



# MOOLARBEN COAL PROJECT

*Stage 2*

## *SECTION 7*

### *Project Justifications*



## SECTION 7 – PROJECT JUSTIFICATION

### Contents

<b>7.</b>	<b>PROJECT JUSTIFICATION .....</b>	<b>S7-3</b>
7.1	Introduction.....	7-3
7.2	Coal Mining .....	7-3
7.3	Project Rationale .....	7-3
7.3.1	Need for the Stage 2 Project	7-3
7.3.2	Need for the Modification of Stage 1	7-4
7.3.3	Project Location	7-4
7.3.4	No Project Alternative	7-4
7.3.5	Project Alternatives	7-5
7.4	Objects of the Environmental Planning and Assessment Act 1979.....	7-14
7.4.1	Proper Management, Development and Conservation of Natural and Artificial Resources	7-14
7.4.2	Promotion and Co-ordination of the Orderly and Economic Use and Development of Land	7-15
7.4.3	Protection of the Environment	7-15
7.4.4	Ecologically Sustainable Development	7-16
7.4.5	Public Involvement and Participation	7-18
7.5	Justification for the Stage 2 Project and Modification of Stage 1.....	7-18
7.5.1	Environmental Residual Impacts	7-19
7.5.2	Environmental Benefits	7-19
7.5.3	Socio-economic Benefits	7-20

### Tables

Table 7.1	Advantages and disadvantages of alternatives considered.....	S7-6
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## 7. PROJECT JUSTIFICATION

### 7.1 Introduction

Coal development projects require high-quality coal resources. Where a high-quality coal resource exists, development of a coal mine faces:

- Physical challenges: caused by the location of the coal seams and the climatic, topographic, hydrological and geotechnical constraints imposed by the surrounding landscape.
- Environmental challenges: caused by the environmental sensitivities of the project setting.
- Social challenges: caused by the expectations and concerns of the affected communities.
- Economic challenges: caused by the need to extract and process the coal profitably.

The proposed Stage 2 project includes the current optimisation of engineering, economic, environmental, and social considerations. Detailed design will enable further optimisation of the mine plan.

### 7.2 Coal Mining

Coal is a safe, secure, relatively inexpensive source of energy nationally and internationally. It is the energy source for over 90% of Australia's electricity which is fundamental in maintaining and improving our living standards. Australian coal is also required to meet increased global energy demand due to increased economic growth and standards of living. In the short to medium term, demand for coal will continue as economically viable renewable sources of energy are being developed that can meet Australian and global energy demands. In the medium term, development of carbon capture and storage technology is expected to decrease carbon dioxide emissions from coal-generated electricity.

In 2006-07, the NSW coal mining industry produced around 170.3 million tonnes (Mt) of raw coal, yielding 131.3 Mt of saleable coal. This accounted for \$8.1 billion in income. Exports of 91.5 Mt of thermal and metallurgical coal totalled approximately \$6.2 billion in value, while domestic consumption of 34.5 Mt of coal by the power, steel and other industries totalled \$1.7 billion in value. The remaining saleable coal was placed into mining stocks (Department of Primary Industries, 2008). The coal mining industry continues to be a major employer in NSW. At the end of June 2007 there were 13,392 people directly employed in the five coalfield regions across NSW.

### 7.3 Project Rationale

#### 7.3.1 Need for the Stage 2 Project

Stage 2 is being developed to provide coal to the domestic and international coal markets. The project will deliver economic benefits at regional, state and federal levels as well as to other stakeholders. Moolarben Coal Mines is owned by Felix Resources Limited (80% ownership), Sojitz Corporation of Japan (10% ownership), and a consortium consisting of Korea Resource Corporation (KORES), Korea Electric Power Company (KEPCO) and four of its generator

subsidiaries, Kosep, Komipo, Kowepo and Kospo plus Hanwha Corporation Limited (a total of 10% ownership). The project will bring economic benefits to these groups by:

- Increasing the total annual coal output of Felix Resources Limited.
- Optimising the value of the coal resources at the MCP by allowing more coal to be handled and processed by Stage 1 infrastructure and transport facilities.
- Increasing flexibility in delivery of different product coals (i.e., varying ash contents) allowing production rates to be matched to the price and demand for various grades.
- Meeting contractual obligations as an equity participant in the Newcastle Coal Infrastructure Group.

The other socio-economic and environmental benefits that the project will deliver are described below.

### **7.3.2 Need for the Modification of Stage 1**

Stage 2 requires the utilisation of approved Stage 1 infrastructure to handle and process Stage 2 ROM coal and to transport product coals to market. The ability for MCM to integrate the two stages and to utilise Stage 1 infrastructure for Stage 2 provides MCM with improved coal handling efficiencies and reduced capital expenditure and operating costs. The sharing of infrastructure across the MCP will reduce the need for duplicated infrastructure and reduce the environmental footprint of Stage 2. The integration of Stage 2 and Stage 1 and the ability of MCM to construct and operate the MCP as an integrated mining complex will be made possible by the modification of the Stage 1 Project Approval.

### **7.3.3 Project Location**

Unlike other industries, mine development is constrained by the location of resources. Stage 2 is located within an intensive coal mining area. It is located adjacent to Stage 1, with the Ulan open cut and Wilpinjong open cut coal mines in the immediate vicinity. The NSW Government has recognised the value of the area as a coal resource by granting a number of authorities and approvals for coal mining in the area. Stage 2 represents a continuation of this beneficial exploitation of coal in the area and the approval of Stage 2 would be consistent with the endorsed use of the local area.

Stage 2 will generally have lower environmental impacts than developing a coal resource of equivalent value independently of an existing mine or project (e.g., noise, dust, greenhouse gas emissions and traffic). This will be achieved through the integration of Stage 2 and Stage 1, creating a single operating mining complex that will enable sharing of infrastructure and mine services between the two stages. Reduced off-site noise and dust impacts from Stage 2 will also be achieved because Stage 2 impacts will be effectively buffered by the land occupied by Stage 1.

By locating Stage 2 adjacent to active mining areas, it will not increase the footprint of the coal extraction industry into new areas of NSW.

### **7.3.4 No Project Alternative**

The direct consequences of not proceeding with the project can be summarised as follows:

- Socio-economic benefits of Stage 2 described in Section 7.5.3 will not be realised.
- Environmental benefits described in Section 7.5.2 will not be realised.
- Environmental and social impacts will be avoided: the impacts on land, water and air (and associated physical, biological, and social impacts) as summarised in Section 7.5.1 will not occur.
- Realisation of the economic value of the coal resource will not occur.

### **7.3.5 Project Alternatives**

Project alternatives were considered as part of the ongoing project feasibility studies. This EA report examines feasible alternatives and recognises that, in some cases, a combination of different alternatives may be adopted. In each case, the alternative proposed and assessed in detail in this EA is that which is seen by MCM as presenting the best balance between engineering design and operating considerations, and environmental, social and economic outcomes.

The environmental impacts of the alternatives considered, along with the operational advantages and disadvantages, are summarised in Table 7.1.

STAGE 2

**Table 7.1 Advantages and disadvantages of alternatives considered**

Alternative	Advantages	Disadvantages	Proposal
<b>Stage 2</b>			
<i>Mining Method Across the Stage 2 Project Area</i>			
Open cut	<p>Efficient extraction of coal with an economically viable strip ratio (the volume of overburden: volume coal)</p> <p>Lower capital and operational costs.</p>	<p>The physical disturbance to the environment is generally greater for open cut mining than underground mining.</p> <p>Overburden storage required, potentially out-of-pit.</p> <p>Ongoing rehabilitation and closure of open cuts is required.</p> <p>Final void requires management.</p>	Coal will be most efficiently extracted from the Stage 2 Project Area that is not beneath the low relief ridge and plateau features by open cut mining (OC4).
Underground	<p>Physical disturbance to the environment is generally less for underground mining compared to open cut mining.</p> <p>Minimal requirement to clear vegetation.</p> <p>Rehabilitation and closure costs are lower than for an open cut.</p>	<p>Higher capital and operational costs.</p> <p>Surface subsidence impacts to natural features and built structures.</p> <p>Requires extensive safety measures to allow work in a hazardous environment.</p>	Coal will be most efficiently extracted from beneath the low relief ridge and plateau features in the north and west of the Stage 2 Project Area using longwall mining (UG1 and UG2).
<i>Open Cut 4 Mining Method</i>			
Extract OC4 overburden and coal by excavator and truck operations	<p>Greater operational flexibility both within OC4 and across the MCP.</p> <p>More precise separation of overburden and extracted coal.</p> <p>Direct out-of-pit placement of overburden where required.</p> <p>Smaller active mining area allowing better dust and noise control.</p> <p>Low capital cost.</p>	Diesel use.	Proposed.

STAGE 2

**Table 7.1 Advantages and disadvantages of alternatives considered (cont'd)**

Alternative	Advantages	Disadvantages	Proposal
<b>Stage 2 (cont'd)</b>			
<i>Open Cut 4 Mining Method (cont'd)</i>			
Extract OC4 overburden by drag line using east west strips	Electrically powered and better energy efficiency.	High capital cost. Poor resource recovery due to irregular pit outline. East-west mining inefficient due to short strips. A large amount of time required to move drag line between open cuts. Requires greater working area. Throw blasting required using higher MIC and therefore greater vibration impact. More overall dust emissions from larger open area.	Not proposed.
<i>Open Cut 4 Mining Sequence</i>			
South to north along Murragamba Creek valley then north to south along Eastern Creek valley	Greater opportunity for out-of-pit overburden placements. Haul road constructed on existing stable ground surface (as opposed to overburden in back filled void). Allows progressive rehabilitation to start adjacent to Munghorn Gap Nature Reserve early in project life.	Initially, longer haul distance to the Stage 2 ROM coal facility.	Proposed.

STAGE 2

**Table 7.1 Advantages and disadvantages of alternatives considered (cont'd)**

Alternative	Advantages	Disadvantages	Proposal
<b>Stage 2 (cont'd)</b>			
<i>Open Cut 4 Mining Sequence (cont'd)</i>			
North to south along Murragamba Creek valley then north to south along Eastern Creek valley	Initially, shorter haul distance to Stage 2 ROM coal facility. Improved arrangement for use of drag line.	Restricted space for out-of-pit overburden emplacements. Start-up out-of-pit overburden emplacements will be more visible from Stage 2 Project Area boundary. Initially, higher strip ratio. Mine progressing along Murragamba Creek upstream, preventing final creek realignment from being established until completion of mining in the Murragamba Creek valley.	Not proposed.
<b>Open Cut 4 Closure</b>			
Final void adjacent to eastern boundary	Allows access to adjacent coal resources. Avoids requirement to haul overburden approximately 10 km from out-of-pit overburden emplacements. Lower economic costs. Lower energy use. Avoids noise and dust from double handling of overburden.	Public access to final void needs to be prevented. Potential net evaporation from void lake.	Proposed.
No final void	Allows rehabilitation of complete area of OC4 to mimic existing landforms.	Disturbance of out-of-pit stockpiles that will have been rehabilitated with vegetation established for over 20 years. Higher cost.	Not proposed.

## STAGE 2

Table 7.1 Advantages and disadvantages of alternatives considered (cont'd)

Alternative	Advantages	Disadvantages	Proposal
<b>Stage 2 (cont'd)</b>			
<i>Disturbance to Murragamba Creek</i>			
Do not disturb Murragamba Creek	Minimal impacts on the entire upper reaches of the ephemeral Murragamba Creek (approximately 7 km long).	Prevents access to approximately 20 Mt coal. Mining will remove creek catchment.	Not proposed.
Preserve geomorphically sound section of Murragamba Creek (approximately 1.7 km long)	Only the sections of Murragamba Creek that are already highly disturbed will be mined. The ecological and archaeological values of the geomorphically sound section of Murragamba Creek will be preserved. Diversions allow sediment control structures to be installed decreasing potential downstream sediment loads.	Prevents access to 4 Mt of coal. The geomorphically sound section of Murragamba Creek will be discontinuous with disturbed sections during mining.	Proposed.
Mine full extent of Murragamba Creek	Maximise recovery of coal. Diversions allow sediment control structures to be installed decreasing potential downstream sediment loads.	The geomorphically sound section of Murragamba Creek will be mined with the loss of areas of ecological and Aboriginal cultural heritage significance.	Not proposed.
<i>Disturbance to Eastern Creek</i>			
Mine full extent of Eastern Creek	Maximise recovery of coal.	Removal of degraded ephemeral aquatic ecosystem (2.2 km long).	Proposed.
Do not disturb Eastern Creek	Minimal impacts on the entire upper reaches of Eastern Creek (2.2 km long).	Prevents access to approximately 18 Mt coal.	Not proposed.

STAGE 2

**Table 7.1 Advantages and disadvantages of alternatives considered (cont'd)**

Alternative	Advantages	Disadvantages	Proposal
<b>Stage 2 (cont'd)</b>			
<i>Underground 1 and Underground 2 Mining Method</i>			
Longwall mining	High resource recovery.	Surface subsidence occurs.	Proposed.
Bord and pillar	Minimal surface subsidence. Lower capital cost. Higher safety risk.	Poor resource recovery. Lower production rate.	Not proposed.
<i>Underground Panel Width</i>			
300 m wide panels	Widely used panel width.	Greater flexibility allowing surface features to be better protected from subsidence.	Proposed.
400 m wide panels	Potentially greater efficiency.	Higher capital cost. Technology being developed.	Not proposed.
<i>Access to Underground Mines</i>			
UG1 and UG2 access through OC1	One surface facility servicing both underground mines. Surface ROM coal transported approximately 3 km to Stage 1 Main Infrastructure Area.	Workforce and materials need to travel an additional 4 km underground to access UG2.	Proposed.
UG1 and UG2 access through OC4	Surface facilities located further from sensitive offsite receivers.	Surface ROM coal transported approximately 6.5 km to Stage 1 Infrastructure Area. Requires exposed high wall in OC4 to remain following active mining of area which will be left as a final void.	Not proposed.

## STAGE 2

Table 7.1 Advantages and disadvantages of alternatives considered (cont'd)

Alternative	Advantages	Disadvantages	Proposal
<b>Stage 2 (cont'd)</b>			
<i>Access to Underground Mines (cont'd)</i>			
UG1 and UG 2 access through OC2	Direct access to both UG1 and UG2. Longer panels increasing recovery efficiency.	Surface facilities and mine access located closer to sensitive offsite receivers. Surface ROM coal transported approximately 6 km to Stage 1 Infrastructure Area. Requires exposed high wall in OC2 to remain following active mining of area which will be left as a final void.	Not proposed.
Dedicated UG2 drift entries	Higher capital cost. Ease of access to UG2 from surface. No requirement for underground mine access from OC4 or OC2, allowing rehabilitation.	Duplication of surface infrastructure and facilities. Greater total surface footprint.	Not proposed.
<b>Main Infrastructure Area</b>			
Develop Stage 2 ROM coal facility south of the railway line	Sufficient area available. Closer to OC4. Avoids requirements for OC4 haul trucks to cross road and rail line.	Duplication of infrastructure.	Proposed.
Expand Stage 1 Infrastructure Area	Avoids requirement to construct Stage 2 ROM coal facility.	Area available for expansion limited by railway, roads and Bora Creek.	Not proposed.

STAGE 2

**Table 7.1 Advantages and disadvantages of alternatives considered (cont'd)**

Alternative	Advantages	Disadvantages	Proposal
<b>Stage 2 (cont'd)</b>			
<i>Transport of OC4 ROM Coal to Stage 2 ROM receiver dump hopper</i>			
Transport by haul truck	Lower capital cost. Allows better flexibility in mine scheduling.	Likely requirement for use of chemical dust suppressants.	Proposed.
Transport by conveyors	Lower operational costs. Lower energy use.	Ongoing realignment of conveyors required as open cut is developed. High cost to move conveyors between open cuts. Double-handling of coal as trucks will be required to transport the coal to the conveyor loading point. Does not allow efficient batching of coal from OC4 and other mine areas. Requires larger ROM stockpile which increases the risk of spontaneous combustion of stockpiled coal.	Not proposed.
<b>Modification of Stage 1</b>			
<i>Access to UG4</i>			
Access to UG4 from OC1 highwall	Surface facilities below land surface level reducing offsite noise impacts. Drivage within coal seam.	Construction following mining of OC1. Construction needs to follow development of OC1 highwall or may require box cut.	Proposed.
Access to UG4 from Stage 1 Infrastructure Area	Immediate access to UG4 coal resource.	Higher capital cost to construct drift entries. Requires greater total area of surface disturbance.	Not proposed.

STAGE 2

**Table 7.1 Advantages and disadvantages of alternatives considered (cont'd)**

Alternative	Advantages	Disadvantages	Proposal
<b>Modification of Stage 1 (cont'd)</b>			
<i>Coal Handling and Processing</i>			
Increased Stage 1 CHPP throughput	Efficient use of Stage 1 CHPP.	None.	Proposed.
Dedicated Stage 2 CHPP	Stand alone facilities would allow Stage 1 and Stage 2 to be operated independently.	Duplication of CHPP. Higher capital cost.	Not proposed.

## 7.4 Objects of the Environmental Planning and Assessment Act 1979

The Director-General's Requirements (DGRs) issued on 11 September 2008 and the DGRs for modification of Stage 1 issued on 18 February 2009 require this Environmental Assessment (EA) report to include:

a conclusion justifying the project on economic, social and environmental grounds, taking into consideration whether the project is consistent with the objects of the Environmental Planning & Assessment Act 1979

The objects of the EP&A Act that relate to the development of mines are sections 5 (a) (i), (ii), (vi) and (vii) and section 5 (c). Compliance of Stage 2 with these objects is described below.

### 7.4.1 Proper Management, Development and Conservation of Natural and Artificial Resources

Environmental Planning and Assessment Act section 5 (a) object (i) is to encourage:

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.

Stage 2 will extract coal seams that are one of NSW's natural resources. Development of Stage 2 alongside Stage 1 will allow the coal to be more efficiently extracted than if it was extracted as part of a separate mining project or under a separate owner.

The mine design (see Section 4) avoids physical disturbance of:

- Rock art site above UG2 (DECC site 36-3-0134).
- Gulgong-Sandy Hollow rail line.
- Wollar-Wellington transmission line.
- Goulburn River National Park.
- Munghorn Gap Nature Reserve.
- The geomorphically sound section of Murrumbidgee Creek and its associated biodiversity and cultural values.

Mine design minimises impacts to Ulan-Wollar Road and the clearing of native vegetation. Environmental management measures to further reduce potential impacts are described in Section 5. Progressive rehabilitation will restore the environment to an ecologically valuable state (see Section 5.7 and 5.18). This will include improving local habitat values and connectivity between the Munghorn Gap Nature Reserve and the Goulburn River National Park through establishment of native vegetation. These habitat corridors will allow safe passage for native wildlife and assist in enhancing and conserving the biodiversity of the project area. In addition, existing degraded land will be converted to a mix of woodlands and native grasslands.

Stage 2 will promote direct and indirect social and economic benefits to the local and regional communities (see Section 5.14).

#### **7.4.2 Promotion and Co-ordination of the Orderly and Economic Use and Development of Land**

Environmental Planning and Assessment Act section 5 (a) object (ii) is to encourage: 'the promotion and co-ordination of the orderly and economic use and development of land'.

Stage 2 is adjacent to Stage 1 of the Moolarben coal mine, the Ulan open cut mine and Wilpinjong open cut mine. It will therefore efficiently use existing public and private infrastructure, particularly in comparison to coal projects that are distant from other coal mines. Each of these existing mines has been approved by the Minister for Planning (or his/her delegate) in his/her role of co-ordinating the orderly and economic use and development of land. The Stage 2 environmental assessment (this report) considers the cumulative impacts of all of these mines to allow a co-ordinated assessment of Stage 2 as part of overall mine development in the area.

Mining is consistent with the land use planning zone objectives for the site under the Mid-Western Regional Interim LEP (MWRC, 2008). Mining of OC4 will provide a much higher economic return on the land than if it continues to be used for grazing.

#### **7.4.3 Protection of the Environment**

Environmental Planning and Assessment Act section 5 (a) object (vi) is to encourage:

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.

The development and operation of a mine and the extraction of coal inevitably has an impact on the environment. The major potential environmental risks associated with Stage 2 are impacts to surface and groundwater, clearing of native vegetation including EEC/CEEC's, loss of habitat and threatened fauna species, cultural heritage and impacts to the local community from noise and air quality.

Measures to protect the environment are described in Section 5 and include:

- Preserving the geomorphically sound section of Murrumbidgee Creek.
- Locating Stage 2 away from privately-owned properties potentially impacted by noise and dust.
- Implementing dust control measures beyond standard industry practice.
- Fitting noise mitigation devices to haul trucks and excavators.
- Not undertaking longwall mining of UG2 beneath the rock art site DECC site 36-3-0134.

In addition to these protection measures, mitigation measures including native vegetation offsets will be employed (see Section 5.7 and 5.18). The effectiveness of these protection and mitigation measures will be determined through an environmental monitoring program. This program will expand on the Stage 1 monitoring program. Environmental protection measures will be reviewed and improved based on the results from the monitoring program.

#### 7.4.4 Ecologically Sustainable Development

Environmental Planning and Assessment Act section 5 (a) object (vii) is to encourage: 'ecologically sustainable development'.

The EP&A Act defines ecologically sustainable development (ESD) as having the same meaning as in section 6(2) of the Protection of the Environment Administration Act. This defines the principles that underpin ESD: the precautionary principle; inter-generational equity; biodiversity conservation; and improved valuation, pricing and incentive mechanisms. Compliance of Stage 2 with these principles is described below.

##### 7.4.4.1 Precautionary Principle

Protection of the Environment Administration Act section 6(2) states that ESD can be achieved through the implementation of:

- (a) the precautionary principle—namely, 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.

In the application of the precautionary principle, public and private decisions should be guided by:

- (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and
- (ii) an assessment of the risk-weighted consequences of various options.

This EA report evaluates the environmental risks associated with development of Stage 2 based on a series of expert investigations that have characterised the existing environment, predicted expected impacts and recommended avoidance, management and mitigation measures. An analysis of project alternatives and the consequences associated with each is detailed in Section 7.3.5.

##### 7.4.4.2 Inter-generational Equity

Protection of the Environment Administration Act section 6(2) states that ESD can be achieved through the implementation of:

- (b) inter-generational equity - namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,

In order to secure inter-generational equity, MCM has proposed limits to and methods of mining which, while optimising the value of the coal recovered and maximising the economic benefits from the recovery of the resource for the current generation, will minimise the environmental impacts and in particular ensure that there will not be long term adverse effects to the environment for which future generations will pay the price.

Inter-generational equity will be achieved by:

- Constructing and operating Stage 2 as described in Section 4 and Section 5 to avoid or minimise environmental impacts wherever possible.

- Developing and implementing construction and operation environmental management plans.
- Implementing an environmental monitoring program and reviewing results to further improve environmental performance.
- Progressively rehabilitating existing degraded cleared land with native vegetation to improve the ecological value of the area.
- Paying of securities against which rehabilitation will be measured and guaranteed.
- Implementing an ecological offset strategy that will result in a net gain in the area of native vegetation.

#### **7.4.4.3 Conservation of Biological Diversity and Ecological Integrity**

Protection of the Environment Administration Act section 6(2) states that ESD can be achieved through the implementation of:

- (c) conservation of biological diversity and ecological integrity—namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,

Conservation of biological diversity and ecological integrity are described in Section 5.7 and summarised in Section 7.4.3.

#### **7.4.4.4 Improved Valuation, Pricing and Incentive Mechanism**

Protection of the Environment Administration Act section 6(2) states that ESD can be achieved through the implementation of:

- (d) improved valuation, pricing and incentive mechanisms—namely, that environmental factors should be included in the valuation of assets and services, such as:
  - (i) polluter pays—that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,
  - (ii) 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 waste,
  - (iii) environmental goals, having been established, 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 cost of Stage 2 coal will include the cost of alterations to mine design to protect the environment (see Section 7.4.3), implementing the Stage 2 environmental commitments (see Section 6) and complying with environmental conditions such as the EPL. In addition, MCM will comply with the following valuation, pricing and incentive mechanisms:

- The Stage 2 Energy Savings Action Plan (see Section 5.2).
- The Commonwealth Carbon Pollution Reduction Scheme as it applies to the project in the event that the scheme is adopted.

### 7.4.5 Public Involvement and Participation

Environmental Planning and Assessment Act section 5 (c) object is:

to provide increased opportunity for public involvement and participation in environmental planning and assessment.

Community consultation has been ongoing since Stage 1 as described in Section 3. It has included:

- Formation of the Moolarben Coal Mine Consultative Committee and Moolarben Coal Exploration Community Consultative Committee.
- A community information session at the Ulan Community House (23 to 25 July 2008).
- Advertising the lodgement of a Major Project Application for Stage 2 in the Mudgee Guardian on 21 July 2008.
- Distribution of six community newsletters for Stage 1 and Stage 2.
- 'One-on-one' discussions with land-owners and occupiers of land located within and outside EL 6288.

These consultation activities will be ongoing. In addition, the following community consultation will be undertaken:

- Establishment of a telephone hotline for community members to contact MCM.
- Establishment of a project website.
- Public exhibition of this Environmental Assessment for 30 days and review of public submissions.

The community consultation program has afforded MCM the opportunity to identify and address local community concerns regarding the project as described in Section 3.

## 7.5 Justification for the Stage 2 Project and Modification of Stage 1

Stage 2 will provide economic, social and environmental benefits. These will be maximised through the integration of Stage 2 with Stage 1 to form an integrated mining complex, the MCP. This integration will be achieved through the modification of the Stage 1 Project Approval.

The economic, social and environmental benefits of Stage 2 will be offset to some degree by the residual environmental impacts of the project (i.e., impacts that will remain after the application of all avoidance, minimisation and management measures). The economic benefits to MCM, Felix Resources Limited and its shareholders are described in Section 7.3. Residual environmental impacts are described in Section 5 and are summarised in Section 7.5.1. Environmental benefits are largely derived from rehabilitation of disturbed land and provision of offsets as described in Sections 5.7 and 5.18 and summarised in Section 7.5.2. The social and economic benefits to the local, regional and Australian community are described in Section 5.14 and are summarised in Section 7.5.3.

### 7.5.1 Environmental Residual Impacts

The main environmental residual impacts of Stage 2 are:

- The removal of a total of 851 ha of intact native vegetation, of which 157 ha is EEC/CEEC habitat. There will be no direct impacts to individual threatened flora or fauna species.
- Potential indirect impacts (e.g., reduction in foraging habitat) on threatened woodland birds (e.g., Hooded Robin, Brown Treecreeper, Diamond Firetail and Painted Honeyeater) and a microchiropteran bat (Large-eared Pied Bat) species.
- Progressive loss of over 11 km of creek habitat in the Murrumbidgee Creek and Eastern Creek valleys and associated feeder drainages, springs, swales, farm dams and groundwater dependant ecosystems.
- The removal of 5 Aboriginal heritage sites of high significance and 16 sites of medium significance. An additional two Aboriginal heritage sites of high significance and seven sites of medium significance will be disturbed.
- The likely removal of three non-Aboriginal heritage sites of high local significance and five sites of medium local significance.
- Elevated noise levels at non mine-owned residences, particularly to the southwest of the project area. Noise assessment criteria are predicted to be exceeded by up to 3 dB at four private residences at some period during the mine life.
- Elevated dust levels at non mine-owned residences, particularly to the southwest of the project area. Air quality assessment criteria are predicted to be exceeded at five private residences at some period during the mine life.
- Average annual Scope 1 and 2 greenhouse gas emissions for the MCP will be 0.262 Mt CO<sub>2</sub>-e.
- Surface subsidence of up to 1.9 m will occur above UG1 and UG2.
- The environmental flow of water in Murrumbidgee and Eastern creeks will be reduced by 7%.
- A final mine void, partially filled with water, will remain at the end of the project life.

### 7.5.2 Environmental Benefits

Environmental benefits of Stage 2 include:

- Conversion and enhancement of land to offset the clearing of native vegetation.
- Conversion of existing low value cleared and disturbed land to land with native vegetation and an increased ecological value.
- Improving connectivity between the Munghorn Gap Nature Reserve and the Goulburn River National Park through the establishment of native vegetation. These habitat corridors will allow safe passage for native wildlife and assist in enhancing and conserving the biodiversity of the area.
- Extending the habitat of the Goulburn River National Park and the Munghorn Gap Nature Reserve through the provision of adjacent flora and fauna offset areas.

- Contributions to the management of DECC Estates as part of the offset strategy where offset land is dedicated to the National Estate.
- Management and improvement of MCM land that is outside of areas of direct disturbance.
- Prevention and control of listed environmental and noxious weeds from the project area, focussing on known listed species of rehabilitated landscapes such as Galena, Rhodes Grass and Coolati Grass.
- Protection of 43 Aboriginal heritage sites on MCM-owned properties through the designation of these properties for heritage conservation.
- Realignment of Murragamba and Eastern Creeks which will provide an opportunity to create watercourses that are lower gradient and which are subject to less erosion and higher biological diversity than the current alignments.
- Continued investment by MCM's parent company Felix Resources Limited in low carbon emission coal technology through the Coal 21 Fund.
- Forming water sharing agreements with other mines to reduce the cost to the environment and other downstream users from water extraction and disposal.

### 7.5.3 Socio-economic Benefits

Socio-economic benefits of Stage 2 include:

- Construction expenditure of \$120 million (including equipment costs, based on 2008 dollar values). The concurrent construction of Stage 2 with Stage 1 will stimulate additional regional production and consumption of \$260 million, providing a total benefit to the region of \$584 million. This is 2.2 times greater than the 2006 estimated benefit to the region for Stage 1 construction alone.
- Annual revenue of \$780 million from combined Stage 1 and 2 operations when Stage 2 is operating at full capacity will stimulate further regional production and consumption of approximately \$731 million, providing a total annual benefit of \$1.5 billion.
- Payment of taxes and mining royalties to the Federal and State governments:
  - Tax revenues during the construction of Stage 1 and Stage 2 will be approximately \$54 million. This will consist of \$29 million of income tax, \$9 million from indirect taxes, \$8 million from company tax and payroll tax of approximately \$8 million. This is 2.8 times greater than the 2006 estimated benefit of Stage 1 alone.
  - When Stage 2 is operating at full capacity (Year 8), it is estimated that Federal Government tax revenue from Stage 1 and Stage 2 will be \$98 million. This will consist of \$60 million of income tax, \$19 million from indirect taxes and \$20 million from company tax. State Government revenue from payroll tax is estimated to be \$17 million and coal royalties approximately \$47 million. The total public sector benefit will therefore be approximately \$146 million.
  - Over the life of the mine, Stage 2 will increase the expected total of tax revenue by 55% compared to Stage 1 alone and will provide an approximate three-fold increase in royalty revenues.

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**STAGE 2**

- Employment opportunities, focusing on opportunities for locals, which will generate wealth impacts allowing individuals and families to enhance their quality of life:
  - The Stage 1 construction workforce will be used for Stage 2 construction. The MCP will directly employ 220 construction workers. A further 184 full-time positions will be indirectly generated through increased production and consumption.
  - At the peak of the operational phase, Stage 2 will potentially generate an additional 122 full time positions (in addition to Stage 1 positions). In total, Stage 1 and Stage 2 will employ up to 439 people directly. Additional regional production and consumption will generate a further 847 and 585 jobs respectively, an induced employment benefit of 1,432 jobs.
- Payments to MWRC to offset any increase in the demand for their services. Contributions for Stage 2 will be made to MWRC on the basis of increased product output from the MCP (operated as a single complex) above Stage 1 approved product output.

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