

Section 5 Evaluation / Justification of the Proposal

This section concludes the assessment of the proposed East Boggabri Coal Mine. It commences with an evaluation of the proposed development in terms of biophysical, economic and social aspects and consistency with sustainable development principles.

The proposed development and its likely impacts are then justified in terms of the market demand for the low sulphur/low ash, semi-soft coking/thermal coal for export markets that would be produced by the proposed mine.

The section concludes with the justification of the proposal, an evaluation of the alternatives considered and an outline of the consequences of not proceeding with the proposal.



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5.1 JUSTIFICATION OF THE PROPOSAL

5.1.1 Introduction

This section evaluates the proposed East Boggabri Coal Mine by drawing together and reviewing the full range of predicted impacts previously discussed in Section 4 of this document including, where relevant, those that would arise in a cumulative sense with the approved Boggabri Coal Project and existing Whitehaven Coal Mine. Throughout this EIS, emphasis has been focussed upon achieving a sustainable development principally through the design of the proposal and the adoption of a range of practical operational safeguards and management procedures.

The proposal has been designed based on an initial assessment of issues that the Proponent identified as potential constraints to the development including flora, fauna and Aboriginal heritage. Following this initial assessment of constraints, the local and wider community and local and State government agencies were consulted to further identify issues to be addressed in the EIS. Based on this consultation, the Proponent commissioned R.W. Corkery & Co. Pty. Limited and a team of ten specialist consultants to investigate and advise upon the most effective way(s) to mitigate or manage the issues of concern raised. The advice of each specialist consultant was used to refine the design of the proposal to ensure that it met government specified criteria or goals, accepted industry standards and/or reasonable community expectations.

As specified under Schedule 2(6) of the *Environmental Planning and Assessment Regulation 2000*, the proposed East Boggabri Coal Mine is justified in this section in terms of biophysical, economic and social considerations. The justification of the proposal concludes with a review of how the sustainable development principles discussed in Section 1.7 have been addressed during the various stages of the design of the proposal and the environmental impact assessment process.

5.1.2 Biophysical Considerations

5.1.2.1 Impacts Attributable to the Proposal

The proposal would have a range of impacts on the biophysical environment. Sections 4.1 to 4.5 and 4.8 to 4.12 of this document identify the potential biophysical impacts of the proposal, ie. after the adoption of a number of design and operational procedures, mitigation measures and/or offset strategies. The residual impacts, and the proposed management of each, are summarised as follows.

Topography

The local topography would be modified through the construction of two out-of-pit overburden emplacements covering approximately 142ha and the creation of a final mine void covering approximately 29ha. Throughout the life of the proposal, overburden, interburden, coarse reject from the Whitehaven CHPP and some selected subsoil material would be placed both within mined out sections of the open cut area and within the northern and southern emplacements. The final landform, which would include backfilling the majority of the open cut area has been designed to appear as a continuation of two topographic features, a north-south oriented ridge towards the centre of the Project Site and a low hill towards the eastern side of the Project Site.



The final landform would also provide for resumption of some agricultural activity, with an increase in the area of land available for conservation of native vegetation and development and/or extension of linkages between isolated pockets of remnant native vegetation on and adjacent to the Project Site and Leard State Forest.

Water Resources

A proportion of the surface water currently flowing through the Project Site would be retained on site for use in dust suppression. The “clean” water component captured would be within the maximum harvestable right for the Project Site, with additional clean water diverted to natural watercourses. Sediment-laden or “dirty” water originating from disturbed areas would be collected and preferentially used for dust suppression. Any excess dirty water would be retained to allow sufficient time for suspended solids to settle out and enable it to be discharged within DEC criteria. Following project completion and reconfiguration of the local topography, the Nagero Creek catchment would be reduced by 94ha (0.01%) whilst the Bollol Creek catchment would increase by approximately 17ha allowing for internal runoff within the final mine void. The 77ha differential accounts for the proposed catchment of the final mine void.

Several ephemeral watercourses would be traversed by the mine access road and proposed transport route. Concrete causeways would be constructed at these crossings to ensure the natural surface water flows through these watercourses are not impeded and scouring is avoided. Additionally, the proposed transport route has been designed to ensure that natural flood flows are not impeded by the road formation.

During the life of the proposal, the groundwater level surrounding the proposed open cut area would be reduced by up to 8m to the immediate north of the Project Site but restricted to a drawdown of between <1.0m and 4.0m within 400m to the east, south and west of the Project Site. No groundwater bore identified on non-project related properties was predicted to suffer a reduction in saturated thickness likely to significantly affect its yield, with a maximum reduction in saturated thickness of 3.2% predicted within a bore on “Bollol Creek Station”.

Soils and Land Capability

Approximately 120ha of Class III land capability / Class 3 agricultural suitability land currently used for grazing and cropping would be disturbed as a result of the proposal. Approximately 50% of the Class III capability land would be returned for grazing activities whilst the remainder would be integrated with the areas nominated for native vegetation and biodiversity offset areas.

Vegetation

Approximately 78ha of native vegetation, including <0.5ha of the variant to the endangered White Box Yellow Box Blakely’s Red Gum Woodland community (listed under the TSC Act), would be disturbed by this proposal. On the Project Site itself, 268ha of the final landform has been designated for re-establishment of native woodland vegetation to mitigate the disturbance of native vegetation on the Project Site. An additional area of 102.5ha of existing native vegetation and 130ha of currently cleared land would be excluded from activities as a biodiversity offset. This area excluded from agricultural activity and allowed to regenerate naturally, would provide linkages between Leard State Forest to the north, a floodplain vegetation community along Bollol Creek and currently isolated pockets of native vegetation on the Project Site.



Fauna

The disturbance to the native vegetation of the Project Site would have a minor impact on the availability of habitat to native fauna. This minor impact would be offset by the re-establishment of native vegetation on the final landform, the creation of habitat corridors and through the exclusion of agriculture from selected areas of the Project Site. Included within this area excluded from agricultural activities would be an isolated pocket of the Belah Community, an important habitat for the Black Cockatoo, a species listed as vulnerable under the TSC Act and EPBC Act.

Aboriginal Heritage

A total of eight Aboriginal heritage sites were identified on the Project Site and within the proposed transport route corridor. The layouts of both the Project Site and proposed transport route were modified to avoid disturbing six of the sites, however, disturbance to two sites would be unavoidable. The artefacts contained at these two open scatter sites would be salvaged and transferred to the Cumbo Gunerah Keeping Place in line with the recommendations of the two Aboriginal stakeholder groups. Of the six retained sites, the most culturally significant of these, a scarred tree site, would be fenced and marked on mine plans as a “culturally sensitive area”.

Noise

The proposal has been designed with the objective of minimising noise impacts and maintaining any noise generated at levels compliant with DEC criteria. The following design and operational features would be implemented by the Proponent.

- A 15m acoustic bund wall would be constructed at the leading edge of the southern emplacement during the daytime and non-adverse meteorological conditions.
- The placement of overburden at night on the southern emplacement would always occur behind and within 30m of this acoustic bund wall.

With the adoption of these controls, noise modelling has established that all DEC criteria for construction, operations and sleep disturbance would be satisfied.

Vehicle noise would be audible at a number of residences within 2km of the proposed transport route, however, transportation noise criteria are predicted to be satisfied at all residences adjacent to the transport route.

A monitoring program would be undertaken to validate the predicted noise levels around the Project Site and adjacent to the proposed transport route.

Blasting

No exceedances of airblast overpressure or ground vibration criteria were predicted at the surrounding residences. Notwithstanding this prediction, a notification and monitoring program would be implemented by the Proponent.

Air Quality

Air pollutant levels are predicted to be below DEC criteria for deposited dust, PM₁₀ and PM_{2.5} at all non-project related residences, ie. assuming the adoption of a range of standard dust control measures. Similarly, SO₂ and NO₂ emissions would satisfy DEC and Heritage, WHO and NEPC criteria and greenhouse gas emissions would only lead to a minor increase in the industry and Australia-wide emissions.



Visibility

Predominantly distant, broken views of sections of the proposed East Boggabri Coal Mine and transport route would be possible from several surrounding residences. Progressive rehabilitation of the northern and southern emplacements would reduce the visual impact of the most exposed areas of the mining operation while also screening the majority of other mining and mining-related activities.

Traffic

Traffic on three local roads would increase noticeably as a result of the proposal, particularly heavy vehicles movements on sections of Manilla Road, Hoads Lane and Blue Vale Road. These increases are assessed to be acceptable given the following.

- (i) Manilla Road, while currently unsealed, is a main road effectively operating as a collector road for light and heavy vehicle traffic travelling between Boggabri and Manilla/Barraba. It is noted that only a 2km section of this road would be used by heavy vehicles with the remainder of the northern section of the proposed transport route confined to private roads.
- (ii) Hoads Lane and Blue Vale Road form part of the transport route between the Whitehaven Coal Mine and Whitehaven CHPP. The Proponent would negotiate a contributions plan with each of Narrabri and Gunnedah Shire Councils for the maintenance of the affected sections of these roads.

5.1.2.2 Cumulative Impacts

The impacts on the biophysical environment described in Section 5.1.2.1 have been assessed in isolation as if the proposed East Boggabri Coal Mine is the only development in the area. In fact, opportunities exist for cumulative impacts with one existing coal mine (Whitehaven Coal Mine) and one approved (but not yet operational) coal mine (Boggabri Coal Project). Two further local projects, namely the Maules Creek Project, a potential coal mine development (already approved) located north of Leard State Forest, and the proposed Belmont Coal Project 15km southeast of the Project Site, have potential to contribute additional impacts to the surrounding environment. Given the strategic development of the Belmont Coal Project as a replacement for coal produced by the Whitehaven Coal Mine, an assessment of the cumulative impact of the proposal and the Whitehaven Coal Mine was considered indicative of the likely cumulative impacts should the Belmont Coal Project be approved and commence. Each of the cumulative impacts summarised in this section is described in Sections 4.1 to 4.5 and Sections 4.8 to 4.12.

From a biophysical perspective, there would be few opportunities for cumulative impacts to occur between the various approved and/or proposed coal mining projects given their physical separation, ie. with the exception of the Boggabri Coal Project. The cumulative impacts upon the biophysical environment as a consequence of these various projects are set out below, concluding with an assessment of the overall cumulative impact of all proposed developments.



Boggabri Coal Project (1km north of the Project Site)

Topography: Current mine planning suggests the final Boggabri Coal Project land form would emulate the existing gentle slopes of Leard State Forest with a profiled final void in the vicinity of the final mining area and an elevated emplacement in the vicinity of the initial mining area. As such, the landforms of both the proposed East Boggabri Coal Mine and Boggabri Coal Project have been designed to emulate existing topographic features and therefore minimise impacts on the local topography beyond the end of the mine life. Creating gentle slopes within the local topography would provide flexibility for developing post-mining land uses.

Surface Water: As is the case with to the proposed East Boggabri Coal Mine, the Boggabri Coal Project would retain the majority of surface water flows within the designated catchment areas while only discharging water during years of greater than average rainfall. During the period of concurrent operations, the quantity of surface water entering the Nagero Creek catchment would reduce by 1.5%. At the completion of the two developments this reduction in catchment is estimated at approximately 4.5% with the cumulative impact on downstream water quantity therefore minimal.

As both the proposed East Boggabri Coal Mine and Boggabri Coal Project would maximise the retention of “dirty” water, discharge of water exposed to disturbed areas would be restricted to periods of heavy rainfall. Both developments would ensure water management structures and storages would provide this water with sufficient time to reduce the sediment load to within DEC criteria. Water management plans, including monitoring programs, would be developed, or in the case of the Boggabri Coal Project modified, to allow for assessment of downstream water quality impacts and modifications to controls as appropriate. There is unlikely to be a significant impact on downstream water quality as a consequence of the concurrent operation of the two developments.

Groundwater: RCA (2005) has assessed the potential impact of the concurrent development of the two mines on groundwater levels and availability to nearby users. Of the identified groundwater bores surrounding the Project Site, only those on the project-related “Thuin” and “Nagero” properties are predicted to suffer a reduction in saturated thickness of >10%. Of the non-project related properties, the largest cumulative decrease in saturated thickness of 6.9% was predicted to occur in a bore on “Bollol Creek Station” which draws water from the alluvial aquifer. This decrease was approximately double that predicted for the operation of the proposed East Boggabri Coal Mine alone. As bore yields are effectively determined by saturated thickness, these reductions would likely result in only very minor decreases in bore yield. The groundwater drawdown and decrease in saturated thickness predicted by RCA (2005) are consistent with those presented in the EIS for the Boggabri Coal Project.



- Soils and Land Capability:** There is unlikely to be a cumulative impact on soils and land capability as a consequence of the concurrent development of the East Boggabri Coal Mine and the Boggabri Coal Project. Each project has been designed to protect and replace all soil resources, minimise erosion and re-instate similar capability land.
- Vegetation:** The proposed East Boggabri Coal Mine would involve the clearing of 73ha of a vegetation community described by Cannon *et al.* (2002) as White Cypress Pine - Narrow-leaf Ironbark Forest Community. This area, combined with the 1 200ha to be cleared on the East Boggabri Coal Project area, would represent approximately 1.4% of this vegetation community defined on the combined Boggabri and Horton 1:100 000 scale map sheets. This reduction represents a relatively small impact, especially when considering the proposed rehabilitation strategies of the two developments and the biodiversity offset strategy of the proposed East Boggabri Coal Mine.
- Fauna:** The disturbance to native vegetation as a consequence of the proposal and the Boggabri Coal Project would also impact on fauna habitat and therefore native fauna. CES (2005) considers the impacts both as pulse impacts, ie. immediate and short-term impacts as a consequence of initial changes to an ecological system, and press impacts, ie. the long term impacts as a consequence of sustained changes to an ecological system. Minimising disturbance to existing areas of native vegetation on the Project Site and excluding agricultural activity from significant areas would assist in minimising the pulse impacts while rehabilitating the final landform with native flora and allowing the natural regeneration of the agriculture excluded areas would assist in minimising the longer term press impacts on fauna. Wildlife corridor connectivity and conductivity between Leard State Forest and the floodplain vegetation community in Bollol Creek would be improved such that any impacts on native fauna is minimised and mitigated.
- Aboriginal Heritage:** Each Aboriginal heritage site is considered separately and subject to assessment by the local Aboriginal community. Assuming the recommendations of the Aboriginal community are adhered to in managing the identified sites, and artefacts of both the East Boggabri Coal Mine and Boggabri Coal Project, there would be no cumulative impact.
- Noise:** When combined mining operations at the proposed East Boggabri Coal Mine and Boggabri Coal Project were modelled by Spectrum Acoustics (2005), a minor 1dB(A) exceedance was predicted at the closest residences “Templemore” and “Bollol Creek Station”. This exceedance was predicted to occur during worst-case operational scenarios and meteorological conditions which would be extremely unlikely to occur as it would require mining at surface level during adverse northwest wind conditions. The exceedances as a consequence of commencement operations is considered minor and manageable through regular dialogue with the residents of the two potentially affected residences.



- Blasting:** Neither the East Boggabri Coal Mine nor the Boggabri Coal Project is predicted to exceed ground vibration or air overpressure blasting criteria. As simultaneous blasting would be avoided at the two mines, the potential for an exceedance due to cumulative impacts is non-existent. The monitoring proposed by the Proponent would assess whether there are any ongoing impacts on surrounding residences with appropriate mitigation measures to be initiated in the event impacts are identified.
- Air Quality:** With the exception of a single exceedance of the maximum average 24 hour PM₁₀ concentration, cumulative air pollutant levels are predicted to be below DEC criteria for deposited dust, PM₁₀ and PM_{2.5} at all non-project related residences. Similarly, SO₂ and NO₂ emissions would satisfy DEC, WHO and NEPC criteria and greenhouse gas emissions would only lead to a minor increase in the industry and Australia wide emissions.
- Visibility:** The proximity of the proposed East Boggabri Coal Mine and Boggabri Coal Project would ensure that any change to the existing visual amenity is limited distant views from the southwest. Progressive rehabilitation of the two sites would ensure the cumulative impact on visual amenity is minimal and limited predominantly to the period prior to revegetation of the exposed areas of each mine.
- Traffic:** Separate systems for the despatch of coal would be in place at the proposed East Boggabri Coal Mine and the Boggabri Coal Project. Hence, there would be no local cumulative impacts arising from coal transportation. It is, however, likely that a proportion of the workforce for both mines would be domiciled at Boggabri and nearby rural areas. Hence, there would be increases in light vehicles travelling on the local road network. In reality, the combined light vehicle traffic would be noticeable but well within the capacity of the local road network.

Whitehaven Coal Mine (10km south of the Project Site)

The principal areas of potential cumulative impacts between the Whitehaven Coal Mine and the proposed East Boggabri Coal Mine relate to traffic levels and traffic noise.

The proposed daily level of heavy vehicle traffic travelling between the East Boggabri Coal Mine, the Whitehaven Coal Mine and the Whitehaven CHPP and rail loading facility would be governed by the daily requirements of the CHPP and train schedules. WCM proposes that there would be a maximum of 520 truck movements per day from both the proposed East Boggabri and Whitehaven Coal Mines. Whilst this is a substantial volume of trucks, the transport route has been constructed and maintained at a level that will sustain this traffic volume.

The combined operation of the proposed East Boggabri Coal Mine and the Whitehaven Coal Mine would result in an approximate doubling of existing heavy vehicle levels. Based on site-specific measurements and predictions, Spectrum Acoustics (2005) determined that at a distance of 20m from the proposed transport route, noise levels would increase to approximately 65dB(A) L_{Aeq(1 hour)}. Assuming a decrease in noise levels of 3dB(A) with a doubling of distance as noted in the Environmental Criteria for Road Traffic Noise, compliance



with traffic noise criteria from the predicted traffic levels would be satisfied at a distance of approximately 60m. The traffic noise criterion of 60dB(A) would therefore be met for cumulative noise impacts associated with the concurrent transport operations from the Whitehaven Coal Mine and the proposed East Boggabri Coal Mine at all residences along the route, the closest of which is 70m from Blue Vale Road.

Belmont Coal Project (15km southeast of the Project Site)

The potential for cumulative impacts between the proposed East Boggabri Coal Mine and the Belmont Coal Project would be confined to the transportation of coal. Given coal production from the Belmont Coal Project is intended to replace production from the Whitehaven Coal Mine, the cumulative impacts are likely to be comparable with those of the Whitehaven Coal Mine.

Maules Creek Coal Project (7km to 13km north of the Project Site)

Given the considerable separation distance between the two locations, and the fact that the coal from the Maules Creek Coal Project is to be despatched by rail (up to 5Mtpa), there would be little likelihood of cumulative biophysical impacts between the Maules Creek Coal Project and the proposed East Boggabri Coal Mine.

5.1.3 Economic Considerations

5.1.3.1 Introduction

The economic considerations of the proposal are assessed in the context of the benefits to the economy if the development application is approved and the impacts upon the economy if the development application is not approved.

Should the Company's development application be approved, there would be a number of direct and/or indirect economic benefits for the Proponent, its employees and contractors as well as to the local and regional communities. Flow-on effects would provide economic benefits to State and Federal authorities and governments. These benefits are considered for the proposed East Boggabri Coal Mine in isolation (Section 5.2.2) and in the context of the concurrent development of the Boggabri Coal Project (Section 5.2.3).

5.1.3.2 Impacts Attributable to the Proposal

Boggabri, Gunnedah and the LGAs of Narrabri Shire and Gunnedah Shire

Approximately 30 full-time equivalent jobs would be created during the construction and mine establishment phase. Once operational, 80 persons would be employed for the 8-10 year life of the mine. It is estimated that direct and indirect employment associated with the East Boggabri Coal Mine would contribute to a combined increase in population within Boggabri and Gunnedah of approximately 33 persons and the addition of 14 households. Although modest, this level of increase would also stimulate employment in ancillary businesses as well as those benefiting from the increased economic activities within the towns.



Contributions to the local economies within the Narrabri and Gunnedah LGAs would either be one-off and associated with construction of the proposed mine and transport route, or ongoing and associated with continuing mining, processing and transportation operations.

The 30 temporary construction-related positions would contribute as follows to the local economies during the 4 month construction period.

Employment	Direct	30 Jobs
	Indirect.....	51 Jobs
Income	Direct	\$2 340 000
	Indirect.....	\$1 723 800

An estimate of the predicted employment and income resultant from the operation of the proposal each year for the life of the proposal is as follows.

Employment	Direct	80 Jobs
	Indirect.....	205 Jobs
Income	Direct	\$5 084 600 per year
	Indirect.....	\$6 929 000 per year

Following the grant of a mining lease for the East Boggabri Coal Mine, annual rates paid to Narrabri Shire Council would increase funds available for a wide range of community services paid by general rates.

State and Federal Government Flow-on Effects

The following benefits for NSW and the Commonwealth would be expected should the development application for the proposal be approved.

New South Wales

- The New South Wales Government would benefit directly from the increased employment provided by the proposed East Boggabri Coal Mine and the associated income tax, payroll tax and other charges and flow-ons.
- Royalties for the coal of approximately \$4.2 million per year.
- Other direct or indirect payments to the State government and agencies.

Australia

- The Commonwealth would benefit from the development of the proposal in the form of federal taxes and duties and the opportunity for in excess of A\$1 120 million export earnings over the life of the mine.



A failure to receive Development Consent for the East Boggabri Coal Mine would have the following impacts upon the local, regional, State and federal economies.

- The loss of direct employment opportunities for 80 persons and indirect employment for 205 persons.
- The loss of an opportunity to reduce the unemployment rate of Narrabri and Gunnedah LGAs.
- The loss of the further stimulus to the local economies and particularly residential and commercial development that would be generated by the increased economic activity and increased populations of the Boggabri, Gunnedah and their respective LGAs.
- The loss of in excess of \$37.5 million annual expenditure on wages and consumables and employment generating economic activity.
- The loss of significant freight, payroll tax and other earnings and charges.
- The loss of in excess of A\$1 120 million export earnings.

5.1.3.3 Cumulative Impacts

Boggabri, Gunnedah and the LGAs of Narrabri Shire and Gunnedah Shire

The concurrent development and operation of the proposal and Boggabri Coal Project, which would be of similar size and scale for the life of the proposed East Boggabri Coal Mine, would roughly double the direct and indirect employment and income figures presented in Section 5.1.3.2. These cumulative figures would therefore be as follows.

Construction:

Employment	Direct	80 Jobs
	Indirect	136 Jobs
Income	Direct	\$1 622 400
	Indirect	\$4 596 800

Operations:

Employment	Direct	177 Jobs
	Indirect	454 Jobs
Income	Direct	\$13 806 000
	Indirect	\$15 345 200

Given the documented need for the Boggabri Coal Project to source a greater proportion of its workforce from outside the local area, the cumulative impact on population growth and housing requirements would be proportionally greater. Based on direct employment figures, it is estimated the population of the LGAs would increase by 101 with the creation of 41 new households. This would place greater pressure on the availability of housing within the towns surrounding the two mines, however, would also create a greater stimulus to development as populations and market demand increase.



New South Wales

- The New South Wales Government would further benefit from increased employment provided by the development of the proposed East Boggabri Coal Mine and Boggabri Coal Project through the associated taxes such as income and payroll tax, other charges and flow-ons.
- Royalties for the coal of approximately \$4.2 million per year.
- Other direct or indirect payments to the State government and agencies.

Australia

- The Commonwealth would benefit from the development of the proposal in the form of federal taxes and duties and the opportunity for in excess of A\$1 120 million export earnings over the life of the mine.

In the event the East Boggabri Coal Mine and Boggabri Coal Project do not proceed, the following impacts upon the local, regional, State and federal economies are predicted.

- The loss of direct employment opportunities for an estimated 177 persons and indirect employment for over 450 persons.
- The loss of an opportunity to further reduce the unemployment rate of Narrabri and Gunnedah LGAs.
- The loss of the further stimulus to the local economies and particularly residential and commercial development that would be generated by the increased economic activity and increased populations of the Boggabri, Gunnedah and their respective LGAs.
- The loss of in excess of over \$37.5 million annual expenditure on wages and consumables and employment generating economic activity.
- The loss of significant freight, payroll tax and other earnings and charges.
- The loss of in excess of over A\$1 120 million in export earnings.

5.1.4 Social Considerations

5.1.4.1 Impacts Attributable to the Proposal

The towns of Boggabri and Gunnedah and the LGAs within which they are located are demographically typical for their respective sizes and settings in rural NSW. Unemployment is higher than the State average, agriculture dominates as the major employer and the age structure shows a reduced proportion of the population within the 20-39 year age bracket. Stakeholders and community representatives consulted during the preparation of the EIS indicated that established facilities and services are well developed in Boggabri, Gunnedah and Narrabri. However, in each case, those consulted indicated a need for the creation of alternative opportunities to encourage school leavers and local youth to remain within the town or LGA.

Given this assessment of the local demographics, the development of the East Boggabri Coal Mine would have the potential to deliver the following positive social impacts.



Demographics

With the development of the proposed East Boggabri Coal Mine, the opportunities for school leavers and local youth (20-29 year age bracket) within the local area would be increased. Not only would the proposed mine provide both skilled and unskilled job opportunities, but ancillary businesses would be encouraged to provide apprenticeships and other employment opportunities as a consequence of the increased demand generated by the development of the proposed mine. This would assist in reducing or reversing the trend for those in the 20-39 year age bracket to leave the area in search of employment or educational opportunities which is typical of regional NSW.

The proposal would be of particular benefit to Boggabri which currently has not achieved the critical population mass to attract more services and commerce to the town. Increased employment would promote a growth in the population which in turn would assist in creating sufficient population necessary for a return of services such as a pharmacy to the town.

Community Morale

The provision of greater job opportunities within the local area would reduce social stress caused by unemployment and provide greater economic well-being. There is already a sense of optimism within the towns most likely to be affected by the proposal, ie. Boggabri and Gunnedah, which would be further enhanced as the promised job opportunities and economic stimulus was realized. The creation of a healthier age structure would also provide a boost for local sporting and other clubs as more people are available to participate.

With a boost to community morale and increased economic well-being would come greater participation in volunteer services and community events.

Increased population to participate in locals clubs, sporting groups, cultural activities, and organisations, and an increased ability and willingness to provide volunteer services and contributions to local community events would ultimately contribute to stronger social networks and social capital.

Opportunities for School Leavers and Local Youth

Opportunities for local school leavers through training at the proposed mine itself, increased apprenticeship opportunities that would be created in ancillary businesses and an increase to the skilled labour market. With the retention of the younger working class generation, there would be greater encouragement for the development of services and facilities within the local area to service this age group.

Community Growth

The contribution of mining and related industries to the local economic base would increase particularly within Narrabri Shire where agriculture is the dominant industry. This would assist in maintaining economic activity within the LGA even during periods of drought (such as at present) when reduced agricultural output places a strain on all local commercial enterprises. A stimulus would also be provided for other local businesses, particularly in the retail and service sectors. Benefits would be felt within, but not limited to the motel and hotel trade, cafes and restaurants, mining related engineering and surplus spending activity such as gyms, cinema, recreational goods and services, beauty salons, and hair dressers.



Other Benefits

The development of the proposed East Boggabri Coal Mine may contribute to the direct or indirect employment of local residents currently recognised to be “hidden unemployed” and who have previously exited the labour market in frustration.

The development of the mine would provide the opportunity for a proven good corporate citizen (Whitehaven Coal Mining Limited) to further contribute to the local community.

The mining contractor’s commitment to providing indigenous employment and training opportunities would assist in strengthening what Gunnedah Shire Councillors already consider to be a relatively strong local Aboriginal community.

Two potentially negative impacts associated with the development and operation of the proposed East Boggabri Coal Mine are as follows.

- A reduction of the peaceful rural amenity due to movement of coal trucks along the proposed transport route.
- Short term housing stress while the market responds to new demand.

The local community appears to fully understand the connection between sustainable economic growth and desirable community and social outcomes. There is enthusiasm in the local community for this mine and mining in general because of the people it will bring to town, the increase in dollars spent locally, the provision of local jobs and the potential from increased participation in community events and clubs. Notwithstanding this enthusiasm, there is a recognition/expectation in the local community that the mine would need to be managed responsibly, meet its environmental requirements and take due care with coal transportation on the local road system. Considering this generally positive attitude towards the development of the proposal, the potential positive impacts on local social conditions far outweigh the possible negative impacts.

5.1.4.2 Cumulative Impacts

The impacts identified in Section 5.1.4.1 would be amplified and enhanced if the Boggabri Coal Project proceeds at the same time as the proposed East Boggabri Coal Mine. During the life of the East Boggabri Coal Mine, the Boggabri Coal Project would be of a similar size and scale and therefore employ a similar number of people. IBC, the Proponent for the Boggabri Coal Project currently does not have the ongoing association with other local coal mines and as such does not have the capability to use these as training grounds for prospective local employees. As a consequence, it is envisaged that a greater proportion of the proposed workforce, particularly the skilled workforce, would be sourced from outside the local area.

This would tend to exacerbate the impact associated with short-term accommodation shortages. However, it would provide a greater stimulus to the local population increases as the new employees relocate to Boggabri, Gunnedah and the local area. As with the East Boggabri Coal Mine alone, this would enhance the positive benefits associated with the achievement of critical population mass in Boggabri and provide greater stimulus for residential and commercial development in Boggabri and Gunnedah.

The development of the two mines would therefore complement each other by promoting both increased local employment opportunities as well as increasing local spending.



5.2 EVALUATION OF ECOLOGICAL SUSTAINABILITY

5.2.1 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. Schedule 2(6) of the *Environmental Planning and Assessment Regulation 2000*, requires the EIS to justify the proposal in terms of the principles of Ecologically Sustainable Development (ESD). The principles of ESD that have been recognised for over a decade (see Section 1.7.2) 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 East Boggabri Coal Mine, the Proponent has endeavoured to address each of the sustainable development principles. The following sub-sections draw together the features of the proposed development that reflect the four principles of sustainable development.

- 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.

5.2.2 Principles of ESD

5.2.2.1 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 proposal and throughout the preparation of the EIS, the Proponent has engaged specialist consultants to examine the existing environment, predict possible impacts and recommend safeguards in order to ensure that the level of impact satisfies statutory requirements or reasonable community expectations. Environmental safeguards, as discussed in Section 4 of this document, are measures that have been planned with a comprehensive knowledge of the existing environment and an appreciation of the potential impacts, in order to prevent environmental degradation. Throughout the development of the proposal, the Proponent and its consultants have adopted an anticipatory approach to risk, particularly the risk of irreversible ecological damage, by undertaking an appropriate level of research and baseline investigations and environmental evaluation.

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



Objectives of the Proposal

The proposed East Boggabri Coal Mine has been designed with the principal objective being to develop and operate the mine in a safe and environmentally responsible manner which meets the requirements of local and State government agencies, accepted industry standards and wherever possible, reasonable community expectations. The Proponent 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 Project Components

Several design aspects of the proposal 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 original design for a single out-of-pit overburden emplacement was split into two separate emplacements to ensure that remnant stands of threatened native vegetation on the Project Site were left undisturbed.
- The orientation of the mine access road and proposed transport route was re-aligned to avoid disturbance to several Aboriginal heritage sites, native vegetation and an ephemeral watercourse.
- The locations of soil stockpile areas were relocated to avoid a section of the Project Site most at risk of localised flooding following heavy rain.
- The southern emplacement has been designed with a 15m acoustic bund wall located at the leading edge during day-time and non-adverse meteorological conditions. All night-time overburden placement activities would be either in-pit or behind and within 30m of this bund wall.
- The southern emplacement and its construction were designed to reduce the potential visual impacts on residents to the south and east of the Project Site, as well as road users/motorists travelling on Goonbri Road, Manilla Road and other local roads.
- The final landform was designed to provide for the re-establishment of land suitable for grazing whilst integrating the conservation of significant areas of native vegetation and the establishment of habitat/vegetation linkages between currently isolated pockets of native vegetation and Leard State Forest.

Integration of Safeguards and Procedures

The framework for ongoing environmental management, operational performance and rehabilitation of the Project Site would be provided through the development consent and be managed in accordance with the DPI (MR) (MREMP), both of which would involve the input from relevant State and local government agencies. The MOP, which would contain a range of



site specific environmental procedures to achieve consistency with specified outcomes and to control identified risks, would be updated periodically, while the AEMR which would report on the progress of the operation, would 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;
- groundwater, noise, deposited dust levels, PM₁₀ concentrations, airblast overpressure and ground vibration would be monitored at locations potentially most affected by the proposal in order to ensure the continued compliance of the operation with goals outlined in this document;
- the principles outlined in the surface water management plan would be adopted to minimise any impact on water quality or quantity exiting the Project Site. 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 Project 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.

Progressive 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 of native vegetation and the linking of isolated pockets of native vegetation with Leard State Forest.

Conclusion

The precautionary principle has been considered during all stages of the design and assessment of the proposed East Boggabri Coal Mine. The approach adopted, ie. initial assessment, consultation, specialist investigations and safeguard design, provides a high degree of certainty that the proposed development would not result in any major unforeseen impacts.

5.2.3 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 proposal.



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

Identification of Project Objectives

- The proposal has been designed with the objective of providing as much employment as possible to persons throughout the local community. This objective would require a commitment to employee training.
- Consideration has been given to the ability of the Narrabri and Gunnedah LGAs to accommodate a development of the scale proposed. Local community stakeholders were consulted to ensure adequate facilities and an appropriate level of services would be available to the proposal and proposal employees with the objective being to minimise any disruption of access of the local community to these facilities and services.
- The proposal has been designed with the objective to ensure the continued viability of surrounding land uses throughout and beyond the life of the proposal.

Design of Project Components

The proposal has been designed to maintain inter-generational equity, ie. in recognition that mining is a 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 open cut area and out-of-pit overburden emplacements have been designed to ensure that disturbance to the threatened vegetation communities and sensitive fauna habitats would be minimised.
- The proposed open cut area, out-of-pit overburden emplacements and proposed transport route have been designed to ensure that disturbance to Aboriginal heritage sites would be restricted to two of the eight sites identified.
- The availability of groundwater to surrounding landholders, although not predicted to be noticeably affected by the proposal, would be monitored throughout the life of the proposal and compensatory measures taken should a short-term reduction in the availability of groundwater to local landholders occur.
- The rehabilitation of the Project Site has been designed to intergrate the re-establishment of agricultural land with the conservation of native vegetation and improving links between isolated pockets of native vegetation with Leard State Forest.



Integration of Safeguards and Procedures

The Proponent recognises that all members of the local Boggabri/Gunnedah communities should benefit appropriately from the proposal either directly or indirectly. In order to ensure a realistic distribution of benefits, the Proponent 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.

Progressive Rehabilitation and Subsequent Land Use

The final landform would be constructed and rehabilitated in a manner that would generally retain land with 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.

Conclusion

The principle of social equity has been addressed throughout the design of the proposal. The East Boggabri Coal Mine would contribute significantly to the economic activity of Boggabri, Gunnedah and surrounding communities through the generation of employment and increased demand for local goods and services and flow-on effect. As such, the benefits of the proposal would be distributed throughout the local community. The proposal was also designed such that elements of the existing environment available to this generation, including agricultural land, water and local biodiversity would continue to be available to future generations. The Proponent would adopt a pro-active approach in identifying and addressing any concerns identified by the local community.

5.2.2.3 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 proposal has been designed to achieve compliance with these principles are set out below.

Identification of Project Objectives

The Proponent is committed to undertake all activities in an environmentally responsible manner, and recognises the need to fully understand the ecological components and inter-relationships that exist on and surrounding the Project Site and ensure that changes to other natural components of the environment (e.g. soils, surface water and groundwater) do not adversely affect biological diversity or ecological integrity. As such, the proposal has been designed to incorporate measures that would:

- minimise impacts on the flora and fauna of the Project 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
- implementation of a regeneration and establishment program which encourages the re-establishment of native vegetation and development of linkages between isolated pockets of native vegetation with Leard State Forest.



Design of Project Components

- Water management structures have been designed and would be constructed to ensure that only water within DEC specified criteria leaves the Project Site and enters the Namoi River.
- The placement of overburden has been designed to avoid disturbance to areas of threatened native vegetation and sensitive fauna habitat.
- The construction of internal roads and the proposed transport route between the Project Site and the Whitehaven Coal Mine would minimise disturbance to native vegetation.
- A buffer of 50m would be established from the eastern and southern Project Site boundaries to maintain the linkage between Leard State Forest with the remnant native vegetation to the south of the Project Site.
- Stock would be excluded from the identified pockets of native vegetation and land on which natural regeneration is planned to form the linkage between these and Leard State Forest.

Integration of Safeguards and Procedures

- Removal of native vegetation, including regenerating White Cypress Pine patches, would be kept to a minimum.
- Sections of the Project Site would be de-stocked to allow the grassy understorey to regenerate.
- 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 open cut area would commence as soon as possible to re-establish the connectivity of habitat corridors from Leard State Forest to adjoining vegetation remnants.
- Weed eradication programs would be developed and implemented, as required.

Progressive 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 and fauna habitat. 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.



Conclusion

The proposal would address the principle of conservation of biological diversity and ecological integrity through the minimisation of disturbance to areas of native vegetation, and re-establishment of greater areas of native vegetation than are disturbed. Should threatened species be identified within those areas of the Project Site to be disturbed, these would be relocated or managed appropriately in consultation with DEC or a suitably qualified professional. Weed eradication programs would be implemented as appropriate and would further assist in addressing the principle of sustainable development.

5.2.2.4 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 East Boggabri Coal Mine is set out below.

Identification of Project Objectives

The Proponent's principal objective of the Proponent 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 Project Components 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 Proponent on these resources.

The Proponent's commitment to improving the local road network used by trucks transporting coal and continuing to contribute to funding of road maintenance also reflects the Proponent's commitment to this principle.

Progressive Rehabilitation and Subsequent Land Use

The design of the final landform to integrate ongoing agricultural activities with the re-establishment of native vegetation and linkages between isolated remnants of native vegetation with Leard State Forest illustrates the value placed by the Proponent on both the agricultural and ecological elements of the Project Site.

Conclusion

The value placed by the Proponent on environmental resources is evident in the identification of proposal objectives, extent of site-specific research, planning and environmental safeguards and measures to be implemented to prevent irreversible damage to the environment on and surrounding the Project Site. It is planned that the income received from the sale of the coal would be sufficient to enable the Proponent to achieve an acceptable profit level whilst undertaking all environmentally-related tasks and meeting all commitments in all consents, leases, licences and approvals and those made to the local community.



5.2.2.5 Conclusion

The approach taken in planning the proposal 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 proposal has addressed each of the sustainable development principles, and on balance, it is concluded that the proposed development achieves a sustainable outcome for the local and wider environment.

5.3 CONSEQUENCES OF NOT PROCEEDING WITH THE DEVELOPMENT

Schedule 2(3) of the *Environmental Planning and Assessment Regulation 2000* requires that this EIS address the consequences of not proceeding with the proposal. Such consequences would include the following.

- (i) The 12.4Mt of recoverable coal would not be mined by the Proponent. Such an outcome would be contrary to the DPI (MR) and the Proponent's objective to maximise resource utilisation.
- (ii) The opportunity to create up to 80 full-time jobs would be foregone.
- (iii) Approximately 8 to 10 years' disposable wages for the full-time and part-time workforce of approximately 80 persons would be foregone, a substantial proportion of which would be spent in the Boggabri/Gunnedah areas.
- (iv) Foregoing PAYE taxes for the life of the mine.
- (v) Foregoing royalties of \$4.2 million annually and payments to State Authorities as well as in excess of A\$1 120 million export earnings which would help offset, at least in part, Australia's foreign debt.
- (vi) The minor impacts on the local environment would not eventuate.

The benefits of proceeding with the proposal therefore far outweigh the minor impacts on the environment that would result. The consequences of not proceeding with the proposal also weigh heavily in favour of proceeding with the proposed East Boggabri Coal Mine.

5.4 CONCLUSION

The proposed East Boggabri Coal Mine has, to the extent feasible, been designed to address the issues of concern to the community and all levels of government. The proposal provides for the mining, production, sale and despatch of a high quality coal product which would be significant in generating employment opportunities and boosting the local economies of Boggabri, Gunnedah and other surrounding communities. The post-mining landform would integrate the re-establishment of 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 East Boggabri Coal Mine should proceed because it would:

- (i) contribute towards satisfying the demand for export quality coal;
- (ii) satisfy sustainable development principles;
- (iii) provide for an increase in wildlife corridor conductivity and connectivity through the re-establishment of native vegetation and stock exclusion from selected locations on the Project Site;
- (iv) have a minimal and manageable impact on the biophysical environment;
- (v) address the perceived social impacts;
- (vi) contribute to the continued economic activity of Boggabri, Gunnedah and Narrabri and Gunnedah Shires;
- (vii) provide for the substantial regeneration program to improve local biodiversity and fauna habitat; and
- (viii) the various biophysical impacts would not eventuate.

