

**SUBMISSION TO THE NSW PLANNING
DEPARTMENT RE DARGUES REEF PASTEFILL
MODIFICATION PROPOSAL**

From:
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I strongly object to the pastefill modification at the Dargues Reef Site without further safeguards, due to the threat they may pose for my drinking and house water quality, and the health of myself, my family, and my neighbours who also rely on Major's Creek for their drinking and household water.

I request that approval be given only under the following circumstances:

1. That the pastefill contain no more than 1% Xanthate, or its breakdown products.
2. That the xanthate and breakdown content of the paste fill be tested weekly, and the results made public on the Cortona web site, as well as the register of concerned public downstream (which has yet to be put into place by Cortona), within 28 days of such testing.
3. That any spillage of paste fill, or it's components, must be reported to downstream residents as soon as possible, and no later than within six hours for residents who use the water directly downstream for drinking and household use and irrigation.
4. Autopsies of dead fish or amphibians within 10 km downstream of the Project, or where more than one animal that drinks water from up to 10 km downstream has died from no apparent cause. These autopsies must be conducted within one week of samples being provided. Preferably, an independent body would take such samples and collect the subject for autopsy, but as in all recent incidents government authorities have no responded within three weeks in this

area to reported spillages, it is unlikely that they would respond quickly enough for valid samples to be taken.

5. A specified testing regime be put into place to determine any increased alkalinity of the ground or surface water, with remediation to take place within 28 days if a rise in alkalinity is detected. These results should also be made available on the website and register. This must be combined with specified remediation measures to be put into place within 28 days of any rise in the ph.

6. The long term stability and leaching potential of the paste fill should be considered, as suggested by Dr Hose. As there have been no long term studies of the integrity of pastefill, this would necessitate monitoring beyond the projected lifespan of the project, with a bond in place to fund on going monitoring and any mitigation measures, if necessary.

I also draw your attention to **a study of this proposal by Dr Grant Hose, of Macquarie University**, commissioned by the Environmental Defender's Office, which, while agreeing that the pastefill concept is a useful one in this instance, also draws attention to the inadequacy of data and need for further testing and monitoring.

"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 its own potential effects on biota in the groundwater and receiving waters. It may be that the buffering 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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