

Advice to decision maker on coal mining project

Proposed action: Mt Penny Coal Project (EPBC 2011/6026)

Requesting agency	Department of Sustainability, Environment, Water, Population and Communities
Date of request	13 December 2012
Date request accepted	20 December 2012
Advice stage	Environmental Impact Assessment - Draft
Summary of request from the regulator	<p>The Department of Sustainability, Environment, Water, Population and Communities (the department) is currently assessing proposed projects in accordance with the provisions of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (the EPBC Act).</p> <p>The Department notifies the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (the Committee) of an opportunity to comment on:</p> <ol style="list-style-type: none"> a. What are the likely impacts of the proposed mine on surface and groundwater resources, in particular, changes to surface and groundwater dynamics and water resources which may support surface habitat? b. Does the committee find the water balance and conclusions relating to water management provided by the proponent to be reasonable?

Advice

The Department requested advice from the Committee on the Mt Penny draft environmental impact statement.

Cumulative Impacts (Mt Penny Coal Mine and Moolarben Coal Complex)

1. The Committee considers that water related impacts of Mt Penny need to be considered cumulatively with the nearby Moolarben, Ulan and Wilpinjong Coal mines.
2. In terms of cumulative impacts to groundwater, the Committee notes that drawdown in the upper and lower Permian geological layers is predicted to extend at least 16 km east of the proposal, under the Goulburn River National Park; a significant area of relatively intact habitat and an important regional reservoir of genetic diversity. The amount of drawdown of the mining operation has the potential to cause higher connectivity between aquifers through induced leakage and / or cracking. These hydrological changes have potential to cause ecological edge effects.
3. The Committee notes that the drawdown figures presented are limited, as drawdown contours extend beyond map boundaries. In addition, the Committee considers that there was not enough information

provided to determine the potential for drawdown cones to overlap (from both current and proposed mines in the region).

Mt Penny Coal Mine

4. The Committee notes that the removal of remnant *White Box – Yellow Box – Blakey’s Red Gum Grassy Woodland and Derived Native Grassland* ecological community could contribute to further loss of habitat connectivity and ecosystem fragmentation within the project site.
5. The proponent states that if drawdown exceeds 20 per cent of predicted drawdown for three consecutive months, the monitoring data will be referred for independent review so as to consider possible mitigation measures. The Committee considers that the proposed 20 per cent review trigger level is not adequate. A risk based approach incorporating a lower trigger level and mitigation measures would be more appropriate. The risk based approach should also include an assessment of the reversibility of impacts on groundwater. A management plan for drawdown should be prepared by the proponent and submitted to the regulator for approval prior to the commencement of the action.
6. The Committee considers that the proponent’s general conclusion that there are no groundwater dependent ecosystems within the study area cannot be substantiated from the documentation provided, as ecosystems may be adversely affected by drawdown in the alluvium. An ecosystem is considered as groundwater dependent if the “ecosystems requires access to groundwater to meet all or some of their water requirements so as to maintain the communities of plants and animals, ecological process they support, and ecosystem services they provide” (Richardson et al., 2011). Confirmation of the location and extent of all groundwater dependent ecosystems within the region is required to determine potential impacts from the proposal. In addition, the Committee considers that future monitoring should include stygofauna.
7. The Committee notes that the Mt Penny proposal is predicted to reduce stream flows by between 2 – 4 % and that reduced stream flow and drawdown may limit the availability of pools for drought protection of biota. Further the Committee notes the Goulburn and Bylong Rivers are designated as major fish habitat under the NSW *Fisheries Management Act 1994*.
8. The Committee considers that there may be adverse impacts on water quality and ecology from (a) the reconstruction of Coggan Creek, (b) changes to the flood regime and (c) elevated discharges to the Bylong River. The Committee considers that the available discharge scenarios are inadequate, as the proponent intends to discharge up to 20 ML per day to the ephemeral Bylong River. Flows in the Bylong River (taken from the Bylong no 2 gauge) were recorded as 0.3 ML per day.
9. The site water balance also includes a salt balance. The Committee notes that the water quality of discharges to Bylong River will be affected by the quantity and quality of water available for mixing prior to discharge, and as mining progresses, salinity is predicted to increase. The proponent’s modelling indicates that during a 90th percentile rainfall year, salinity would be below a 750 $\mu\text{S}/\text{cm}$ target over the life of the mine. However, during extreme high rainfall events, discharges may exceed the 750 $\mu\text{S}/\text{cm}$ threshold, although the exact value is not provided. To mitigate potential impacts from adverse water quality, the Committee notes that a reverse osmosis plant has been proposed, however brine disposal options have not been considered. In order to ensure that the Hunter River is not further impacted by saline discharges, the Committee considers that it will be important to confirm the proponent’s participation in the Hunter River Salinity Trading Scheme and the capacity of the scheme to cope with additional salt loads within the catchment. If water quality parameters are unable to be met, water should be retained on site, such as in proposed dams or temporarily stored in open-cut pits, and treated to levels that allow discharge cognisant of environmental risks.
10. The design of the sampling approach to determine the occurrence of potentially acid forming soils has not been presented. The Committee considers that as the pit floor has potential acid forming material, further information is required to determine potential impacts and the efficacy of proposed mitigation measures, such as a mine acid drainage plan. Water quality may be impacted if water from the void discharges into water courses during the construction phase of the project. It is understood that a levee is proposed to reduce the risk of flooding the open cut pit from Coggan Creek during the first year of mining. The levee will be constructed to a height of 229 mAHD, which is 1.9 m above the predicted 1 in 500 year average recurrence interval (ARI) event. Further clarification is required to determine whether this levee is appropriate to prevent flood water entering the pit for a 1 in 1000 year ARI event.
11. The Committee considers that the numerical model (used to determine the water balance) is appropriate to assess water management issues at the mine site. However, the Committee notes that the model’s

application results in discrepancies. These includes a lack of information relating to surface and groundwater fluxes and predicted water movement between dams, related dam capacities and potential discharge scenarios. In addition, there is an unaccounted 2 ML per day discrepancy between the total pit dewatering and the capacity of the upper mixing dam. For broader water management requirements the Committee considers the modelling and derived water balance to be inadequate.

**Date of
advice**

1 February 2013

References:

Richardson et al., 2011. Australian Groundwater Dependent Ecosystem Toolbox, Part 1: Assessment Framework, National Water Commission, Canberra.