



Northwest  
Territories Environment and Natural Resources

Ms. Rebecca Chouinard  
Regulatory Manager  
Mackenzie Valley Land and Water Board  
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Dear Ms. Chouinard:

**De Beers Canada Inc.**  
**Gahcho Kue Diamond Mine**  
**Water Licence Application – MV2005L2-0015**  
**Land Use Permit Application – MV2005C0032**  
**ENR, GNWT Final Closing Arguments**

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De Beers Canada Inc. (De Beers) has filed an application with the Mackenzie Valley Land and Water Board (MVLWB) to develop the Gahcho Kue Diamond Mine at Kennady Lake, Northwest Territories.

The Department of Environment and Natural Resources (ENR), Government of the Northwest Territories (GNWT) has participated in the Board's process to date including the following: application review and the submission of review comments; a technical session; information requests; written technical intervention, participation in the Public Hearing, and the review of the draft Water Licence and Surveillance Network Program. As requested by the Board, ENR GNWT provides the following final closing arguments to the Board.

### **Licence Term**

De Beers has requested a licence term of twenty years. ENR understands that the construction and operation phase of the mine is expected to be thirteen years (two years construction and eleven years of operation) following which there will be approximately two years of active closure and then an additional ten year period during which time Kennady Lake will be refilled. Post-closure monitoring will be required, once Kennady Lake is refilled, to confirm the success of the reclamation activities.

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Updates to the *Mackenzie Valley Resource Management Act* now allow licence terms for as long as the life of the project. ENR's primary concern regarding using longer licence terms is ensuring that there is adequate opportunity for the public and interested parties to provide input and voice concerns regarding the performance of a project or in response to proposed changes at a development. To date, the licence renewal and hearing process has provided this opportunity.

If longer licence terms are to be used, then ENR expects the Board to be open to holding hearings on issues of significance to parties as and when required. ENR recognizes that the Board currently has the authority to call hearings outside the licence renewal process, but notes that the Board has only rarely exercised this authority (e.g. the Interim Closure and Reclamation Plan (ICRP) renewal process for Ekati). However, ENR understands this may simply be a function of licence renewals occurring with sufficient frequency that additional hearings are not required.

For the Gahcho Kue project, ENR suggests a thirteen year licence term. This term is longer than has been granted to previous diamond projects in the NWT and aligns with the construction and operational phases as presented by the proponent. The renewal would then provide the Board with the opportunity to develop a closure specific licence for the closure phase of the project, which will rely heavily upon information collected during the operational phase of the project. The Board may need to run a formal closure planning process towards the end of the thirteen year term in order to ensure public participation is adequate to develop a suitable closure plan for the mine.

### **Security**

De Beers and the GNWT continue to have a difference of opinion with respect to the amount of security that should be held for the project. As described at the public hearing, the primary differences relate to costs associated with disposing of potentially acid generating (PAG) material, use of overburden to re-vegetate the rock piles, mobilization/demobilization costs and some smaller differences associated with the assumptions related to the GNWT's policy for reclamation security.

The method of PAG waste rock disposal proposed by De Beers is to place the material within the submerged areas at the base of the waste rock piles, in mined out pits, as well as encapsulating some PAG material within the interior of waste rock piles. The 2013 "Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories" provide guidance on waste rock piles and PAG, and recommend placing PAG rock within the centre of a waste pile so permafrost can encapsulate it if conditions permit and underwater or underground disposal are not viable options. ENR notes the qualifier regarding a preference for underwater or underground disposal since disposing of PAG waste rock in a subaqueous environment post-closure provides the most certainty for secure, long term control of acid rock drainage and metal leaching.

ENR has proposed an alternative method for managing PAG material that would consist of segregating the material and placing it in a mined out pit, once a pit became available. The PAG material would then be submerged once the pits (and Kennady Lake) are allowed to refill with water.

De Beers identified during the public hearing that the amount of PAG material that would be encapsulated within the rock pile would be relatively small. As such, ENR does not believe that the alternative option of segregating PAG material and placing it into a mined out pit will be cost prohibitive, and ENR has included this cost as a preferred option in the security estimate. ENR notes that De Beers introduced another alternative concept at the Public Hearing, which is to cover selected areas of the waste rock pile to limit infiltration into areas containing PAG material. Details regarding this proposal have not been provided, and a cost estimate for a selective cover is not calculated in either ENR's or De Beers' cost estimate.

A second area of difference between the estimates is in regards to covering the waste rock piles with overburden to facilitate re-vegetation. The ENR cost estimate includes an allowance for stockpiling excavated overburden and using this material as a growth medium for vegetation on the waste rock piles. While re-vegetating the rock piles is not included in the current closure plan, the concept is supported by Aboriginal interveners and De Beers have committed to a re-vegetation research program and a closure working group.

De Beers expressed concern over the proposal to cover the waste rock piles with salvaged overburden due to the potential for erosion leading to increased sediment loading to the receiving environment. However, given the preference expressed by Aboriginal parties, ENR recommends that these re-vegetation costs remain in the security estimate until the findings of the working group and the re-vegetation studies demonstrate that re-vegetation of disturbed areas, including waste rock piles, is not feasible or not required.

A third area of difference relates to the ENR's application of the NWT Minesite Reclamation Policy. Under the policy, a credit is not applied to the total reclamation amount for activities that are planned to be completed during progressive reclamation. In contrast, De Beers security estimate was reduced for closure activities considered as progressive reclamation. An example of this is the closure activity related to infilling adjacent to Dyke L with coarse Processed Kimberlite which De Beers indicated would occur during progressive reclamation. ENR's estimate included an allowance for this amount, consistent with the Policy. ENR notes that credit for this amount can be applied when the activity is actually completed.

### **Dilution Factors and Effluent Quality Criteria (EQC)**

One of ENR's intervention recommendations was regarding the dilution factor that should be used when calculating EQC. ENR's analysis of De Beers calculations appeared to indicate that the EQC were calculated using the assumption that forty-two times dilution was available in the receiving lake, when in fact the available dilution would be much less as discharge occurred over time. Upon review of De Beers response to interventions, Updated EQC Report and discussion with Board staff at the public hearing, it became apparent that De Beers was actually using a dilution factor much lower than forty-two times, and ENR's recommendation is not accurate.

ENR withdraws the following recommendation:

*"ENR recommends that the Board use a dilution factor of 5 times when calculating Effluent Quality Criteria, to account for contaminant loading in Lake N11. At this time, ENR does not have a recommendation for Area 8."*

ENR continues to recommend that the Board take the approach of minimizing changes to the receiving environment as a means of minimizing environmental impacts to Lake N11, Area 8 and the downstream aquatic ecosystem when setting EQC.

### **Incineration Management**

The GNWT committed to address in its closing statement the scope of the authority of the NWT *Environmental Protection Act* as noted on the Day 2 De Beers Gahcho Kue Project transcripts page 19.

It is important to note that the GNWT is not asking the MVLWB to put restrictive regulatory limits for air emissions in a Land Use Permit (LUP) and/or Water Licence (WL). As per ENR's written intervention, ENR has suggested that the MVLWB include a point source testing requirement for emissions from incineration devices. This is a best management practice that is consistent with the MVLWB, *Guidelines for Developing a Waste Management Plan*, on page 19 it states:

*"Waste Combustion equipment-Incineration of waste may include the use of an incinerator. If incineration is employed, the incineration device must be designed and operated to treat the waste types and quantities. Further, proponents shall ensure that any on site incinerator meets the requirements of the Canada-wide Standards for Dioxins and Furans xiii and the Canada-wide Standards for Mercury Emissions xiv. Proponents who use incineration may be required to provide an incineration management plan and design and operate the facility in a manner that is consistent with Environment Canada's Technical Document for Batch Waste Incineration (2009) and may seek additional guidance on incinerator management by referencing Operating and Emission Guidelines for Municipal Solid Waste Incinerators (1989) xvi."* (MVLWB)

ENR notes that the only way to ensure that efforts to operate and maintain the incinerator are effective and that the formation and release of point source toxic, persistent and bio-accumulative compounds to the environment, such as dioxins, furans and mercury is limited is through formalized stack testing. Results should be in compliance with the Canadian Council of Ministers of the Environment (CCME) Guidelines for Canada-Wide Standards (CWS) for Dioxins, Furans and Mercury Emissions. Stack testing is the most effective form of quantitative testing available for incineration management to clearly demonstrate that incineration devices are maintained and operated as designed.

As presented by Environment Canada (EC) in both its written intervention and in the public presentation EC has concluded that dioxins and furans can have a direct impact on the aquatic environment. In the two scientific studies referenced by EC they stated:

*"...environmental fate modeling study, which found that proper waste incineration is unlikely to have an adverse impacts to environment. However, poor incineration could lead to adverse impact to soil, water, lake sediments, fish, and wildlife."*  
(MVLWB Transcript Day 2 page 37)

In addition, EC then referenced a second study conducted at the EKATI Diamond Mine:

*"The second study was a sediment sampling study conducted at Ekati diamond mine. This study linked camp incineration waste to elevated levels of dioxins and furans in the lake and lake sediments. Due to the potential impacts to lake and lake sediments, waste incineration should be managed through water conditions of the water licence"* (MVLWB Transcript Day 2 page 37)

As presented by EC it has been proven, in the north, that dioxins and furans generated from improper operation of camp waste incinerators can have adverse effects on the aquatic environment (lake and lake sediments). ENR supports and concurs with the evidence provided by EC that potential adverse impacts on the aquatic environment can occur due to improper operation and maintenance of camp waste incinerators. As demonstrated at EKATI, it is ENR's belief that it is within the MVLWB mandate to ensure the correct operation and maintenance of this equipment to prevent aquatic impacts.

ENR has requested that the MVLWB include a condition in the licence that requires the proponent perform stack testing every other year. This is the only testing mechanism that will ensure that incineration devices are being maintained and operated in accordance with MVLWB *Guidelines for Developing a Waste Management Plan*.

Additionally, if stack testing shows that there is a formation of contaminants from incineration above CCME Canada Wide Standards (CWS), ENR requests that the proponent then develop an adaptive management response plan to ensure that the incineration equipment is being operated and maintained and is capable of meeting the CWS.

In summary:

- ENR is not requesting the MVLWB to implement regulatory limits for air emissions into the environment, which would be defined under the NWT *Environmental Protection Act*.
- ENR is requesting that the proponent be required to monitor potential contaminants (waste) from point source releases, this is similar to a Surveillance Network Program (SNP) requirement. The best management practice is to monitor incinerator emissions through stack testing. This
- is the only way to ensure that the proponent is operating and maintaining its waste disposal equipment as is consistent with the MVLWB *Guidelines for Developing a Waste Management Plan*.
- The MVLWB approves and therefore authorizes the proponents Waste Management Plan as defined in Water Licence in *Part G: Conditions Applying to Water and Waste Management Section 3* and the Land Use Permit *Section 26(1)(i) Storage, Handling, and Disposal of Refuse or Sewage*. Therefore, ENR is requesting that monitoring requirements (testing) be included in the licence(s) as a formal requirement, and that a response plan be developed if the equipment is not operating as outlined in the *Boards Guidelines for Developing a Waste Management Plan*.

#### **Land and Water Board Authority Over Wildlife and Wildlife Habitat**

At the May 6-7, 2014 public hearing for the LUP and water licence for De Beers' proposed Gahcho Kue Mine, legal counsel for the MVLWB requested that ENR provide its view with respect to the scope of the Board's authority over wildlife and wildlife habitat in relation to "some of the materials that are on the Hearing record and, in specific, in relation to the [Gahcho Kue Mine Environmental Impact Review follow-up] measures."

#### **General Legislative Context**

The preamble of the *Mackenzie Valley Resource Management Act* S.C. 1998, c. 25 (MVRMA) speaks to an "integrated and coordinated system of land and water management in the Mackenzie Valley". Among other powers, this system integrates the regulatory stages of environmental assessment, licencing and permitting for all land and water in the Mackenzie Valley, including federal, territorial and private land. Post devolution, this system also integrates and coordinates both federal and territorial legislative authorities and responsibilities in the Mackenzie Valley. All legislative analysis of the MVRMA should take this legislative intent into account.

### Jurisdiction over Wildlife Habitat

The GNWT derives its legislative authority over "the conservation of wildlife and its habitat" from section 18(1)(m) of the *NWT Act*. While section 18(1)(m) of the *NWT Act* was amended as part of the devolution process from the previous section 16(m) power over "the preservation of game in the Territories", the GNWT has been managing wildlife and wildlife habitat for many years and has a fulsome suite of related legislation including the *Wildlife Act* 2014, c.10 and the *Species at Risk Act* S.N.W.T. 2011, c.16.

Part 4 of the MVRMA sets out the powers of the MVLWB, and does not expressly refer to wildlife or wildlife habitat. Within Part 4, the scope of the Board's jurisdiction is set out in section 102(1) of the MVRMA which confers to the MVLWB all of the powers in Part 3 of the MVRMA (Land and Water Regulation).

With respect to wildlife, section 64 requires all land and water boards in the Mackenzie Valley to seek the advice of the applicable renewable resource board in relation to wildlife and wildlife habitat that may be affected by an authorization granted by the MVRMA under Part 3.

64 (2) A board shall seek and consider the advice of the renewable resources board established by the land claim agreement applicable in its management area respecting the presence of wildlife and wildlife habitat that might be affected by a use of land or waters or a deposit of waste proposed in an application for a licence or permit.

The only express authority the MVLWB has in relation to wildlife is the authority to add permit conditions relating to wildlife habitat as per section 26(1)(h) of the *Mackenzie Valley Land Use Regulations* SOR/98-429 (MVLUR) under the MVRMA. Section 26(1)(h) of the MVLUR allows the MVLWB to include permit conditions respecting the "protection of wildlife habitat and fish habitat". Section 26(1)(q) also allows the MVLWB to provide permit conditions respecting "any other matter in respect of the "protection of the biological or physical characteristics of the land." While the *MVRMA* provides no definition of "wildlife habitat," the reference in subsection (q) to the ecological components of habitat (i.e. biological and physical characteristics of the land) provides a basis upon which habitat can be considered in its broadest sense.

The concept of critical habitat has been examined in recent years by the courts in the context of species at risk legislation. In several landmark cases, an expansive view of habitat that focuses on the attributes of habitat has been supported. While these cases focus on “critical habitat”, which is usually defined as habitat that is necessary for the survival or recovery of a listed wildlife species, critical habitat can be considered a subset of general habitat. In *Environmental Defence Canada v. Canada (Fisheries and Oceans)*, 2009 FC 878 (CanLII), the judgement provided a definition of critical habitat that includes both the geophysical location and the essential attributes of that location that support the health and success of the species in question. The breadth of attributes that can be contained in habitat was illustrated in *David Suzuki Foundation v. Minister of Fisheries and Oceans and the Minister of the Environment*, 2010 FC 1233 where the attributes of habitat for resident killer whales included the availability of salmon prey, unpolluted water and a quiet environment. This broad definition of habitat then requires that those attributes are protected. In the killer whale example, limiting pollution as well as limiting physical and acoustic disturbances are examples of measures that, if taken, ensure that the habitat continues to be functionally useful for that species. Accordingly, preservation of essential prey species (i.e. caribou) could be considered as habitat protection for predators if predator species are of concern.

Similarly, impacts on functional aspects of habitat may extend well beyond the immediate vicinity of a development’s footprint. For example, the national *Recovery Strategy for Woodland Caribou, boreal population, in Canada* (the Strategy), required under the federal *Species at Risk Act*, was released in October 2012. To be compliant with the Strategy, jurisdictions like the NWT must maintain or achieve self-sustaining populations and provide effective protection for critical habitat. Protection of critical habitat requires that at least 65 percent of boreal caribou range be maintained in an undisturbed state in perpetuity. Disturbed habitat is defined within the Strategy as (1) anthropogenic disturbances visible on a Landsat image of 1:50,000, plus habitat within a 500 m buffer of the disturbance; and (2) fires 40 years old or younger. The 500 m buffer accounts for the loss of functional habitat around anthropogenic features and is based on multiple studies showing that boreal caribou use areas near these features less than expected by chance. This type of “avoidance” behavior means that functional habitat loss is often much greater than actual habitat lost to the anthropogenic footprint. Loss of functional habitat means there is less habitat available for caribou to carry out their life processes than there was prior to the disturbance, which can have population level implications. Barren-ground caribou are also known to avoid anthropogenic features; for example, one recent study showed that barren-ground caribou are not as likely to use areas within 14 km of the Ekati and Diavik mine sites<sup>1</sup>.

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<sup>1</sup> Boulanger J., Poole K, Gunn A., and Wierzychowski J. 2012. Estimating the zone of influence of industrial developments on wildlife: a migratory caribou *Rangifer tarandus groenlandicus* and diamond mine case study. *Wildlife Biology*. 18:164-179



### Application of the Board's Authority to the Measures

Respecting the relationship between the MVLWB's jurisdiction and the Measures set by the Mackenzie Valley Environmental Impact Review Board for the Gahcho Kue Mine, the GNWT is of the view that inclusion of the Measures required by the Environmental Impact Review Board as conditions in a LUP is within the jurisdiction of the Board. A broad interpretation of habitat that is consistent with current jurisprudence and with section 26(1)(q) in the MVLUR interprets Measures 1 and 2 as protecting important habitat attributes, and so contributing to the protection of wildlife habitat. Within an integrated wildlife management system in which multiple factors that affect the ability of wildlife species to survive and reproduce are managed (harvest, predators, disturbance, development), wildlife protection essentially occurs *through* wildlife habitat protection.

Elements of Measure one directed to De Beers were as follows:

*De Beers will:*

- *Minimize impacts to caribou and the extent of the zone of influence around the mine site to the extent that is technically feasible.*
- *Prior to construction, develop a caribou protection plan that ensures protection of caribou and caribou habitat. The caribou protection plan should include an adaptive management framework demonstrating how the Wildlife Effects Monitoring Program (WEMP) and the Wildlife and Wildlife Habitat Protection Plan (WWHPP) are linked.*

The first bullet directly relates to ensuring that caribou habitat surrounding the mine continues to be functionally useful for caribou and should be included as a condition in a LUP. The second bullet requires the completion of a plan. The land and water boards commonly require plans that provide detailed information about a particular aspect of a project to inform how the proponent will manage that aspect of its project. As discussed, within an integrated resource management system, caribou protection essentially occurs through habitat protection. The reference to both a WEMP and a WWHPP in the measure is an acknowledgement that protection of habitat for a wide-ranging species such as caribou occurs at multiple scales. A WWHPP focuses primarily on managing impacts of the project on habitat attributes that affect wildlife at a local, project scale while a WEMP addresses potential effects of the project on the attributes of habitat at a cumulative, regional scale throughout the range of the herd.

Elements of Measure 2 directed to De Beers were as follows:

*De Beers will:*

- *Construct and operate the Winter Access Road in a way that minimizes its adverse effects as a partial barrier to caribou movement and migration;*
- *Monitor to determine the presence and behaviour of caribou along the winter access road using means in addition to satellite collar data, such as track counts and visual observations; and*

- *Ensure that the caribou protection plan, the wildlife effects monitoring program and the wildlife and wildlife habitat protection plan address the effects on caribou movement and behaviour along the winter access road.*

The first bullet in Measure 2 clearly relates to habitat protection. The winter access road, once constructed, can continue to be caribou habitat and minimizing barrier effects of the road directly relates to the ability of caribou to use that and surrounding habitat. Wildlife habitat protection is not simply the protection of a physical area, but also maintenance of the characteristics of that area that allow the habitat to functionally support the survival and reproductive success of individuals within a population. The MVLWB should therefore, set conditions relating to operation of the winter road in the LUP since habitat protection meets the MVLUR section 26(1)(h) criteria.

The second bullet can be interpreted from both a caribou protection and a habitat protection perspective. Understanding caribou movements around roads improves ability to mitigate road impacts; however, this bullet also outlines the follow-up monitoring actions required to support the habitat protection mitigations that underlie the first bullet. Monitoring wildlife behaviour and movements around developments is the only way to measure the effectiveness of the habitat protection mitigations. As such, the MVLWB should set conditions relating to monitoring caribou behaviour and movement in the LUP to enable the effectiveness of habitat protection to be quantified.

The third bullet of Measure two speaks to the content of the plans that have been required and committed to through the Environmental Impact Review process that support the maintenance of habitat quality (i.e. habitat protection) for caribou. In specifying that applicable plans address effects on caribou movement and behaviour along the winter access road, the bullet is in effect requiring De Beers to maintain the attributes of the habitat that preserve and maintain caribou use of the habitat. As such this should be captured as a condition in a LUP.

Final Closing arguments were provided by ENR technical experts in the Justice Department, Environment Division, Wildlife Division, Water Resources, and the North Slave Region and were coordinated and collated by the Environmental Impact Assessment, Conservation, Assessment and Monitoring (CAM).

Should you have any questions or concerns please do not hesitate to contact Mr. Patrick Clancy, Environmental Regulatory Analyst, at (867) 920-6118 or email at [Patrick.Clancy@gov.nt.ca](mailto:Patrick.Clancy@gov.nt.ca).

Sincerely,



Ray Case  
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