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4 March 2014

Ref: 028900LET01

ABM Resources NL
Level 1/141 Broadway
Nedlands, WA 6009

Attention: Mr Justin Robins
Environmental Manager

Dear Justin

RE: TWIN BONANZA PROJECT, TANAMI DESERT, NORTHERN TERRITORY TAILINGS STORAGE FACILITY, GEOTECHNICAL CONCEPTUAL DESIGN REPORT - STAKEHOLDER COMMENTS

4DGeotechnics (4DG) is pleased to submit to ABM Resources NL (ABM) this letter responding to ABM stakeholders (CLC) comments regarding the proposed Tailings Storage Facilities (TSF) design capacity during extreme climatic conditions.

On 18 February 2014, 4DG received an email from ABM requesting us to address the following comments:

CLC comment: The CLC's preference is that a more cautious design parameter of a 1:1000-yr, 72-hr rainfall event is adopted by ABM in order to prevent overtopping of tailings dams/water storage facilities. In the past decade there has been an exceptional rainfall event in the region. In the week from 26 January to 2 February 2006, 550 mm of rainfall was recorded at Tanami Mine and most of this over three days. An analysis by GHD indicated that the expected return time of a three-day event of this magnitude was of the order of 910 years (cited in Reid et al 2006). This particular rainfall event is acknowledged in Chapter 12 of the Draft EIS – Road transport and traffic management (see Figures 12.6 and 12.7) – but is not discussed in the context of water, waste and tailings management. Moreover, given current uncertainties about global climatic conditions a more precautionary approach to mine infrastructure design is warranted.

CLC Comment: Table 10.7 (p308) shows the TSF is designed to hold a probable maximum precipitation event of approximately 820mm for a 5 hour event. In the event of a 1:1000-year, 72-hour rainfall event (similar to the January/February event of 2006) how much water would need to be discharged from the TSF via the spillway? There is a strong case to increase the freeboard capacity to above 150cm in order to contain a 1:1000-year, 72-hour rainfall event and take into account the potential impacts of climate change.

In response to CLC's comments, 4DG believes that there is adequate storage in the dual cell TSF, as presented in the 4DG geotechnical conceptual design report dated 6 November 2013 (4DG Ref. 028900REP01_Rev2), to account for the 1:1000 AEP storm referenced in the CLC comments, if the following operational controls are used:

- The catchment area for the structures is approximately 13.1ha; the 1:1000 AEP storm event would contribute approximately 72,075m^3 to the pond and the PMF used for design would contribute approximately 113,165 m^3. If the tailings are beached at 1% and the pond is maintained at an RL of 455.76 m or lower before the wet season, there would be approximately 194,144 m^3 of storage in the pond below the spillway invert. Therefore, the 1:1000 AEP storm event and the PMF could both occur without any water expected to be released from the spillway.

It is noted that a detailed flood analysis of the structures will be required for the next phase of design. 4DG is able to undertake this analysis in-house and we would be happy to provide assistance in this regard. The detailed flood analysis will consider internal storage requirements for the design storage allowance (DSA), freeboard calculations, wave run-up, spillway design, dam break analysis, and external catchment flood modelling.

We trust this letter meets your current requirements. If you have any questions or require any further information or clarification on this matter, please contact Brian Francis or the undersigned.

4DGeotechnics Pty Ltd

Ian Lewis
PRINCIPAL ENGINEERING GEOLOGIST

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