



October 5, 2018

Chris Hotson
Regulatory Manager
Mackenzie Valley Land and Water Board
7th Floor – 4910 50th Avenue
P.O. Box 2130
Yellowknife, NT
X1A 2P6

Dear Mr. Hotson,

**Re: De Beers Canada Inc. (De Beers) – Gahcho Kue Mine
Land Use Permit MV2005C0032 - Water Licence MV2005L2-0015
2018 RECLAIM Financial Security Estimate Report
Additional Information**

On September 27, 2018, the Mackenzie Valley Land and Water Board (the Board) requested that the Government of the Northwest Territories – Environment and Natural Resources (GNWT – ENR) provide further rationale and information on our July 20, 2018 submission related to the revised security estimate (RECLAIM Version 5) for the Gahcho Kue Mine as submitted by De Beers. The Board requested clarification in two areas which are reiterated below.

1. Related to GNWT-ENR comment-1

- a. As the developer of the RECLAIM model, and the party that is responsible for clean-up of the site in the case of abandonment, please provide a recommended amount of security, to be considered by the Board, related to air and wildlife monitoring that would be in line with the other diamond mines operating in the NWT (as noted by GNWT-ENR in their comment). Please also indicate in which phase(s) of the payment schedule these amounts would be added to, based on those presented by De Beers in RECLAIM Version 5.

GNWT-ENR Response:

In GNWT-ENR's July 20, 2018 submission, it was requested that De Beers "provide an estimate on the amount of security that should be held for air and wildlife monitoring for Gahcho Kue, consistent with other diamond mines operating in the NWT." Note, GNWT-ENR did not estimate these costs previously as detailed monitoring plans for air and wildlife have not been provided. These details are needed for the GNWT-ENR to provide a site-specific estimate of air and wildlife monitoring costs for the site.

In light of the information request noted above and in absence of such site-specific information, GNWT-ENR has provided the Board with a range of costs that have been included in RECLAIM for other mines operating in the NWT. As outlined in Table 1 below, the Diavik Diamond Mine, the Ekati Diamond Mine and the Snap Lake Diamond Mine all have security currently held for air and wildlife monitoring. Note, a specific dollar value could not be assigned to Diavik's Air Quality Monitoring Program, as Diavik does not provide an estimate for air quality monitoring as a standalone item in RECLAIM. It is included in the line item "Performance monitoring (water, dust, wildlife, etc.)" and presumably in the "reporting" and "person, labour, equipment, logistics, etc" line items. These line items have a unit cost of \$250,000 and \$100,000 per year and an overall total cost of \$6,237,680 respectively. The air quality and meteorological cost for Snap Lake is \$117,000 per year during interim care and maintenance and final reclamation and then drops to \$34,000 per year during post-closure period.

As outlined in the table, average yearly air monitoring costs at the other diamond mines range from \$30,000 to \$117,000 while average yearly wildlife monitoring costs range from \$20,000 to \$120,000. It is anticipated that monitoring costs for these items at Gahcho Kue mine site would fall somewhere in this range.

Table 1. Security held for Ekati, Diavik and Snap Lake diamond mines for air and wildlife monitoring.

	Ekati¹	Diavik²	Snap Lake³
Air Quality Monitoring Program	\$30,000/year	Not defined	\$34,000 to \$117,000/year
Wildlife Effects Monitoring Program	\$120,000/year	\$50,000/year	\$20,000/year

¹ [Misery UG Security – WLWB Determination – July 12 18](#)

² Appendix VII of the Diavik Closure and Reclamation Plan – WRSA – Version 1.2 – [Expected Cost of Closure and Reclamation](#)

³ [Security Estimate RECLAIM Report v.3, Table A.9](#) – June 4, 2018, estimates accepted in the [MVLWB's change to schedule 2](#) on June 20, 2018

Given the uncertainty that exists regarding the scope and timing of this monitoring at Gahcho Kue, GNWT-ENR would be willing to work with De Beers on the scope of activities and the costs associated with them if, to be consistent with other operations, the Board chooses to include such costs in the Gahcho Kue estimate. Should De Beers provide any site-specific monitoring details to the Board in the future, GNWT-ENR could review the plans and prepare a site-specific estimate for air and wildlife monitoring for Gahcho Kue mine.

Regarding the Board's inquiry to which phase of the schedule these amounts should be added, GNWT-ENR notes that the intent of securities held with the Minister of GNWT-ENR is to ensure environment liabilities at the site will be managed should the property come under the management of the GNWT. It is GNWT-ENR's understanding that air and wildlife monitoring programs are currently being conducted at the site, therefore, cost to undertake these monitoring programs in the case of insolvency represents an existing liability. Securities related to air and wildlife monitoring would be appropriately posted under the current phase.

2. Related to GNWT-ENR comment-3

- a) It is understood that consistency with other diamond mines operating in the NWT should be considered, however, there may be different circumstances at each site that should be considered before standardized grouping occurs. As such, please provide further rationale as to why the cost code, and associated unit costs, for the placement of cover on the fine processed kimberlite containment facility should be changed and increased from what De Beers has provided.

GNWT-ENR Response:

The RECLAIM model was developed as a tool to aid in the estimation of closure and reclamation costs at sites in the NWT. The format of the model, unit cost multiplied by quantity of units, is intended to be transparent, easy to use and easy to update.

The intent of setting and holding reclamation security for a site is that funds will be available to the GNWT to carry out the necessary reclamation work in the event that the owner of the site is unable to do so. In order to ensure that there will be sufficient funds available for the GNWT to conduct such work, the unit costs in the model should reflect expected costs to the greatest extent possible. Unit costs in RECLAIM are reviewed as part of regular updates to the model, but can also be modified in between updates when revised costs for such work undertaken by government becomes available, or, site-specific unit costs are derived by a licensee based on site specific activities and information (i.e. in third party dollars).

Unit costs related to constructing covers were developed for the Ekati site. In the Ekati 2015 Closure and Reclamation Progress Report, Dominion Diamond Ekati ULC (Dominion) provided a relatively detailed description of the level of effort required to re-mine waste rock from the northeast portion of the Panda/Koala waste rock storage area (WRSA) for construction of the Pigeon pad. The following points summarize some of the aspects relevant to this IR:

- The recovery of the granite extended south into the main pile in two areas representing depths of ~ 13 m and 8 m. Dominion considered the recovery areas and the depths of excavations representative of what would be required for obtaining granite in reclamation.
- A total of 3,055,282 tonnes were recovered.
- In general, recovery of materials consisted of drilling and blasting materials that are either well-bonded with fine grained materials, or frozen water. For materials that were not well bonded, a combination of dozing and excavating granite materials were used.
- The overall distribution of well bonded versus not well bonded material within the pile was variable in nature and did not seem to be influenced by the recovery depth or location. This variability is reflected in the level of effort required. For example, in 2014 a total of 58% of the tonnage was drilled and blasted and at the end of 2015 the values had decreased to 37%.
- Recovery occurred consistently from May until mid-November 2014 and March until November 2015. Recovery operations during winter did not occur due to a lack of equipment and resource schedule, not as a result of winter conditions in the pile.
- In the summer months, where possible, excavated faces of well-bonded materials were exposed to sunlight to promote thawing.

Based on this information, and some further refinements to the costs, the unit costs approved for Dominion's security estimate were subsequently approved by the WLWB for the Diavik mine. Although the GNWT-ENR recognizes that there may be some differences between sites, and for different areas within a site (e.g. flat vs. sloped, haul distance, trafficability, etc.), GNWT-ENR recommends using these updated costs at Gahcho Kue where the proposed reclamation activities are substantially the same as those at the Ekati and Diavik sites.

GNWT-ENR notes the following:

- The quantities re-mined from the Panda/Koala WRSA are nearly the same as those estimated by De Beers as required for capping the FPK containment facility and coarse PK pile so direct comparisons can be made.
- Though possible to excavate waste rock from the active layer only, as described in De Beers' response, this was not what occurred at Ekati and may not be operationally desirable or practical for a number of reasons. Dominion also notes that the overall distribution of well bonded versus not well bonded material within the pile was variable.
- Waste rock will not only be frozen in portions, it will have been compacted with heavy equipment.

However, as is the case for any mine estimate, if De Beers can provide site-specific and detailed information on rock removal and placement that differ significantly from activities and conditions experienced at Ekati, GNWT-ENR and its retained consultant would review that information and adjust its position and costs, where it was determined necessary.

- b) Provide further rationale as to why this recommendation is related to only the fine processed kimberlite containment facility, and not to any of the other areas of the mine site that required mine rock for cover that used the same cost code and unit costs; including the coarse processed kimberlite pile, the landfill, or other associated areas of the mine site (i.e. concrete foundations).

GNWT-ENR Response:

When applying unit costs, the same unit cost should be used for activities that are substantially the same. In this instance, the GNWT-ENR's recommendation was directed only at using re-mined waste rock to cover the fine processed kimberlite facility. This was an unintentional oversight on the part of the GNWT-ENR. Should rock cover construction be required for other mine components using mine rock from rock piles, GNWT-ENR recommends that the updated unit cost be applied. One exception may be the landfill where De Beers' security estimate includes a provision to both stockpile granular material, as well as placing the stockpiled material as landfill embankments and cover. In such case, the provisions in De Beers' security estimate for covering the landfill would be considered more appropriate.

In closing, should the MVLWB or De Beers wish to discuss or require clarification on any of the above responses, feel free to contact Mr. Rick Walbourne, Acting Manager, Water Regulatory at (867) 767-9234 ext. 53113 or [Rick Walbourne@gov.nt.ca](mailto:Rick.Walbourne@gov.nt.ca) or the undersigned at [Patrick Clancy@gov.nt.ca](mailto:Patrick.Clancy@gov.nt.ca). GNWT-ENR would be happy to meet and discuss.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Clancy', written in a cursive style.

Patrick Clancy
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Department of Environment and Natural Resources
Government of the Northwest Territories