

Section 5

Evaluation of the Proposed Modification

5.1 INTRODUCTION

As a conclusion to the Statement of Environmental Effects, the proposed modification to the Werris Creek Coal mine is evaluated and justified through consideration of both the potential impacts on the environment and benefits to the local and wider community.

The evaluation of the proposed modification has been undertaken by firstly reassessing of the risks posed to the local environment by the proposed modified activities, following consideration of the controls, safeguards and/or mitigation measures proposed by the Applicant and summarised in Section 4. The proposed modification has also been evaluated against the principles of Ecologically Sustainable Development (ESD) in order to provide further guidance as to the acceptability of the proposed modification, as presented in the Statement of Environmental Effects.

5.2 OVERVIEW OF RESIDUAL ENVIRONMENTAL IMPACTS

Section 4 identified the following minor adverse impacts of the proposed modification and the proposed mitigation or management measures, where relevant.

- The modification to the open cut area and overburden emplacement would require disturbance to an additional 25.4ha of land on the mine site. Of this 25.4ha, 8.8ha represents a variant of the White Box Yellow Box Blakely's Red Gum Woodland Endangered Ecological Community (EEC), with the remainder previously cleared agricultural land. Recognising its obligation to ensure no net loss of biodiversity values in the medium to long term, the Applicant has proposed to offset this disturbance through the conservation of an area of approximately 32ha on the adjacent "Railway View" property. The "Railway View" biodiversity offset area includes 20ha of the White Box Yellow Box Blakely's Red Gum Woodland EEC, 4.5ha of Tumbledown Gum woodland and a further 7.5ha of previously cleared land and would be incorporated into the overall Biodiversity Offset Strategy for the Werris Creek Coal Mine.



In considering the residual impact of the proposed clearing, the regional distribution of the White Box Yellow Box Blakely's Red Gum Woodland EEC was taken into account. Within a 9 400ha surrounding the mine site, GCNRC (2004a) identified approximately 1 900ha of the EEC. The 8.8ha to be cleared by the proposed modification represents less than 0.5% of the regional distribution and Given the extent of the occurrence of this community in the region, GCNRC (2009) assessed that the proposed clearing would not have any adverse effect on the community such that its local occurrence is likely to be placed at risk of extinction. Furthermore, the proposed long-term conservation of the 20ha of this community on the "Railway View" property provides an offset ratio of greater than 2:1, generally considered to satisfy the "no net loss" principle.

- The proposed modification would require the construction of up to four dams within the southwestern corner of the mine site to store water extracted from the underground workings of the former Werris Creek Colliery (through which the proposed open cut mine would be developed). The underground Water Storage Area, within which the dams would be constructed, covers an area of approximately 13ha on cleared agricultural land. The site of the proposed Underground Water Storage Area was decided upon following the consideration of alternate sites to the west of the rail load-out road. Ultimately these locations were discounted as the first would potentially require disturbance to an area of White Box Yellow Box Blakely's Red Gum Woodland EEC, while ground conditions of the second location were incompatible with dam construction. The proposed location occurs over land classified as Class III capability and the Applicant proposes to reduce the long-term impact of the dam construction on the future use of this land for agriculture by recovering and storing the topsoil resource and rehabilitating the dams on the cessation of mining by removing any saline material, backfilling and respreading the stored topsoil.

Given the Applicant proposes to rehabilitate the Underground Water Storage Area to re-establish Class III capability land, the impact of the proposed clearing would be minimal and temporary.

- The proposed modification to the overburden emplacement would reduce the area of the final landform available for the re-establishment of Class III capable land from 43ha to 31ha.

The reduction in the area of Class III capable land in the final landform is considered unavoidable and acceptable given the competing requirement to ensure no net loss of biodiversity values (which requires significant areas of the final landform to be allocated to native vegetation establishment and conservation). The Applicant notes that should a longer term extension of the Werris Creek Coal Mine to the north proceed, the area of a revised final landform allocated to the re-establishment of Class III land would be increased.

- The Applicant has provided for additional surface water management controls on the mine to accommodate the increased area of disturbance. These structures have been designed, and would be constructed, to meet the requirements of the document "Managing Urban Stormwater: Soils and Construction, Vol. 1 and 2E" (Landcom, 2004, 2008).



Assuming the implementation of the surface water controls identified in Section 4.1.4, the proposed modification would not result in any additional impacts on local surface water resources.

- As a consequence of the modified open cut area, and the dewatering of the underground workings to the north of the current open cut, it is predicted that there would be some minor changes to impacts on local groundwater resources.
 - Mine in-flows to the open cut are predicted to reduce as the head of water contained within the underground workings is removed. Daily in-flows of 580m³/day in Year 1 of the proposed modification and 215m³/day in Year 3 are predicted, which would be less than the 648m³/day predicted by the original groundwater assessment for the Werris Creek Coal Mine (and reflected by observed seepage rates). At these rates of in-flow, the mine is expected to operate as a dry mine.
 - The proposed modification would result in a very small reduction in the groundwater level, which would be practically imperceptible from that predicted by the original groundwater assessment for the Werris Creek Coal Mine. Groundwater monitoring undertaken by the Applicant to date has confirmed that the impact of the mining operations on the groundwater level in the bores of neighbouring landholders has been negligible with the expectation being that the proposed modification would also have no perceptible impact on groundwater availability.
 - By considering the predicted groundwater drawdown predicted as a result of the proposed modification, it has been calculated that flows to Quipolly Creek (within the Quipolly Creek Alluvium) may decrease by up to 59MLpa. This represents a small increase in the reduction of flows to Quipolly Creek predicted by the original Werris Creek Coal Mine (which is largely attributable to the dewatering of the underground workings which creates a preferred flow path for water recharging the aquifers). Notably, this level of groundwater flow reduction is within the expected seasonal fluctuation for this groundwater source of the Phillips Creek, Mooki River, Quirindi Creek and Warrah Creek Water Sources Water Sharing Plan (2004) which describes Quipolly Creek as a highly variable creek with flows varying from no flow to over 1 000ML/day. It is also notable that flows to the Quipolly Creek Alluvium would ultimately be increased (782m³/day) given the increased permeability of the final landform.

The proposed modification would have a practically imperceptible impact on groundwater drawdown and availability. It is possible that a Water Access Licence may be required under the Water Management Act 2000 to account for the possible reduction in flow to the Quipolly Creek Alluvium, however, it is considered that an exemption from licensing would be appropriate given the minor nature of the impact and insignificant environmental impact.



- Under most conditions, the 35dB(A) noise criteria could be achieved at all non-project related residences. Under certain conditions, exceedances of up to 5dB(A) may be received at the “Cintra” and Zeolite assessment locations, however notably, the noise levels would not exceed 40dB(A), which is within the target range included with existing negotiated agreements with the owners of these properties.

Assuming the implementation of the proposed noise controls identified in Section 4.3.3, the noise generated by the proposed modification would be equivalent to that predicted by the original noise assessment for the Werris Creek Coal Mine and measured by monthly noise monitoring. The proposed modification would have an imperceptible impact on local noise levels.

- Air quality modelling undertaken for the proposed modification suggests that there may be some increases in dust and particulate matter as a result of the proposed modification. However, it is noted that the modelling completed was highly conservative and reflects the absolute worst-case situation.

Given the highly conservative nature of the air quality modelling, it is assessed that the impacts of the proposed modification on local air quality would be negligible with deposited dust and PM₁₀ concentrations remaining similar to those currently recorded by monthly monitoring.

- With the exception of the White Box Yellow Box Blakely’s Red Gum Woodland EEC, no threatened flora or fauna were identified on the mine site nor considered likely to be impacted by the proposed modification.

Considering the proposed addition of the “Railway View” offset area to the Werris Creek Coal Mine biodiversity offset strategy, the proposed modification would have an acceptable impact on flora and fauna.

- No items of Indigenous or non-Indigenous heritage would be affected by the proposed modification.

Assuming the Applicant acknowledges and implements as necessary its responsibilities with respect to Aboriginal heritage under the National Parks and Wildlife Act 1974, the proposed modification would have no impact on cultural heritage.

- The overburden emplacement of the mine site may be more noticeable from vantage points to the south and east of the mine site. There would be no change to visual amenity from vantage points to the north or west of the mine site.

Given the Applicant’s continued commitment to minimising the extent of surface disturbance in advance of mining, to implementing progressive rehabilitation, reducing dust emissions, and maintaining the mine site in a clean and tidy state, it is assessed that the increase in height of the overburden emplacement would not result in any unacceptable change to the current visual amenity.



In evaluating the impact of the proposed modification, all of the above residual impacts on the local environment have been considered. In each case, the residual impacts were assessed to be either imperceptible from the impacts attributable to the approved Werris Creek Coal Mine, compliant with relevant criteria or appropriately mitigated or offset. The overall impact of the proposed modification is therefore assessed as acceptable.

5.3 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

5.3.1 Introduction

Sustainable practices by industry, all levels of government and the community are recognised to be important for the future prosperity and well-being of the world. The principles of Ecologically Sustainable Development (ESD) that have been recognised for over a decade were based upon meeting the needs of the current generation while conserving our ecosystems for the benefit of future generations. In order to achieve sustainable development, recognition needs to be placed upon the integration of both short-term and long-term environmental, economic, social and equitable objectives.

Throughout the design of the proposed modification, the Applicant has endeavoured to address each of the sustainable development principles. The following sub-sections draw together the features of the proposed modification that reflect the four principles of sustainable development, namely:

- the precautionary principle;
- the principle of social equity;
- the principle of the conservation of biodiversity and ecological integrity; and
- the principle for the improved valuation and pricing of environmental resources.

5.3.2 The Precautionary Principle

To satisfy this principle of ESD, emphasis must be placed on anticipation and prevention of environmental damage, rather than reacting to it. During the planning phase for the proposed modification and throughout the preparation of the Statement of Environmental Effects, the Applicant engaged specialist consultants to examine the existing environment, predict possible impacts and recommend controls, safeguards and/or mitigation measures in order to ensure that the level of impact satisfies statutory requirements or reasonable community expectations. The Applicant and its consultants have adopted an anticipatory approach to impacts, particularly that of irreversible ecological damage, by undertaking an analysis of the risks posed by activities of the proposed modification, an appropriate level of research and baseline investigations and environmental evaluation. The controls, safeguards and/or mitigation measures have therefore been planned with a comprehensive knowledge of the existing environment and the potential risk of environmental degradation posed by mining and associated activities.

Examples of matters relating to the precautionary principle that were considered during the various stages of the Proposed modification are listed below.



Objectives

The proposed modification has been designed with the principal objective being to continue to operate the mine in a safe and environmentally responsible manner, and which meets the requirements of local and State government agencies, accepted industry standards and wherever possible, reasonable community expectations. The Applicant recognises that only through comprehensive environmental assessment and an environmentally responsible approach to the design and operation of the proposed development can the risk of harm to the environment be minimised.

Design of the Proposed Modification

Several design aspects of the proposed modification were modified during the planning stage in order to ensure the requirements of local and State government agencies, accepted industry standards and wherever possible, reasonable community expectations were met. These included the following.

- The design of the final landform, and more specifically the allocation of end use on the landform was altered to increase the area allocated to nature conservation.
- The location of the Underground Water Storage Area was relocated to the southwestern corner of the mine site as the original location would have encroached on a remnant patch of the White Box Yellow Box Blakely's Red Gum Woodland EEC.

Integration of Safeguards and Procedures

The framework for ongoing environmental management, operational performance and rehabilitation of the mine site would continue to be managed in accordance with the DPI-MR Mining, Rehabilitation and Environmental Management Process (MREMP), both of which would involve the input from relevant State and local government agencies. The Mining Operations Plan, which would contain a range of site specific environmental procedures to achieve consistency with specified outcomes and to control identified risks, would be updated, while Annual Environmental Management Reports would continue to be prepared to report on the progress of the operation and provide an opportunity to review the effectiveness of the environmental management strategies adopted. In addition:

- all on-site procedures would be regularly reviewed, particularly in light of monitoring results;
- surface water, groundwater, noise, deposited dust levels, airblast overpressure and ground vibration, flora and fauna, would continue to be monitored in order to ensure the continued compliance of the operation with goals outlined in this document;
- wherever possible, areas not required for mining or associated activities would remain grassed to assist in minimising erosion and reducing the suspended sediment load in surface water flowing through the mine site; and
- topsoil and subsoil would be stripped, stockpiled and re-spread on the basis of the quality of the soil (as indicated by the soil mapping unit), and planned final land use of different areas of the final landform.



Rehabilitation and Subsequent Land Use

Long term adverse impacts on the local environment would be avoided through the design and rehabilitation of a landform suitable for the establishment / maintenance of significant areas (115ha) of native vegetation.

5.3.3 Social Equity

Social equity embraces value concepts of justice and fairness so that the basic needs of all sectors of society are met and there is a fair distribution of costs and benefits to the community. Social equity includes for both inter-generational (between generations) and intra-generational (within generations) equity considerations.

Equity within generations requires that the economic and social benefits of the development be distributed appropriately among all members of the community. Equity between generations requires that the non-material well-being or “quality of life” of existing and future residents of the local community would be maintained throughout and beyond the life of the mine.

Both elements of social equity are addressed through the design of the proposed modification itself, the implementation of operational safeguards to mitigate any short-term or long-term environmental impacts, and the proposed rehabilitation of the areas directly disturbed. Examples of matters relating to social equity that are relevant to the various stages of the proposed development are listed below.

Objectives

The proposed modification has been designed with the objective of maximising the provision of employment opportunities to residents of the local Werris Creek area. This objective includes a commitment to employee training.

Design of the Proposed Modification

The proposed modification, and the Werris Creek Coal mine as a whole, has been designed to maintain inter-generational equity, ie. in recognition that mining is a relatively short-term land use, and to ensure components of the existing biological, social and economic environment available to existing generations would also be available to future generations.

- The proposed limit of open cut mining and out-of-pit overburden emplacements have been designed to ensure that disturbance to the threatened vegetation communities and sensitive fauna habitats is minimised and where unavoidable offset.
- The modified open cut area and out-of-pit overburden emplacements would not impact on any aspect of cultural heritage.
- The availability of groundwater to surrounding landholders, although not predicted to be noticeably affected by the mining activities, would be monitored throughout the life of the mine and compensatory measures taken should a short-term reduction in the availability of groundwater to local landholders occur.
- The rehabilitation of the modified mine site has been designed to integrate the re-establishment of some agricultural land with the conservation of native vegetation.



Integration of Safeguards and Procedures

The Applicant recognises that all members of the local community should benefit appropriately from the mine either directly or indirectly. In order to ensure a realistic distribution of benefits, the Applicant would continue to consult with the local community and maintain a pro-active approach to issues of interest. This dialogue would also include a system to record, manage and respond to any complaints relating to the operation.

Rehabilitation and Subsequent Land Use

The final landform would be constructed and rehabilitated in a manner that would generally retain a reasonable proportion of land with an agricultural capability similar to that prior to mining, thereby providing the basis for continuing economic activity within the local community.

5.3.4 Conservation of Biological Diversity and Ecological Integrity

The protection of biodiversity and maintenance of ecological processes and systems are central goals of sustainability. It is important that developments do not threaten the integrity of the ecological system as a whole or the conservation of threatened species in the short- or long-term. Details of how the proposed modification has been designed to achieve compliance with these principles are set out below.

Objectives

The Applicant is committed to undertaking all activities in an environmentally responsible manner, and recognises the need to ensure that changes to natural components of the environment do not adversely affect biological diversity or ecological integrity. As such, the proposed modification has been designed to incorporate measures that would:

- minimise impacts on the flora and fauna of the mine site, whilst allowing the extraction of an economically viable resource;
- through progressive rehabilitation, ultimately result in improvements in the extent and viability of vegetation habitat available; and
- addition to the Werris Creek Coal Mine biodiversity offset strategy which encourages the re-establishment of native vegetation and development of linkages between isolated pockets of native vegetation on the mine site and surrounding properties.

Design of the Proposed Modification

The Applicant, on advice from the specialist consultancy's commissioned to assess the impact on the environment, has provided for the conservation of biological diversity and ecological integrity through the following design elements.

- Water management structures have been designed and would be constructed to ensure that only water within DECC specified criteria leaves the mine site.
- The placement of underground water storage dams was revised to avoid disturbance to a remnant patch of White Box Yellow Box Blakely's Red Gum Woodland EEC.



- Progressive rehabilitation of the mine site would include the creation and enhancement of habitat corridors between the mine site final landform and remnant stands of endangered ecological communities.

Integration of Safeguards and Procedures

The Applicant would implement the following safeguards and procedures to maximise the conservation of biological diversity and ecological integrity on and surrounding the mine site.

- Pre-clearing surveys of native tree species would be undertaken and any threatened species encountered would be relocated prior to clearing.
- Cleared vegetation <300mm in diameter or containing hollows would be retained and used in the rehabilitation of areas designated for native vegetation re-establishment.
- Post-mining rehabilitation of the mine site would include the establishment of native vegetation.
- Weed eradication programs would be developed and implemented, as required.
- The “Railway View” offset area would be incorporated into the Werris Creek Coal Mine biodiversity offset strategy.

Rehabilitation and Subsequent Land Use

The final landform has been designed to provide for some agricultural activity but with an emphasis upon the re-establishment of native vegetation, fauna habitat and habitat corridors. The areas designated for native vegetation re-establishment have been selected to enable the development of linkages between isolated pockets of native vegetation and hence increase the conductivity and connectivity of wildlife corridors for native fauna.

5.3.5 Improved Valuation and Pricing of Environmental Resources

The issues that form the basis of this principle relate to the acceptance that the polluter pays, all resources are appropriately valued, cost-effective environmental stewardship is adopted and the adoption of user-pays principle based upon the full life cycle of the costs. A reflection of these issues on the proposed modification is set out below.

Objectives

The Applicant’s principal objective is to operate the mine in a profitable, safe and environmentally responsible manner, which demonstrates that an appropriate value has been placed on elements of the existing environment.

Design of the Proposed Modification and Integration of Safeguards and Procedures

The extent of research, planning and design of environmental safeguards, mitigation measures and offset strategies to prevent irreversible damage to environmental resources, other than the coal to be mined, is evidence of the value placed by the Applicant on these resources.



The Applicant's commitment to improving the status and conservation of native vegetation locally also reflects the Applicant's commitment to this principle.

Rehabilitation and Subsequent Land Use

The design of the final landform to integrate ongoing agricultural activities with the re-establishment of native vegetation illustrates the value placed by the Applicant on both the agricultural and ecological elements of the mine site.

5.3.6 Summary

The approach taken in planning the proposed modification has been multi-disciplinary, involved consultation with potentially affected local residents and various government agencies and emphasis on the application of safeguards to minimise potential environmental, social and economic impacts. The design of the proposed modification has addressed each of the sustainable development principles, and on balance, it is concluded that the proposed modification achieves a sustainable outcome for the local and wider environment.

5.4 CONCLUSION

The proposed modification to the Werris Creek Coal Mine has, to the extent feasible, been designed to address the issues of concern to the community and all levels of government. The proposed modification provides for more efficient mining, production, sale and despatch of a high quality coal product which would be significant in maintaining local employment and stimulus to the local economies of Werris Creek and Quirindi. The post-mining landform would integrate the re-establishment of some agricultural land with areas designated for the conservation and extension of native vegetation and fauna habitat.

This document and the range of specialist consultant studies undertaken have identified that the proposed modification should proceed because it would:

- i) increase efficiency of coal production and thereby maximise employment opportunities;
- ii) contribute towards satisfying the ongoing demand for low ash, low sulphur coal;
- iii) reduce residual impacts on the local environment to levels imperceptible from those associated with the ongoing operations of the mine, compliant with the nominated criteria or adequately mitigated or offset;
- iv) satisfy sustainable development principles;
- v) provide for continuing and future use of the mine site for agriculture;
- vi) provide significant training and employment opportunities for residents of Liverpool Plains Local Government Area; and
- vii) contribute to the continued growth in economic activity in the Liverpool Plains Shire.

