Mackenzie Valley Environmental Impact Review Board

Box 938
200 Scotia Centre, (5102-50th Avenue)
Yellowknife, NT X1A 2N7
Fax : (867) 920-4761

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EA99-004

Tina Markovic
BHP Diamonds Inc.
#1102, 4920-52nd Street
Yellowknife, NT
X1A 3T1
fax: 669-9292

RE: DEVELOPMENT DESCRIPTION
BEARTOOTH, PIGEON AND SABLE KIMBERLITE PIPE DEVELOPMENT

This letter summarizes government's input to the Mackenzie Valley Environmental Impact Review Board (Review Board) request for comments regarding the submitted development description for the Beartooth, Pigeon and Sable kimberlite pipe development proposal Development Description. The summary is divided into two parts: Table One includes comments relating to scope of development[1] and Table Two provides comments relating to scope of assessment[2].

The contents of this letter, plus other input, will eventually be referenced in the terms of reference for the environmental assessment to be issued by the Review Board. These terms of reference will be used to guide the drafting of the environmental assessment report to be developed by BHP. A proposed outline for the environmental assessment report is provided next:

- Title (of the development proposal)
- Executive summary (translated into appropriate aboriginal languages)
- Description of the development (e.g., phases, timetables, location, technology used, alternatives to the development, development design details taking into account the environment)
- Description of the existing environment including environmental interactions (e.g., natural and human setting);
- Impact of the development on the environment, including those caused by malfunctions or accidents, and any cumulative impact(s);
- List of potential impacts and the proposed mitigation or remedial measures;

[1]Scope of development is about defining what makes up the development. That is, what undertakings or parts of undertakings will be included for consideration in the environmental assessment.

[2]Scope of assessment is the identification of relevant impacts and concerns.

Heidi Klein	Executive Director	(867) 873-9029
Bridgette Larocque	Finance and Administration Officer	(867) 873-5257
Gordon Stewart	Environmental Assessment Officer	(867) 873-9193
Louie Azzolini	Environmental Assessment Officer	(867) 873-9189
Roland Semjanovs	Communications Officer	(867) 873-9636

- Identification and description of the residual impacts following mitigation or remedial measures;
- Results and summary of issues from public and community consultation, including any concerns raised;
- Plans for any environmental management plan, follow-up and monitoring;
- List of supporting evidence and information sources, including previous environmental assessments; and
- List of the required licences, permits and other authorizations, if relevant.

Next steps:
This letter concludes the first phase of the Review Board's work plan. The next phase of work involves the preparation of draft terms of reference and convening a government experts' meeting to discuss these. We expect the Review Board to issue its terms of reference by the end of November.

Please call me at 867-873-9189 if you have any questions regarding this letter or the attached tables.

Sincerely,

Luciano Azzolini
Environmental Assessment Officer

c: Government expert advisors, see email distribution list

attachment

Heidi Klein	Executive Director	(867) 873-9029
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Table One
Development Description comments relating to scope of development

No.	Scope of Development	Provider of Comments
1	Describe tailings disposal management	NRCAN
2	Granular sources for roads and for reclamation of littoral zones	NRCAN
3	Describe follow-up/monitoring programs / modifications to existing plans	NRCAN
4	reclamation plans and activities / modifications to existing plans	NRCAN
5	Describe the capacity of existing and / or proposed tailings / mine water facilities	NRCAN
6	Information regarding use of existing explosives facilities or construction of new facilities (e.g. explosives magazine for the Sable pit - size of magazine and distance from a water body	NRCAN
7	For all additional pipes modifications to existing facilities (includes potential increase in footprint and height of Koala/Panda waste rock or lake bed sediment dump due to added tailings disposal	DIAND
8	Modification of existing quarry sites	DIAND
9	Construction of additional facilities and infrastructure including diversion channels, haul and access roads, waste rock storage area, disposal sites, Sable road and stream crossings (culvert placement) and quarry locations where these are in addition to existing sites	DIAND
10	Sable kimberlite pipe sedimentation pond	DIAND
11	Describe the overall mining schedule from the approved mining approach (one pit at a time) to a concurrent mining Schedule (multiple pits at the same time)	DIAND
12	Describe and cross reference the original detailed source documents, or plans approved with the proposed development	DIAND
13	Drainage directions should be clearly shown	Environment Canada
14	Heavy reliance on the 1995 Environmental Impact Statement	Environment Canada
15	Clearly reference and include pertinent information and data from studies conducted	Environment Canada
16	Describe proposed monitoring	Environment Canada
17	BHP noted the three new pipes replace the Leslie pipe which has already been permitted, but unless BHP specifically removes the Leslie pipe from their permitted kimberlite pipes, all development at the three new pipes must be considered to occur in addition to pipes already permitted as development of the Leslie kimberlite pipe could occur	Environment Canada
18	Describe the Panda/Koala settlement pond and water management.	Environment Canada
19	Unclear where the residual Pigeon Pond will be and if a drainage channel is needed?	Environment Canada

No.	Scope of Development	Provider of Comments
20	The drainage direction for the Big Reynolds pond should be identified and closure details provided	Environment Canada
21	Please clarify location of explosives storage areas	Environment Canada
22	Discussion of how the expansion interacts with the current development (e.g., if the proposed project will not alter the size, skill inventory and Northerner / aboriginal make-up of BHP's workforce and procurement policy then BHP should make a statement to that effect in the development description). Similar statements expected for other components of the expansion	GNWT
23	Describe the all weather road to the Pigeon Kimberlite pipe	GNWT
24	Describe the volume and type of traffic on the Sable road	GNWT
25	Describe how run-off from the waste rock piles will be managed at each pit	GNWT
26	Describe the area covered by waste rock dumps at each pit	GNWT
27	Describe the anticipated increase in ore and waste rock storage areas required by the expansion	GNWT
28	Describe the fuel management, spill contingency planning and spill response capabilities at the Sable and Pigeon pits	GNWT
29	Describe the waste management and hazardous waste management at the Sable and Pigeon pits (where and how will the wastes be stored)	GNWT
30	Describe the frequency of waste removal from the Sable and Pigeon pits and transportation requirements	GNWT
31	Describe the fuel supply requirements at the Sable and Pigeon pits and transportation requirements	GNWT
32	Describe the amount of land to be disturbed by all components of the proposed expansion (pits, roads, infrastructure)	GNWT
33	Describe the Panda/Koala Settlement pond (location and capacity)	GNWT
34	Need details of 3km all-weather road being proposed to haul kimberlite from Beartooth pit to the existing process plant	DFO
35	Describe the capacity of the Panda sumps and disposal areas. Describe increase in the runoff collection system due to the addition of material from Beartooth	DFO
36	Indicated that if TSS during Beartooth dewatering is unacceptable, water will be directed to Long Lake via the process plant, but what is the proposed method (pipe system) to reroute this water over the 3km distance?	DFO
37	Where is the Panda/Koala Settlement pond to be constructed? What is the proposed method of getting water from the Beartooth pit to the pond?	DFO

No.	Scope of Development	Provider of Comments
38	Describe / details of the proposed all-weather road to Pigeon pit	DFO
39	Describe method of pumping and piping Pigeon pit water to Long Lake	DFO
40	Describe the estimated volumes and capacity of the Sable sump	DFO
41	Stated that there would be a sedimentation pond for collection and settling of pit sump water for the Sable pit which would then be discharged to Two-rock Lake. The next statement, however, states that water within pit sump would be used for roads and drilling with any remaining water going to Long Lake. What constitutes any remaining pit water"?	DFO

Table Two
Comments relating to scope of assessment

No.	Scope of assessment	Provider of Comments
1	Impact on or modification to the Long Lake containment area resulting from any changes in tailings disposal management	NRCAN
2	Surficial geology, permafrost, drainage, Geotechnical etc.	NRCAN
3	Baseline distribution and thickness of surficial materials	NRCAN
4	Rock types	NRCAN
5	Slope stability of pit walls	NRCAN
6	Impact of aggregate use	NRCAN
7	Reclamation of used pipes	NRCAN
8	Drainage effects of spoil	NRCAN
9	Water chemistry of spoil	NRCAN
10	Chemistry of pipes and stability of kimberlite byproducts	NRCAN
11	Permafrost temperatures and ground ice conditions at mines and roadways, and in material being moved	NRCAN
12	Thermal effects of mining	NRCAN
13	Drainage of lakes/disposal of lake waters and sediments to access kimberlite	NRCAN
14	Is there enough aggregate for construction? Is source crushed rock or unconsolidated materials	NRCAN
15	Information on remedial actions at the mine site (waste dumps, tailings)	NRCAN
16	Where landfill/aggregate will come from?	NRCAN
17	What waterways / watersheds are affected and how extensive?	NRCAN
18	How will disturbance to the environment (including thermal milieu) be limited?	NRCAN
19	Sensitivity of boggy / wetland terrain to drainage and thermal alterations (notably in relation to Pigeon pipe development)	NRCAN
20	Amount of overburden and rock to be removed, and its effects	NRCAN
21	Acid rock drainage potential and its remediation (including sub-aqueous disposal option)	NRCAN
22	Baseline permafrost physical conditions and thermal regime	NRCAN
23	Effects of pit mining activities and infrastructure on permafrost regime and changes to physical strength characteristics / hydrogeological regime	NRCAN
24	Capacity / impacts on existing frozen core dams	NRCAN
25	Massive ground ice and granular resource extraction - limitations on volumes of resource material and minimizing terrain disturbance associated with ground ice thaw	NRCAN

No.	Scope of assessment	Provider of Comments
26	Hydrogeological and hydrogeochemical	NRCAN
27	baseline depth profiles of lake / stream sediment geochemistry with emphasis on heavy metals	NRCAN
28	Effects of pit dewatering on the water table and surface drainage	NRCAN
29	Expected post-closure modifications to regional groundwater chemistry and flow patterns caused by flooding mining excavations	NRCAN
30	Quantity and quality of waters (including suspended sediments) draining waste rock and tailings facilities; provisions for disposal and mitigation	NRCAN
31	Quantity and quality (salinity, phosphate, nitrogen, heavy metal content) of mine discharge waters; provisions for disposal and mitigation	NRCAN
32	Waste rock and sediment management - additional information on geochemical characterization program	NRCAN
33	General - including an expanded discussion of cumulative effects on the winter road, other infrastructure and ecology in light of Ekati, Diavik and potential future mining activity	NRCAN
34	General - additional follow-up monitoring and reclamation requirements	NRCAN
35	General - final abandonment, restoration and reclamation plans	NRCAN
36	Construction of additional open pits (through dewatering of lakes, excavation of on-land pipes and the associated effects of this activity on fish, fish habitat, local drainage patterns	DIAND
37	Effect of malfunctions or accidents	DIAND
38	Technically and economically feasible means of carrying out the development and the environmental effects of such alternative means	DIAND
39	Impacts or changes on existing facilities infrastructure and facilities as a result of the expansion	DIAND
40	Potential for Acid Rock Drainage (ARD) with addition of new materials to waste rock storage areas or disposal sites	DIAND
41	Potential increase in traffic on existing haul roads and transportation corridors	DIAND
42	Potential commutative effects on wildlife and aquatic systems with respect to existing BHP operations and anticipated new developments	DIAND
43	Impact of dewatering Beartooth Lake (all pipes under water bodies)	DIAND
44	Potential for nutrient passage in fish and non-fish bearing water courses	DIAND
45	Impact on fisheries resources of Ulu Lake	DIAND
46	Impacts of works and activities such as creek diversions, pit	DIAND

No.	Scope of assessment	Provider of Comments
	restoration	
47	Impact of Pigeon kimberlite pipe development on the Exeter water shed	DIAND
48	Impact of facilities and support infrastructure at the three pipes	DIAND
49	Impact of on-going pit dewatering	DIAND
50	Archeological evaluation of the road to the Sable kimberlite pit	DIAND
51	Impact of the road to the Sable kimberlite pit on water crossings	DIAND
52	Sable kimberlite pit road alternatives	DIAND
53	Impact of the Sable kimberlite pipe development on the Exeter water shed	DIAND
54	Sable kimberlite pit waste rock ARD	DIAND
55	Lake bed sediment placement and control of runoff	DIAND
56	Rationale for the Sable road, including rationale for the proposed routing, all weather vs. seasonal	DIAND
57	Quarry management and reclamation specifics	DIAND
58	BHP future exploration plans as they relate to the proposed development	DIAND
59	Confirm that all exiting facilities BHP plans to use can adequately handle the increased waste materials, loading, etc.....	DIAND
60	Impact of the new mining schedule. Impact the approved mining approach (one pit at a time) to impact of concurrent mining Schedule (multiple pits at the same time)	DIAND
61	Baseline environmental data on water quality, fish, sediments, etc from the Pigeon pond and stream	DIAND
62	Geochemical or acid rock drainage testing on waste rock associated with the pipes	DIAND
63	Discussion of cumulative effects with Diavik	DIAND
64	Public concern needs to be addressed further through consultation	DIAND
65	Map that delineates all kimberlite pipes in the claim block and existing/proposed roads	DIAND
66	Impact of reclamation of the Sable kimberlite pipe with waste dump	DIAND
67	Impact of the loss of terrestrial habitat that was not covered in the 1995 EIS.	Environment Canada
68	Impact on birds	Environment Canada
69	Impact associated with any potential thermal erosion in relation to altered drainage around the Pigeon and Beartooth kimberlite pipes	Environment Canada
70	Is Kinetic and static testing planned to confirm no acid generation from the waste rock ores?	Environment Canada
71	Impact of alternatives such as "backfilling" the mined out kimberlite	Environment

No.	Scope of assessment	Provider of Comments
	pits with the next pipe's waste rock (especially for pipes that are fairly close together).	Canada
72	Closure of the exhausted kimberlite pipes involves flooding and restoration of drainage - are there actual measurements of ground water flow in the area?	Environment Canada
73	Cumulative effects must look at cumulative effects within the mine lease caused by the development, as well as looking at them on a regional basis. The scale should be relevant to the species being looked at, and may involve different spatial boundaries for different ecosystem components	Environment Canada
74	Impacts of dewatering the Beartooth during October and November and impacts into the Panda Diversion Channel which may freeze, causing flow problems in spring? Timing alternatives should be looked at	Environment Canada
75	Details on the lake habitat to be lost in Ulu and on the fisheries resources of Two Rock Lake	Environment Canada
76	How will the water quality of Two Rock Lake be protected?	Environment Canada
77	Impact of the mine expansion on the management of the tailings containment area	GNWT
78	Anticipated changes in aircraft traffic	GNWT
79	Waste rock from Beartooth Pipes - no water quality details are given i.e. metals, TP and pH.	DFO
80	Depositing of Beartooth waste rock, till and lake bottom sediments in Panda disposal areas will result in a minor increase in footprint, but there is no definition of minor, and whether any other waterways may be impacted by the increases.	DFO
81	Anticipated impacts of dewatering Beartooth in October and November on Panda Lake and the Diversion Channel i.e. increased flows, increased nutrients, alterations in hydrograph?	DFO
82	Propose to use pumping as a long-term water management activity to direct surface flow around the Beartooth pit, how feasible is this and what are the contingencies?	DFO
83	State that water draining into the Beartooth pit will be collected in a sump and pumped out to the Panda/Koala pond. What is the pump configuration and estimated volumes, and contingencies for dealing with icing on the pit walls as well as ice removal from the pit?	DFO
84	How will the dewatering of 393,000m3 of water from Sable to Two-Rock Lake affect water balance, lake levels, outflow rates, etc in October and November in Two-Rock Lake?	DFO
85	How will the subaqueous disposal of potentially acid-generating rock in the southern portion of Ulu Lake impact on water quality and	DFO

No.	Scope of assessment	Provider of Comments
	aquatic organisms in the remainder of the lake?	
86	Stated that no significant water diversion around Sable Lake would be required. Quantify ""significant" and identify what water diversion will be required	DFO
87	BHP to assess the potential cumulative effects of their proposed project (development of three additional pits, roads) with their existing operation in addition to the proposed Diavik project.	DFO
88	The proposed expansion will extend BHP"s mine footprint and will impact on another watershed. The cumulative loss of lakes, streams and associated fisheries resources, and alterations in surface and groundwater flows, cumulative impacts on caribou migration, and cumulative impacts to vegetation due to surface disturbance and dust deposition, are just a few of the areas that need a full assessment. A lot of public concern has been raised regarding the potential for cumulative effects with increasing development in the area. The public was assured that the proponent of any new proposals would have to assess the impacts of their project in conjunction with any existing or proposed projects in the area	DFO