

Advice to decision maker on coal mining project

Proposed action: Cobbora Coal Project (EPBC 2011/6158) – New Development

Requesting agency	Department of Sustainability, Environment, Water, Population and Communities
Date of request	8 April 2013
Date request accepted	8 April 2013
Advice stage	Environment Impact Assessment (Supplementary)
Summary of request from the regulator	<p>The Department of Sustainability, Environment, Water, Population and Communities (the Department) is currently assessing the proposed project in accordance with the provisions of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (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 the Environmental Assessment and Preferred Project Report. Specifically, the Department seeks the advice of the Committee on whether:</p> <ol style="list-style-type: none"> 1. Does the Committee consider that the proponent has provided sufficient information on the water resources and its management to assess likely significant impacts from its proposed action? – If the information is considered insufficient for that purpose, what advice regarding areas of inadequacy can the Committee provide? 2. What are the likely impacts of the proposed mine on surface and ground water resources, in particular, changes to surface and ground water dynamics and water resources which may support surface habitat for threatened species and communities? 3. Does the Committee find the water balance and conclusions relating to water management provided by the proponent and attached to this brief to be reasonable?

Advice

The Committee was requested to provide advice on the Cobbora Coal Project in New South Wales to the Commonwealth regulator at the Environmental Assessment stage. This advice draws upon aspects of the information in the Environmental Assessment and Preferred Project Report provided by the proponent, together with the expert deliberations of the Committee. The Environmental Assessment and Preferred Project Report and information assessed by the Committee are listed in the Source Documentation at the end of this advice.

The proposed project is located approximately 11 km south of Cobbora and 60 km east of the township of Dubbo in New South Wales, covers an area of approximately 27,400 ha, and would extract up to 20 million tonnes per annum (Mtpa) of Run of Mine coal. The mine life is expected to be 21 years, including construction and operation but excluding rehabilitation. The proposed project involves the development of three open cut coal pits with associated coal handling and processing facilities onsite, a 26 km water supply pipeline from the Cudgegong River, and a 24 km rail spur and loading facility.

The Committee, in line with its Information Guidelines¹, has considered whether the proposed project assessment has used the following:

Relevant data and information: key conclusions

Relevant data and information on the proposed project has not been provided regarding the potential impacts on:

- regional salinity, as the groundwater model does not include all potential sources of salt, in particular the Jurassic Purlawaugh Beds;
- recharge into the Great Artesian Basin, as the southern recharge zone of the Great Artesian Basin lies to the north of the proposed project;
- downstream irrigation areas;
- surface and groundwater dependent ecosystems resulting from drawdowns of up to 90 m, as groundwater and surface water connectivity has not been documented; and
- surface water and groundwater quality and quantity due to potential discharge from the pit lakes and the proposed final void.

Appropriate methodologies which have been applied correctly: key conclusions

Key methodologies and assessments needed to fully assess the proposed project that are not provided include:

- a regional water balance;
- a regional salt balance;
- a cumulative impact assessment (particularly in relation to salinity and modified flow); and
- a risk assessment on the impacts of the proposed project on surface water and groundwater dependent ecosystems.

These are needed to validate and increase confidence in the proponent's impact assessments and mitigation proposals.

The proponent should include an uncertainty analysis of the outputs from the groundwater model. The model does not address all the elements identified under the 'Background Data and Modelling' section of the Committee's Information Guidelines, such as inclusion of hydraulic characteristics including aquifer connectivity.

Reasonable values and parameters in calculations: key conclusions

The site water balance model only simulates historical climate. In addition, limited sensitivity analysis has been undertaken, despite the proponent acknowledging uncertainties with the data used in the site water balance.

Question 1: Does the Committee consider that the proponent has provided sufficient information on the water resources and its management to assess likely significant impacts from its proposed action? – If the information is considered insufficient for that purpose, what advice regarding areas of inadequacy can the Committee provide?

1. There is insufficient information to reasonably understand the potential impacts of the proposed project, without a regional water balance, without a comprehensive cumulative impact assessment and without potential downstream water quality impact assessments, particularly in relation to salinity.

Question 2: What are the likely impacts of the proposed mine on surface and groundwater resources, in particular, changes to surface and ground water dynamics and water resources which may support surface habitat for threatened species and communities?

2. The increased risk of salinity as a result of surface discharge and groundwater drawdown resulting from the proposed project may have significant ramifications for downstream users and ecosystems. In this regard the Committee notes the following:
 - a. The proponent has not identified all the potential risks associated with salinity in the Sandy Creek sub-catchment (and the Talbragar River catchment) and should undertake a risk assessment to ensure that an appropriate mitigation plan is in place to manage the potential impacts from increased regional salinity;
 - b. The Jurassic Purlawaugh Beds are a major source of salt in the Sandy Creek sub-catchment and the Talbragar River catchment. The Jurassic Purlawaugh Beds and the Pilliga Sandstone, should be included in the geological conceptual model and then translated into the numerical groundwater model; and
 - c. The proposed transfer of 3,311 ML per year of water from the Cudgegong River catchment into the Sandy Creek sub-catchment has the potential to exacerbate the issues surrounding salinity in the already highly saline Sandy Creek sub-catchment.
3. A risk assessment is needed to determine the potential impacts on recharge into the Great Artesian Basin and downstream irrigation areas. In relation to the Great Artesian Basin, the Sandy Creek sub-catchment geology includes Jurassic sediments which may connect to the southern recharge zone of the basin. Further work is required to ensure that the drawdown in the proposal will not affect recharge to the Great Artesian Basin as the Southern Groundwater Recharge Source extends to the northern edge of the Talbragar River in this area.
4. The proponent has not considered the potential impacts on the surrounding creeks and water quality as a result of uncontrolled discharge from the mine water dams. The sedimentation dams are currently designed to contain 95 per cent of a 5 day storm event (63.3 mm), which means that they have the potential to overflow approximately 1 to 2 times per year. Consideration should be given to sedimentation dams being redesigned to contain a larger storm event (1 in 1000 year average recurrence interval) to minimise the potential for downstream water quality and ecological impacts.
5. The proposed project identifies mitigation measures, including creation of permanent water sources to offset the impact of dry years on the riparian vegetation due to the reduction of catchment runoff along creek channels. Insufficient information has been provided as to the adequacy of these water sources to recharge the shallow alluvial aquifers that support the existing riparian vegetation.
6. The Committee made a number of observations about the proposal's potential impacts on surface water and groundwater resources and groundwater dependent ecosystems:
 - a. The predicted drawdown levels of 90 m in mining area B and 60 m in area A have the potential to impact groundwater dependent ecosystems and surface water including refuge pools;
 - b. The regional 1 m drawdown is predicted to extend 5 km to the south, 4 km to the west and 3 km to the north and east of the mining area highlighting the need to determine the potential regional impacts on water; and
 - c. There is insufficient information on hydraulic connectivity across the proposed project area and regionally to understand the impacts of drawdown on surface water systems and groundwater dependent ecosystems.

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7. The Committee considers that these observations highlighted the need for:
- A risk assessment to be conducted to determine the sensitivities and potential impacts on species, particularly in relation to the springs and refuge pools identified in the area. This risk assessment is needed to substantiate the claims that the predicted drawdowns will not affect surface and groundwater dependent ecosystems. Species that may be impacted include: the Freshwater Catfish (*Tandanus tandanus*), which is listed as threatened under the NSW Fisheries Management Act; wetland birds including the endangered Australasian Bittern (*Botaurus poiciloptilus*); and migratory birds, such as the vulnerable Blue-Billed Duck (*Oxyura australis*), which has been sighted during dry years;
 - A conservation plan informed by the above-recommended risk assessment to manage the potential drawdown impacts on refuge water and semi-permanent pools; and
 - A post mine management plan dealing with drawdown impacts, because the groundwater modelling indicates that it will take 20 to 50 years for groundwater levels to recover post mining.
8. The Committee, while noting that field investigations have been undertaken, recommends that further information be provided to improve the reliability of the groundwater model, particularly in regard to:
- Formation-scale hydraulic properties such as vertical permeability and hydraulic conductivity for relevant geologic units, which are required to assess aquifer connectivity;
 - Geological conceptualisation model, including faulting and the Jurassic formations to reduce the uncertainty in regards to regional salinity impacts;
 - Evapotranspiration;
 - Ongoing review and validation of the model during the life of the project, including data on the impacts of the proposed voids; and
 - Uncertainty analysis of the outputs from the groundwater model, which is consider to be best practice.
9. The current proposed project includes a final void but states that a 'final void management plan' will not be completed until year 15 of the project. The Committee:
- Suggests that the final void design and management plan be completed prior to production commencing. This would also include a risk assessment on the proposed backfilling of pits with residual produced material, equating to approximately 8 Mtpa, which if not properly managed, could leach into the surface water environment; and
 - Considers that voids are a long-term environmental legacy, and that the backfilling of voids and the minimisation of pit lakes represents best environmental practice for post-mining management.

Question 3: Does the Committee find the water balance and conclusions relating to water management provided by the proponent and attached to this brief to be reasonable?

10. The surface water budget provided by the proponent is insufficient to assess the regional cumulative impacts of the proposal. It is recommended that the proponent develop a regional water balance considering both surface water and groundwater.
11. The proponent has entitlements to extract from the Macquarie and Cudgegong Regulated Rivers Water Source, which is part of the Central West Water Management Area Water Sharing Plan. It is recommended that the proponent meets the environmental and source protection criteria set for the Macquarie and Cudgegong Regulated River Water Source, to ensure the environmental sustainability of
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the Cudgegong River catchment.

12. All site and surface water plans should be constructed in accordance with the National Water Quality Management Strategy.
13. The Northern Inland Catchments, which includes the Macquarie-Castlereagh catchment, has been identified as a bioregional assessment priority region. Data and relevant information from the proposed project should be made accessible for this bioregional assessment to assist the knowledge base for regional scale assessments.

Date of advice	18 April 2013
Source documentation available to the Committee in the formulation of this advice	<ol style="list-style-type: none">a. EMGA Mitchell McLennan 2012. Cobbora Coal Project Environmental Assessment. Prepared for Cobbora Holding Company Pty Limited.b. EMGA Mitchell McLennan, 2013. Cobbora Coal Project Preferred Project Report and Response to Submissions. Prepared for Cobbora Holding Company Pty Limited.
References cited within the Committee's advice	¹ Information Guidelines for Proposals Relating to the Development of Coal Seam Gas and Large Coal Mines where there is a Significant Impact on Water Resources available at: http://www.environment.gov.au/coal-seam-gas-mining/project-advice/pubs/iesc-information-guidelines.pdf
