



OUT21/1273

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Dear Ms Evans

**Mount Pleasant Optimisation Project (SSD-10418)
EIS**

I refer to your email of 2 February 2021 to the Department of Planning, Industry and Environment (DPIE) – Water about the above matter. This advice has been provided by DPIE - Water and the NSW Natural Resources Access Regulator (NRAR).

A number of recommendations and comments regarding water licencing and groundwater management (modelling, technical information, monitoring, etc.) are provided in **Attachment A**.

Any further referrals to DPIE – Water & NRAR regarding this matter can be sent by email to:
landuse.enquiries@dpie.nsw.gov.au.

Yours sincerely

Donna Priestley
Acting Manager, Assessments
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NSW Department of Planning, Industry and Environment - Water
12 March 2021

ATTACHMENT A

Advice to DPIE Planning & Assessment regarding the EIS for the Mount Pleasant Optimisation Project (SSD-10418) - EIS

DPIE – Water and NRAR provide the following recommendations.

Water Licencing

1 Post Approval Recommendations:

- a. The proponent should ensure that prior to water take, sufficient water entitlements are held under approved Water Access Licence (WAL) for all predicted water take. This includes:
 - The 13 ML/year of predicted take from the Dart Brook Water Source is licensed under a WAL.
 - Ensuring high security water is available under existing licences for post-mining water take.
- b. The existing Water Management Plan (WMP) should be revised to reflect all WALs held by the project and their conditions of approval.

Explanation

The proponent has detailed in the EIS that it holds sufficient licences to account for the take from each water source, **with the exception of 13 ML/year of predicted take from the Dart Brook Water Source**, which is regulated under the Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources, 2009. The proponent believes they would be readily able to acquire this entitlement given:

- The modest licence deficit of 13 ML/year represents a very small fraction of the overall entitlement available in the Dart Brook Water Source (approximately 30,000 units).
- WALs in the Dart Brook Water Source are actively traded, with 2,697 units permanently transferred in the 2019-2020 water year.

The existing WMP, including the Groundwater Management Plan and the Surface and Ground Water Response Plan, would be revised to reflect the Project and the requirements of any associated water licences (subject to the conditions of any Development Consent for the Project).

Groundwater

Groundwater Model

2 Pre-approval Recommendation:

The proponent should provide supplementary discussion on the groundwater model sensitivity to hydraulic conductivities.

This would include a model scenario with conceptualisation of increased hydraulic conductivity to be applied to the porous rock aquifer around the limits of the open cut-mining. Furthermore, the bounds of difference in the potential drawdown and take of water from the alluvial aquifers should be presented for a simulation with the zone of increased hydraulic conductivity in the porous rock aquifer.

Explanation

The groundwater assessment and numerical modelling, prepared by AGE (on behalf of the proponent) considers potential impacts of the proposed optimisation project compared to the currently approved operation, and cumulative impacts of the project including neighbouring mining operations. The assessment and modelling were subjected to independent peer

review which concluded that they 'meet or exceed current industry standards' and that 'the model is fit for the purpose' (Barnett, 2020).

DPIE - Water notes that while the model standardised unweighted means square root (SMSR) of 4.1% was within the Australian Modelling Guidelines target of 5-10%, data was not provided to support the additional claim that '*other calibration statistics, e.g. mean residual, are acceptable...*' (A2.1, Appendix C, AGE 2020).

DPIE - Water notes that modelled predictions of alluvial drawdown and take are significantly reliant on assumptions of continuity of a natural undisturbed low transmissivity barrier between the mined area and the Hunter alluvium.

The independent reviewer (Barnett, 2020) noted that '*the [modelled] outcome appears to arise from the fact that the coal seams dip to the west and there is only poorly transmissive inter-burden and overburden sediments between the pit face and the alluvial sediments to the east*'.

The optimisation project presents a disturbance area (Figure 1-4) expanding towards the north east corner. In addition, Figure 5.1 presents a revised alluvial aquifer boundary in which the extent of alluvium is closer to the north eastern corner than previously mapped' The revised alluvial boundary shows encroachment of the alluvium within the mine lease boundary towards the middle eastern and south eastern boundaries of the mine lease.

Rock blasting and highwall stress release creates a zone of increased hydraulic conductivity within the enveloping porous rock to the mine pit. Where this zone of alteration in hydraulic conductivity occurs in proximity to the alluvial aquifer, there is potential for increased interaction between the two water sources currently not conceptualised.

DPIE - Water considers that given the adjustment in the alluvial boundary closer to the mine pit giving an increased potential for hydrogeological connectivity with the alluvial aquifers at several locations, further assessment and discussion is warranted. The sensitivity of the model to hydraulic conductivities – specifically demonstrating variance in predicted take and drawdown where a zone of fracturing arising from blasting activities and stress release is incorporated into the model.

Further Technical Information and Assessment

3 Pre-approval Recommendations:

The proponent should:

- a. Provide shallow groundwater map(s) overlaid with GDEs which include maximum cumulative predicted drawdown active mining and post-mining stages.
 - a. As drawdown is predicted to continue expanding during the post-mining phase, the proponent should confirm timing for figures depicting maximum drawdown in the alluvium and Edderton seam (Layer 18) i.e. during active mining or post-mining.
- b. Confirm the distance(s) of the proposed mining activity from the three-dimensional extent of the alluvial water source buffer distances defined in the AIP.
- c. Confirm whether the drawdown values presented for neighbouring bores represent maximum drawdown active mining or post-mining phase.
- d. Provide additional details regarding the proposed management and monitoring of PAF material, including but not limited to: a site map showing, handling and storage/containment location(s), handling protocols, emplacement plan and procedures, monitoring and mitigation of potential impacts.
- e. Reconcile how evaporation is applied in the modelled groundwater inflows and also considered in outflow estimates.

Explanation

DPIE - Water notes averaged modelled groundwater inflows are presented net of evaporation (Figure 21, Appendix D), however, evaporation is also considered in outflow estimates in the same figure. Clarity is required regarding calculation methodology.

Groundwater Monitoring and Impacts

4 Post-approval Recommendation:

The proponent should install additional groundwater monitoring infrastructure to monitor for potential impacts to groundwater. This includes but is not limited to infrastructure proposed by the client in the EIS.

Additional monitoring infrastructure should be installed as soon as practical to enable adequate collection of baseline data.

Explanation

Groundwater

In addition to the existing surface and groundwater monitoring network, the proponent proposes installation of additional and replacement monitoring bores, a vibrating wire piezometer (VWP), and monitoring of existing landholder bores (where possible) to monitor for potential drawdown, out-of-pit emplacement seepage, and changes to water quality.

Waste Rock

The geochemistry assessment, prepared by RSG Environmental, identified potential acid forming (PAF) material in the Bayswater-Wynn seam interburden (Archerfield Sandstone) and Wynn Seam interburden materials.

The assessment recommended *‘selective handling and encapsulation of PAF interburden and coal reject materials at an emplacement or preferably as part of an open pit backfilling within one week of placement should be considered...’*

Section 7.3.1 of *Attachment 8: Rehabilitation and Mine Closure Addendum* states that “PAF material would be either well blended with NAF or acid consuming waste rock, producing an overall NAF material, or encapsulated within NAF waste rock. NAF material would be placed on the outer 5 m of the Eastern Out-of-Pit Emplacement and outer 2 m of any backfilled areas of the mine void.”

DIPE notes MODFLOW particle modelling by AGE indicated *‘most of the particles flowed toward the void... particles placed around the TSF to the west of the MPO pit also travelled toward the void at Bengalla, while several particles placed to the north of the MPO pit reported to the Dartbrook underground workings.’*

Given inherent leachate drainage risks of proposed out-of-pit emplacement activities, DIPE - Water considers that the level of detail provided in the EIS regarding proposed handling, monitoring of PAF material requires further detail to demonstrate effective management, monitoring and mitigation of potential impacts.

Water Users

5 Post-approval Recommendation:

The Water Management Plan should include details all water user's bores likely to be impacted by the project – not just those predicted to experience greater than 2m drawdown - due to the possibility of higher than estimated impacts occurring. Where possible, baseline data should be obtained and incorporated into the revised WMP for all bores where impacts are predicted to exceed 1m drawdown.

Explanation

DIPE - Water notes predicted impacts to other groundwater users estimated to experience greater than 2m aquifer drawdown. It is further noted that the existing WMP contains details of make good provisions for affected groundwater supplies.

END ATTACHMENT A