Section 6
Evaluation / Justification of the Project

This section concludes the assessment of the proposed Longwall Project. The key assessment requirements (identified by the Director-General's Requirements) and other issues identified as having higher unmitigated risk rankings (see Section 3.3.1) are re-assessed based on the implementation of the proposed safeguards, controls and mitigation measures and a residual risk level determined. The project is then evaluated based on the residual risk posed and in consideration of ecologically sustainable development (ESD) principles.

A justification for the project is then provided based on the residual impacts of the project, the likely economic and social benefits that would be generated and the consequences locally, regionally and nationally of the project not going ahead.

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6.1 INTRODUCTION

As a conclusion to the *Environmental Assessment*, the development and operation of the Longwall Project is evaluated and justified through consideration of its potential impacts on the environment and potential benefits to the local and wider community.

An evaluation of the Longwall Project has been undertaken by firstly re-assessing the risks posed to the local environment by project activities, and then considering the implementation of the commitments for controls, safeguards or mitigation measures summarised in Section 5. The Longwall Project has also been evaluated against the principles of Ecologically Sustainable Development (ESD) in order to provide further guidance as to the acceptability of the Longwall Project, as presented in the *Environmental Assessment*.

Section 6.3, which presents the justification of the Longwall Project, revisits the predicted residual impacts on the biophysical environment, considers the socio-economic benefits which would be provided and assesses the consequences of not proceeding with the Longwall Project.

6.2 EVALUATION OF THE PROJECT

6.2.1 Residual Environmental Risk and Impacts

Following consideration of the proposed operational safeguards, controls and mitigation that would be implemented by the Proponent as part of the project design, **Table 6.1** reassesses the risk associated with each of the potential environmental impacts identified in Section 3.3. It is noted that in some cases no residual risk rating has been allocated as the assessment recorded in Section 4B has determined that the impact would not occur.

Table 6.1
Analysis of Mitigated Risk

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Potential Environmental Impacts (see Table 3.1)	Level / Scale of Impact (if applicable)	Consequence of Occurrence if Mitigated	Likelihood of Occurrence if Mitigated	Mitigated Risk Rating
Subsidence				
Damage or destruction of structures / infrastructure	Impact on residential / domestic structures on the Mine Site	2	B	H
	Impact on residential / domestic structures off the Mine Site	2	E	L
	Impact on services infrastructure, eg. power lines, pipelines	3	D	M
Alteration of local drainage	Ponding and altered hydrological flows along local creeks and tributaries	2	B	H
	Realignment of local creeks and tributaries	2	C	M
	Altered surface flows affecting contour banks and drainage on agricultural land	2	C	M
Increased erosion along drainage lines and subsequent decrease in water quality		2	C	M
Change to structure or composition of vegetation communities and fauna habitat		2	C	M
Reduced availability of groundwater as a result of fracturing altering hydrogeological flow paths.		3	D	M
Disturbance of, or damage to Aboriginal sites or artefacts		2	D	L

Consequence of Occurrence: 1 = Insignificant; 2 = Minor; 3 = Moderate; 4 = Major; 5 = Catastrophic
Likelihood of Occurrence: A = Almost Certain; B = Likely; C = Possible; D = Unlikely; E = Rare
Risk Rating: E = Extreme; H = High; M = Moderate; L = Low

Note *: Represents the lowest risk rating that can be assigned as the lowest possible consequence or likelihood has been assigned.

Table 6.1 (Cont'd)
Analysis of Mitigated Risk

Potential Environmental Impacts (see Table 3.1)	Level / Scale of Impact (if applicable)	Consequence of Occurrence if Mitigated	Likelihood of Occurrence if Mitigated	Mitigated Risk Rating
Groundwater				
Groundwater Pollution by leaking/spilt hydrocarbon	Contamination requiring minor recovery works	1	D	L
	Contamination requiring major recovery works	3	E	M
Drawdown of groundwater	Reduced water levels within the aquifers of the Intake Beds to the Great Artesian Basin Groundwater Source	2	D	L
	Reduced water levels within the aquifers of the Lower and Upper Namoi Alluvial Groundwater Source	3	D	M
	Reduced water levels within the aquifers of the Gunnedah Basin Groundwater Source	1	B	M
Reduction in groundwater bore yields	Reduction in yield within groundwater bores on Proponent owned land	1	A	H*
	Reduction in yield of <15% of non-project related bores	1	B	M
	Reduction in yield of >15% of non-project related bores	3	D	M
Impacts on Groundwater Dependent Ecosystems		2	C	M
Surface Water/Flooding and Drainage				
Reduced natural surface water flows	Reduced productivity of downstream grazing lands	2	D	L
	Stressing of downstream native vegetation due to restricted flows	2	C	M
Reduced quality of downstream waters	Isolated and minor event resulting in temporary degradation of water quality in local creeks and tributaries, eg. minor discharge of saline water	2	D	L
	Continuing discharge of contaminated water resulting in ongoing degradation of water quality in local creeks and tributaries, eg. regular discharge of saline or dirty water	4	E	H*
	Isolated and major event resulting in temporary but wider spread degradation of water quality, eg. discharge of hydrocarbons reaching Namoi River	4	E	H*
	Repeated major event resulting in long-term and wide spread degradation of water quality, eg. continued discharge of saline water reaching the Namoi River	5	E	H*
Changes to local flooding patterns.	Change to structure and composition of vegetation communities and fauna habitat	2	E	L
	Reduction in the value of agricultural land	1	D	L
Soil Erosion and Sedimentation				
Soil erosion	Minor gully erosion of drainage lines, stockpiles or created slopes	1	C	L
	Minor sheet or gully erosion of rehabilitated landform	1	C	L
	Major gully or sheet erosion formation	2	D	L
Sediment Load and Turbidity	One-off discharge of dirty water from the Mine Site	2	D	L
	Regular discharge of dirty water from the Mine Site	3	E	M*
Threatened Flora and Fauna				
Loss of, or alteration to, existing habitats	Disturbance to native vegetation / habitat in accordance with the proposed activities	1	A	H*
	Disturbance to native vegetation / habitat outside the areas nominated as part of the proposed activities	2	D	L

Consequence of Occurrence: 1 = Insignificant; 2 = Minor; 3 = Moderate; 4 = Major; 5 = Catastrophic
Likelihood of Occurrence: A = Almost Certain; B = Likely; C = Possible; D = Unlikely; E = Rare
Risk Rating: E = Extreme; H = High; M = Moderate; L = Low

Note *: Represents the lowest risk rating that can be assigned as the lowest possible consequence or likelihood has been assigned.

Table 6.1 (Cont'd)
Analysis of Mitigated Risk

Potential Environmental Impacts (see Table 3.1)	Level / Scale of Impact (if applicable)	Consequence of Occurrence if Mitigated	Likelihood of Occurrence if Mitigated	Mitigated Risk Rating
Threatened Flora and Fauna (cont'd)				
Direct adverse impact on threatened species.	Disturbance to Threatened flora, fauna or endangered communities	3	D	M
	Disturbance leading to local population reduction	4	E	H*
	Disturbance leading to local extinction(s)	4	E	H*
Reduced biodiversity	Local biodiversity	3	E	M*
	Regional biodiversity	4	E	H*
Aboriginal Heritage				
Impact on identified sites and/or artefacts of Aboriginal cultural heritage as a result of the proposed construction and mining activities and without the permission of the registered Aboriginal stakeholders or DECC		4	E	H*
Impact on unidentified sites and/or artefacts of Aboriginal cultural heritage as a result of subsidence and without the permission of LALC or DECC		3	D	M
Noise and Blasting				
Increased noise levels associated with Mine Site activities causing annoyance, distractions, ie. amenity impacts.	Occasional minor exceedance of noise criteria (1-2dB(A))	1	B	M
	Regular minor exceedance of noise criteria (1-2dB(A))	2	B	H
	Marginal exceedance of noise criteria (3-5dB(A))	2	B	H
	Regular marginal exceedance of noise criteria (3-5dB(A))	3	B	H
	Occasional major exceedance of noise criteria (>5dB(A))	2	E	L
	Regular major exceedance of noise criteria (>5dB(A))	3	E	M
Increased noise / vibration levels associated with project road and rail traffic activities causing annoyance, distractions, ie. amenity impacts.	Occasional minor exceedance of noise criteria (1-2dB(A))	1	E	L
	Regular minor exceedance of noise criteria (1-2dB(A))	2	E	L
	Marginal exceedance of noise criteria (3-5dB(A))	2	E	L
	Regular marginal exceedance of noise criteria (3-5dB(A))	3	E	M
	Occasional major exceedance of noise criteria (>5dB(A))	2	E	L
	Regular major exceedance of noise criteria (>5dB(A))	3	E	M
Maximum noise levels resulting in sleep disturbance.		3	D	M
Increased noise levels associated with the project leading to reduced production, ie. impacts on livestock.		2	E	L
Blasting related ground vibration resulting in structural damage to buildings and structures		3		
Nuisance/amenity impacts on surrounding landowners / residents resultant from blasting related ground vibration and air overpressure soundwaves		2		
Reduced agricultural production resultant from blasting related distress to livestock		2		
Air Quality				
Nuisance – deposited dust	Deposited dust levels attributable to the Longwall Project occasionally exceed (for one or two months every year) the DECC guideline	1	C	L
	Deposited dust levels attributable to the Longwall Project regularly exceed (for >5 months per year) the DECC guideline	3	D	M

Consequence of Occurrence: 1 = Insignificant; 2 = Minor; 3 = Moderate; 4 = Major; 5 = Catastrophic
Likelihood of Occurrence: A = Almost Certain; B = Likely; C = Possible; D = Unlikely; E = Rare
Risk Rating: E = Extreme; H = High; M = Moderate; L = Low

Note *: Represents the lowest risk rating that can be assigned as the lowest possible consequence or likelihood has been assigned.

Table 6.1 (Cont'd)
Analysis of Mitigated Risk

Potential Environmental Impacts (see Table 3.1)	Level / Scale of Impact (if applicable)	Consequence of Occurrence if Mitigated	Likelihood of Occurrence if Mitigated	Mitigated Risk Rating
Air Quality (cont'd)				
Health – PM_{10}	PM_{10} levels attributable to the Longwall Project occasionally above the project goal at non-project related residences	**2**	**D**	**L**
	PM_{10} levels attributable to the Longwall Project regularly exceed (>5 times per year) the project goal at non-project related residences	**3**	**E**	**M***
Ventilation of Saline Water resulting in impacts on vegetation	Restricted to predominantly non-native vegetation within immediate vicinity of ventilation shaft	**1**	**C**	**L**
	Impacts on native vegetation or extending beyond immediate vicinity of ventilation shaft	**2**	**D**	**L**
	Impacts extend beyond the Mine Site or impact on extensive areas of native vegetation.	**3**	**E**	**M***
Increased Greenhouse Gas Emissions		**1**	**B**	**M**
Visual Amenity				
Reduced amenity of altered Mine Site landform	Temporary disturbance to landform	**1**	**A**	**H***
	Marginally identifiable change to the landscape in the final landform	**1**	**A**	**H***
	Highly identifiable change to the landscape in the final landform	**1**	**C**	**L**
Impacts on the effectiveness of the Siding Springs Observatory		**2**	**E**	**L**
Traffic and Transport				
Increased traffic congestion		**1**	**E**	**L**
Road pavement deterioration		**1**	**D**	**L**
Elevated risk of accident/incident on local roads	Minor accident – no injury	**1**	**D**	**L**
	Minor accident – minor injury	**2**	**D**	**L**
	Major accident –moderate injuries requiring hospitalisation	**3**	**E**	**M***
	Severe accident – severe injuries or death injury	**4**	**E**	**H***
Elevated risk of rail related accident/incident	Minor accident – no injury	**1**	**D**	**L**
	Minor accident – minor injury	**2**	**D**	**L**
	Major accident –moderate injuries requiring hospitalisation	**3**	**E**	**M***
	Severe accident – severe injuries or death injury	**4**	**E**	**H***
Soils and Land Capability				
Insufficient soil quantities for rehabilitation.		**2**	**D**	**L**
Reduced soil quality	Temporary disturbance to soil	**1**	**B**	**M***
	Degradation of soil quality	**2**	**D**	**L**
Elevated erosion or erosion potential.		**2**	**D**	**L**
Decreased land and agricultural capability of the final landform		**3**	**E**	**M***
Rehabilitation, Final Landform & Biodiversity Offsets				
Reduced access to agricultural lands.		**2**	**D**	**L**
Increase in areas designated for native vegetation conservation		**n/a**	**n/a**	**n/a**

Consequence of Occurrence: 1 = Insignificant; 2 = Minor; 3 = Moderate; 4 = Major; 5 = Catastrophic
Likelihood of Occurrence: A = Almost Certain; B = Likely; C = Possible; D = Unlikely; E = Rare
Risk Rating: E = Extreme; H = High; M = Moderate; L = Low

Note *: Represents the lowest risk rating that can be assigned as the lowest possible consequence or likelihood has been assigned.

Table 6.1 (Cont'd)
Analysis of Mitigated Risk

Potential Environmental Impacts (see Table 3.1)	Level / Scale of Impact (if applicable)	Consequence of Occurrence if Mitigated	Likelihood of Occurrence if Mitigated	Mitigated Risk Rating
Waste Management				
Contamination by waste oil.	Contamination requiring minor recovery works	1	D	L
	Contamination requiring major recovery works	3	E	M*
Acid generation from overburden used in construction of bunds and Pit Top Area structures		3	E	M*
Reduced amenity of Mine Site due to poor rubbish, litter management		1	D	L
Land Contamination				
Transfer of contaminated material	Small area affected (<0.01ha)	1	E	L
	Large area affected (>0.01ha)	2	E	L
Contamination of surface water as a result of exposing contaminated lands	Minor and temporary contamination of water quality in local creeks and tributaries	1	D	L
	Minor and continuing contamination of water quality in local creeks and tributaries	3	E	M*
	Major and temporary contamination of water quality in local creeks and tributaries	3	E	M*
	Major and continuing contamination of water quality in local creeks and tributaries	4	E	H*
Spontaneous Combustion				
Injury sustained as a consequence of fire	Minor injury	1	E	L
	Moderate injury requiring first aid	2	E	L
	Injury requiring hospitalization	3	E	M*
	Severe injury or death	5	E	H*
Impacts on native flora and fauna in the event of fire spreading beyond coal stockpiles	Small fire within Mine Site	1	E	L
	Moderate fire extending beyond the Mine Site	2	E	L
	Large fire extending far beyond the Mine Site	3	E	M*
Socio-Economic Impacts and Property Values				
Improved economic activity and related social impacts attributable to reduced unemployment		n/a	n/a	n/a
Reduced quality of life (actual or perceived)		3	E	M*
Reduced property values	Temporary decrease in property values	1	D	L
	Moderate term decrease in property values	2	D	L
	Long term decrease in property values	3	E	M*

Consequence of Occurrence: 1 = Insignificant; 2 = Minor; 3 = Moderate; 4 = Major; 5 = Catastrophic
Likelihood of Occurrence: A = Almost Certain; B = Likely; C = Possible; D = Unlikely; E = Rare
Risk Rating: E = Extreme; H = High; M = Moderate; L = Low

Note *: Represents the lowest risk rating that can be assigned as the lowest possible consequence or likelihood has been assigned.

Through the implementation of the proposed controls, safeguards and mitigation measures identified in Section 4B and summarized in the Statement of Commitments in Section 5, the risk rating for the majority of potential environmental impacts has been reduced.

In some cases, a rating is no longer provided as the relevant assessment recorded in Section 4B determined the likelihood to be so low, or consequence so insignificant, as to be virtually non-existent. This approach was taken generally when the risk rating could not be considered any lower than "high" due to a likelihood classification as "almost certain" or consequence classification as "catastrophic" so as not to suggest a significance that does not exist.

Further consideration is given to the potential impacts which retain a "high" risk rating as follows.

- Severe damage of residential / domestic structures on the Mine Site.

  Subsidence is likely to result in the considerable damage to the residences or domestic structures located above subsidence zone, defined by the angle of draw from the underground mining area. In recognition of this potential damage, the Proponent has already purchased the properties on which residences would be undermined. The feasibility of repairing the damage caused to buildings on the Proponent's properties would be assessed following the cessation of subsidence.

- Changes to local hydrology as a result of ponding within the tributaries of Kurrajong and Pine Creeks.

  While the impacts are predicted to be minor only, it is likely that subsidence induced changes to the gradient of the watercourses within the Mine Site will result in some ponding. This may affect some vegetation and the quality of water ultimately discharging from the Mine Site, however, if either of these indirect effects is identified, the ponding effect would be reduced by excavating a channel across the elevated sections of landform (above the retained underground chain pillars). The risk of impact associated with ponding is therefore considered to have been minimised and is acceptable.

- Reduction in yield within groundwater bores on Proponent-owned land.

  This is almost certain to occur, however, as the consequence of this is rated as "insignificant", the risk is deemed to have been minimised and is acceptable.

- Reduced quality of downstream waters as a result of isolated or continuous discharge of contaminants such as saline water or hydrocarbons.

  While the consequence of such a reduction in water quality may be "major" or "catastrophic", in all cases the likelihood of occurrence is "rare" and therefore the risk of impact is therefore considered to have been minimised and no greater than numerous other industrial, commercial or agricultural developments.

- Loss of, or alteration to, existing habitats as a consequence of disturbance to native vegetation / habitat identified as part of the Longwall Project.

  This is certain to occur, however, given the proposed commitments of the Proponent in relation to ecological management and biodiversity offsets the consequence of this is rated as "insignificant", the risk is deemed to have been minimised and is acceptable.

- Disturbance to threatened species or local ecology leading to local population reduction, local extinction or reduced biodiversity.

  While the consequence of these impacts is considered "major", in all cases the likelihood of occurrence is "rare" (as a result of the Proponent's commitments in relation to ecological management and biodiversity offsets) and therefore the risk of impact is therefore considered to have been minimised and acceptable.

- Impact on identified sites and/or artefacts of Aboriginal cultural heritage as a result of the proposed construction and mining activities and without the permission of the registered Aboriginal stakeholders or DECCW.

  The accidental disturbance to an identified Aboriginal artefact or site cannot be categorically ruled out and therefore, even though the potential likelihood is considered "rare", as the potential consequence is major, a high risk rating is retained. The commitments made by the Proponent in relation to Aboriginal cultural heritage management are deemed to minimise the potential for accidental disturbance and therefore the residual risk is considered acceptable.

- Temporary disturbance to the existing landform and marginally identifiable change to the landscape.

  While the potential consequence of the impact is considered insignificant, because it is considered almost certain to occur, the high risk rating applies.

- Major or severe accident resultant from road or rail transport from the Project Site.

  While every precaution has been and would be taken by the Proponent in relation to the design of traffic management and education of its workforce, the potential consequence of a major or severe accident is such that a high risk rating applies.

- Major or severe injury sustained as a consequence of spontaneous combustion related fire.

  While the likelihood of such an occurrence is reduced to "rare" through the implementation of appropriate spontaneous combustion management controls, the potential consequence of an incident is such that a high risk rating applies.

- Major and continuing contamination of surface water as a result of exposing contaminated lands.

  As above, while the likelihood of such an occurrence is considered "rare", however, the potential consequence of a major or contamination event is such that a high risk rating applies.

- Severe injury or death sustained as a consequence of fire on the Mine Site.

  While considered a "rare occurrence", the consequence could be catastrophic and as such a high risk rating applies despite the incorporation of safeguards which would minimise the potential for fire on the Mine Site.

The risks associated with the majority of possible environmental impacts are considered moderate or less and therefore, while these may result in impacts deemed unacceptable to some stakeholders, the development and operation of the Longwall Project, with the implementation of appropriate management plans, are generally considered acceptable.

6.2.2 Ecological Sustainable Development

6.2.2.1 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. The principles of Ecologically Sustainable Development (ESD) that have been recognised for over a decade were based upon meeting the needs of the current generation while conserving our ecosystems for the benefit of future generations. In order to achieve sustainable development, recognition needs to be placed upon the integration of both short-term and long-term environmental, economic, social and equitable objectives.

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

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

6.2.2.2 The Precautionary Principle

In order 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 Longwall Project and throughout the preparation of the *Environmental Assessment*, the Proponent engaged specialist consultants to examine the existing environment, predict possible impacts and recommend controls, safeguards and/or mitigation measures in order to ensure that the level of impact satisfies statutory requirements or reasonable community expectations. Throughout the development of the Longwall Project, the Proponent and its consultants have adopted an anticipatory approach to impacts, particularly that of irreversible ecological damage, by undertaking an analysis of the risks posed by activities of the Longwall Project, an appropriate level of research and baseline investigations and environmental evaluation. The controls, safeguards and/or mitigation measures have therefore been planned with a comprehensive knowledge of the existing environment and the potential risk of environmental degradation posed by Longwall Project activities.

The implementation of the environmental safeguards, controls and mitigation measures has been formalised by the Proponent as the draft Statement of Commitments presented as Section 5.

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

Objectives of the Longwall Project

The Longwall Project has been designed with the principal objective being to increase coal production at 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, consideration of feasible mitigation measures and offset strategies and an environmentally responsible approach to the design and operation of the Longwall Project can the risk of harm to the environment be minimised.

Design of Longwall Project Components

Several design aspects of the Longwall Project required consideration of potential impacts on the local environment 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 locations of the Reject Emplacement Area and Brine Storage Area were chosen to minimise disturbance to native vegetation and the riparian zones of several ephemeral creeks which traverse the Mine Site.
- The current location and proposed orientation of gas drainage activities has been modified to minimise the area of disturbance within the riparian zones of the ephemeral creeks which traverse the Mine Site. Not only will this reduce the area of native vegetation to be disturbed, but it will ensure that the majority of Aboriginal heritage sites identified on the Mine Site can be avoided without the need for salvage.
- In order to prevent the discharge of saline water from the Mine Site, a series of ponds for the storage of raw groundwater, treated 'raffinate' and waste brine have been incorporated into the design of the Longwall Project with capacity large enough to manage the dewatering of mine in-flows.
- Whilst intuitively, it is considered that introducing additional fresh water discharges to the Namoi River would be of net benefit, the potential adverse and beneficial affects of the proposed discharge has been considered (both in relation to river hydrology and ecology).
- The final landform has been designed to provide for the re-establishment of considerable areas of land suitable for grazing whilst integrating the conservation of areas of native vegetation and potential ongoing use of the rail loop for a subsequent development.

Integration of Safeguards and Procedures

The framework for ongoing environmental management, operational performance and rehabilitation of the Mine Site would be provided through the project approval and be managed in accordance with the Mining, Rehabilitation and Environmental Management Process, both of which would involve the input from relevant State and local government agencies. The Mining Operations Plan, which would contain a range of site specific environmental procedures to achieve consistency with specified outcomes and to control identified risks, would be updated

periodically, while the Annual Environmental Management Report would report on the progress of the operation and provide an opportunity to review the effectiveness of the environmental management strategies adopted. In addition:

- all on-site procedures would be regularly reviewed, particularly in light of monitoring results;
- surface water, groundwater, noise, deposited dust and PM_{10} levels would be monitored at locations potentially most affected by the Longwall Project in order to ensure the continued compliance with the goals outlined in this document;
- the principles outlined in the surface water management section of this document (Section 4B.3.4) would be adopted to minimise any impact on water quality or quantity exiting the Pit Top Area;
- wherever possible, areas not required for mining-related activities would remain grassed to assist in minimising erosion and reducing the suspended sediment load in surface water flowing through the Mine Site; and
- topsoil and subsoil would be stripped, stockpiled and re-spread on the basis of the quality of the soil (as indicated by the soil mapping unit), and planned final land use of different areas of the final landform.

Rehabilitation and Subsequent Land Use

Long term adverse impacts on the local environment would be avoided through the design and rehabilitation of disturbed areas to a landform and vegetation structure equivalent to that of the pre-mining environment.

Conclusion

The precautionary principle has been considered during all stages of the design and assessment of the Longwall Project. The approach adopted, ie. risk analysis, initial assessment, consultation, specialist investigations and safeguard design, provides a high degree of certainty that the project would not result in any major unforeseen impacts.

6.2.2.3 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 Longwall Project.

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

Identification of Longwall Project Objectives

The Longwall Project has been designed with an objective of providing significant employment opportunities to residents of the Narrabri and Gunnedah Shires. This objective would require a commitment to employee training. Consideration has also been given to the ability of the existing infrastructure and services within the Narrabri and Gunnedah Local Government Areas to accommodate a development of the scale proposed.

The Longwall Project has also been designed with an objective to ensure the continued viability of surrounding land uses throughout and beyond the life of the Longwall Project.

Design of Longwall Project Components

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

- The location and orientation of the Pit Top Area, and location and orientation of progressive disturbance over the Mine Site has been designed to minimise disturbance upon native vegetation and sensitive fauna habitats.
- The location and orientation of progressive disturbance over the Mine Site has been designed to ensure that disturbance to Aboriginal heritage sites would be avoided (unless impracticable for mine safety reasons).
- The availability of groundwater to surrounding landholders, although not predicted to be noticeably affected by the Longwall Project, would be monitored throughout the life of the mine and ameliorative measures taken should a short-term reduction in the availability of groundwater to local landholders occur.
- The rehabilitation of the Mine Site has been designed to integrate the re-establishment of agricultural land with the conservation of native vegetation.

Integration of Safeguards and Procedures

Local community stakeholders have been consulted to ensure adequate facilities and an appropriate level of services would be available (and could be maintained) for the influx of personnel to the region which may occur as a result of the increased employment opportunities offered by the longwall Project.

The Proponent recognises that all members of the local Narrabri, Boggabri, Baan Baa, Gunnedah and other local communities should benefit appropriately from the Longwall Project 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.

Rehabilitation and Subsequent Land Use

The final landform would be constructed and rehabilitated in a manner that would generally retain land with an agricultural capability similar to that prior to mining, thereby providing the basis for continuing economic activity within the local community. The intention to retain the rail loop within the rehabilitated landform would provide an important item of infrastructure for a subsequent industry.

Conclusion

The principle of social equity has been addressed throughout the design of the Longwall Project. The Longwall Project would contribute significantly to the economic activity of Narrabri and the communities of the Narrabri Shire and surrounding districts through the generation of employment and increased demand for local goods and services and flow-on effect. As such, the benefits of the Longwall Project would be distributed throughout the local community. The Longwall Project 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.

6.2.2.4 Conservation of Biological Diversity and Ecological Integrity

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

Identification of Longwall Project Objectives

The Proponent is committed to undertake all activities in an environmentally responsible manner, and recognises the need to ensure that changes to natural components of the environment do not adversely affect biological diversity or ecological integrity. As such, the project has been designed with an objective to minimise impacts on the flora and fauna of the Project Site, whilst allowing the recovery of an economically viable resource.

In addition, an objective of the Proponent has been to ensure that there is no net loss of biodiversity values resultant from the activities of the Longwall Project in the medium to long term.

Design of Longwall Project Components

The activities associated with the Longwall Project require significantly greater areas of surface disturbance than the Stage 1 Narrabri Coal Mine. As a consequence, emphasis has been placed on minimising the area of native vegetation that would be disturbed by the Longwall Project.

The additional areas of infrastructure on the Pit Top Area, including the Reject Emplacement Area and Brine Storage Area have been located where disturbance to native vegetation can be avoided.

The Reject Emplacement Area and Brine Storage Area, which represent the largest single areas of disturbance associated with the Longwall Project, have been designed to be constructed progressively. That is, sections of each area would only be disturbed and constructed as needed. As a consequence, final area of disturbance may be far less than that proposed within this document.

All ponds to contain saline water or brine would be lined with an impermeable liner with a permeability of $<1 \times 10^{-14}$ m/s or less.

All other water management structures have been designed and would be constructed to ensure that only water within DECCW specified criteria leaves the Pit Top Area.

Gas drainage activities would be located and orientated to minimise the area of disturbance within the riparian zones of the ephemeral creeks which traverse the Mine Site. This would have the additional positive impact of reducing the potential for disturbance to Aboriginal sites (identified or unidentified which invariably are located within, or within 35m of the creek bed).

Despite all efforts to reduce disturbance to native vegetation, based on the current design of all surface disturbance, it is predicted that up to 210.5ha of native vegetation may be disturbed by the Longwall Project. It is recognised that the extent of clearing associated with the surface to in-seam drilling operations may be reduced substantially throughout the life of the Project in the event underground in-seam drilling is adopted once mining is underway. To offset the impact of clearing native vegetation, the Proponent has committed to finalising a Biodiversity Offset Strategy within 3 years of the receipt of project approval (or prior to disturbance above LW4, which ever occurs first). At this stage, the Proponent intends to incorporate the 543ha of native vegetation on Lots 64 and 65, DP757114, in the northwestern section of the Mine Site. The area to be conserved within this offset area includes vegetation of three of the four native vegetation communities to be disturbed at a combined ratio of approximately 2.6:1. By establishing a biodiversity offset area, the biodiversity values of the Mine Site would be maintained or improved whilst those areas of disturbance are rehabilitated to re-establish the 210.5ha of native vegetation disturbed.

Integration of Safeguards and Procedures

The Proponent would implement the following safeguards and procedures to maximise the conservation of biological diversity and ecological integrity on and surrounding the Mine Site.

- The boundaries of proposed disturbance would be clearly identified prior to any disturbance commencing. As far as practicable, the nominated areas would avoid disturbance to the vegetation of Community 3 along watercourses of the Mine Site.
- Pre-clearing surveys of native tree species to be removed would be undertaken by a qualified ecologist to identify whether any threatened species, population or community or their habitat (including aquatic habitat and species) is present.
- In the event that an EEC or threatened species or population is identified, the proposed area of disturbance would be reviewed and relocated or reorientated if practicable. Wherever possible, significant habitat trees would be retained.

- If the relocation or re-orientation of the area to be disturbed is not practicable (for reasons of mine / operational safety), the consultant ecologist would relocate any fauna species residing within the area to be cleared.
- If necessary, tree felling would be undertaken in accordance with a Tree Felling Protocol, to be developed by a qualified ecologist.
- Cleared native vegetation would be dispersed and spread around disturbed areas to provide habitat, increase the seed bank and to provide a mulch material for nutrient cycling and water retention purposes. Tree hollows would be re-sited where practicable.
- Rehabilitation of the Mine Site would be undertaken progressively with areas no longer required for ongoing operations rehabilitated as soon as practicable.
- Weed eradication and feral animal management programs would be developed and implemented, as required.

Other ecological management commitments are included in Section 6 – Ecology of the draft Statement of Commitments (**Table 5.1**).

Rehabilitation and Subsequent Land Use

The final landform has been designed to re-instate the natural landforms and vegetation communities wherever possible including the equivalent area of disturbed native vegetation.

Conclusion

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

6.2.2.5 Improved Valuation and Pricing of Environmental Resources

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

Identification of Longwall Project Objectives

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

Design of Longwall 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.

Rehabilitation and Subsequent Land Use

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

Conclusion

The value placed by the Proponent on environmental resources is evident in the identification of Longwall Project 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 Mine 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 to a high standard and meeting all commitments in all the project approval, leases and licences and those made to the local community.

6.2.2.6 Conclusion

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

6.3 JUSTIFICATION OF THE PROJECT

6.3.1 Introduction

In assessing whether the development and operation of the Longwall Project is justified, consideration has been given both to the predicted residual impacts on the local and wider environment and the potential benefits the project would have for the Proponent, Narrabri and Narrabri Shire, surrounding districts, NSW and Australia. When considering the predicted residual impacts, a review of the proposed controls, safeguards and mitigation measures of the Proponent was also undertaken to determine the emphasis placed on impact minimisation and the incorporation of the principles of ESD.

This section also considers the consequences of the Longwall Project not proceeding.

6.3.2 Biophysical Considerations

Sections 4B.1 to 4B.12 present the range of residual impacts on the biophysical environment predicted should the Longwall Project proceed, after the adoption of a number of design and operational procedures, mitigation measures and/or offset strategies. The Longwall Project would have a range of impacts on the biophysical environment. The residual impacts considered of greatest significance, and the proposed management of these, are summarised as follows.

Subsidence

Subsidence modelling completed by DGS (2009) considered three separate subsidence scenarios. The results of this study indicate that the surface deformations due to longwall mining within the Mine Site are likely to cause the following impacts.

- Surface cracking and shearing within tensile and compressive strain zones and ranging in width from 20mm to 190mm at cover depths ranging from 380m to 160m respectively. Strain concentrations in near surface rock, ie. ridges, could double the above crack widths to 40mm and 380mm respectively.
- Surface gradients are likely to increase or decrease by up to 6% (3^o) along creeks resulting in ponding depths of between 0.5m to 1.5m. Only two areas across the Mining Area would result in overbank ponding with the remainder of ponding contained within the existing stream beds.
- Direct hydraulic connection to the surface, due to continuous sub-surface fracturing above the panels, is considered unlikely to occur. Subsurface aquifers within 110m to 180m above the proposed panels, however, may be affected by direct hydraulic connection to the workings, with significant long-term increases to vertical permeability.
- Creek flow loss (through discontinuous fracturing to surface) is considered unlikely due to the deeper soil profiles across the Mine Site.
- Instability of steep, eroded creek channel banks and areas of dispersive soils could be exacerbated by subsidence.
- Damage to soil and water conservation structures such as contour banks and dams is likely. Damage to other surface infrastructure above the Mining Area, ie. houses, sheds, etc. is also likely, although all such structures are located solely on land owned by the Proponent.
- Aboriginal sites are unlikely to be impacted directly by subsidence but potentially indirectly through accelerated erosion or surface cracking.

The Proponent has committed to repairing surface cracks as they occur and monitoring the impacts of subsidence on hydrological and hydrogeological processes, ie. groundwater availability and creek flows. In the event that adverse impacts on these are identified, remedial measures would be implemented which may include excavation of the creek channel or supply of an alternate water supply. Ultimately, however, none of the predicted impacts are likely to result in significant detrimental impacts to the local environment or surrounding land owners and would be managed in accordance with a Subsidence Management Plan to be prepared following receipt of project approval.

Groundwater Resources

A detailed groundwater model has been developed to simulate the impact of the Longwall Project on the groundwater beneath the Mine Site and surrounds. Importantly, it has been established that there is no direct connectivity between the Hoskissons Coal Seam (to be mined) and the Namoi River alluvium (from which the majority of local groundwater users draw water supply). The groundwater modelling predicts that groundwater (which is likely to be saline [TDS>5 000mg/L]) would initially flow into the underground mine at a moderate rate of 0.21ML/day (76.7ML/year), steadily increasing to a peak rate of 3.82ML/day (1 398.1ML/year) in Year 20 before declining as water is allowed to remain in the goaf areas of completed longwall panels in areas down dip of the active mining. Notably, the Proponent has designed a water management strategy to accommodate this volume and quality of water.

The groundwater modelling predicts the following impacts on groundwater levels (at the completion of mining) within the hydrogeological units beneath the Mine Site.

- Within the Hoskissons Coal Seam, drawdowns of 5m or more may extend to 15km from the Mine Site and drawdown of 1m or more may extend approximately 20km from the Mine Site to the southwest and northwest.
- Within the Garrawilla Volcanics, drawdowns of generally less than 5m are predicted. A 1m drawdown is predicted to extend between 5km and 8km to the west of the Mine Site.
- Drawdowns of 0.5m in the alluvium, colluvium and regolith are predicted to extend up to 3km from the Mine Site to the north. Maximum drawdown would be limited to around 5m, and only occur in the immediate vicinity of the Mining Area.
- No measurable drawdown impact is predicted in the Namoi River alluvium.
- No measurable drawdown impact is predicted in the Jurassic sediments of the Great Artesian Basin, ie. Purlawaugh Formation and Pilliga Sandstone.
- At the end of the 100 year recovery period, water levels in all the main hydrogeological units are predicted to have recovered generally to pre-mining levels recorded at the start of mining.

Notably, there would be no impact on the water contained with the Namoi River alluvium and an insignificant impact on the groundwater of the Great Artesian Basin groundwater source (a reduction of 3MLpa). A reduced flow of 0.1ML per year is predicted for some reaches of the Namoi River as a consequence of local groundwater drawdown, however, this change would be practically imperceptible and have no impact on local hydrology or hydrogeology.

The potential for impact on the small number of bores screening the aquifers of the lower hydrogeological units that may experience some drawdown has to a large degree been mitigated by the Proponent's acquisition of properties within the anticipated zone of impact. However, in the event that drawdown associated with the Longwall Project is determined to impact on the yield of a non-project related bore, the Proponent has committed to mitigating these impacts (or compensating the bore holder).

Finally, it is anticipated that the predicted drawdown attributable to the Longwall Project would not impact on a spring located on the "Mayfield" property to the south of the Mine Site, however, should some reduction in flow be attributed to the Longwall project, the Proponent would provide an alternate supply until such time as the flow is re-instated.

Surface Water Resources

A proportion of the surface water currently flowing through the Mine Site would be retained for use in dust suppression. The "clean" water component captured would, however, be within the maximum harvestable right for the Mine Site, with additional clean water diverted to natural watercourses.

Sediment-laden or "dirty" water originating from disturbed areas would be collected and during the initial years of the Longwall Project to supplement the Mine Site water supply. As mine dewatering rates increase, however, this water would no longer be required to supplement the Mine Site water supply and would be allowed to settle within the sediment dam structures before being released to maintain environmental flows of the downstream catchment. Based on the design of the sediment dam structures, any controlled release would meet the nominated criteria for total suspended solids (TSS) (50mg/L). The Proponent has committed to preparing and implementing an Erosion and Sediment Control Plan (ESCP) for all disturbance to be undertaken in association with mine ventilation and gas drainage operations over the Mining Area. The ESCP would be prepared in accordance with Landcom (2004) and DECC (2008) and would provide for best practice erosion and sediment control.

Two of the Pit Top Area catchments have been identified as containing potentially contaminated water (coal processing area catchment and Reject Emplacement Area catchment). Runoff from these catchments would be diverted to storage basin structures from where it would be pumped to a dam and processed through the Water Conditioning Plant, ie. this water would be prevented from discharging from the Pit Top Area. Notwithstanding the low potential for discharge of contaminated water, the Proponent has identified measures for minimising and remediating the impacts should a pollution event occur on the Mine Site.

The Longwall Project operations would also require that significant volumes of saline groundwater be managed on the surface and prevented from entering the natural drainage network. The Proponent has committed to processing all dewatered mine in-flows through a Water Conditioning Plant to produce fresh water raffinate (TDS≤500mg/L) and concentrated brine (TDS~25 000mg/L). The concentrated brine would be stored within a number of impermeable brine storage ponds (both within the rail loop and the Brine Storage Area to the north of Kurrajong Creek Tributary 2), allowed to evaporate over the life of the Longwall Project, with the remaining brine at the end of mine life (~2 000ML) reinjected back into the underground void space over a period of approximately 2 years. The operation of the nominated brine storages has been modelled by WRM (2009) illustrating that these provide storage capacity well in excess of what is predicted by the groundwater modelling of Aquaterra (2009). Notwithstanding the low potential for discharge of saline water, the Proponent has identified measures for minimising and remediating the impacts should a pollution event occur on the Mine Site.

The fresh water raffinate would be used to supply the Mine Site water requirements. Surplus volumes of raffinate would be discharged to the Namoi River via a pipeline to be constructed by the Proponent within Crown reserves, Narrabri Shire road easements Proponent-owned land and potentially on the edge of some parcels of private land. WRM (2009) has assessed the likely impact of the proposed discharge on river hydrology and determined that the maximum discharge of 3ML/day would not significantly affect river flow, which is in excess of 100ML/day 70% of the time. The discharge may, however, have a positive impact on river hydrology by increasing the flow rate during periods of low flows, which could in turn increase the reliability of stock and domestic users and improve environmental flows in the catchment.

In relation to water quality, the salinity of the discharge would be equivalent to that of the Namoi River during moderate flows and less saline than that of the Namoi River during low flow periods.

Flora and Fauna

Up to 210ha of native vegetation would be disturbed by activities associated with the Longwall Project. This disturbance would be mitigated by the proposed safeguards and management measures proposed for surface disturbance activities (see Commitments 8.1 to 8.19) and offset by the establishment of the proposed Biodiversity Offset Strategy which would conserve approximately 543ha of vegetation of the same type as that to be disturbed. Wherever possible, impacts on ecology of conservation significance would be avoided, and if unable to be avoided minimised and/or offset.

Aboriginal Heritage

A total of 43 Aboriginal sites have been identified over the Mining Area of LW1 to LW7. The Proponent has committed to avoiding impact on the four of these sites identified as being of greatest significance. The remaining sites would also be avoided where possible, with unavoidable disturbance managed in accordance with the salvage recommendation of the registered Aboriginal stakeholders.

A further 69 sites were identified as part of a reconnaissance survey over the remainder of the Mining Area (LW8 to LW26) and nine sites over the Brine Storage Area.

Management of the identified Aboriginal sites, and those that will be identified by subsequent surveys over the future longwall panels of the Mining Area, would be in accordance with an Aboriginal Cultural Heritage Management Plan to be updated following consultation with the local Aboriginal community and the DECCW.

European Heritage

No sites of European heritage significance would be disturbed by the Longwall Project.

Noise

The Longwall Project would generate noise levels over and above those currently experienced throughout the existing environment. These noise levels, assuming the implementation of the operational commitments identified in Section 5, would generally comply within the DECCW nominated criteria for all construction and operational activities. Through the implementation of the nominated noise controls, exceedances of noise criteria would be limited to between (1dB(A) and 5dB (A)) at all but one residence ("Kurrajong") as operations occur over LW24 to LW26 (Scenario 3). The predicted exceedances would only occur under noise enhancing conditions (inversion or southeast winds) and would be limited temporarily to the period associated with either surface activities above LW1 to LW3 ("Bow Hills", "Naroo", and "Greylands"). As all reasonable and feasible noise mitigation measures are to be implemented, the predicted exceedance would be limited to noise enhancing meteorological conditions only, and then for a limited period of operations. The impact of these moderate exceedances is considered acceptable. Surface activities generating noise would be monitored as required to ensure the extent of any exceedances are minimised.

Air Quality

Air pollutant levels are predicted to be below DECCW criteria for deposited dust and annual average PM_{10} levels at all non-project related residences, ie. assuming the adoption of a range of standard dust control measures. Similarly, SO_2 and NO_2 and odour emissions would satisfy DECCW, WHO and NEPM criteria and greenhouse gas emissions would only lead to a minor increase in Australia-wide and International emissions.

Based on a 365 day data set generated for the local area from data collected at the closest PM_{10} measuring station, 24 hour maximum PM_{10} levels may exceed the DECCW nominated criteria at two residences, R2 – "Ardmona" and R3 – "Naroo", on two and four days of the year respectively (when construction activities within the Brine Storage Area are in progress). In each case, the incremental increase attributable to the Longwall Project is not the dominant component of the total predicted concentration, ie. the majority of the particulate matter is supplied by activities other than the Longwall Project.

Given the periodic and temporary nature of the construction activities within the Brine Storage Area and the relatively low frequency of moderate to fresh winds from the northwest quadrant (<10% in 2008), the predicted number of exceedances are assessed to be a conservative representation of the impacts likely to be experienced in the surrounding area. Furthermore, by ceasing construction activities within the Brine Storage Area when the prevailing winds are from the northwest quadrant, the potential for exceedance of the 24-hour PM_{10} criterion would be further reduced.

Air quality modelling predicts that all other air quality pollutants would be within the nominated air quality criterion at the non-project related residences on and surrounding the Mine Site.

Soils and Land Capability

Impacts on the soils of the Mine Site would be temporary and manageable given the procedures intended to stockpile and revegetate all soils. The soils located within the cracking zones above each longwall panel, along watercourses and other areas susceptible to erosion, eg. slopes >10º over soils derived from the Purlawaugh Formation, would be regularly inspected and any erosion quickly identified and remediated before any damage to the soils can occur.

Traffic

Overall traffic levels would not increase noticeably on the Kamilaroi Highway although there may be occasional delays caused to traffic on Kurrajong Creek Road due to the short term (<6 minutes) closure of the railway level crossing to allow the entry or exit of coal trains onto or off the rail loop. The intersection/rail crossing has been designed and constructed to ensure the storage of vehicles on the Kamilaroi Highway at these times does not compromise the safety of road users.

Visibility

Activities on the Mine Site would contribute to a noticeable change to the existing visual amenity although the construction and vegetation of amenity bunds around the Pit Top Area and progressive rehabilitation of the disturbance associated with gas drainage and ventilation activities would largely mitigate this change.

When considering the implementation of the controls, safeguards and mitigation measures proposed by the Proponent and summarised in the draft Statement of Commitments, the level of impact on the biophysical environment is relatively minor. The relatively minor impact is further emphasised when compared to operating coal mines elsewhere which require disturbance to larger areas of native vegetation, are in closer proximity to local communities and require disturbance to items of Aboriginal or European heritage significance.

6.3.3 Socio-economic Considerations

The impacts of the Longwall Project on the socio-economic environment would be largely positive given the significant increase in employment opportunities, the Proponent's commitment to employing local residents, the diversification of industry within the Narrabri and Gunnedah Local Government Areas and the flow-on effects to subsidiary and associated industries and businesses of the Longwall Project. In demonstration of this positive impact, an analysis of the spending associated with the mine over the past two years shows that in excess of $148 million has been invested by the Proponent with almost $47 million or 31.43% spent in the local area.

In relation to the Longwall Project.

- Approximately 26% of the $295 million capital cost to establish the Longwall Project would be related to construction labour, on-site facilities construction and materials (a significant proportion of which would be spent locally). (The remaining 74% of the capital costs would be directed overseas and throughout Australia for the purchase of the longwall equipment and coal processing equipment.)
- Annual labour costs would be in the order of $36 million once mine production reaches the 8Mtpa level, a significant proportion of which would be retained locally through payment of employees and local contractors.
- Royalties of up to $35 million per year would be payable to the NSW government when full production is reached which would contribute to the State economy, as would port and rail access fees.

While a short term tightening of the rental market in Narrabri may be experienced during the early years of operation of the Longwall Project, it is understood that a number of residential developments have been proposed which would ease this shortage of rental property in the medium and long term both in Narrabri and Gunnedah. Both Narrabri and Gunnedah and their respective local government areas are considered to have sufficient existing facilities and services to cater for the projected population growth. In any event, the Proponent through its associated companies, has proven itself to be a significant contributor to the communities in which it has operated other mines, eg. Gunnedah, Boggabri and Werris Creek.

6.3.4 Planning Considerations

This section reviews the compliance of the Longwall Project with local, regional and State planning instruments. It is noted that whilst the relevance of these instruments may change in the future, the following represents the application of these in their current form to the Project as described in Section 2.

Narrabri Local Environmental Plans 1992

The proposed activities would be undertaken within land zoned General Rural (1a) with mining permissible within this zone with development consent.

Orana Regional Environmental Plan (REP) No 1 – Siding Spring

While the Mine Site is approximately 115km from Siding Spring and lies within 200km of the Observatory, no consultation or concurrence is required with the Observatory Director as, under Section 8 of the REP, consultation or concurrence is only required for locations within 100km of the observatory.

State Environmental Planning Policy (SEPP) (Mining, Petroleum Production and Extractive Industries) 2007

The SEPP specifies matters requiring consideration in the assessment of any mining, petroleum production and extractive industry development, as defined in NSW legislation. **Table 6.2** presents a summary of each element requiring consideration and a reference to the section in the *Environmental Assessment* where this is addressed.

Table 6.2
Application of SEPP (Mining, Petroleum Production and Extractive Industries) 2007

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Relevant SEPP Clause	Description	EA Section
12: Compatibility with other land uses	Consideration is given to: - the existing uses and approved uses of land in the vicinity of the development; - the potential impact on the preferred land uses (as considered by the consent authority) in the vicinity of the development; and - any ways in which the development may be incompatible with any of those existing, approved or preferred land uses. The respective public benefits of the development and the existing, approved or preferred land uses are evaluated and compared. Measures proposed to avoid or minimise any incompatibility are considered.	4A.3.3 4B.8.3 4B.1.6.8 4B.11 & 6.3.3 Throughout Section 4B
13: Compatibility with mining, petroleum production or extractive industry	Consideration is given to whether the development is likely to have a significant impact on current or future mining, petroleum production or extractive industry and ways in which the development may be incompatible. Measures taken by the Proponent to avoid or minimise any incompatibility are considered. The public benefits of the development and any existing or approved mining, petroleum production or extractive industry must be evaluated and compared.	1.4 NA 6.3

Table 6.2 (Cont'd)
Application of SEPP (Mining, Petroleum Production and Extractive Industries) 2007

Relevant SEPP Clause	Description	EA Section
14: Natural resource and environmental management	Consideration is given to ensuring that the development is undertaken in an environmentally responsible manner, including conditions to ensure: - impacts on significant water resources, including surface and groundwater resources, are avoided or minimised; - impacts on threatened species and biodiversity are avoided or minimised; and - greenhouse gas emissions are minimised and an assessment of the greenhouse gas emissions (including downstream emissions) of the development is provided.	4B.2 & 4B.3 4B.4 4B.7.6.6
15: Resource recovery	The efficiency of resource recovery, including the reuse or recycling of material and minimisation of the creation of waste, is considered.	2.2.5 & 2.4.1
16: Transportation	The following transport related issued are considered. - The transport of some or all of the materials from the site by means other than public road. - Limitation of the number of truck movements that occur on roads within residential areas or roads near to schools. - The preparation of a code of conduct for the transport of materials on public roads.	2.6 & 4B.9
17: Rehabilitation	The rehabilitation of the land affected by the development is considered including: - the preparation of a plan that identifies the proposed end use and landform of the land once rehabilitated; - the appropriate management of development generated waste; - remediation of any soil contaminated by the development; and - the steps to be taken to ensure that the state of the land does not jeopardize public safety, while being rehabilitated or at the completion of rehabilitation.	2.13 2.8 12.14 to 12.16 2.13

State Environmental Planning Policy No. 33 (SEPP 33) – Hazardous and Offensive Developments

Based on the risk screening method of DUAP (1997), neither the storage nor transport of the hazardous materials to be stored on the Mine Site would result in the Project being considered a hazardous, offensive or potentially hazardous under SEPP 33 (see **Appendix 3**).

State Environmental Planning Policy No. 44 (SEPP 44) – Koala Habitat Protection

SEPP 44 has been addressed by the fauna consultant to the Project (Ecotone, 2009 – see *Specialist Consultant Studies Compendium* – Part 4). The Mine Site does not represent core Koala habitat (see Section 4B.4.7.2).

6.3.5 Consequences of not Proceeding with the Longwall Project

The consequences of not proceeding with the Longwall Project include the following.

i) The coal recoverable by Longwall methods would not be mined by the Proponent. Such an outcome would be contrary to the State's and the Proponent's objective to maximise resource utilisation.

ii) The opportunity to create an additional 98 full-time jobs would be foregone.

iii) The disposable wages for the additional full-time and part-time workforce would be foregone, a substantial proportion of which would be spent in the Narrabri/Boggabri/Gunnedah areas.

iv) The opportunity to expand the mining industry within the Narrabri Shire would be foregone along with the training opportunities proposed by the Proponent. This loss of training opportunities would also reduce the ability of the local communities to retain younger people who are generally leaving to pursue greater opportunities elsewhere.

v) Foregoing the additional PAYE taxes for the 30 year life of the mine.

vi) Foregoing additional coal royalties and payments to State Authorities as well as export earnings which would help offset, at least in part, Australia's foreign debt.

vii) The additional minor impacts on the local biophysical environment would not eventuate, particularly those related to subsidence.

It is considered that the benefits of proceeding with the Longwall Project therefore far outweigh the minor impacts on the environment that would result. The nominated consequences of not proceeding with the Longwall Project also weigh heavily in favour of proceeding with the Longwall Project.

6.4 CONCLUSION

The Longwall Project has, to the extent feasible, been designed to address the issues of concern to the community and all levels of government. The Longwall Project provides for increased production, sale and despatch of up to 8Mtpa of high quality coal products which would be significant in generating employment opportunities and maintaining a long-term stimulus to the local economies of Narrabri, Gunnedah and other surrounding communities. The development and operation of the Longwall Project would assist in increasing the role of the coal industry as a contributor to the economic base of Narrabri Shire which to date has experienced few economic benefits from the coal industry. 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 Longwall Project should proceed because it would:

i) contribute towards satisfying the demand for export quality coal;

ii) reduce risk levels associated with possible incidents and impacts on the environment to an acceptable level;

iii) have a minimal and manageable impact on the biophysical environment;

iv) satisfy sustainable development principles;

v) provide for continuing and future use of the Mine Site for agriculture and nature conservation;

vi) provide significant training and employment opportunities for residents of Narrabri, Gunnedah and surrounding communities;

vii) contribute to the diversification of industry within the Narrabri Shire and promote a continued growth in economic activity in the Narrabri and Gunnedah Local Government Areas; and

viii) address the perceived social impacts.

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