



Office of
Environment
& Heritage

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Ms Phillipa Duncan
Senior Planning Officer
Department of Planning and Environment
phillipa.duncan@planning.nsw.gov.au

Dear Ms Duncan

Dargues Reef Environmental Assessment for Modification 3 (MP10_0054)

The Office of Environment and Heritage (OEH) is responding to your request for comment on the latest version of the Environmental Assessment (EA) for the proposed Modification 3 (Mod 3) of the Dargues Reef Gold Mine.

OEH has provided input on Mod 3 at numerous times throughout the planning process including:

- A site visit (27 March 2014)
- Comments on the background paper (4 April 2014)
- Comments on the draft EA (23 March 2015)

We have reviewed the latest version of the EA and have provided detailed comments in Attachments 1 & 2. These comments mostly relate to:

- Impacts on Aboriginal cultural heritage
- Impacts on fauna accessing the tailings dam

Overall, OEH is of the view that the impacts of the Cyanide tailings dam on biodiversity are still unknown and have the potential to be significant. Additional mitigation measures would be required to prevent birds and bats from accessing the site.

To discuss the contents of this letter further please contact Susan Lamb on (02) 6229 7117 or by email at susan.lamb@environment.nsw.gov.au.

Yours sincerely

26 August 2015

ALLISON TREWEEK
Senior Team Leader Planning - South East
Regional Operations Group - South

Enclosure: ATTACHMENT 1: Detailed comments on Aboriginal cultural heritage
ATTACHMENT 2: Detailed comments on biodiversity issues

ATTACHMENT 1: Detailed comments on Aboriginal cultural heritage

As raised in our previous correspondence dated 23 March 2015, OEH requests that a revised Aboriginal Heritage Management Plan (AHMP) is completed by a qualified archaeologist. The AHMP must include the recommendations outlined in Appendix 11 of the Modification 3 Environmental Assessment (Mod 3 EA) and a detailed salvage strategy for Aboriginal sites GT OS1 and GT OS2.

We note that the Statement of Commitments (SoCs) relating to Aboriginal Heritage have been removed on the basis that they are addressed by the original conditions of approval. While the intent of the SoCs is reflected in the conditions of approval some of the specific details are not. OEH recommends that the steps outlined for Aboriginal Heritage in the SoCs are included in the AHMP.

We are still concerned that no further site inspections for Aboriginal Heritage have occurred since June 2011. We therefore request that all Aboriginal sites are inspected prior to impact as conditions may have changed. The current condition of each site must be recorded and an updated site card submitted to the OEH Aboriginal Heritage Information Management System (AHIMS).

We disagree that Aboriginal consultation has been completed in accordance with OEH guidelines. The consultation process cannot be considered continuous as there has been a gap in the consultation process of six months or longer. According to Appendix 11, the last communication between the consultant and Registered Aboriginal Parties (RAPs) was in June and July of 2013. In addition, the May 2015 report (Appendix 11) does not record whether the letter report dated 4 February 2015 has been sent to the RAPs, nor whether there were any responses.

We note that the proposed harvestable rights dam HRD-E(r) will not be constructed due to its location within the proposed eastern waste rock emplacement (Mod 3 EA, July 2015 page 78). This is in contrast to the Mod 3 EA dated February 2015, which stated that dam HRD-E(r) was located within the unsurveyed 'Slings' property which is in the southwest section of the project site. How is it that this dam is now located near the eastern waste rock emplacement? Has the proposed location of dam HRD-E or the eastern waste rock emplacement changed since February?

We acknowledge that Figure 1 in Appendix 11 has been updated to clearly show the dimensions of recorded sites and their proximity to the proposed works. We recommend this type of mapping occur for all recorded Aboriginal sites within the project area.

ATTACHMENT 2: Detailed comments on biodiversity issues

As raised in previous correspondence and during the March 2014 site visit, OEH requested that the proponent address a number of issues to reduce environmental risks associated with this project. These included:

- The requirement to offset biodiversity impacts stemming from this modification – in addition to previously negotiated offsets.

We note a new offset area has been identified in Figure 16 (Section 4.3.2). The new offset area of 33 hectares to offset the additional 19.5 ha of modified development provides a new offset ratio of 1.7:1 which in itself is low. However the overall offset package of 7:1 is still considered adequate.

- The request to consider the erosion risks associated with the culvert on the access road traversing Spring Creek and potential accumulative impacts on endangered ecological communities downstream.

This appears to have been considered however the Department of Planning and Environment should ensure that the NSW Office of Water is satisfied that there will be no further erosion of the downstream far bank.

Section 4.3.5.2 – Cyanide-related Impacts

The exclusion of terrestrial fauna by the use of a 1.8m high fence is supported, provided that the construction of the fence makes it impervious to small mammals. We would recommend wire mesh with holes no greater than 20mm. This will not be sufficient to keep out reptiles and amphibians. No threatened reptiles or amphibians have been identified on site, however potential impacts for local populations of native species also need to be avoided or mitigated.

It is unlikely that the Mallard duck is the most susceptible bird species to Cyanide as it is larger in body mass than most of the threatened birds listed in the assessment of significance. The use of LD₅₀ data from one species as a predictor of LD₅₀ for another species is not always accurate. Griffiths *et al* 2014 refers to a study which compared LD₅₀ for Little Brown Bats and 2 mouse species which found a threefold variation between 2 species of mice with one of them being similar to the bat.

The assertion that Bat foraging would be low over the tailings dam is not consistent with the findings of Griffiths *et al* 2014¹. That study found evidence of the presence and relative activity of bats above Cyanide storage dams at mine sites. Furthermore, echolocation buzz calls recorded in the airspace directly above the tailings dam provided indirect evidence of foraging and/or drinking.

Appendix 9 – Ecology Assessment

The Ecology Assessment includes an assessment of significance for a number of threatened species and endangered ecological communities (EECs). However, in relation to the impacts of this project modification on threatened species, it does not appear that any field surveys have been conducted to determine how any of the threatened species may be using the site. Of greatest concern is the lack of knowledge of how the threatened fauna species are using the existing waterbodies. This knowledge is critical in determining what the risk of cyanide ingestion will be for the new tailings dam.

The section on impact assessments also fails to evaluate the cumulative impacts of the project on threatened species as it only focuses on the potential impacts of modification 3. The assessment does not incorporate the cumulative impacts of the original approval and the modification. Furthermore, the impact assessment focuses on the impacts associated with the removal of vegetation rather than the potential impacts of the gold mine and treatment processes, which may have significant impacts. These impact types are currently in different sections but should be combined, to assess the total impacts on species.

¹ Stephen R. Griffiths, David B. Donato, Graeme Coulson & Linda F. Lumsden (2014) High levels of activity of bats at gold mining water bodies: implications for compliance with the International Cyanide Management Code; *Environmental Science Pollution Research*

Appendix 3 – ToxConsult 2015b

The report by ToxConsult (Appendix 3) assumed that the tailings storage facility discharge of WAD cyanide would be 30mg/L, however it is not clear within the EA how the proponent will ensure that this concentration will not be exceeded. There has been no analysis as to whether the concentration of cyanide would exceed 30mg/L during dry periods where evaporation was high.

Appendix 3 describes the LD₅₀(mg CN/kg bw) for various species which have been tested in various studies. However there is no comparison of how the ingestion of water containing a cyanide concentration of 30mg/L would equate to mg CN/kg bw.

Given that there is such a wide variation in LD₅₀ for different species it seems difficult to estimate what the LD₅₀ would be for native species such as Gang Gangs or Bats. While we acknowledge that it is difficult to find cyanide studies on Australian wildlife, it is important to recognise that the Mallard duck (*Anas platyrhynchos*) is not native to Australia (though it does now live here). Many Australian ducks and migratory birds are smaller in body mass and may be more likely to be affected from ingesting cyanide.

The potential impacts to bats were based on previous rat studies. As the effects of cyanide appear to be related to the weight of animals, the assumption that microbats are comparable to lab rats is not necessarily accurate. For example, microbats range in weight around 20g and lab rats commonly weigh over 500g.

There has been no discussion on the potential impacts to the local reptile and amphibian population.

The tailings storage facility is likely to contain a range of other heavy metals that are potentially toxic to native fauna. These potential impacts have not been discussed or considered in the modification 3 EA.

OEH considers the risks to wildlife (both threatened and protected species) from cyanide and other chemicals in the tailings dam has not been sufficiently assessed and mitigated for in the EA. The proponent discusses vague cyanide poisoning mitigation measures in the EA but the lack of detail about how and at what frequency these measures will be implemented does not provide enough confidence to offset the risks of impacts.

Statement of Commitments (SoCs)

- Table 9 – Condition 32 will have to be updated to include the new areas needed to offset the expansion of the tailings dam.
- SoC 5.9a should not be removed as it is not reflected in the approval conditions of Modification 2. The offsite offset has always been part of the offset requirements, whereby;

Identify and implement an offsite biodiversity strategy that would:

- *Ensure the protection and enhancement of a minimum of 35.5 ha of Tableland Basalt Forest in similar condition to the community within the project site;*
- *Include a Biodiversity Offset area within the vicinity of the project site but outside the area of predicted groundwater drawdown*
- *Be implemented in perpetuity and be described in the Biodiversity Management Plan for the project as amended.*

Alternatively, ensure that funding to an equivalent amount that would have been required under the abovementioned offsite Biodiversity offset Strategy is made available in perpetuity for the management of Tableland Basalt Forest matters in the vicinity of the project site.