

From: "Penny Hayman" <phhayman@pcug.org.au>
To: "Felicity Greenway" <Felicity.Greenway@planning.nsw.gov.au>
Date: 5/31/2012 8:58 am
Subject: Fw: Dr Hose

Felicity

This should have been attached to the AVPPEC submission it came via the EDO.
Thanks sorry for the delay.

penny hayman

-----Original Message-----

From: Grant Hose [mailto:grant.hose@mq.edu.au]
Sent: Tuesday, 29 May 2012 8:06 AM
To: Megan Kessler; Corrina Novak
Subject: Dargues Reef Modification

Dear Megan

Thank you for the invitation to comment on the Dargues Reef Mine Modification.

I have reviewed the EA for the modification and have the following comments.

To the best of my knowledge the leaching tests done on the paste fill sample seem appropriate and the interpretation of those data seem adequate, such that environmental harm from metals in the paste fill is unlikely, as it was for the mine waste rock in the absence of the paste.

My concern is that the pH of the leachate (~9) is above the background pH of most of the groundwater (~7). The significance of this difference is not discussed in the EA or supplementary report in appendix 3 despite the consultant concluding that the pH of the groundwater will influence the concentrations of metals. Recent research has suggested that even limited contact with concrete channels can influence the pH of stream water (Wright et al 2011) so the dismissal of this issue in the letter from Cortona to the DRCC seems to me premature. With longer residence times in groundwater compared to surface streams, it seems likely to me that contact between groundwater and the paste fill concrete will result in an increase in groundwater pH. As suggested in the Hydrobiology report, increasing pH will likely reduce the availability of some metals in the leachate, but it will also have it's own potential affects on biota in the groundwater and receiving waters. It may be that the buffeting capacity of the groundwater is sufficient to cope with the change in pH but this should be considered in the report.

Further, there is no mention in the EA regarding the longevity and stability of the concrete paste fill. How long do the proponents expect that the concrete paste fill will remain in tact as a solid mass. What is the half life (or similar) of concrete masses such as they will be creating?. I am no concrete engineer but if the concrete deteriorates over time then the infiltration of groundwater to the paste fill will increase as will the dissolution of metals and carbonates in the concrete etc. The long term stability of the paste fill should be considered.

Best regards

Grant

Wright, I. A., Davies, P. J., Findlay, S. J., and Jonasson, O. J.
(2011). A new type of water pollution: concrete drainage
infrastructure and geochemical contamination of urban waters. Marine
and Freshwater Research 62, 1355-1361.

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Dr Grant Hose
Senior Lecturer
Depts of Biological Sciences & Environment and Geography MACQUARIE
UNIVERSITY NSW 2109 Australia

Phone: +61 (0)2 9850 6296
Fax: +61 (0)2 9850 8245

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