OUT21/2581

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NSW Department of Planning, Industry and Environment

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Dear Mr Nevill

Cowal Gold Operations Underground Development and Modification 16 (SSD 10367)
Response to Submissions

I refer to your email of 1 March 2021 to the Department of Planning, Industry and Environment (DPIE) Water and the Natural Resources Access Regulator (NRAR) about the above matter.

The following recommendations are provided by DPIE Water and NRAR.

We are generally satisfied with the proponent's response. However, we seek a commitment from the proponent to install a minimum of two nested monitoring bore sites parallel to and adjacent to the proposed underground mine alignment within the mining lease covering Lake Cowal. This is to monitor for any potential impacts as well as provide evidence of the predicted minimal impact on the groundwater table irrespective of whether the lake is full or dry.

Please note our detailed comments and recommendations are in Attachment A.

Any further referrals to DPIE Water and NRAR can be sent by email to landuse.enquiries@dpie.nsw.gov.au or contact: Liz Rogers by mobile: 0428 600 421 or email: liz.rogers@dpie.nsw.gov.au

Yours sincerely

E Rogers

Liz Rogers
Manager Assessments
Department of Planning, Industry and Environment: Water
29 April 2021

Attachment A

Detailed advice to DPIE Planning & Assessment regarding the Cowal Gold Operations Underground Development and Modification 16 (SSD 10367) – Response to Submissions

1.0 Maintain and expand the groundwater monitoring program

1.1 Explanation

As recommended in our earlier EIS advice, we believe that the installation of additional bores in the bed of Lake Cowal is necessary to collect evidence regarding the impacts of the project on Lake Cowal.

The plots of monitoring observations compared to modelled groundwater table heads in the Transported unit show that monitoring bores, UG-BH-01 (SG1) and UG-BH-02 (SG1), have only 1 observation point (February 2020). The monitoring bore PDB3B appears to have the best fit to the monitoring data, however, DPIE-Water notes this bore is isolated from Lake Cowal by the lake protection bund and is on the edge of the open cut mine. We are concerned that calibration to this bore, which may be itself impacted, may overly influence the results.

The proponent argues that the installation of additional bores in the lake bed is not feasible. However, DPIE Water has experience with bores drilled in lakes (e.g. Lake Victoria) and in sands formations and believe this work is possible. DPIE-Water does not accept the premise that monitoring bores in the Transported unit adjacent to the proposed underground mine poses a high environmental risk. Properly constructed and developed nested monitoring bores, with one level of monitoring targeting the Transported unit / sediments underlying Lake Cowal, or separate monitoring bores in the Transported unit /overlying sediments, will have little environmental risk and minimal risk of creating preferential flow pathways.

These proposed monitoring bores are necessary:

- to monitor for any potential impacts to, or, to provide data-based evidence of the predicted minimal impact on the groundwater-table, irrespective of whether the lake is full or dry.
- to inform if the drawdown is propagating to the lake. An artificial reduction of water level could reduce the ecosystem footprint. DPIE Water understands this has not been demonstrated either way and the groundwater model prediction cannot predict a change of level to the lake. This is because the lake is modelled as either completely empty or full at all times.

DPIE-Water acknowledge UG-BH-01 (SG1) and UG-BH-02 (SG1) were, and hopefully still are, monitoring the lower part of the Transported unit. Continued monitoring at these sites is encouraged, in addition to the requested two additional Transported / overlying sediment monitoring sites.

1.2 Recommendation – Post Determination

1. Install a minimum of two nested monitoring bore sites, both with separate pipes which are screened in the alluvium (Transported Unit) and the underlying Lachlan Fold Belt sequence (saprolite/saprock). These are to be installed parallel to and adjacent to the proposed underground mine alignment within the mining lease covering Lake Cowal.
2. Maintain and undertake extension to the groundwater monitoring program as outlined in this RtS for the duration of the current and future Cowal Gold Operations. Any extensions or changes to the groundwater monitoring network will need to be reflected in an update to the Water Management Plan.

2.0 Account for groundwater take

2.1 Explanation

The planned management strategy is to extract at an average rate of 4.0 ML/day from Bland Creek Palaeochannel Borefield and 1.5 ML/day from East Side Borefield, to ensure an annual groundwater take from the Upper Lachlan Alluvium within the licenced limit.

DPIE-Water notes that in accordance with the 10% Transported unit: 90% Saprolite, Saprock and fresh rock ratio, as proposed by the proponent for groundwater take proportioning, groundwater take is predicted to be 65.7 ML/year from the transported overlying sediments basal to Lake Cowal. The Water Access Licences (WALs) held by the proponent are sufficient to cover the predicted requirements as the proponent holds enough shares in the correct groundwater sources to account for this yearly take from the mine and the borefield.

2.2 Recommendation – Post Determination

3 The proponent must account for the groundwater take (direct and indirect) not only for the physical stages of the Cowal Gold operation but also between the respective groundwater sources. These also need to be reviewed and reported against existing water licences in the annual environmental report.

3.0 Water Management Plan

3.1 Explanation

The Water Management Plan should be updated to reflect additional monitoring, metering and management measures to report on groundwater inflows and potential impacts to water sources due to the underground development. It should also be updated to reflect changes to and additional surface infrastructure and any resulting changes to surface water management within the Internal Catchment Diversion System.

3.2 Recommendation – Post Determination

4 Submit to DPIE- Water for review an updated Water Management Plan (WMP) for the Cowal Gold Operations to reflect the updated hydrogeological assessment and groundwater modelling outcomes.

5 The updated WMP to outline the adopted planned management strategy to extract at an average rate of 4.0 ML/day from Bland Creek Palaeochannel Borefield and 1.5 ML/day from East Side Borefield, to ensure an annual groundwater take from the Upper Lachlan Alluvium remains within the licensed limit (as described in Section 2 of this advice).

6 Update the WMP to include the two additional nested monitoring sites.

4.0 Groundwater impact assessment and groundwater model

4.1 Explanation

The poor connection between Lake Cowal and Primary Rock/Saprock is outlined satisfactorily in both the Groundwater Impact Assessment in the RtS and in the additional information supplied by the proponent.

The information supplied to support the selection of hydraulic conductivity and other parameters for the Transported material are acceptable based on DPIE-Water's understanding of the hydrogeology of the area. The calibration match of modelled groundwater levels to observation groundwater monitoring data resulted in a lower (order of magnitude) hydraulic conductivity, than that which the field test data indicated, being adopted.

To ensure adequate monitoring of predicted impacts we are seeking a commitment to install additional monitoring bores in the bed of Lake Cowal as highlighted in section 1 of this advice.

4.2 Recommendation – Post Determination

7 Undertake periodic review of the measured groundwater monitoring data against the modelled outcomes and update the model to reflect the actual measured values if there is significant difference or notable concern raised by stakeholders. This information should inform an update to the Water Management Plan.

8 The Proponent is to validate the model after two years of commencement of the project, and every five years thereafter throughout the life of the mines (pit and stopes).

End Attachment A