snowfall. To what degree were surveyors confident that they were able to still discern snow tracks after this time?*
 - h) Four individual wolverines were observed opportunistically during other ground and aerial surveys. Specifically, what kind of surveys were being conducted at the time these wolverines were observed? When and where did these surveys/observations occur?*

RESPONSE 4.12.9 (a)

Yes, De Beers followed a similar study design and protocol to that used for monitoring wolverines at the EKATI™ diamond mine. This study design is subject to an annual technical review by the Independent Environmental Monitoring Agency. In addition, the baseline study design was reviewed with RWED personnel.

RESPONSE 4.12.9 (b)

Field workers were highly familiar with these areas of expertise. Winter track surveys for wolverines were conducted using experienced and skilled aboriginal technicians from communities, and experienced wildlife biologists.

RESPONSE 4.12.9 (c)

Travel speed was adjusted according to the skill of the observers to minimize the risk of missing tracks (wolverine or other carnivores), but was also dictated by the terrain and snow conditions. Surveys were not conducted during extreme weather such as high winds and drifting snow.

RESPONSE 4.12.9 (d)

No, tracks were not identified to individual and sex.

RESPONSE 4.12.9 (e)

Although the shape of the route was arbitrary, the survey route was 100-km long. The survey route length was chosen based on the large home range size of wolverines (females: 126 km²; males 404 km²; Mulders 2000). The location of the survey route was selected to cross several habitat types within the Regional Study Area (RSA) (e.g., heath tundra, heath tundra / boulder, spruce forest and riparian habitats).

RESPONSE 4.12.9 (f)

The difference in the timing of surveys between 1999 and 2000 was due to differences in snow and weather conditions. Weather conditions often dictate the timing of field work in environmental studies.

RESPONSE 4.12.9 (g)

Again, weather conditions often dictate the timing of field work. Although it is recognized that tracking conditions in 2000 were not ideal, the skill of the aboriginal and wildlife technicians provided confidence that few, if any, wolverine tracks were missed along the survey route.

RESPONSE 4.12.9 (h)

All surveys and incidental observations of wolverines occurred within the RSA. In 1999, one adult was observed during a caribou aerial survey on 30 March, and two adults were observed during the esker surveys for carnivore dens (one on 29 May, and one on 30 May). In 2000, one adult was observed during surveys for upland breeding birds on 22 May.

Reference

Mulders, R. 2000. Wolverine ecology, distribution, and productivity in the Slave Geological Province. Final report to the West Kitikmeot Slave / Study Society.

- 4.12.10 Reference:** *EAR, Section 10.4.1.3.6, page 10-126*
- ToR Line:** *414-417, 425, 435*
- To:** *De Beers Canada Mining Inc.*
- Preamble:** *During both years of the raptor study, surveys were conducted in May and July. In 2000, an intensive aerial survey of all suitable raptor nesting habitat within a radius of 11 km from the mine site was also conducted.*
- Request:** *Please provide the following information:*
- a) What were the exact dates of the raptor surveys?*
 - b) What was the biological significance of choosing the 11 km radius for the intensive survey?*
 - c) The EAR states that “if nest searches could not be located quickly...”. Please explain what denotes “quickly”?*
 - d) How much time was allotted for search effort?*
 - e) Was time/search effort standardized for all searches?*

RESPONSE 4.12.10 (a)

Raptor surveys were conducted from 28 to 30 May 1999, 25 to 26 May 2000, and 26 July 2000. Surveys were timed to provide information regarding the number of breeding attempts (May surveys) and the outcome of breeding attempts (i.e., chick/fledgling counts in July) for the two raptor species (peregrine falcon and gyrfalcon) within the Regional Study Area (RSA). The timing of surveys was reviewed with RWED personnel. Consideration was given to the timing of surveys elsewhere in the Slave Geological Province (e.g., EKATI™ and Daring Lake studies).

RESPONSE 4.12.10 (b)

An intensive survey for raptor nest sites was conducted on 26 May 2000, within an 11-km radius of the mine to ensure comprehensive coverage of the area around the major project elements (e.g., mine site, esker area to be used for extracting granular resources, esker access road).

RESPONSE 4.12.10 (c)

Minimizing disturbance to territorial birds and avoiding the risk of eggs chilling were key factors in limiting the amount of time spent searching for the nest bowl in the May surveys. Therefore, if adult birds were present and exhibited territorial or defensive behaviour, but survey crews were unable to locate nests, breeding attempts were assumed, as per Court *et al.* (1998). Once the adult birds were off the nest, surveyors limited their time in the area to approximately five minutes. Chicks and fledglings are more robust to the effects of exposure and so a longer time (5-15 minutes) was spent

searching for nest sites during the July survey although on most occasions young were located within a few minutes due to their visibility.

RESPONSE 4.12.10 (d)

From 28 to 30 May 1999, 16.8 hours were spent searching for carnivore dens along eskers and raptor nest sites adjacent to eskers. From 25 - 26 May 2000, 11.3 hours were spent searching for carnivore dens along eskers and raptor nest sites adjacent to eskers, including a survey of nests located in 1999. Also, on 26 May 2000, 3.7 hours were spent on an intensive aerial survey for raptor nest sites within an 11-km radius of the mine.

RESPONSE 4.12.10 (e)

Time / search effort was not standardized in the context of obtaining frequency data (*i.e.*, counts) on the number of raptors nesting in the study area per unit time. Rather, the current methodology used for locating and monitoring raptor nest sites at the Snap Lake Diamond Project, EKATI™ diamond mine and Diavik diamond mine involves an initial search of as large an area as possible to locate raptor nest sites. Incidental observations during surveys for other wildlife Valued Ecosystem Components (VECs) provide locations of additional nest sites in the study area. Each year the previously recorded nest sites are revisited to establish occupancy/activity and the outcome of the breeding attempt (number of young). Time / search effort for determining occupancy and productivity of a known nest site were based on the judgement of the survey crew. Usually one slow pass along each cliff with a known nest is conducted, and occasionally an extra pass is required to confirm occupancy or nest success. Additional passes along the cliff might be required if no raptors are observed within the first two passes. This study protocol has been reviewed and accepted by RWED.

Reference

Court, G.S., D.M. Bradley, C.C. Gates, and D.A. Boag. 1988. Natural history of the peregrine falcon in the Keewatin District of the Northwest Territories, Canada. *Arctic* 41:17-30.

- 4.12.11 Reference:** *EAR, Section 10.4.1.3.6, page 10-126*
EAR, Section 10.4.1.4.5, page 10-145
- ToR Line:** *4414-417, 425. 435*
- To:** *De Beers Canada Mining Inc.*
- Preamble:** *Raptor surveys were conducted during aerial surveys of eskers for carnivore dens. Consequently, surveys were not standardized or based on raptor biology. As well, there seems to be a difference of terms used between the methods and results sections. A better understanding of terms and study design will assist in effectively reviewing the document.*
- Request:** *Please provide the following information:*
- a) What is the justification for not performing a systematic search of raptor sites?*
 - b) How will biases be accounted for or interpreted?*
 - c) How confident is De Beers that impact prediction for raptors are accurate?*
 - d) Please distinguish between an active nest site and occupancy and provide the criteria for both.*
 - e) Why was there no survey for fledglings performed in 1999?*

RESPONSE 4.12.11 (a)

Raptor surveys were systematic and grounded in raptor biology. The timing of the surveys coincided with courtship/early laying for peregrine falcons and incubation for gyrfalcons; and the nestling or fledging period for peregrine falcons and gyrfalcons, respectively. The period was kept constant between years to ensure surveys were conducted at the same time of the breeding season. Study design and timing were reviewed with the Government of the Northwest Territories (GNWT) Department of Resources, Wildlife and Economic Development (RWED) to ensure that appropriate methodologies were used.

An intensive aerial search of the entire Regional Study Area (RSA) for nesting raptors was not conducted. The need for a systematic search of the entire study area for nesting raptors during baseline data collection was not identified during consultations with communities and regulators (RWED, Canadian Wildlife Service). Also, no precedent exists for intensive raptor surveys on such a broad scale (301,889 ha) for development projects within the Slave Geological Province.

RESPONSE 4.12.11 (b)

Gyrfalcons and peregrine falcons primarily nest on exposed cliff faces. They may also nest on large erratics. Raptor surveys during baseline data collection focused on surveys of these features to detect breeding raptors. Prominent cliff faces (*i.e.*, potential

nesting habitat) within the RSA, were marked on a topographic map prior to conducting the esker survey. Deviation from the esker flight path during the aerial surveys for carnivore dens were made to visit such features. Moreover, smaller features that were seen during the flight but not detected on topographic maps were visited to check for breeding raptors. Consequently, major cliffs within the RSA were visited, and smaller cliff features and large erratics closer to eskers were visited.

In summary, surveys for raptors within the RSA focused on preferred raptor breeding habitat. This represents normal practice for raptor biology. Therefore, the issue is not one of bias but of the amount of preferred habitat searched within the RSA. De Beers considers that the survey effort expended:

- provides a reasonable estimate of raptor breeding densities for the RSA;
- represents a greater baseline survey effort than for any other diamond project to date; and
- has excluded the presence of raptor nesting sites close to project infrastructure or activities.

RESPONSE 4.12.11 (c)

As identified in Sections 10.4.2.4.4, 10.4.2.3.4 and 10.4.2.4.4 of the environmental assessment report (EAR), De Beers has high confidence that impact predictions related to these issues are accurate. Specifically for raptors, this level of confidence is based on the following:

- raptor surveys show that project activities will not directly disturb nesting habitat;
- no nest sites will be disturbed by project activities;
- there is no valid linkage for the possible attraction of raptors to project activities; and
- the project will have a negligible effect, if any, on prey abundance as the project footprint is relatively small (250 ha) and the indirect effects of dustfall on prey health (*i.e.*, arctic ground squirrels) are predicted to be negligible (Section 11.3.2.3 of the EAR).

RESPONSE 4.12.11 (d)

A nest site is considered to be “active” if there is evidence of a breeding attempt having occurred there. “Occupancy” is a record of whether a nest site was active in the years a nest site was surveyed. An active nest is synonymous with an occupied nest. The criteria by which a nest site was considered to be active (*i.e.*, a breeding attempt

occurred there) is provided in Section 10.4.1.3.6 of the EAR and follows Court *et al.* (1988).

RESPONSE 4.12.11(e)

Consultation with regulators during the baseline environmental data collection initially identified that surveys should be restricted to the courtship/early incubation period to establish nest site occupancy. The survey methodology was expanded in 2000 to include a survey for fledglings (*i.e.*, nest site productivity).

Reference

Court, G.S., D.M. Bradley, C.C. Gates, and D.A. Boag. 1988. Natural history of the peregrine falcon in the Keewatin District of the Northwest Territories, Canada. *Arctic* 41:17-30.

- 4.12.12 Reference:** *EAR, Section 10.4.1.3.7, page 10-128*
- ToR Line:** *414-417, 425, 435*
- To:** *De Beers Canada Mining Inc.*
- Preamble:** *During waterfowl surveys, lakes were divided into lakes that were located within 10 km of the mine site, and lakes that were located at a distance greater than 11km. Surveys of the 10 closest lakes were then repeated. More detail pertaining to design parameters are required in order to assess the effectiveness of the approach and validity of the results.*
- Request:** *Please provide the following information:*
- a) What was the basis for performing a second survey on only the closest 10 lakes?*
 - b) Were survey results pooled over both surveys for the 10 closest lakes?*
 - c) Were these results comparable to those lakes surveyed only once?*
 - d) Were observations made on the ground or by helicopter?*

RESPONSE 4.12.12 (a)

A second survey (July 1999) of lakes within 10 km of the proposed mine was based on the prediction that the maximum zone of influence from the project would be within 10 – 15 km of the footprint [see IR 4.2 and IR 4.10 (b)]. Therefore, it was decided to conduct another survey of these lakes during the brood-rearing period to acquire information on the likelihood that waterfowl use these lakes to raise young.

RESPONSE 4.12.12 (b)

No, the density of waterfowl observed on the lakes for June 1999 and 2000 were presented independently, as was the density of waterfowl on lakes within 10 km of the project for July 1999 (page 10-147 of EAR).

RESPONSE 4.12.12 (c)

Yes, the values between survey periods in 1999 for the lakes within 10 km of mine are comparable, as are the values for June 1999 and 2000. The values are comparable because the number of birds observed on each lake was standardized by observation time and length of shoreline.

RESPONSE 4.12.12 (d)

All observations were made on the ground.

- 4.12.13 Reference:** *EAR, Section 10.4.1.4.1, page 10-129*
- ToR Line:** *414-417, 428-429*
- To:** *De Beers Canada Mining Inc.*
- Preamble:** *Caribou surveys were conducted in 1999 and 2000. During the second year, the design of the caribou surveys changed. Due to the small number of surveys, the data that were collected were sparse. Making predictions based on only two field seasons is difficult.*
- Request:** *Please provide the following information:*
- a) How confident is De Beers that predictions are reasonable and/or appropriate?*
 - b) In terms of assessing impacts, how will the uncertainty be dealt with?*

RESPONSE 4.12.13 (a)

Predictions related to impacts of the proposed mine on habitat loss (direct and indirect), movement and behaviour, and abundance of caribou are associated with a moderate to high degree of certainty. Although the number of surveys conducted for 1999 and 2000 was not extensive, surveys were conducted during peak movement of caribou through the MacKay-Camsell-Snap lake area. In addition, traditional knowledge, snow track surveys, and data on the location and density of historic southern migration trails provided additional support for the results of aerial survey data.

RESPONSE 4.12.13 (b)

During the assessment of impacts, uncertainty is coupled with the confidence in predicting the magnitude of an impact. If measures used to estimate magnitude are associated with large variance (*i.e.*, high degree of uncertainty), then a conservative approach is used to overestimate the expected magnitude and provide a margin of safety. By adopting this method, it is assumed that the environmental consequence of an impact will actually be less than expected. Monitoring is then used to determine if impact predictions are correct.

- 4.12.14 Reference:** *EAR, Section 10.4.1.4.1, page 10-134*
- ToR Line:** *414-417, 428-429*
- To:** *De Beers Canada Mining Inc.*
- Preamble:** *The distribution and density of trails through the RSA were used to present a historical view of caribou movements throughout the area. Based on this presentation of historic trail use, De Beers concluded that most caribou move north and west of Snap Lake during the southern migration.*
- Request:** *Were other sources of long-term data such as RWED surveys used to supplement trail density data?*

RESPONSE 4.12.14

Yes, traditional knowledge (Lutsel K'e Dene First Nation 2001), and on-site consultation and observations of Lutsel K'e Elders was used to support information on the location and density of historic trails in the Regional Study Area (RSA).

Reference

Lutsel K'e Dene First Nation. 2001. Traditional Knowledge in the Nâ Yaghe Kué Region: An Assessment of the Snap Lake Project. Final Assessment Report. July 2001.

4.12.15 Reference: *EAR, Section 10.4.1.4.1, page 10-139*

ToR Line: *414-417, 428-429*

To: *De Beers Canada Mining Inc.*

Preamble: *The number of caribou observed during the Northern and Southern migration in 1999 and 2000 are presented in Table 10.4-1. The table lacks detail with regards to specific survey parameters.*

Request: *Please provide the following information:*

- a) The number of surveys that were conducted for each season in order to arrive at the final number of caribou.*
- b) What was the average amount of time required to complete an individual caribou survey?*

RESPONSE 4.12.15 (a)

During the northern migration, seven surveys were conducted across 1999 and 2000 (30 March and 2 April, 1999, and 11 and 14 April, and 4, 7, and 10 May, 2000). During the post-calving (southern) migration, five surveys were conducted across 1999 and 2000 (21, 22, and 23 July, 1999, and 21 July and 17 August, 2000).

RESPONSE 4.12.15 (b)

The average amount of time required to complete a single caribou survey was 3.0 to 3.5 hours.

- 4.12.16 Reference:** *EAR, Section 10.4.1.4. 2, page 10-139*
- ToR Line:** *414-417*
- To:** *De Beers Canada Mining Inc.*
- Preamble:** *Grizzly bear sign was observed within the RSA, however it is unclear whether these were incidental observations or as part of a systematic survey. Also there is mention of black bears being observed on several occasions within the RSA. If black bears were observed on a regular and frequent basis, a reassessment of their status as a VEC may be warranted.*
- Request:** *Please provide the following information:*
- a) Was a systematic survey conducted in order to gather information about the presence of grizzly bear signs within the RSA?*
 - b) If so, what were the parameters of the study design?*
 - c) How many times were black bears observed within the RSA? Within what timeframe?*

RESPONSE 4.12.16 (a)

Yes, systematic surveys for grizzly bear sign were conducted on the ground along the esker 10 km south of the project site to collect information on the presence of grizzly bears in the RSA.

RESPONSE 4.12.16 (b)

Concurrent with aerial esker surveys in both years, a ground survey was conducted by three people (including two aboriginal technicians) on the esker system located approximately 10 km south of the proposed project. One person surveyed the top portion of the esker, while the other two people each surveyed one side of the esker. The locations of all recent signs of grizzly bear activity (fresh scat, tracks and excavations for ground squirrels) were recorded. As mentioned in IR 4.12.7 (b), since 2001, De Beers has conducted systematic searches for grizzly bear sign in sedge wetland and riparian habitats using similar sampling techniques as the EKATI™ monitoring program (BHP Billiton 2002).

RESPONSE 4.12.16 (c)

Two black bears were observed in the RSA during baseline studies. One adult was observed on 22 July 1999 during a caribou survey, and one adult was observed on 6 June 2000 during breeding bird surveys.

Reference

BHP Billiton. 2002. EKATI™ Diamond Mine 2001 Wildlife Effects Monitoring Program.
Prepared by Golder Associates Ltd. for BHP Billiton Inc.

- 4.12.17 Reference:** *EAR, Section 10.4.1.4 2, page 10-140*
- ToR Line:** *414-417, 425, 435*
- To:** *De Beers Canada Mining Inc.*
- Preamble:** *In 2000, wolf dens were discovered during spring carnivore surveys. However, in July 2000 no previously discovered dens were found to be occupied. There could be a variety of reasons for this; however it was assumed that the wolves left the study area.*
- Request:** *Please provide the following information:*
- a) Was the timing of the second survey too late to capture occupancy?*
 - b) If not, what is the reasoning behind this assumption?*
 - c) What criteria was this assumption based on?*

RESPONSE 4.12.17 (a)

No, the timing of the second survey was not too late to determine occupancy.

RESPONSE 4.12.17 (b)

Timing of surveys was based on consultation with RWED. As stated in Section 10.4.1.4.2 of the EAR, the 26 July 2000 survey included RWED carnivore biologist Dean Cluff and furbearer biologist Robert Mulders. According to Dean Cluff, wolves that den north of MacKay Lake in the central tundra region of the Slave Geological Province typically do not abandon den sites until after mid-August. Recent information suggests that wolves from this same population leave their summer ranges during late autumn (mid-October to November; Cluff *et al.* 2002). Thus, if wolves denning in the Snap Lake area were similar to wolves denning north of MacKay Lake, then den sites should still have been occupied. Because den sites were not occupied during the July survey, the survey team assumed that the animals had left the RSA.

RESPONSE 4.12.17 (c)

Criteria for determining if a den was active involved observing wolves or fresh sign (scat, tracks, and prey remains) around the den site.

Reference

Cluff, H.D., L.R. Walton and P.C. Paquet. 2002. Esker habitat studies in the Slave Geological Province. Movements and habitat use of wolves denning in the central Arctic, Northwest Territories and Nunavut, Canada. Final Report to the West Kitikmeot / Slave Study Society. February 2002.

- 4.12.18 Reference:** *EAR, Section 10.4.2.2 2, page 10-153*
- ToR Line:** *414-417*
- To:** *De Beers Canada Mining Inc.*
- Preamble:** *A list of mitigation measures is provided for minimizing the effects of the project on wildlife habitat. In order to understand the potential effectiveness of the proposed mitigation options, more detail is required.*
- Request:** *Please provide the following information:*
- a) As per the 10th mitigation measure listed on page 10-153, will water be applied on the airstrip and roads for 6 months of the year for the entire life of the mine?*
 - b) In reference to the 12th mitigation measures listed on page 10-153, specifically, what other dust control measures will be implemented?*
 - c) Were potential impacts of proposed and alternative dust suppressants on the environment considered? If so, what are the potential impacts?*

RESPONSE 4.12.18 (a)

Water will be used for dust control during the life of the mine. If dust generation during operation does not warrant water use for a six-month period, then it will be reduced through adaptive management as per the Environmental Management System.

RESPONSE 4.12.18 (b)

"Other dust control measures" refers to the use of dust collection systems. For example, dust collection systems would be used on outdoor crushers at the quarry site. As stated in the responses to Information Responses 2.4.29 and 2.5.32, if additional dust control measures are required, the plan will be discussed with the regulators and follow the Government of the Northwest Territories guidelines for dust suppression (GNWT 1998).

Reference

GNWT (Government of the Northwest Territories). 1998. Guideline for Dust Suppression. Environmental Protection Service, Department of Resources, Wildlife and Economic Development (RWED), Yellowknife, Northwest Territories. Internet: <http://www.gov.nt.ca/RWED/library/eps/dustsupression.pdf>. Accessed June 2002.

RESPONSE 4.12.18 (c)

Only water was considered as a dust control option on the airstrip and roads. The potential impacts of water use for dust control were considered when calculating volumes of water required on site. No environmental impacts from the use of water for dust control were identified and therefore not considered further in the EAR.

- 4.12.19 Reference:** *EAR, Section 10.4.2.2.3, page 10-154*
- ToR Line:** *414-417, 425, 435*
- To:** *De Beers Canada Mining Inc.*
- Preamble:** *In the discussion on the home ranges of raptors within the area, studies of raptors in Alaska and Scotland were referenced and discussed. While these studies may share some similarities, they cover vastly different geographical areas, and likely have very different study objectives and design. For comparison sake and a more effective understanding of results, it would be helpful to know whether studies or monitoring programs that were conducted under the similar developmental and geographical conditions were also researched. This information could help reduce the uncertainty associated with the home ranges of raptors with the study area.*
- Request:** *Were other studies that were more relevant to the study area and design of the DeBeer's project available? If so, how were they referenced or researched, and how were they integrated into the study design?*

RESPONSE 4.12.19

Estimates of home range may be subject to large variation resulting from differences between individuals and ecological influences (habitat, food availability), so ultimately the best information would come from a study within the Slave Geological Province. However, no such studies have been conducted. Studies pertaining to the home range of peregrine falcons and gyrfalcons are extremely limited, and the two studies referenced represent the most appropriate information available.