



Tłıchǫ Government

Box 412, Behchokǫ̀, NT X0E 0Y0 • Tel: (867) 392-6381 Fax: (867) 392-6389 www.tlicho.ca

January 18, 2012

Chuck Hubert
Environmental Assessment Officer
Mackenzie Valley Environmental Impact Review Board
200 Scotia Centre
Box 938
Yellowknife, NT X1A 2N7

Dear Mr. Hubert,

Re: De Beers Environmental Information Requests

The Tłıchǫ Government provides the following information requests (IR's) for De Beers Canada. The Tłıchǫ Government feels that this information is necessary for the purposes of the Gahcho Kué project.

The Tłıchǫ government and its consultants are available to discuss these IR's and their applicable rationale with the De Beers Canada and the Mackenzie Valley Environmental Impact review board.

We thank you for the opportunity to provide the requested information. If you have any questions or concerns, please do not hesitate to contact us.

Sincerely,

for

Laura Duncan
Tłıchǫ Executive Officer
Ph: 867-766-3391
Email: lauraduncan@Tlicho.com

**Attachment to Gahcho Kué – First round Information Request Letter
January 2012**

De Beers Canada

In reviewing Section 5, Traditional Knowledge of the DeBeers' Environmental Impact Statement (EIS) for their Gahcho Kué Project several observations come to mind. We are impressed with how DeBeers has used the literature in an attempt to understand the Dene perspective of all that is part of the land. In spite of dividing and categorizing, they have attempted to incorporate the complexities, as seen by traditional knowledge holders, of how and why the "land" and wildlife can be impacted by mining. Nevertheless, we have comments and questions:

IR Number: TG 1

Source: Tłıchq Government

To: De Beers Canada

Subject: TK – Relationship with Traditional Land Use

DAR Section: 5.0 (pp. 1 to 76)

Terms of Reference Section: 3.2.5

Preamble:

This chapter blurs the distinction between "traditional land use" and "traditional knowledge" (pp. 5-8). Given that a person can use an area without having much knowledge of it, it is important to recognize that to understand vegetation communities, wildlife behaviour, habitat, land use over time, and environmental changes takes traditional knowledge of specific plants, water flow, animal behaviour, human behaviour, and a historical overview. It is more relevant to say that traditional land use is connected to TK, but the relationship is dependent on a particular perspective as well as the specific knowledge.

Request:

- 1.1** What is the Dene perspective and why is this perspective relevant to understanding TK and their concerns?
- 1.2** Is there a meaningful distinction between these two concepts, and how does DeBeers conceptualize the relationship between "traditional land use" and "traditional knowledge"?
- 1.3** Given the importance of land to the Dene, please explain more fully - from a Tłıchq perspective – how traditional land use and traditional knowledge are intertwined?
 - o Explain how this Project could impact Dene citizens and their relationship with the land and resources, and how DeBeers will mitigate this.

IR Number: TG 2

Source: Tłıchǫ Government

To: De Beers Canada

Subject: Traditional Land Use and Current Use of Traditional Territory

DAR Section: 5.1.4 (p. 5-5)

Terms of Reference Section: n/a

Preamble:

This chapter also blurs the distinction between “traditional land use” and the “current use of a traditional territory.” (pg. 5-5) It would be helpful for analysis to have an understanding of the key concepts.

Request:

2.1 What is the distinction between these two concepts?

IR Number: TG 3

Source: Tłıchq Government

To: De Beers Canada

Subject: TK Systems

DAR Section: 5.1.1 (pg. 5-1)

Terms of Reference Section: 3.2.5

Preamble:

The sections says that: *"Where traditional knowledge and conventional science come to different effect predictions, the EIS will identify the different conclusions and outline how De Beers proposes to deal with the disagreement."* (pg. 5-1)

Request:

3.1 How does conventional science differ from TK?

3.2 How generally does De Beers propose to accommodate disagreements between the two knowledge systems?

- o And, where in the EIS does it deal with this?

IR Number: TG 4

Source: Tłıchq Government

To: De Beers Canada

Subject: Boundaries of TK studies

DAR Section: 5.1.3.3 (pg 5-3)

Terms of Reference Section: 3.2.5

Preamble:

There are several Aboriginal communities that have traditional land and resource use areas that could be directly affected by the project, and are included in the study area.

Request:

4.1 How were the boundaries of a “traditional knowledge study area” determined?

- What criteria were used?
- Or, did De Beers rely on maps drawn from land claim (treaty) agreements or negotiation processes?

4.2 Further, do these TK study areas overlap or do they share boundaries that all can agree upon?

IR Number: TG 5

Source: Tłıchq Government

To: De Beers Canada

Subject: Secondary Sources of TK

DAR Section: 5.2.3, 5.2.4 (pg 5-10, 5-12)

Terms of Reference Section: 3.2.5

Preamble:

The chapter says that: *"Currently, TK specific to the Project is limited....De Beers is confident that it has sufficient and applicable TK from secondary sources to incorporate TK into Project design, to predict effects and to identify appropriate monitoring and mitigation..."*(pg. 5-10, and see a similar claim on pg. 5-12)

Request:

5.1 How has De Beers developed this confidence that it has "sufficient and applicable TK from secondary sources" to develop a Project design, predict Project effects, and consider monitoring and mitigation?

- There is primary source TK that is being gathered in relation to the Project, and this will surely give more confidence to the parties. Can the developer reduce the statements of confidence, so that the parties can be assured that their original knowledge will be included?
- If De Beers can go ahead and prepare its EIS without this "primary TK", what value will this TK serve once it is eventually collected later in the life of the Project?

IR Number: TG 6

Source: Tłıchq Government

To: De Beers Canada

Subject: Incorporating TK into EIS

DAR Section: 5.4

Terms of Reference Section: 3.2.5

Preamble:

This section makes a number of references to sections in the larger EIS that make use of or incorporate Traditional Knowledge.

Request:

6.1 How does DeBeers conceptualize and define traditional knowledge?

- How is TK being approached or understood for the purposes of this EIS?

6.2 Please provide a table that summarized all of the various places in the EIS where TK is referenced.

6.3 We would also like to see a comprehensive analysis of the integration of TK in the EIS, in order to ensure that, in individual cases, the integration of TK is meaningful.

6.4 What is the relationship between local knowledge and traditional knowledge?

6.5 And is local knowledge or traditional knowledge utilized by the local group as mentioned on pp., 5-19?

6.6 Is there a local group that utilizes the area near the Gahcho Kué Project?

IR Number: TG 7

Source: Tłıchq Government

To: De Beers Canada

Subject: Relationship between TK, land and culture

DAR Section: 5.4.2.9

Terms of Reference Section: 3.2.5

Preamble:

DeBeers discusses places, routes, and to some extent the cultural landscape, but does not satisfactorily put into a context that addresses a Dene perspective. No where do they discuss the idea that 'land' is sacred and 'all land should be respected'.

In addition this section does not demonstrate the relationship between traditional knowledge and culture.

Further, in spite of the fact that DeBeers Canada has discussed the significance of places-especially sacred sites-they do not mention the importance of traveling trails both on the land and through oral narratives—in the mind. Traveling trails via oral narratives allows Dene to always be prepared to use places and in the future. Although the Gahcho Kué area was used mainly by the Akaitcho, there is evidence that Tłıchq traveled towards and through Gahcho Kué looking for caribou, both alone and with the Akaitcho Dene. For the Dene, remembering the trails, the landscape, and where resources are likely to be found in the area is fundamental to their survival.

Request:

- 7.1** Given that 'land' and all resources are valued components (VCS), how will the Project impact the well-being of the communities?
- 7.2** How will the impacts on wildlife impact the values Tłıchq place on all wildlife and on the activities associated with wildlife?
- 7.3** How will the traditional knowledge systems be impacted as English and western concepts are used to discuss and describe the Project design as well as monitoring and mitigation associated with the environment and landscape?
- 7.4** Will DeBeers take steps to recognize Dene concepts and perspectives so their traditional knowledge system stays intact throughout the life of the mine?
- 7.5** How will destroying traditional trails impact the psyche of Dene in general and specifically that of the families who traditionally used the area?

IR Number: TG 8

Source: Tłıchq Government

To: De Beers Canada

Subject: Monitoring and Mitigation measures arising from TK

DAR Section: ss. 5.4.3 (pg 5-71)

Terms of Reference Section: 3.2.5

Preamble:

This section presents additional monitoring and mitigation measures that arose from TK. But this is only true in a very broad sense, in that the measures being proposed are intended to respond to general concerns raised by the elders in one meeting and in some TK literature. DeBeers states they are committed to monitoring. TK monitoring is vital given the location of this mine being close to a proposed protected area.

Request:

- 8.1** What role specifically will TK play in the actual planning, development and implementation of these proposed measures?
- 8.2** What resources will DeBeers put into TK monitoring to ensure harvesters' knowledge of change to the study area is documented, analysed and reported by the TK Research and Monitoring Division of the Tłıchq government?
- 8.3** Will both harvesters' observation of change based on local knowledge as well as traditional knowledge be recognized and incorporated when designing mitigating measures?
- 8.4** Is there a difference between monitoring change by using harvesters' local knowledge and their traditional knowledge?
 - How are the two interrelated in the context of monitoring?
- 8.5** Will DeBeers support established TK protocol and methodologies to monitor wildlife, environmental, social and cultural impacts during the life of the mine?
 - And after closure – until the Tłıchq elders, harvesters and leadership agree reclamation has been successful?
- 8.6** Will TK be used to monitor water flow as well as all the wildlife and plants that use the lakes and rivers associated with drainage from mine?

IR Number: TG 9

Source: Tłıchq Government

To: De Beers Canada

Subject: Habitat and Vegetation

DAR Section: ss. 5.4.3 (pg. 5-71)

Terms of Reference Section: 3.2.5

Preamble:

Given DeBeers has listed habitat, vegetation communities and landscape types found in traditional knowledge studies, and information on various wildlife-including caribou- we would like to know:

Request:

9.1 What type of vegetation-habitat types-as defined by the Tłıchq-are associated with Gahcho Kué, and how, then, do they anticipate the impacts of these will affect the wildlife that uses the area?

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IR Number: TG 10

Source: Tłıchq Government

To: De Beers Canada

Subject: Water Quality Predictions – Use of Humidity Cell Tests

DAR Section: 4.1.2 Key Lines of Inquiry-Water Quality and Fish

Terms of Reference Section: Chapter 8 and Appendices

Preamble:

The water quality model uses data from humidity cell tests (HCT) that have not been scaled to represent conditions at the site. This is simply poor practice and is not an accepted method. This may lead to inaccurate predictions and likely greatly underestimates the levels of contaminants in drainage from the site. We believe this is a material error.

In Attachment 8.1.3 page 8.1.3-6 the EIS report states "*The direct use of results of HCT as a source term input to water quality models is consistent with current industry practices and some regulatory guidance (e.g., Price 1997).*" This statement is incorrect. We have contacted the author Dr. Price and he has stated

"It (the prediction manual) states the opposite, that under ideal situations the test provides a measure of primary reaction rates for some minerals but the increased leaching rate prevents precipitation of secondary minerals that commonly limits release of many elements. And then there are all the differences between lab and field climate and test samples and the actual materials in particle size, volume and mass etc."

On Page 8.1.3-6 the EIS report also states "*The direct application of the results of HCT avoids the need for scaling of the kinetic test results to mine facilities (EPA 2003).*" The referred to EPA report to our understanding makes no such claim. In fact the report states

"Scaling issues are a significant obstacle when using bench-scale kinetic test results to quantitatively estimate acid generation in waste rock and tailings piles. Included are the effects of grain size and reactive surface area, infiltration rates, and flushing rates and volumesit is important to consider that differences between lab test conditions and the natural environment are likely to complicate extrapolation of kinetic test results."

The direct use of humidity cell data to represent drainage quality from the PK and waste rock piles is a potential serious error that must be addressed.

Request:

- 10.1** Please provide water quality predictions for revised input concentrations for contaminants. The revised inputs should draw upon generally accepted methods for interpretation and scaling of humidity cell test information. (i.e. use humidity cell data to determine contaminant loadings and scale data for grain size and temperature. Complete equilibrium modelling as necessary to determine if any contaminants are solubility controlled).

IR Number: TG 11

Source: Tłıchǫ Government

To: De Beers Canada

Subject: Water Quality Predictions – Phosphorus

DAR Section: 4.1.2 Key Lines of Inquiry-Water Quality and Fish

Terms of Reference Section: Chapter 8 and Appendices

Preamble:

Appendix 8.1.3 provides the basis for determining phosphorus levels. It is apparent that the humidity cell tests for the first 100 weeks or so could not be used as the limit of detection for phosphorus (P) was too high (0.015 mg/L). The data used is from measurements after week 170. This means that 170 l/kg of wash water had been applied to the waste rock samples. This is equivalent to >10,000 years of rainfall infiltration into the pile and is not likely to be representative of pile leachate phosphorus levels. Furthermore the report says it uses one half of the detection limit to estimate P levels (i.e. 0.01 mg/L). The problem here is that all the data we reviewed (e.g. HC-8 and HC-9) have a detection limit of 0.03 mg/L which suggests the level for modelling should have been 0.015 mg/L. Shake flask data monitors P levels at up to 1.5 mg/l with many samples >0.1 mg/L. This clearly shows that phosphorus is mobile in waste rock yet this data was ignored.

The selection of phosphorus levels used in the report is a potential serious issue that must be addressed.

Request:

- 11.1** Methods used to assess phosphorus levels in waste rock drainage are believed to be inaccurate. Will De Beers Canada Inc. complete suitable additional studies to better characterize phosphorus levels and update water quality predictions? (e.g., consider using shaker flask data and scaling phosphorus leaching data, completing tests such as EPA meteoric water leach procedure, and use of large scale column tests with infiltration rates typical annual infiltration at the site).

IR Number: TG 12

Source: Tłıchq Government

To: De Beers Canada

Subject: Water Quality Predictions – Potential Acid Generating Waste Rock

DAR Section: 4.1.2 Key Lines of Inquiry-Water Quality and Fish

Terms of Reference Section: Chapter 8 and Appendices

Preamble:

Pg 8.II-63 states

"Although there is very little NP in the mine rock, there is generally very low concentrations of sulphide. Less than 10% of all the mine rock samples are classified as PAG and another 30% of samples have an uncertain PAG classification. 0.3 wt% total sulphur, which is generally considered to be the minimum concentrations of sulphur needed for acid generation. Fourteen of the 1,236 samples (1.1%) reported sulphide concentrations exceeding 0.3% and NP/AP ratios of less than three."

There are some confusing and incorrect facts, specifically:

- i) Samples of granitic rock with <0.3% sulphur commonly produce acid drainage; and
- ii) This section says <10% PAG and 30% potentially PAG, while page 8-170 says <6% in PAG.

Request:

- 12.1** Please clarify the quantities and percentages of PAG waste rock. Also describe how to manage PAG and potentially PAG if this represents 30-40% of the waste (page 8.II-63).

IR Number: TG 13

Source: Tłıchq Government

To: De Beers Canada

Subject: Water Quality Predictions – Leaching Rates

DAR Section: 4.1.2 Key Lines of Inquiry-Water Quality and Fish

Terms of Reference Section: Chapter 8 and Appendices

Preamble:

The report uses water quality from the first five cycles of the humidity cell test to characterize short term releases from the waste rock piles and processed kimberlite (PK) piles. For a 1 kg sample, a total of six litres of water would have been applied during this “short term” period. This is equivalent to about 2500 years of rainfall infiltration into a pile.

Requests:

13.1 Even if humidity cell data could be used directly; how does a drainage produced after the equivalent of 2500 years of infiltration represent short term leaching?

13.2 Please justify or revise the basis for assessing short term leaching characteristics for PK and waste rock.

IR Number: TG 14

Source: Tłıchq Government

To: De Beers Canada

Subject: Water Quality Predictions – Leaching Rates

DAR Section: 4.1.2 Key Lines of Inquiry-Water Quality and Fish

Terms of Reference Section: Chapter 8 and Appendices

Preamble:

Ammonia levels are not projected to be of issue while this has been a significant concern at many mines in the North (e.g. Diavik). Flows at Gahcho Kué are much lower than at Diavik and one would expect much higher concentrations of ammonia from blasting as a result.

Request:

14.1 Please clarify why ammonia from blasting will not be an issue at Gahcho Kué.

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IR Number: TG 15

Source: Tłıchq Government

To: De Beers Canada

Subject: Water Quality Predictions - Ammonia

DAR Section: 4.1.2 Key Lines of Inquiry-Water Quality and Fish

Terms of Reference Section: Chapter 8 and Appendices

Preamble:

Ammonia levels are not projected to be of issue while this has been a significant concern at many mines in the North (e.g. Diavik). Flows at Gahcho Kué are much lower than at Diavik and one would expect much higher concentrations of ammonia from blasting as a result.

Request:

15.1 Please clarify why ammonia from blasting will not be an issue at Gahcho Kué.

IR Number: TG 16

Source: Tłıchq Government

To: De Beers Canada

Subject: Water Quality Predictions – Trace Contaminants

DAR Section: 4.1.2 Key Lines of Inquiry-Water Quality and Fish

Terms of Reference Section: Chapter 8 and Appendices

Preamble:

A review of the leaching data suggests that a number of trace contaminants are mobile from waste rock and processed kimberlite. These include arsenic, selenium and molybdenum, all of which can be leached under alkaline conditions. Because humidity cell data has been used directly, these as well as many other elements do appear to be of concern and we are not convinced this is the case. For example As (arsenic) levels in "first flush" of granitic waste rock are reported at 0.025 mg/L. This is an arsenic dissolution rate of 0.025 mg/kg/wk. For a 30 m high pile this would be the equivalent of 1500 mg/m²/wk. If we assume loadings from the pile are reduced by a factor of 500 to account for grain size and temperature etc., concentration in seepage would >1 mg/L. This is materially different than the humidity cell result.

Request:

16.1 Should revised water quality predictions (previously requested) show elevated levels of heavy metals, arsenic, selenium etc., please describe how these will be managed in both the short and long term.

IR Number: TG 17

Source: Tłıchq Government

To: De Beers Canada

Subject: Water Quality Predictions – pH Levels On Site

DAR Section: 4.1.2 Key Lines of Inquiry-Water Quality and Fish

Terms of Reference Section: Chapter 8 and Appendices

Preamble:

The report on Table 8.8-13 has developed a water quality criterion for ammonia. The levels assume an ambient pH of 6.7 and temperature of 15°C. The pH value is a value typical of background. Ammonia toxicity is greatly impacted by pH with toxicity increasing as pH rises. All testing data has shown that runoff from the PK and waste rock piles is quite alkaline (pH>8.0). It is not understood why pH levels would not be impacted from discharges during operation or in Kennady Lake at closure (the receptor of all alkaline discharges).

Requests:

- 17.1** Please provide justification for predictions that pH levels will not be impacted by alkaline discharges from the PK and waste rock piles. If pH is impacted please provide data on unionized ammonia levels at higher pH levels.

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