

Section 5

Evaluation and Justification of the Proposal

PREAMBLE

This section concludes the environmental assessment of the Broken Hill North Mine with an evaluation of risk sources and potential environmental impacts for each of the principal environmental issues.

The risk analysis of the potential environmental impacts takes into account the standard mitigation measures adopted throughout the mining industry, as well as the additional measures to be implemented as part of the Proposal so as to assign each environmental impact an overall residual risk ranking based upon likelihood and consequence of occurrence.

The Proposal is then evaluated based on the residual risk posed and in consideration of ecologically sustainable development.

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

This page has intentionally been left blank

5.1 INTRODUCTION

This section concludes the *Environmental Impact Statement*. The development and operation of the Broken Hill North Mine is evaluated and justified through consideration of its potential impacts on the environment and potential benefits to the local and wider community.

The evaluation of the Proposal is undertaken by firstly assessing the identified environmental risks posed to the local environment by the proposed activities and then considering the implementation of the commitments for controls, safeguards or mitigation measures outlined in Section 4. The Proposal has also been evaluated against the principles of Ecologically Sustainable Development (ESD) in order to provide further guidance as to the acceptability of the Proposal, as presented in the *Environmental Impact Statement*.

Section 5.3, which presents the justification of the Proposal, 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 Proposal.

5.2 ANALYSIS OF ENVIRONMENTAL RISK

As identified in Section 3.5, risk is the chance of something happening that will have an impact upon the objectives of a task. In the present case, the relevant objective is the recommencement and operation of the Broken Hill North Mine with minimal adverse impacts on the surrounding environment or local community.

In order to analyse the environmental risks associated with the Proposal, a structured analysis of risk assuming standard industry controls involving the following individuals was undertaken on 6 June 2016. This analysis was updated as the various impact assessments were completed, taking into account the addition management and mitigation measures proposed by the Applicant in Section 4.

- Mr Geoff Hender, Deputy General Manager of Perilya Broken Hill Limited.
- Mr Mitchell Bland, Principal Environmental Consultant with R.W. Corkery & Co. Pty Limited.
- Ms Lauren Clear, Environmental Consultant with R.W. Corkery & Co. Pty Limited.

The outcomes of the risk analysis incorporated the adoption of standard, industry-wide controls and mitigation measures, together with the implementation of specific control measures for the Proposal, so as to produce a residual risk ranking that accurately summarises the risks of the individual risk sources throughout the life of the Proposal.

Risk is measured in terms of consequence (severity) and the likelihood (probability) of the event happening. The allocation of a consequence rating was based on the definitions contained in **Table 5.1**. Similarly, the likelihood or probability of an impact occurring was allocated based on the definitions contained in **Table 5.2**. Finally, the overall risk is then determined by considering the relative consequence and likelihood of an event occurring as defined by **Table 5.3**. To ensure consistency, the definitions contained in **Tables 5.1** to **5.3** are consistent with those used by the Applicant for its internal risk assessment processes.

**Table 5.1
Qualitative Consequence Rating**

Insignificant	Minor	Moderate	Major	Critical
Health and Safety				
<ul style="list-style-type: none"> • First aid treatment or injury only; and • Low level soreness or small amount of pain. 	<ul style="list-style-type: none"> • Medical Treatment Injury; • Restricted Work Injury; and • Presented to hospital (no overnight stay). 	<ul style="list-style-type: none"> • Single Lost Time Injury; • Short term hospitalisation (< 7 days); and • Reversible impairment to human health. 	<ul style="list-style-type: none"> • Multiple Lost Time Injuries; • Extended hospital treatment (> 7 days); • Permanent disability < 30%; and • Serious long-term health issue. 	<ul style="list-style-type: none"> • Permanent disability > 30%; and • One or more fatalities.
Environment				
<ul style="list-style-type: none"> • No or very low environmental impact; and • Impact confined to a small area. 	<ul style="list-style-type: none"> • Low environmental Impact; • Rapid clean-up by internal staff or contractors; and • Impact contained to area already impacted by operations. 	<ul style="list-style-type: none"> • Moderate environmental impact; • Clean-up by internal staff or contractors; and • Impact confined within lease boundary. 	<ul style="list-style-type: none"> • Major environmental impact; • Considerable clean-up effort required by internal staff and external contractors; and • Impact may extend across lease boundary. 	<ul style="list-style-type: none"> • Severe environmental impact; • Likely species destruction and long recovery period; • Extensive clean-up using external resources; and • Impact on a regional scale.
Community/External Relations				
<ul style="list-style-type: none"> • Isolated complaint received; • No media coverage; and • No damage to reputation or relationships with stakeholders. 	<ul style="list-style-type: none"> • Multiple or sporadic complaints received; • No media coverage; and • Short-term damage with relationship with one or more stakeholders but no damage to reputation. 	<ul style="list-style-type: none"> • Repeated or serious rate of complaints; • Local media interest and coverage; and • Reversible damage with stakeholders and to reputation. 	<ul style="list-style-type: none"> • Ongoing complaints from local groups, NGO's or regulators; • Regional/national media interests; • Protests by external stakeholders; and • Local or regional damage to reputation. 	<ul style="list-style-type: none"> • High level concern from community, regulators, stakeholders and /or stakeholders; • Adverse national or international media coverage; and • International damage to reputation.
Legal				
<ul style="list-style-type: none"> • Questionable or minor non-conformance with operating condition; • No fine or prosecution; • Unlikely to attract regulatory interest; and • Easy to resolve. 	<ul style="list-style-type: none"> • Non-compliance with operating conditions; • Could attract low level administrative response from regulator; and • No court appearance required. 	<ul style="list-style-type: none"> • Breach of local or national law with potential prosecution by regulator; and • Continuing occurrence of minor breach. 	<ul style="list-style-type: none"> • Major breach of local or national law; • Prosecution or penalties by regulator likely; • Short term treat to operations continuing; and • Civil action initiated. 	<ul style="list-style-type: none"> • Significant breach of national or international law with potential jail sentence; • Operations suspended or cease (short term or long term); • Licenses withdrawn or revoked; and • Class action initiated.
Operational / Cost				
<ul style="list-style-type: none"> • Minor impact, easily corrected with no loss of production; and • <\$5,000. 	<ul style="list-style-type: none"> • Minor damage to equipment or infrastructure with minimal loss of production (< 1 day); and • \$5,000 - \$50,000. 	<ul style="list-style-type: none"> • Damage to equipment or infrastructure causes production to cease < 1 week; and • \$50,000 - \$100,000. 	<ul style="list-style-type: none"> • Damage to equipment or infrastructure causes production to cease < 1 month; and • \$100,000 - \$500,000. 	<ul style="list-style-type: none"> • Damage to equipment or infrastructure causes production to cease > 1 month; and • > \$500,000.
Source: Perilya Broken Hill Limited				

**Table 5.2
Qualitative Likelihood Rating**

Rating	Description in terms of full operating life of the site	Description in terms of frequency
Almost Certain	Consequences expected to occur in most circumstances	Daily or continuous
Likely	Consequences will probably occur in most circumstances	Weekly or monthly
Possible	Consequences could occur at some time	Annually
Unlikely	Consequence will probably NOT occur in most circumstances	Within the life of the operation
Rare	Consequence may occur in exceptional circumstances	>100 years

Source: Perilya Broken Hill Limited

**Table 5.3
Risk Rating Matrix**

Likelihood	Consequences / Severity				
	Insignificant	Minor	Moderate	Major	Critical
Almost Certain	HIGH 15	HIGH 10	EXTREME 6	EXTREME 3	EXTREME 1
Likely	MODERATE 19	HIGH 14	HIGH 9	EXTREME 5	EXTREME 2
Possible	LOW 22	MODERATE 18	HIGH 13	EXTREME 8	EXTREME 4
Unlikely	LOW 24	LOW 21	MODERATE 17	HIGH 12	EXTREME 7
Rare	LOW 25	LOW 23	MODERATE 20	HIGH 16	HIGH 11

Source: Perilya Broken Hill Limited

The four levels of risk identified in **Table 5.3** are managed by the Applicant as follows.

- Low – can be managed by routine procedures and is unlikely to require specific application of resources.
- Moderate – can be managed to minimise the potential for environmental harm by the implementation of specific monitoring programs and response procedures. Responsibility for the implementation of monitoring and management activities must be specified.
- High – requires the development of specific management or action plans identifying specific monitoring, trigger levels for contingency management and specification as to the roles and responsibilities of personnel to implement contingency management. Senior management attention is required to ensure appropriate resources are available to manage this risk.
- Extreme – presents a risk which may not be able to be satisfactorily managed by the development and implementation of management plans. Director attention is needed to identify alternative methods of operation to reduce the risk to a level where it can be satisfactorily managed.

Table 5.4 presents:

- the identified risk source, the potential consequences;
- the initial risk rankings assuming standard controls;
- the location of the proposed management and control measures within Section 4 of this *Environmental Impact Statement*; and
- the residual risk rankings as a result of implementing the additional management, mitigation and control measures.

The standard and residual risk rankings have been determined from **Table 5.3** and colour-coded appropriately to highlight the overall reduction in environmental risk associated with the Proposal.

It should be noted that in some cases it was accepted that the standard controls and mitigation measures would be adequate to achieve an acceptable level of risk without the need for any additional controls or measures or that the risk was as low as reasonably practicable (ALARP). In other cases, the residual risk ranking does not change from the predetermined risk ranking with standard controls when the adoption of additional management and control measures have been implemented, and is similarly deemed to be ALARP.

5.3 EVALUATION AND JUSTIFICATION OF THE PROPOSAL

5.3.1 Introduction

Schedule 2(7) of the *Environmental Planning and Assessment Regulation (2000)* requires the *Environmental Impact Statement* to evaluate and justify the Proposal, having regard to the principles of Ecologically Sustainable Development (ESD) and the biophysical, economic and social impacts of the Proposal. This subsection provides an assessment of these matters to a level that would allow the determining authority to satisfy itself that each matter has been adequately addressed.

5.3.2 Ecologically Sustainable Development

5.3.2.1 Introduction

Throughout the design of the Proposal, the Applicant has endeavoured to address each of the following Ecologically Sustainable Development (ESD) principles, where applicable.

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



**Table 5.4
Analysis of Standard and Residual Environmental Risk**

Risk Source	Consequence / Hazard	Risk with Standard Control Measures	Proposed Control Measures Section Ref.	Residual Risk with Proposed Control Measures
ENVIRONMENTAL ISSUE – AIR QUALITY				
Emissions of PM ₁₀ /PM _{2.5} /TSP/Deposited dust from construction activities.	Health and / or amenity impacts on residential and other sensitive receptors.	L(21)	4.2.7 and 4.3.5	L(21)
Emissions of PM ₁₀ /PM _{2.5} /TSP/Dust from mining operations.	Health and / or amenity impacts on residential and other sensitive receptors.	M(18)		L(21)
Emissions of PM ₁₀ /PM _{2.5} /TSP/ Deposited dust transportation operations.	Health and / or amenity impacts on residential and other sensitive receptors.	M(18)		L(21)
Emissions of particulate lead through construction and mining operations.	Health and / or amenity impacts on residential and other sensitive receptors.	H(13)		M(20) ALARP
Point source emission of gaseous substances.	Adverse impact on human health or the environment.	NA ²		NA
Fugitive emission of gaseous substances.	Adverse impact on human health or the environment.	NA ²		NA
Emission of odorous substance.	Adverse impacts on amenity.	NA ²		NA
ENVIRONMENTAL ISSUE – NOISE				
Noise emissions from mining operations (including site establishment and construction).	Amenity impacts on residential and other sensitive receptors (including infrasound).	H(9)	4.4.6	M(17)
	Health impacts on residential and other sensitive receptors (including infrasound).	M(20)		M(20) ALARP
Off-site traffic noise.	Amenity impacts on residential and other sensitive receptors.	L(21)		L(21)
ENVIRONMENTAL ISSUE – HISTORIC HERITAGE				
Site establishment and construction operations.	Unauthorised impact to known historic heritage sites within the Project Site.	L(21)		L(23)

Table 5.4 (Cont'd)
Analysis of Standard and Residual Environmental Risk

Risk Source	Consequence / Hazard	Risk with Standard Control Measures	Proposed Control Measures Section Ref.	Residual Risk with Proposed Control Measures
ENVIRONMENTAL ISSUE – TRAFFIC AND TRANSPORTATION				
Increased traffic on surrounding roads (workforce).	Elevated risk of accident / incident on local roads.	M(17)	4.5.4	M(20) ALARP
	Increased traffic congestion.	L(21)		L(23)
	Road pavement deterioration.	L(23)		L(23)
Increased heavy vehicle traffic on surrounding roads (operational).	Elevated risk of accident / incident on local roads.	M(17)		M(20) ALARP
	Increased traffic congestion.	L(21)		L(21)
	Road pavement deterioration.	M(18)		L(21)
Inadequate road infrastructure for proposed use.	Poor traffic management.	M(18)		L(25)
ENVIRONMENTAL ISSUE – SURFACE WATER				
Runoff from rainfall event causes water release.	Discharge of sediment-laden water impacting upon riverine ecology and downstream users.	L(21)	4.7.4	L(23)
Discharge/seepage of produced water into surface water/shallow groundwater system.	Pollution of surface water and shallow groundwater.	M(18)		L(21)
Retention of excess poor quality water.	Inability to discharge to surface water and groundwater systems without chemical or additional treatment.	L(21)		L(23)
Erosion/failure of sediment and erosion controls.	Diversion and retention banks erosion / instability leading to increased sediment loads.	L(21)		L(23)
ENVIRONMENTAL ISSUE – GROUNDWATER				
Interception of groundwater from alluvial aquifers in mine workings.	Reduction in groundwater discharge to surrounding creeks/streams, adverse impacts on groundwater dependent ecosystems or surrounding groundwater users.	NA ¹	4.8.3	NA
Interception of groundwater from fractured rock aquifers in mine workings.	Reduction in groundwater discharge to surrounding creeks/streams, adverse impacts on groundwater dependent ecosystems or surrounding groundwater users.	NA ¹		NA
Modified groundwater quality / quantity.	Discharge of poor quality groundwater to surrounding aquifers.	L(25)		L(25)





Table 5.4 (Cont'd)
Analysis of Standard and Residual Environmental Risk

Risk Source	Consequence / Hazard	Risk with Standard Control Measures	Proposed Control Measures Section Ref.	Residual Risk with Proposed Control Measures
ENVIRONMENTAL ISSUE – ECOLOGY				
Planned clearing of vegetation communities.	Loss of terrestrial ecology habitat, local vegetation and biodiversity.	L(21)	4.9.7	L(21)
Planned clearing of vegetation.	Injuries to native wildlife and fauna during clearing / earthworks (pre-strip).	L(23)		L(23)
Changes to groundwater systems.	Adverse impacts on groundwater dependent ecosystems.	NA		NA
Changes to surface water systems.	Adverse impacts on surface water dependent ecosystems.	L(21)		L(23)
Mining operations.	Indirect impacts to fauna communities due to light / noise / pollution etc.	L(21)		L(23)
Mining operations.	Direct impacts to fauna communities, including microbats.	M(18)		L(21)
ENVIRONMENTAL ISSUE – ABORIGINAL HERITAGE				
Unauthorised destruction of known sites.	Loss of heritage values.	M(20)	4.10.4	M(20) ALARP
Unauthorised destruction of unknown sites within approval areas.	Loss of heritage values.	L(23)		L(23) ALARP
ENVIRONMENTAL ISSUE – VISUAL AMENITY				
Establishment of surface infrastructure.	Amenity impact through change in content and composition of views from residences and public vantage points.	L(21)	4.11.4	L(21)
Lighting or lighting glow.	Visual intrusion or reduction in scenic quality at residential and other sensitive receptors.	L(21)		L(21)
Off-site transportation operations.	Local amenity impact of visibility of industrial traffic on residential and other sensitive receptors.	L(21)		L(21)
ENVIRONMENTAL ISSUE – BUSH FIRE				
Fire initiated offsite.	Fire initiated off site threatening mine operations and infrastructure.	L(21)	4.12.3	L(21)
Fire initiated onsite.	Fire initiated on site threatening Site operations or spreading off site and impacting on stock and infrastructure.	L(21)		L(21)

Table 5.4 (Cont'd)
Analysis of Standard and Residual Environmental Risk

Risk Source	Consequence / Hazard	Risk with Standard Control Measures	Proposed Control Measures Section Ref.	Residual Risk with Proposed Control Measures
ENVIRONMENTAL ISSUE – SOILS AND CAPABILITY				
Inappropriate soil management.	Inadequate soil available for rehabilitation purposes leading to less successful rehabilitation and increased rehabilitation costs and maintenance.	H(14)	4.13.4	L(21)
	Degradation of soil in stockpiles leading to less successful rehabilitation and increased rehabilitation costs and maintenance to the Mine Area.	L(21)		L(21)
	Erosion of soil stockpiles leading to increased sediment loads in creeks.	L(21)		L(21)
ENVIRONMENTAL ISSUE – SOCIO-ECONOMIC/AGRICULTURAL				
Mining operations.	Impacts on land values and housing market within the LGA.	Positive Impact	4.15.5	Positive Impact
	Perception of negative health impacts on the community at surrounding residences.	M(17)		M(20) ALARP
	Equity imbalance in wages / access to resources between miners and other sectors within the surrounding community.	Positive Impact		Positive Impact
	Community division between support and opposition for the Proposal within the community.	M(18)		L(21)
	Inability of local business to compete with mining wages leading to antagonism towards the Proposal from local businesses.	Positive Impact		Positive Impact
	Mining operations lead to negative impacts on agriculture within the LGA.	Positive Impact		Positive Impact
	Loss of High Quality Agricultural Land.	NA		NA
Population increase associated with employment growth.	Stress on the local services leading to community disharmony and poor relationships with the Applicant.	Positive Impact	Positive Impact	
Proposal Operations.	Increased pressure on local infrastructure.	L(21)	L(21)	
Note 1:	The standing water level within the North Mine workings as a result of over 130 years of dewatering activities was 579.2m below ground level on 6 January 2017. As a result, there is no potential for discharge of groundwater in the vicinity of the Mine Site			
Note 2:	No odorous or gaseous substances would be emitted by the Proposal			
ALARP = As Low as Reasonably Practicable				



5.3.2.2 The Precautionary Principle

The precautionary principle states that "*where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation*" (IGAE, 1992).

The environmental safeguards discussed in Section 4 have been provided with a comprehensive knowledge of the existing environment derived from experience of R.W. Corkery & Co Pty Limited with similar mining projects and the various studies undertaken by recognised specialist consultants to provide an appreciation of the potential impacts that may result from the Proposal.

R.W. Corkery & Co. Pty Limited has been involved in similar mining projects throughout NSW for over 35 years and has been involved in providing environmental advice and documentation to similar proposals in Broken Hill since the 1990s. Throughout this time, R.W. Corkery & Co. Pty Limited has gained a detailed understanding of the physical and social environment surrounding the Project Site, resulting in the ability to provide a comprehensive assessment of the potential environmental impacts.

Assisting in the compilation of this document, the following specialist consultants, recognised for being leaders in their respective fields, each undertook detailed impact assessments to provide the Applicant with the most appropriate management and mitigation measures to minimise any potential harm with the surrounding environment as a result of the Proposal.

- Ms Judith Cox (BEng (Hons) CAQP), of Pacific Environment Limited, for the assessment of Air Quality.
- Ms Claris Obura (BFor (Hons) Toxicology, BScMolecular Biology and Biomedical Science), of Pacific Environment Limited, for the assessment of Human Health.
- Mr Oliver Muller (BSc(REM & HGeog),(MAAS)), of Muller Acoustic Consulting Pty Ltd, for the assessment of Noise and Vibration.
- Mr Jeff Tyler (MIEAust CPEng) and Mr Rob Bremert (BEng (Civil)), of Tonkin Consulting, for the assessment of Transport.
- Dr Jodie Benton (PhD, BA (Hons)), of OzArk Environmental & Heritage Management Pty Ltd, for the assessment of Aboriginal Heritage.
- Mr Phil Cameron (BSc, Ass Dip App Sci.), of OzArk Environmental & Heritage Management Pty Ltd, for the assessment of Ecology.

Following a full evaluation of the potential environmental impacts of the Proposal based upon the consolidated knowledge of the Applicant, R.W. Corkery and Co Pty Limited and the specialist consultant team, there are no activities or features for which there is a level of uncertainty in achieving an acceptable level of environmental performance.

5.3.2.3 Social Equity

The objective of this principle is that *"the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations"* (IGAE, 1992). Essentially, 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 both inter-generational (between generations) and intra-generational (within generations) equity considerations.

Inter-generational equity was considered in the design of the Proposal as the Applicant has been careful not to sterilise resources that may be available for future generations. Indeed, the Applicant proposes to develop the resource to facilitate further growth and expansion of the Proposal, resulting in employment and economic activity for future generations well beyond the life of the Proposal.

Intra-generational equity was considered in the Proposal as the ongoing operations would result in additional, long-term employment and training for up to 140 persons on a full time equivalent basis. The positions would be offered on a residential basis, with employees and contractors, as far as practicable sourced from Broken Hill and surrounds.

As a result, it is concluded that the objectives of this principle would be maintained as a result of the Proposal and not adversely impact current or future generations.

5.3.2.4 Conservation of Biological Diversity and Ecological Integrity

The protection of biodiversity and maintenance of ecological processes and systems is a central goal 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.

During the design of the Proposal, the Applicant has focused on ensuring that wherever practicable, disturbance has been limited to previously disturbed areas. As a result, no endangered ecological communities or species listed under the TSC or EPBC Acts would be affected, and no vegetation communities would be disturbed.

As a result, the Proposal is unlikely to have a significant impact on biological diversity or ecological integrity.

5.3.2.5 Improved Valuation, Pricing and Incentive Mechanisms

This principle involves consideration of the Proposal and the surrounding environmental resources (e.g. air, water, land and living things) which may be affected and the financial resources required by the Applicant to minimise or manage these impacts on surrounding environmental resources.

The Applicant's principal objective of the Proposal is the recommencement of mining operations at the Broken Hill North Mine in a manner that minimises disturbance and any impact on the environment and surrounding residents. It is planned that the income received from the sale of the resource would be sufficient to enable the Applicant to achieve an acceptable profit level whilst undertaking all environmentally-related tasks and meeting all commitments in all approvals, licences and permits and those made to the local community.

5.3.2.6 Conclusion

The approach taken in planning the Proposal has been multi-disciplinary, involved consultation with various government agencies, and has emphasised the application of safeguards to minimise potential environmental, social and economic impacts. The design of the Proposal has addressed each of the Ecologically Sustainable Development principles and is concluded that the Proposal achieves a sustainable outcome for the local and wider environment.

5.3.3 Justification of the Proposal

5.3.3.1 Introduction

In assessing whether the development and operation of the Broken Hill North Mine is justified, consideration has been given to both biophysical and socio-economic factors, including the predicted residual impacts on the environment and the potential benefits of the Proposal. This subsection also considers the planning considerations involved in the design of the Proposal, the alternatives considered as part of the final design and the consequences of the Proposal not proceeding. The overall justification recognises weightings placed upon both the negative and positive residual impacts identified within this document.

5.3.3.2 Biophysical Considerations

The Proposal has been designed in a manner that would:

- maximise the recovery of resources from within the Mine Site;
- limit the disturbance footprint to areas that have previously been disturbed;
- minimise the potential for pollution of air, surface water and groundwater surrounding the Project Site; and
- rehabilitate the disturbed areas of the Project Site to create a landform that maximises its future beneficial uses.

Inevitably, despite the proposed operational controls and safeguards to be implemented by the Applicant, there remains the potential for some residual impacts on the biophysical environment to occur. The assessed biophysical impacts that the Proposal would have on the local environment are set out below.

Air Quality

Given the implementation of the nominated safeguards and controls, PEL (2017a) determined that particulate matter levels are not predicted to exceed relevant criteria at any surrounding residences as a result of the Proposal. PEL (2017a) also determined that the Proposal would not result in a significant incremental increase in the concentration of heavy metals or of greenhouse gases. As a result, no adverse air quality impacts are anticipated as a result of the Proposal.

Human Health

PEL (2017b) determined that the levels of mean blood lead for children living in the vicinity of the Mine Site would be less than target levels, and that nil or very minor increases in mean blood levels are anticipated as a result of the Proposal. Given the implementation of the nominated safeguards and controls, the Proposal is anticipated to result in an increase of the proportion of children currently exceeding relevant levels of less than 0.3% to 0.7%.

As a result, the Proposal is not anticipated to result in a significant change of the current background blood levels for residents in the vicinity of the Mine Site.

Noise and Blasting

Operational and transport noise generated by the Proposal would, assuming the implementation of the nominated safeguards and controls, not exceed the relevant criteria at any privately-owned residence. In addition, ground vibration generated by blasting would, assuming the implementation of the nominated safeguards and controls, not exceed the relevant criteria at any privately-owned residence. The Applicant would continue to monitor ground vibration.

As a result, no adverse noise or blasting impacts are anticipated.

Traffic and Transportation

The Proposal would not result in a reduction in the performance of any roads or intersections along the proposed transportation route. Minor and infrequent queuing associated with heavy vehicle movements approximately every 30 minutes may occur but is not expected to be significant. The Proposal is not expected to increase road safety risks.

A range of modifications to intersections are proposed and would be constructed in consultation with the Roads and Maritime Service and Broken Hill City Council. In addition, the Applicant would negotiate a Voluntary Planning Agreement with Broken Hill City Council in relation to transportation on Local roads.

As a result, no significant adverse Traffic and transportation impacts are anticipated.

Historic Heritage

A range of sites of historic heritage significance may be directly or indirectly impacted by the Proposal. Given the implementation of the nominated safeguards and controls, it is assessed that the Proposal would not result in significant impacts to any of these sites. In addition, the Proposal would involve the continued use of historic Mine-related infrastructure. As a result, no adverse Historic heritage impacts are anticipated.

Surface Water

Given that the Mine Site does not currently discharge potentially sediment laden water during rainfall events less than a 1 in 100 year AEP event and the implementation of the nominated safeguards and controls, the Applicant anticipates that the Proposal would not result in adverse surface water-related impacts.

Groundwater

The standing water level within the North Mine workings is 579.2m below ground level. In addition, the quality of that water is such that it would not meet the criteria for discharge to the natural environment. Furthermore, there are no surrounding groundwater users or groundwater dependent ecosystems that would be adversely impacted by the Proposal.

As a result, the Proposal is not anticipated to exceed minimal impact criteria under the NSW Aquifer Interference Policy and no adverse groundwater impacts are anticipated.

Ecology

No native vegetation would be disturbed by the Proposal, and the Proposal would not significantly impact any threatened species. As a result, no adverse ecology impacts are anticipated.

Aboriginal Heritage

No sites of Aboriginal heritage significance were identified within the Project Site. As a result, no adverse Aboriginal heritage impacts are anticipated.

Visual Amenity

The Mine Site is an area of longstanding mining disturbance and Proposal-related activity on the surface would be limited and typically would occur within sections of the Mine Site that are not visible from publicly available vantage points or surrounding residences. As a result, assuming the implementation of the nominated safeguards and controls, no adverse visual amenity impacts are anticipated.

Other Impacts

Bushfire, soils and land capability and agricultural impacts associated with the Proposal would be negligible.

5.3.3.3 Socio-economic Considerations

The impacts of the Proposal on the socio-economic environment would be largely positive. Through the payment of wages, purchase of consumables and local goods and services and commissioning of local contractors, the Proposal would contribute between approximately \$33 million and \$88 million per year to the economy of the Broken Hill Local Government Area and between approximately \$10.7 million and \$20.7 million per year to the NSW and National economies.

The Proposal would provide direct full-employment for 140 people on a full time equivalent basis. As it is the intention of the Applicant to source the majority of the Proposal workforce from Broken Hill and surrounding areas, this would have a positive impact on economic activities within the Broken Hill LGA and western NSW.

5.3.3.4 Planning Considerations

This subsection reviews the compliance of the Proposal with relevant State planning instruments, regional strategies, the Broken Hill LEP 2013.

State Environmental Planning Policy (State and Regional Development) 2011

The Proposal is classified as “State Significant Development” under this SEPP. As a result, the Proposal may be assessed and determined by the Minister for Planning and Environment or their delegate.

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

Table 3.1 presents a summary of each element requiring consideration under this SEPP, and a reference to the section in the *Environmental Impact Statement* where each is addressed.

State Environmental Planning Policy (Infrastructure) 2007

A range of infrastructure has been identified which may be affected by the Proposal including road and rail infrastructure. The Applicant has consulted with the relevant stakeholders, including RMS, and considered their requirements in the preparation of the *Environmental Impact Statement*. As the Proposal would not result in adverse safety-related risks to the Broken Hill – Parkes Railway corridor, consultation was not undertaken for rail transportation.

State Environmental Planning Policy No. 55 – Remediation of Land

SEPP 55 aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment. The Applicant notes that the land, in its current state, is suitable for the proposed use, namely for mining operations.

Broken Hill Environment Plan 2013

The *Broken Hill Local Environmental Plan 2013*, and specifically the land zoning identified in that document, has been addressed in Section 3.3.5 of this document. It is noted that open-cut mining as permissible with consent within the Mine Site.

5.3.3.5 Section 79C Considerations

The considerations of Section 79C of the EP&A Act are presented in **Table 5.5**.

Table 5.5
Section 79C Considerations

Requirement	EIS Section
1. In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application:	
(a) the provisions of:	
(i) any environmental planning instrument, and	3.3
(ii) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved), and	3.3
(iii) any development control plan, and	NA
(iiia) any planning agreement that has been entered into under section 93F, or any draft planning agreement that a developer has offered to enter into under section 93F, and	NA
(v) any coastal zone management plan (within the meaning of the Coastal Protection Act 1979), that apply to the land to which the development application relates.	NA
(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality.	Throughout Section 4
(c) the suitability of the site for the development.	4.14
(d) any submissions made in accordance with this Act or the regulations.	NA
(e) the public interest.	4.15

5.3.3.6 Consequences of not Proceeding or Delaying the Proposal

The consequences of not proceeding or delaying the Proposal include the following.

- i. By not proceeding with the Proposal, the mineral resources recoverable by underground mining methods would not be mined by the Applicant. Such an outcome would be contrary to the State's and the Applicant's objective to maximise resource utilisation.
- ii. By delaying the Proposal, synergies that would be available through having two ore sources for its operations would not be available following the closure of the Potosi Mine in 2021. As a result, the Applicant's operations would become less financially viable and potentially at risk of unplanned closure. Similarly, the Applicant's ability to recommence mining operations and fund the substantial development cost of the initial stages of the Proposal would at risk, potentially resulting in a permanent closure of the North Mine.
- iii. The opportunity to generate up to approximately 140 full time equivalent positions would be foregone.

- iv. The proposed expenditure on wages, consumables, services and goods within the economy of the Broken Hill Local Government Area of between \$33 million and \$88 million per year, with a further approximately \$10.7 million and \$20.7 million per year to the NSW and National economies, would be foregone.
- v. The additional minor impacts on the local biophysical environment would not eventuate.

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

5.4 CONCLUSION

The Proposed Broken Hill North Mine Project has, to the extent feasible, been designed to address the issues of concern identified by the relevant levels of government and legislation.

- The Proposal provides for the mining and transportation of ore whilst minimising the residual impacts on the biophysical environment.
- Through the continuation of local employment within and contribution of expenditure within the Broken Hill economy, the socio-economic impacts of the Proposal are considered to be largely positive.
- The post-mining landform would be the subject of extensive consultation with the Broken Hill community conducive to the needs of the area and the historic nature of the Mine Site.