# MOOLARBEN COAL PROJECT

## SECTION 7

## Project Justification and Conclusions

# SECTION 7

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# 7 PROJECT JUSTIFICATION AND CONCLUSIONS

## 7.1 Introduction

This section provides an overview of the MCP in respect to the principles of ecologically sustainable development (ESD), the findings of a closing risk analysis for those issues carried forward from Section 3 and justification for the project.

## 7.2 Ecologically Sustainable Development

ESD is the exploitation of plants, animals and other resources at a level which allows the number and variety of species to remain much the same from generation to generation.

ESD requires the effective integration of economic and environmental considerations in decision-making processes. ESD can be achieved through the implementation of the following principles and programs: -

- The precautionary principle;
- Inter-generational equity;
- Conservation of biological diversity and ecological integrity; and
- Improved valuation, pricing and incentive mechanisms.

ESD is founded on the basis that current and future generations should leave a natural environment that functions equally as well or better than the one inherited. The following section describes the consideration and application of ESD principles in relation to the MCP.

### 7.2.1 Precautionary Principle

The precautionary principle means that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation (Protection of the Environment Administration Act 1991).

Application of the precautionary principle to the MCP needs to ensure that there has been: -

- Careful evaluation of the proposal to avoid serious or irreversible damage;
- Predictable and transparent decision making for the proposal; and
- An assessment of consequences of various options undertaken.

The environmental consequences of the proposal have been documented in *Section 5 – Existing Environment and Interactions* and associated appendices. Scientific and engineering analysis of the environment and likely impacts of the project has been thorough, and has involved field surveys, computer modelling, impact identification and measures to ameliorate impacts.

At all stages of project development there has been an open and transparent decision making process. Consultation has occurred with the various stakeholders and resulted in the project being modified to minimise the potential for serious and/or irreversible damage to the environment. These modifications include: -

- The protection of the Goulburn River National Park and Munghorn Gap Nature Reserve to ensure no direct impacts occasioned by mining;
- The protection of 'The Drip' and aboriginal objects located near 'The Drip', by excluding mining from these features;
- The redesign of the infrastructure facilities to significantly reduce the mine's impact upon Bora Creek and associated vegetation communities and aboriginal objects;
- The redesign of Open Cut 3 to ensure the integrity of Moolarben Creek with associated vegetation communities and aboriginal objects are not destroyed;
- The reestablishment of large tracts of agricultural lands;
- The enhancement of riparian vegetation and aquatic habitats along Moolarben Creek;
- The recording and conservation of items of environmental heritage both within and outside the MCP DA boundary;
- Amendment to the initial mine plans for Open Cuts 1, 2 and 3 to reduce the mine's footprint on timbered slopes and EEC's;
- The management of greenhouse gas emissions by ensuring that: -
    - the selection and purchase of plant and equipment is based on energy efficiencies;
    - plant and equipment are regularly maintained to minimise fuel consumption and emissions; and
    - there is a net increase of 1071 hectares of intact native vegetation over the life of the project after considering the loss of 416 hectares of intact native vegetation to be cleared.
- Through vegetation enhancement and Voluntary Conservation Agreements provide improved connectivity between the Goulburn River National Park and Munghorn Gap Nature Reserve and adjoining native bush land;
- Conserve aboriginal cultural heritage; and
- Potentially dedicate mine owned lands to the DEC estate.

### 7.2.2 Social Equity including Intergenerational Equity

Social equity involves value concepts of justice and fairness so that basic needs of all sectors of society are met and there is a fairer distribution of costs and benefits to improve the well-being and welfare of the community, population or society (DUAP, 1995). Social equity also includes concerns for intergenerational equity which requires that the present generation should ensure the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

The mitigation and rehabilitation measures described in Section 5 – Existing Environment and Interactions will minimise the impact upon not only the current generation, but also upon future generations. Whilst the winning of the coal resource will remove an opportunity for future generations, the economic benefits generated by the MCP will benefit current and future generations. The construction and operation of the mine will deliver significant economic benefits to the local community, the region and both state and federal governments during the life of the project.

Coal is an essential component of life in Australia, and provides approximately $8 billion in export income. It is the energy source for over 90% of the State's electricity, and energy is

fundamental to sustaining and improving living standards. Coal provides a safe, secure, relatively inexpensive source of energy nationally and internationally, and will continue to do so until alternate renewable energy sources are developed to a commercially viable level. Coal allows us to maintain our current way of life while we tackle the difficult and long term task of developing economically viable renewable sources of energy. The wise use of our non-renewable resources such as coal will ensure Australia's economic future through export income and access to competitively priced energy. It will also help ensure that the legacy we hand to the next generation will be as valuable as the one we have inherited. Coal has a key role to play in ensuring a sustainable future for Australia.

### 7.2.3 Conservation of biological diversity and ecological integrity

Biological diversity refers to the variety of life forms on earth and is reflected at three levels by genetic diversity, species diversity and ecosystem diversity.

The MCP is designed to be consistent with the conservation of biological diversity and ecological integrity. The project is founded on known coal deposits in an area which has previously been disturbed by coal mining activities, extractive industries, agricultural/pastoral activities, transport and utility service corridor developments.

That part of the project associated with the infrastructure area and underground coal mine already has a valid development consent in place. The development consent was granted in 1985 following a Commission of Inquiry.

The project has received a thorough examination consistent with statutory authority guidelines, with special attention on threatened and endangered species that may potentially be impacted. Significance assessments have determined that the MCP will not have a significant adverse impact on any species.

Environmental and rehabilitation procedures will ensure the project does not adversely impact the local environment.

### 7.2.4 Improved valuation, pricing and incentive mechanism

This principle requires that environmental factors should be included in the valuation of assets and services, such as:-

- Polluter pays – those who generate pollution and waste should bear the cost of containment, avoidance or abatement;
- The users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any wastes;
- Environmental goals having been established, they should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

The process of identifying project impacts (positive and negative) on the environment and formulating actions or works to mitigate negative impacts recognises the value of both the resource and environment. The Environmental Assessment has examined the environmental consequences of the MCP and recommended mitigation measures and safeguards be implemented if the project proceeds. The costs of mitigation and associated management measures proposed for the MCP have, therefore, been included in the costs of the proposal to ensure that the local environment is protected from pollution. The proponent considers and acknowledges that the environment is a valuable resource for the local and broader communities but also for future generations.

## 7.3 Closing Risk Analysis

A preliminary risk analysis was undertaken in Section 3 with a number of issues carried forward. This closing risk assessment (refer to **Table 7.1**) addresses issues and proposed controls identified during the environmental assessment process and those matters carried forward from Section 3.0

**Table 7.1: Closing risk analysis for the Moolarben Coal Project.**

| No | Aspect | Issue | Proposed Control as a result of Environmental Assessment (Details of impacts are located with the relevant discipline section in *Section 5*) | Risk | | | Further Actions to be Adopted as part of Statement of Commitments and MOP. | Residual Risk | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | P[1] | C[2] | R[3] | | P | C | R |
| 1. | Air Quality. | Exceedences of adopted air quality criteria for sensitive receptors include:<br>• Potential exceedences at 33 residences for the 24 hour average PM10 criteria at Open Cut 1 that will require real time monitoring and management;<br>• 2 dwellings near Open Cut 2 (Yr 8) will experience an exceedence of annual average PM10 assessment criterion and will be subject to negotiated agreements;<br>• Potential exceedences at two residences for the 24 hour average | • Refine limits of Open Cut 1 to incorporate out of pit emplacements and infrastructure, to maintain set back from Ulan Village;<br>• Reduction of mining rate for first three years of Open Cut 1;<br>• Adopt progressive rehabilitation of mining operations to minimise exposed soils;<br>• Ensure coal handling facilities employ appropriate dust suppression methods;<br>• Use water carts on all trafficked areas to minimise dust generation as necessary;<br>• Use constructed roads only, minimisation of access roads and removal of obsolete | A | 2 | **H** | • Prepare Air Quality Management Plan;<br>• Apply for Environmental Protection Licence (EPL);<br>• Employment of suitably experienced environmental officer to ensure implementation of controls and management plan;<br>• Liaison with potentially impacted receptors to determine most appropriate management action; and<br>• Implement real time | B | 4 | **M** |

[1] P = Probability of Issue occurring – See Table 7.2 (A – Almost Certain to E – Rare).

[2] C = Consequence Severity Level – See Table 7.3 (1 – Most severe to 5 – least severe).

[3] R = Assigned Risk Level – See Table 7.4 (**H** = High, **M** =Medium, **L** = Low, **N** = Negligible).

| No | Aspect | Issue | Proposed Control as a result of Environmental Assessment (Details of impacts are located with the relevant discipline section in *Section 5*) | Risk | | | Further Actions to be Adopted as part of Statement of Commitments and MOP. | Residual Risk | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | P[1] | C[2] | R[3] | | P | C | R |
| | | PM10 criteria at Open Cut 2 that will require real time monitoring and management;<br>• 1 dwellings near Open Cut 2 (Yr 8) will experience an exceedence of annual average PM10 assessment criterion and will be subject to negotiated agreements;<br>• 2 dwellings near Open Cut 3 (Yr 10) dwellings will experience exceedences of the annual average PM10 assessment criteria and will be subject to negotiated agreements; and<br>• Potential exceedences at six residences for the 24 hour average PM10 criteria at Open Cut 3 that will require real time monitoring and management. | access roads; and<br>• Liaison with potentially impacted receptors to determine most appropriate management action. | | | | environmental monitoring program to ensure the air quality criteria is not breached. | | | |
| | | • Greenhouse gas emissions from the consumption of energy for mining will be 384,620,000 kg of $CO_2$-equivalent per year. | | A | 2 | **H** | • The regular maintenance of plant and equipment;<br>• Promotion of car pooling;<br>• Responsible use of energy;<br>• Consideration of energy efficiency in the purchase of plant and equipment;<br>• The establishment of large tracts of vegetation<br>• Moolarben Coal Mines to maintain their role under the Greenhouse Challenge Plus Program Framework; | A | 3 | **H** |

| No | Aspect | Issue | Proposed Control as a result of Environmental Assessment (Details of impacts are located with the relevant discipline section in *Section 5*) | Risk | | | Further Actions to be Adopted as part of Statement of Commitments and MOP. | Residual Risk | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | P[1] | C[2] | R[3] | | P | C | R |
| | | | | | | | and<br>• The use of alternate forms of power (where appropriate) for site specific applications around the site. | | | |
| | | • Air quality risk to human health. | • Undertake above controls. | C | 5 | **N** | • Undertake above actions. | D | 5 | **N** |
| 2. | Acoustics, blasting and vibration. | Exceedences of noise criteria at sensitive receptors surrounding the MCP in worst case meteorological and operational conditions:<br>• 2 dwellings will be subject to negotiated agreements for Open Cut 1;<br>• 6 dwellings will be subject to a Plan of Management for Open Cut 1;<br>• Ulan Village has a 1 dBA predicted exceedence for the Year 2 scenario and will require a Plan of Management;<br>• 3 dwellings will be subject to negotiated agreements for Open Cut 2;<br>• 6 dwellings will be subject to a plan of management;<br>• 3 dwellings will be subject to negotiated agreements for Open Cut 3; and | • Refine limits of Open Cut 1 to incorporate out of pit emplacements and infrastructure, to maintain set back from Ulan Village;<br>• Build environmental bunds on western and northern sides of Open Cut 1 and facilities, and Open Cut 2;<br>• Work south to north moving away from Ulan Village;<br>• Design overburden emplacement to shield mining operations;<br>• Locate open cut ROM hopper and primary crusher below ground level in box cut; and<br>• Liaison with potentially impacted receptors to determine most appropriate management action. | A | 4 | **M** | • Prepare Construction Noise Management Plan;<br>• Prepare Operational Noise Management Plan;<br>• Apply for Environmental Protection Licence (EPL); and<br>• Employment of suitably experienced environmental officer to ensure implementation of controls and management plans. | A | 5 | **M** |

| No | Aspect | Issue | Proposed Control as a result of Environmental Assessment (Details of impacts are located with the relevant discipline section in *Section 5*) | Risk | | | Further Actions to be Adopted as part of Statement of Commitments and MOP. | Residual Risk | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | P[1] | C[2] | R[3] | | P | C | R |
| | | • 2 dwellings will be subject to a Plan of Management for Open Cut 3. | | | | | | | | |
| | | Exceedences of ARTC EPL noise criteria at sensitive receptors adjacent to rail line between the site and Muswellbrook, and the site and Wallerwang Power Station near Lithgow.<br>• 22 dwellings were identified as being potentially impacted between the site and Muswellbrook; and<br>• 16 dwellings were identified as being potentially impacted between the site and Wallerwang near Lithgow. | • General location and number of sensitive receptors along railway line identified. | A | 3 | **H** | • Notify ARTC and relevant rail authorities of potential noise impacts. | A | 5 | **M** |
| | | Exceedences of overpressure and vibration criteria at nearby sensitive receptors and structures as a result of blasting:<br>• 1 dwelling will be impacted at Open Cut 1;<br>• Providing blasts are minimised in early years of Open Cut 1 no impact to Ulan Village;<br>• 1 dwelling at Open Cut 2 will be impacted by blasting; and<br>• 3 dwellings at Open Cut 3 will be impacted by blasting. | • Model maximum instantaneous charge weights to predict impacted residents;<br>• Adjust charge weights to minimise impacts where possible; and<br>• Liaison with potentially impacted receptors to determine most appropriate management action. | B | 2 | **H** | • Develop blasting site law;<br>• Prepare Blasting Management Plan;<br>• Apply for Environmental Protection Licence (EPL);<br>• Employment of suitably experienced environmental officer to ensure implementation of controls and management plans. | C | 3 | **M** |

| No | Aspect | Issue | Proposed Control as a result of Environmental Assessment (Details of impacts are located with the relevant discipline section in *Section 5*) | Risk | | | Further Actions to be Adopted as part of Statement of Commitments and MOP. | Residual Risk | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | P[1] | C[2] | R[3] | | P | C | R |
| 3. | Flora, Fauna and Aquatic Ecology. | The significant ecological values likely/potentially affected in Open Cuts 1 and 2 include:<br>• EEC - White Box Yellow Box Blakely's Red Gum Woodland;<br>• Threatened and declining woodland birds;<br>• Threatened plants - Narrow-leaved Goodenia (Goodenia macbarronii), Capertee Stringybark (Eucalyptus cannonii);<br>• Foraging habitat for the threatened Glossy Black Cockatoo;<br>• Habitat for the threatened Painted Honeyeater;<br>• Potential occasional foraging habitat for the threatened Regent Honeyeater;<br>• Midslopes vegetation that supports local fauna movements;<br>• Threatened woodland bird - Grey-crowned Babbler;<br>• Threatened mammal - Squirrel Glider;<br>• Habitat for threatened microchiropteran bats; and<br>• Likely foraging habitat for threatened microchiropteran bats. | • Refine limits of Open Cut 1 to incorporate out of pit emplacements and infrastructure, to maintain set back from Ulan Village and stands of native vegetation;<br>• Adaptation of out of pit emplacements for Open Cuts 1 and 2 to minimise impacts on native vegetation, EEC's and threatened species;<br>• Redesign of pit and infrastructure to retain Ulan Airstrip to avoid relocation and subsequent displacement of native flora and fauna; and<br>• Re-design of previously approved infrastructure in the main infrastructure area to minimise impacts to Bora Creek and associated riparian vegetation.<br>Development of mitigation and offset strategy that incorporates: -<br>• Rehabilitation of open cut disturbance in accordance with methodology proposed in *Section 5*;<br>• Revegetation of lands within the MCP DA area that are outside the mine footprint;<br>• Management of ongoing non-mine related impacts to enhance the value of the residual vegetation cover; and<br>• Use of ameliorative works to reduce the extent of direct impacts during preparatory land clearing events. | A | 2 | **H** | • Prepare Land Rehabilitation Management Plan;<br>• Prepare Construction Flora, Fauna and Aquatic Management Plan;<br>• Entering into Voluntary Conservation Agreements to ensure long-term management in conjunction with Farm Management Plans.<br>• Preparation of Farm Management Plans to manage agricultural lands;<br>• Prepare Operational Flora, Fauna and Aquatic Management Plan;<br>• Prepare Weed and Animal Pest Control Plan;<br>• Potentially the dedication of mine owned lands to the DEC estate; and<br>• Employment of suitably experienced environmental officer to ensure implementation of controls and management plan. | A | 4 | **M** |

| No | Aspect | Issue | Proposed Control as a result of Environmental Assessment (Details of impacts are located with the relevant discipline section in *Section 5*) | Risk | | | Further Actions to be Adopted as part of Statement of Commitments and MOP. | Residual Risk | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | P[1] | C[2] | R[3] | | P | C | R |
| 4. | Groundwater. | • Groundwater inflows into underground and open cut workings;<br>• Reduction in groundwater levels in and adjacent to underground and opencut operations as a result of dewatering;<br>• Impacts to some adjoining groundwater users;<br>• Changes in water quality in waters extracted from groundwater;<br>• Predicted water inflows into Underground No. 4 ranging from 0.3ML/day in Year 1 to 6.5ML/day in the final year of mining;<br>• Small volume of mine water inflows at Open Cuts 1 and 3;<br>• Lowering of Permian water levels by 5m 10km to the east of Underground No. 4;<br>• Significant impact to Ulan Coal Mine bore field; and<br>• Predicted shortfall in project water mine inflows in Year 1, and Years 3 to 11. | • Undertake groundwater census of the MCP to determine quantity and quality of existing groundwater;<br>• Installation of a regime of piezometers and test bores consistent with density guidelines;<br>• Conduct regular monitoring and analysis of results since piezometer installation;<br>• Utilisation of neighbouring coal mines groundwater data where available; and<br>• Independent audit and review of water management and the groundwater inflow predictions | A | 2 | **H** | • Prepare Groundwater Management Plan;<br>• Prepare Water Supply Bore-field Plan;<br>• Apply for Environmental Protection Licence (EPL);<br>• Apply for relevant licences under the Water Act 1912 and Water Management Act 2000;<br>• Continue negotiations with adjoining landholders about availability of water for use in operation;<br>• Investigation of management options for surplus waters;<br>• Continue to implement monitoring program; and<br>• Employment of suitably experienced environmental officer to ensure implementation of controls and management plans. | A | 3 | **H** |
| 5. | Surface Water. | • Reduced surface water flows to Moolarben Creek and Goulburn River from the capturing of rainfall from within the disturbed mine areas;<br>• Installation of culverts on Bora and | • Minimise the area of disturbance;<br>• Design and construct infrastructure to minimize impacts on creeks and related surface water features (Bora Creek and Spring Creek); | B | 3 | **M** | • Prepare Site Water Management Plan.<br>• Apply for Environmental Protection Licence (EPL);<br>• Apply for relevant licences | B | 4 | **M** |

| No | Aspect | Issue | Proposed Control as a result of Environmental Assessment (Details of impacts are located with the relevant discipline section in *Section 5*) | Risk | | | Further Actions to be Adopted as part of Statement of Commitments and MOP. | Residual Risk | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | P[1] | C[2] | R[3] | | P | C | R |
| | | Moolarben Creeks;<br>• The construction of a water storages on Bora Creek;<br>• Subsidence impacts in the area of Underground No.4 may also impact the catchment yield by temporarily increasing the percolation characteristics of strata until the fractures anneal and seal;<br>• Potential water quality impacts including the mobilisation and release of sediments, salts, acid, and hydrocarbons (oils, fuels and grease) from infrastructure and mining areas; and<br>• Potential water surplus. | • Undertake mining operations using best practice techniques in water diversion, containment and treatment;<br>• Install and maintain erosion and sedimentation control;<br>• Minimise the contamination and maximise the reuse of water;<br>• Progressive stabilisation and revegetation of disturbed areas;<br>• Enhancement and stabilisation of existing lands outside the area of the mine foot print; and<br>• Treatment and discharge of excess water to Goulburn River in accordance with DEC requirements. | | | | under the Water Act 1912 and Water Management Act 2000;<br>• Continue negotiations with adjoining landholders about water sharing with adjoining mines;<br>• Investigation of management options for surplus waters;<br>• Continue to implement monitoring program; and<br>• Employment of suitably experienced environmental officer to ensure implementation of controls and management plans. | | | |
| 6. | Aboriginal Heritage. | • High risk of subsidence impacts to 11 sites above Underground No.4;<br>• Moderate risk of subsidence impacts at 1 site above Underground No.4;<br>• Disturbance of 105 sites in Open Cuts 1, 2 and 3; and<br>• Disturbance of 22 sites in infrastructure areas. | • Re-design of previously approved infrastructure in the main infrastructure area to minimise impacts to Bora Creek, associated riparian vegetation and aboriginal objects;<br>Development of an archaeology management strategy that incorporates -:<br>• Conservation and preservation of aboriginal sites and objects from likely mine construction impacts;<br>• Archaeological salvage and test excavations of aboriginal sites and aboriginal objects ;<br>• Surface collection of aboriginal objects;<br>• Intensive insitu recording of aboriginal | A | 2 | **H** | • Prepare Subsidence Management Plan;<br>• Prepare Aboriginal Cultural Heritage Management Plan; and<br>• Employment of suitably experienced environmental officer to ensure implementation of controls and management plans. | B | 2 | **H** |

| No | Aspect | Issue | Proposed Control as a result of Environmental Assessment (Details of impacts are located with the relevant discipline section in *Section 5*) | Risk | | | Further Actions to be Adopted as part of Statement of Commitments and MOP. | Residual Risk | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | P[1] | C[2] | R[3] | | P | C | R |
| | | | sites likely to be impacted from mining development; and<br>• On going monitoring and assessment of subsidence impacts for sites located in the approved Underground No. 4 area. | | | | | | | |
| 7. | European Heritage. | • Disturbance – impact of items of european heritage from open-cut and underground mining operations.<br>• Possible exhumation of sites 3 and 4 (burial sites) near Open Cut 2. | • The heritage study recorded details of the area that may have (without the MCP) been lost;<br>• Erection of physical barriers around identified heritage sites that are within the MCP DA area but outside the impacted area; and<br>• Consultation with relevant persons prior to exhumation and reburial of two burial sites. | A | 4 | **M** | • Prepare archival recordings to meet guidelines of Heritage Office of New South Wales;<br>• Submit copies of Heritage Study to local libraries and historical society; and<br>• Employment of suitably experienced environmental officer to ensure implementation of management plans. | A | 5 | **M** |
| 8. | Subsidence. | • Subsidence prediction of between 1.81m to 2.44m of cover depths ranging from 85m to 215m;<br>• Possible hydraulic connectivity between surface and coal seam where depth of cover less then 100m;<br>• Structures on Westwood property will be damaged to varying degrees;<br>• 5 aboriginal sites will be damaged to varying degrees;<br>• 5 dams above the Underground No.4 | • Longwall panels 12, 13 and 14 have been shortened to minimise risk of impacts to the Goulburn River and The Drip; and<br>• Design of underground layout to minimise impacts to Ulan-Cassilis Road. | A | 2 | **H** | • Prepare Subsidence Management Plan;<br>• The Subsidence Management Plan will include details of subsidence monitoring and subsequent geotechnical model refinement; and<br>• Employment of suitably experienced environmental officer to ensure implementation of management plans. | A | 3 | **H** |

| No | Aspect | Issue | Proposed Control as a result of Environmental Assessment (Details of impacts are located with the relevant discipline section in *Section 5*) | Risk | | | Further Actions to be Adopted as part of Statement of Commitments and MOP. | Residual Risk | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | P[1] | C[2] | R[3] | | P | C | R |
| | | area may require repair; and<br>• Some ponding may occur in drainage lines resulting in localised boggy ground. | | | | | | | | |
| 9. | Visuals. | • Moderate to high daytime visual disturbance for road users along Ulan , Moolarben, Cope and Wollar Roads; and<br>• Moderate to high night-time lighting impacts for road users and adjoining residents. | • Refine limits of Open Cut 1 to incorporate out of pit emplacements and infrastructure, to maintain set back from Ulan Village and stands of native vegetation;<br>• Build environmental bunds on western and northern sides of Open Cut 1 and facilities and Open Cut 2;<br>• Adaptation of out of pit emplacements for Open Cuts 1 and 2 to minimise impacts on native vegetation, EEC's and threatened species;<br>• Redesign of pit and infrastructure to retain Ulan Airstrip to avoid relocation and subsequent displacement of native flora and fauna;<br>• Re-design of previously approved infrastructure in the main infrastructure area to minimise impacts to Bora Creek and associated riparian vegetation;<br>• Shape emplacements (in pit and out of pit) to include localised relief to avoid flat un-natural landforms;<br>• Shape bunds, where not screened by trees to incorporate some small topographic features such as spurs and gullies;<br>• Screen Wollar Road with native | A | 3 | **H** | • Prepare Visual Management Plan to review and address the visual performance of the mine;<br>• Prepare Land Rehabilitation Management Plan; and<br>• Employment of suitably experienced environmental officer to ensure implementation of management plan. | A | 4 | **M** |

| No | Aspect | Issue | Proposed Control as a result of Environmental Assessment (Details of impacts are located with the relevant discipline section in *Section 5*) | Risk | | | Further Actions to be Adopted as part of Statement of Commitments and MOP. | Residual Risk | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | P[1] | C[2] | R[3] | | P | C | R |
| | | | vegetation;<br>• Screen Open Cut 3 facilities with native vegetation;<br>• Face workshop doors to east;<br>• Shield flood lights to maximum extent practical;<br>• Design lighting to restrict stray light; and<br>• Investigate use of long haul road side markers to minimise need for high beam on trucks; | | | | | | | |
| 10. | Traffic and Transport. | • Short term disruption of traffic associated with the construction of intersections;<br>• Short term disruption of traffic by wide load trucks that may disrupt traffic on route to the site during construction;<br>• Little or no disruption to main roads during operations;<br>• Minor disruption to traffic when blasting within 500m of transport infrastructure;<br>• Road safety for public road users and mine employees associated with road delineation, road edge formation and shoulder provision; and<br>• Minor delays at railway level crossing due to increased rail traffic. | • Intersections designed inaccordance with the RTA's Road Design Guidelines;<br>• Partial realignment of Ulan-Wollar Road for resource recovery and the improvement of road geometry and pavement, for the benefit of public road users<br>• Realignment or closure of Carrs Gap Road; and<br>• Partial realignment of Moolarben Road for resource recovery and the improvement of road geometry and pavement, for the benefit of public road users. | A | 4 | **M** | • Construction Traffic Management Plan;<br>• Each wide load will require an individual management plan;<br>• MCM to contribute toward the upgrade of the Mudgee – Ulan Road and the Gulgong to Ulan Road based upon the MCP's level of impact;<br>• Blast Management Plan; and<br>• Traffic Management Plan. | A | 5 | **M** |

| No | Aspect | Issue | Proposed Control as a result of Environmental Assessment (Details of impacts are located with the relevant discipline section in *Section 5*) | Risk | | | Further Actions to be Adopted as part of Statement of Commitments and MOP. | Residual Risk | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | P[1] | C[2] | R[3] | | P | C | R |
| 11. | Geochemical Assessment. | • Erosion of sodic and dispersive soils;<br>• Saline or acid water generation from ROM coal and product coal stockpiles; and<br>• Rejects appear to have a higher ARD risk than other mine materials, and are likely to require specific management to control ARD. | • Application of ameliorant (gypsum or lime) to sodic and dispersive soils;<br>• Implement water management strategy that retains dirty or contaminated water for onsite treatment and reuse; and<br>• Reject material could be dosed using limestone or a similar ameliorant prior to disposal within the overburden, or be blended with overburden and capped with a suitable cover. The final disposal technique (dosage of limestone or cover methods) will be subject to further material characterisation. | B | 3 | **M** | • Routine system of testing to be established to monitor characteristics of overburden, ROM coal, product coal and reject as part of the Site Water Management Plan;<br>• Undertake leach column testing to determine suitability of blending reject and different overburden strata; and<br>• Employment of suitably experienced environmental officer to ensure implementation of controls and management plans. | C | 3 | **M** |
| 12. | Rehabilitation, Final Landform and Final Void Management. | • Incompatible rehabilitations;<br>• Incompatible landforms; and<br>• Final voids in Open Cuts 1, 2 and 3. | • Commitment to progressive rehabilitation;<br>• Design of mine plan to minimise final voids;<br>• Use of final voids during future mining operations including water storages within Open Cut 1 void;<br>• Shaping of landforms to seek compatibility with existing topography;<br>• Commitment to rehabilitation comprising agricultural lands and biodiversity offsets;<br>• Battering of final voids slopes;<br>• Benching and revegetation of final void slopes where possible;<br>• Rehabilitation as detailed in Flora, Fauna | B | 2 | **H** | • Prepare Erosion and Sediment Control Plan;<br>• Negations with landholders and key agencies for suitable outcomes on Voluntary Conservation Agreements and Farm Management Plans<br>• Prepare Land Rehabilitation Management Plan;<br>• Prepare Flora, Fauna and Aquatic Management Plan;<br>• Prepare Final Void Management Plan; and<br>• Prepare Mine Closure Plan. | C | 3 | **M** |

| No | Aspect | Issue | Proposed Control as a result of Environmental Assessment (Details of impacts are located with the relevant discipline section in *Section 5*) | Risk | | | Further Actions to be Adopted as part of Statement of Commitments and MOP. | Residual Risk | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | P[1] | C[2] | R[3] | | P | C | R |
| | | | and Aquatic Ecology section above; and<br>• Undertake soil management practices in accordance with recommendations below. | | | | • Employment of suitably experienced environmental officer to ensure implementation of controls and management plans. | | | |
| 13. | Social and Economics. | The social and economic impacts associated with this project not being approved include the loss of:<br>• S94 contributions to the local Council;<br>• Road improvements;<br>• Public sector benefit from taxation during construction of $22 million;<br>• Construction induced benefits of $267 million;<br>• Cumulative induced employment benefit of 438 equivalent full time jobs during construction;<br>• Annual output of up to $664 million;<br>• Cumulative employment benefit of 910 equivalent full time jobs during operation;<br>• Public sector taxation benefit of more then $69 million per year (approximately $966 million over project life);<br>• Loss of royalties to the state government in the order of $341 million over the project life; and | • Preparation of adequate Environmental Assessment report under Part 3A of the EP&A Act, 1979. | C | 2 | **H** | • Enter into formal Planning Agreement with Mid Western Regional Council; and<br>• Continue consultation with key stakeholders | C | 2 | **H** |

| No | Aspect | Issue | Proposed Control as a result of Environmental Assessment (Details of impacts are located with the relevant discipline section in *Section 5*) | Risk | | | Further Actions to be Adopted as part of Statement of Commitments and MOP. | Residual Risk | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | P[1] | C[2] | R[3] | | P | C | R |
| | | • Overall a public sector benefit of approximately $1.8 billion dollars from royalties, taxation and construction inputs over project life. | | | | | | | | |
| 14. | Preliminary Hazard Analysis. | • The study determined there will be no offsite impacts, however it is possible for the identified hazards to occur. | • While no impacts, MCM propose to include identified potential incidents in the site Emergency Response Plan, along with other incidents identified to have onsite impact to mine personnel and equipment;<br>• Conduct regular emergency response drills, and include identified hazards in the drill exercises; and<br>• All vehicles on site be fitted with at least one dry powder type extinguisher. | D | 1 | **H** | • Develop Emergency Response Plan. | E | 1 | **M** |
| 15. | Bushfire | • The safety of personnel and residents of the area (i.e. contact with smoke and flame);<br>• Damage to plant and buildings (i.e. vehicles, machinery, administration centre);<br>• Damage to non-mine owned dwellings;<br>• Ignition of coal stockpiles and flammable materials such as fuel and lube storages;<br>• Interruption of mining and agricultural operations;<br>• Loss of rehabilitation/ revegetation works; and | • | B | 3 | **M** | • Preparation of Construction Bushfire Management Plan;<br>• Preparation of Operational Bushfire Management Plan; and<br>• Employment of suitably experienced environmental officer to ensure implementation of controls and management plans. | B | 3 | **M** |

| No | Aspect | Issue | Proposed Control as a result of Environmental Assessment (Details of impacts are located with the relevant discipline section in *Section 5*) | Risk | | | Further Actions to be Adopted as part of Statement of Commitments and MOP. | Residual Risk | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | P[1] | C[2] | R[3] | | P | C | R |
| | | • Increased bushfire ignition risks; and<br>• Potential for biodiversity impacts to adjoining DEC estate. | | | | | | | | |
| 16. | Land Capability and Agricultural Suitability. | • Loss of Class 3 agricultural lands for the MCP;<br>• Loss of Class V and VI land capability in Open Cut 1;<br>• Loss of a small area of Class III land capability in Open Cut 2; and<br>• Loss of a small area of Class III land in Open Cut 3. | • Offset reduction in land capability and agricultural suitability with re-establishment of native vegetation consistent with broad government biodiversity and catchment management targets; and<br>• Establishment of Farm Management Plans for continued agriculture in Open Cuts 2 and 3 lands. | A | 4 | **M** | • Prepare Erosion and Sediment Control Plan;<br>• Prepare Land Rehabilitation Plan; and<br>• Employment of suitably experienced environmental officer to ensure implementation of controls and management plans. | A | 5 | **M** |
| 17. | Soils. | • Erosion of existing soils;<br>• Erosion of proposed landforms;<br>• Infrastructure areas have Yellow Solodics and Earthy Sands, which have a high erodibility hazard;<br>• Yellow Solodic exhibits an acid soil pH trend (pHcacl <5.0) and poor fertility characteristics;<br>• Open Cut 1 contains Yellow Solodic soils, and shallow Lithosol that all have a very high erodibility hazard; and<br>• Open Cut 3 contains Yellow Podzolic and Red Podzolic, that have moderate erodibility hazard. | • Soil survey identified sensitive soils and topsoil stripping depths;<br>• Immediately after construction of infrastructure areas Earthy Sands will be hydro mulched and seeded with native grasses endemic to the area;<br>• Application of gypsum or lime to correct soil dispersion or acidity in soils;<br>• Application of fertiliser to soils to raise nutrient availability;<br>• Establishment of cover crops to stabilize soils; and<br>• Investigate use of biosolids to boost organic material in soils. | A | 3 | **H** | • Prepare Construction Erosion and Sediment Control Plan;<br>• Prepare Land Rehabilitation Plan;<br>• Prepare Operational Erosion and Sediment Control Plan; and<br>• Employment of suitably experienced environmental officer to ensure implementation of controls and management plans. | A | 4 | **M** |

### Table 7.2: Table of probability rankings

| | | |
|---|---|---|
| A | Almost certain | The event is expected to occur during the project. |
| B | Likely | The event will occur during the project. |
| C | Possible | The event will probably occur at some time during the project. |
| D | Unlikely | The event could occur at some time during the project. |
| E | Rare | The event may occur only in exceptional circumstances. |

### Table 7.3: Table of consequence severity rankings

| Consequence Type | Consequence Severity Level | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Health and safety. | Fatality/permanent disability. | Serious lost time injury >1 month. | Moderate 1 week to 1 month lost time injury. | Minor lost time injury 1 day to 1 week. | No lost time injury. |
| Natural environment. | Very serious long-term environmental impairment of ecosystem functions. | Serious long-term environmental impairment of ecosystem functions. | Serious medium term environmental effects. | Moderate, short-term effects but not affecting ecosystem functions. | Minor effects on biological of physical environment. |
| Social/cultural heritage. | On-going serious widespread social issues, or significant irreparable damage or loss of structures/items of cultural significance. | On-going serious social issues, or significant damage to structures/items of cultural significance. | Medium-term social impacts on local population, or permanent damage to items of cultural significance. | Minor medium-term social impacts on local population, or damage or loss of items of low cultural significance. | Minor short-term social impacts on local population, or damage of items of low cultural significance. |

| Consequence Type | Consequence Severity Level | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| Community/ government reputation/ media. | Serious public or media outcry (international coverage). | Significant adverse national media/public/ non-government organisation attention. | Attention from media and/or heightened concern by local community. Criticism by non-government organisations. | Minor, adverse local public attention. | Localised community complaints. |
| Legal. | Significant prosecution and fines. Very serious litigation including class actions. | Major breach of regulation. Major litigation. | Serious breach of regulation with investigation or report to authority with prosecution and /or moderate fine possible. | Minor legal issues, minor non-compliances and breaches of regulation. | |

**Table 7.4: Risk assessment matrix**

| Probability | Consequence | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| **A** | H | H | H | M | M |
| **B** | H | H | M | M | L |
| **C** | H | H | M | L | N |
| **D** | H | M | L | L | N |
| **E** | M | L | L | N | N |

H = High, M = Medium, L = Low, N = Negligible

## 7.4 Justification and Need for Moolarben Coal Project

The MCP will result in significant socio-economic benefits to Australia, New South Wales and the Mid-Western Regional Council local government area during the construction and operational phases of the project.

**Construction Phase Benefits**

- The cost of constructing the MCP is expected to total $150 million which will be spent over a period of up to 2 years. The $150 million expenditure in the construction phase is expected to stimulate additional production valued at $73 million and additional consumption worth $44 million (induced benefit of $117 million) - providing a total benefit of $267 million;
- The $150 million spent constructing the MCP is expected to create 220 full-time equivalent jobs in each year of the construction period. The induced production and consumption will generate a further 216 jobs providing a total employment benefit of 438 jobs during the construction phase of the project; and
- Public sector taxation revenues during the construction phase of the project will be approximately $22 million and consist of $11 million of income tax, $4 million from indirect taxes, $3 million from company tax and payroll tax of about $3 million.

**Operational Phase Benefits**

- When the MCP is fully operational, revenue of $356 million from year 4 onwards from coal mining operations will stimulate further output valued at approximately $308 million. $162 million will result from additional production and $146 million will be generated by additional consumption. The total annual output from year 4 inclusive is expected to be more than $664 million;
- Employment generation will increase progressively until full production is attained and peak at 317 full time positions. Additional production and consumption will generate a further 280 and 313 jobs respectively; an induced employment benefit of 593 jobs. In total, approximately 910 full-time equivalent positions will be created in each financial year of operation; and
- When full capacity is reached in year 4 it is estimated that taxation revenue to the Federal Government will total approximately $59 million: $37 million from income tax, $13 million from indirect taxes, and $9 million from company tax. Payroll taxation revenue to the State Government is estimated at more than $10 million, with coal royalties estimated at approximately $32 million in year 4 and yielding a total public sector benefit of more than $10 million per annum at maximum production.

The MCP will contribute positively and significantly to the Mid-Western Regional Council local government area both socially and economically. The MCP may also offset the impact of the Ulan Coal Mine open-cut winding down its operations.

The project will provide a stimulus to the local economy by the creation of employment opportunities for residents of the local government areas both directly and indirectly. It is highly likely that the MCP will be required to recruit some workers outside the local government area. It is anticipated that the townships of Mudgee and Gulgong and to a lesser extent Rylstone and Kandos will attract these workers and their families because of the services and facilities these towns currently provide.

Predicted environmental impacts as discussed in Section 5 of this Environmental Assessment report will be managed via an Environmental Management System containing specific management plans. The environmental management plans will be drafted to minimise any

impacts of the MCP during construction and operational phases on air quality, noise, vibration, subsidence, ground and surface waters, heritage (aboriginal and european), soils, traffic, flora and fauna.

The project (post underground mining) has the ability to provide a significant addition to the Goulburn River National Park and to provide linkages with Munghorn Gap Native Reserve and large tracts of privately owned lands in the vicinity of the project.

The consequences of not proceeding with the MCP will include the loss of employment and social benefits that accrue to the community at large from taxation revenues, and enhancement of existing ecological areas.

## 7.5 Conclusion

The objectives of the development of the MCP are based upon the following principles:

- The development of a safe an economically viable mining operation;
- The maximisation of coal resources; and
- The minimisation of impacts upon the host physical and social environments.

The Environmental Assessment report has within *Section 5 – Existing Environment and Interactions* considered the impacts, mitigation measures and benefits the MCP will have on the physical and socio-economic environs whilst an assessment of the project against the principles of ESD has been provided above.

The authors of this Environmental Assessment report have formed the opinion that the MCP meets the following objects of the EP&A Act, 1979, viz: -

*" (a) (i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*

*(ii) the promotion and co-ordination of the orderly and economic use and development of land,*

*(iii) the protection, provision and co-ordination of communication and utility services,*

*(iv) the provision of land for public purposes,*

*(v) the provision and co-ordination of community services and facilities,*

*(vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and*

*(vii) ecologically sustainable development, and*

*(c) to provide increased opportunity for public involvement and participation in environmental planning and assessment."*

Based on the investigations for the MCP and associated interactions with the environment, the site is suited to open cut and longwall coal mining. The project is in the public's interest and accordingly it is respectfully requested that the Minister for Planning proceed to grant conditional approval to the MCP, subject to the implementation of the proponent's Statement of Commitments contained in Section 6 of the Environmental Assessment report.