

Advice to decision maker on coal mining project

Proposed action: Foxleigh Coal Mine Extension project, Queensland (EPBC 2010/5421) – Extension

Requesting agency	Department of Sustainability, Environment, Water, Population and Communities
Date of request	10 April 2013
Date request accepted	10 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 advises the Committee of an opportunity to comment on the Supplementary Environmental Impact Statement for the project. Specifically, the Department seeks the advice of the Committee on:</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 fully assess possible impacts from its proposed action? – If the information is considered insufficient, what advice regarding areas of inadequacy can the Committee provide? 2. Are the proposed design and operational measures considered adequate to protect: <ol style="list-style-type: none"> a. downstream impacts on aquatic and riparian habitats? b. riparian habitat trees? 3. Are the water related impacts of the proposed action likely to adversely impact on listed threatened ecological communities, in particular, the Brigalow ecological community? 4. Will the expected impacts of groundwater drawdown be localised? 5. Is the design of the proposed levees and the proposed diversion of Cockatoo Creek adequate to prevent significant impacts on listed threatened species or listed threatened ecological communities as a result of flood? 6. Can the Committee recommend any further water related measures to enhance the protection and viability of listed threatened species and ecological communities?

Advice

The Committee was requested to provide advice on the Foxleigh Coal Mine Extension Project in Queensland to the Commonwealth regulator on the Supplementary Environmental Impact Statement.

This advice draws upon aspects of the information in the Supplementary Environmental Impact Statement, together with the expert deliberations of the Committee. While requested by the Department, the Committee understands that information relating to the existing Foxleigh Mine Environmental Impact Statement was not provided by the proponent. The Supplementary Environmental Impact Statement and information accessed by the Committee are listed in the source documentation at the end of this advice.

The existing Foxleigh Mine is an operating open cut coal mine, located approximately 12 km south-east of the township of Middlemount in Central Queensland. The mine commenced production in 1999, producing 3.2 million tonnes per annum (Mtpa) of Run of Mine (ROM) coal. The current Foxleigh Mine Area is expected to cease the majority of its operations by the end of 2014. The proposal under review involves the extension of the existing Foxleigh Mine into the Foxleigh Plains site and will provide access to additional coal resources and increase ROM coal production from 3.2 to 4.0 Mtpa. The proposal would extend the life of Foxleigh Mine by approximately 15 years.

The proposed project will use the existing Foxleigh Coal Mine Handling and Processing Plant (CHPP) for washing and processing coal. Product coal will be transported from the CHPP to the Foxleigh Mine train-load out facility at German Creek Mine, via the existing privately owned haul road. The CHPP and train-load out are regarded within the proposal to have sufficient capacity to handle coal from the expanded operations and no upgrading of these facilities is required as part of the Foxleigh Plains Project.

In addition to the advice requested, the Committee has been advised that further developments of the Foxleigh mine dealing with expansions to the mine and diversions on Cockatoo Creek are in planning stages.

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

There is generally insufficient data and quantitative information provided and the extent of the field data and water quality information is too limited for the Committee to assess the likely impacts of the proposed project. In particular, there is an absence of data about hydrogeological characteristics, groundwater/surface water interactions, and the groundwater dependence of semi-permanent pools and Brigalow threatened ecological communities.

Appropriate methodologies which have been applied correctly: key conclusions

The Committee considers the methodologies applied were not adequate to provide a reasonable basis for predicting the likely impacts of the proposed project.

Of concern is the adequacy of the groundwater conceptualisation. The proponent predicted potential groundwater impacts using a conceptualisation that is not substantiated by adequate primary data. The proponent relies strongly on this conceptualisation to draw conclusions regarding the structural isolation of the project site and the resulting hydraulic isolation, including the localised impacts of drawdown.

No numerical modelling was provided with which to test and validate the groundwater behaviour predicted by the groundwater conceptualisation, particularly in relation to the hydraulic isolation of the project. In terms of the water management regime for the site, this means that all modelling presented in the Supplementary Environmental Impact Statement is predicated upon the use of this unsubstantiated groundwater conceptualisation. To provide informed advice the Committee would need relevant numerical models and detailed analysis of data generated by numerical models, as outlined in the 'Background Data and Modelling' section of the Committee's Information Guidelines. This information was not provided.

The conceptualisation provides insufficient information for the Committee to accurately evaluate the probable surface water impacts. Furthermore, there is limited information provided in relation to the scale and extent of the monitoring programs to detect water quality changes resulting from the proposed development.

There is also an absence of adequate information with which to assess impacts and risks to the regional water balance and the proposed project's contribution to cumulative impacts within the region.

Reasonable values and parameters in calculations: key conclusions

Given the lack of appropriate groundwater models, the Committee advises that reasonable values and parameters in calculations were not evident in the Supplementary Environmental Impact Statement.

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

1. The proponent has not provided sufficient information on the water resources and their management to fully assess possible impacts from the proposed action. Assessment of impacts to water resources from the proposed action would benefit from the proponent addressing the advice contained in Questions 2 to 6 (below), particularly where this relates to the validation of the groundwater conceptualisation.

Question 2: Are the proposed design and operational measures considered adequate to protect:

- a. *downstream impacts on aquatic and riparian habitats?*
- b. *riparian habitat trees?*

2. The proposed design and operational measures are not considered adequate to protect downstream aquatic and riparian habitats and riparian species. The Committee advises that:
 - a. The Supplementary Environmental Impact Statement should, but does not, quantify risks of impacts from the mining activities to riparian habitat downstream of the proposed action;
 - b. The cumulative surface water and groundwater impacts in the region have not been provided and there is a high level of uncertainty surrounding surface water and groundwater impacts;
 - c. There are significant uncertainties, and assumptions in the Supplementary Environmental Impact Statement as part of the groundwater conceptualisation. The Committee suggests that appropriate groundwater field-investigation and monitoring are required to validate the groundwater predictions provided;
 - d. The proponent states that the Cockatoo Creek diversion is to be designed to replicate as far as possible the natural features of the original waterway. However, the Committee considers that the disturbance of Cockatoo Creek has the potential to impact groundwater-surface water interactions, related ecological processes, and water quality as the diverted stream's characteristics will be different to those of the existing stream reach. The erosion of overburden used in the construction of levees and its contribution to cumulative downstream impacts may also adversely affect downstream water quality and related ecological communities; and
 - e. The Committee is unable to assess the statements expressed in the Supplementary Environmental Impact Statement regarding the rehabilitation of Cockatoo Creek because the related information is inadequate and insufficient. For example, the proponent states that a detailed revegetation plan will be undertaken as part of the detailed diversion design but the latter has not been provided in the Supplementary Environmental Impact Statement.

Question 3: Are the water-related impacts of the proposed action likely to adversely impact on listed threatened ecological communities, in particular, the Brigalow ecological community?

3. The water-related impacts of the proposed action are likely to adversely impact on listed ecological communities, particularly the Brigalow threatened ecological community. This conclusion was reached for the following reasons:
 - a. The proponent is proposing removal of approximately 83.7 ha of the 148.7 ha or 53.3 per cent of the Brigalow threatened ecological community located within the project site. Impacts associated with clearing (although that is not water related) and the Cockatoo Creek diversion (which is water related) are likely to impact the resilience of Brigalow threatened ecological communities at the site; and
 - b. Predicted drawdown levels in groundwater systems from the proposed project also have the potential to adversely impact Brigalow threatened ecological communities (*Acacia harpophylla* dominant and co-dominant), as Brigalow root depths have previously been recorded between 5 to 6 m (on cracking clay soils near Rolleston, Queensland (Shelton and Dalzell, 2007²)). However, the magnitude and extent of drawdown has not been quantified in the Supplementary Environmental Impact Statement.

Question 4: Will the expected impacts of groundwater drawdown be localised?

4. The Committee is unable to answer this question for the following reasons:
 - a. The groundwater conceptualisation is insufficiently substantiated to be a reliable basis for predicting the potential impacts of the proposed project and for understanding the role of structural geological features in constraining groundwater flow. In particular the conceptualisation relies strongly on the presence of fault structures in the east and west of the project site to draw a number of conclusions regarding the structural isolation of the project site and resulting hydraulic isolation, with little to no quantitative evidence. These conclusions include the localised impacts of drawdown and the proposed groundwater monitoring program; and
 - b. There is insufficient detailed information regarding the water quality and baseflow associated with Cockatoo Creek to enable an adequate assessment of surface water/groundwater interactions.
5. The proposed project relies on a groundwater conceptualisation to determine impacts. The proponent should test and validate the conclusions of the groundwater conceptualisation. Further validation may be achieved through field investigation and numerical modelling to better simulate the rate and extent of drawdown. The proposed monitoring program should be expanded to not only target the assumed flow direction to the north-west within the syncline but should be designed to also characterise the baseline conditions and to test the assumptions of the groundwater conceptualisation.

Question 5: Is the design of the proposed levees and the proposed diversion of Cockatoo Creek adequate to prevent significant impacts on listed threatened species or listed threatened ecological communities as a result of flood?

6. From the information provided in the Supplementary Environmental Impact Statement, the Committee is concerned that the design incorporates the use of overburden soil, which is likely to be highly sodic, to construct levees for the proposed diversion of Cockatoo Creek. Using this material may have adverse impact on threatened species or threatened ecological communities in the event of flood. The flood modelling uses a 1 in 2,000 year average recurrence interval plus 0.1 m freeboard. The Committee notes that this exceeds the 1 in 1,000 year average recurrence interval condition contained in the existing Foxleigh Mine Environmental Approval.
7. The proponent has not provided sufficient data for the Committee to evaluate in detail the adequacy of the design of the proposed diversion of Cockatoo Creek in preventing significant adverse impact on listed threatened species or listed ecological communities as a result of flood.

Question 6: Can the Committee recommend any further water related measures to enhance the protection and viability of listed threatened species and ecological communities?

8. The Committee recommends the following water-related measures in relation to:
- a. Discharge: The proponent is intending that the site will be a 'no discharge' site but intends to comply with the discharge conditions of the existing Foxleigh Mine Environmental Approval, if required. For emergency discharge, the median levels for water quality parameters for stressors should not exceed the relevant 80th percentile values of reference data for the appropriate discharge. The median release water quality for toxicants should be consistent with ANZECC 2000 guidelines;
 - b. Listed threatened species and/or listed threatened ecological communities: This proposal will contribute to cumulative downstream impacts to listed threatened species and/or listed threatened ecological communities such as the Fitzroy River Turtle (*Rheodytes leukops*) and/or Brigalow threatened ecological community. The Committee recommends that in developing an ongoing management plan that the proponent should undertake a risk assessment on the cumulative downstream impacts, and adopt appropriate mitigation strategies; and
 - c. Voids: In terms of impacts associated with final voids, the proponent has stated that a program on final void water quality will be completed during the operation phase of this project. The Committee recommends that information to predict the void water quality should be provided prior to the commencement of the operation. Although the void predictions presented were predicated on the groundwater conceptualisation, the Committee considers that the voids represent a minimal decant risk, but this is outweighed by the potential long term environmental legacy these deep voids will create in the landscape. The Committee considers that the backfilling of voids and the minimisation of pit lakes represent best environmental practice for post-mining management.

Date of advice	18 April 2013
Source documentation available to the Committee in the formulation of this advice	<ul style="list-style-type: none">a. AngloAmerican Pty Ltd, 2012. Addendum to the Foxleigh Plains Project Environmental Impact Statement.b. AngloAmerican Pty Ltd, 2012. Response to public submission on the Foxleigh Plains Project Environmental Impact Statement.c. Hansen Bailey Pty Ltd, 2012. Foxleigh Coal Mine Extension Project, Queensland: Environmental Impact Statement. Prepared for Anglo Coal (Foxleigh) Pty Ltd.
References cited within the Committee's advice	<p>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</p> <p>² Shelton, M, and Dalzell, S, 2007. 'Production, economic and environmental benefits of leucaena pastures,' <i>Tropical Grasslands</i>, vol 41, 174 – 190.</p>
