

# Section 5

## Evaluation and Justification of the Proposal

### PREAMBLE

*This section concludes the environmental assessment of the Avoca Tank Project 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.*

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## 5.1 INTRODUCTION

This section concludes the *Environmental Impact Statement*. The development and operation of the Avoca Tank Project 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 5.4, 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 3.4, 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 construction and operation of the Avoca Tank Project 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 involving the following individuals was undertaken by teleconference on 31 October 2013.

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

**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: Tritton Resources Pty Ltd.

**Table 5.3**  
**Risk Rating Matrix**

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

Source: Tritton Resources Pty Ltd.

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 executive 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. Board 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 has 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.

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

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Risk Source	Consequence / Hazard	Risk with Standard Control Measures	Proposed Control Measures Section Ref.	Residual Risk with Proposed Control Measures
<b>ENVIRONMENTAL ISSUE – ABORIGINAL HERITAGE</b>				
Unauthorised destruction of known sites.	Loss of heritage values.	M(20)	4.2.9	M(20) ALARP
Unauthorised destruction of unknown sites within approval areas.	Loss of heritage values.	M(20)	4.2.9	M(20) ALARP
<b>ENVIRONMENTAL ISSUE – ECOLOGY</b>				
Planned clearing of vegetation communities.	Loss of terrestrial ecology habitat, local vegetation and biodiversity.	L(22)	4.3.7	L(22)
Planned clearing of vegetation.	Injuries to native wildlife and fauna during clearing / earthworks (pre-strip).	L(23)	4.3.7	L(23)
Changes to groundwater and surface water systems.	Adverse impacts on groundwater dependent ecosystems.	L(23)	4.3.7	L(23)
Mining operations.	Indirect impacts to fauna communities due to light / noise / blasting etc.	L(25)	4.3.7	L(25)
<b>ENVIRONMENTAL ISSUE – GROUNDWATER</b>				
Interception of groundwater from alluvial aquifers in mine workings	Reduction in groundwater discharge to surrounding creeks/rivers, adverse impacts on groundwater dependent ecosystems or surrounding groundwater users.	L(25)	4.4.6	L(25)
Interception of groundwater from fractured rock aquifers in mine workings	Reduction in groundwater discharge to surrounding creeks/rivers, adverse impacts on groundwater dependent ecosystems or surrounding groundwater users.	L(22)	4.4.6	L(22)
Modified groundwater quality / quantity	Discharge of poor quality groundwater to surrounding aquifers.	L(21)	4.4.6	L(21)
<b>ENVIRONMENTAL ISSUE – NOISE</b>				
Noise emissions from mining operations (including site establishment and construction).	Amenity impacts on residential and other sensitive receptors (including infrasound).	L(21)	4.5.5	L(21)
	Health impacts on residential and other sensitive receptors (including infrasound).	L(23)	4.5.5	L(23)
Off-site traffic noise.	Amenity impacts on residential and other sensitive receptors.	L(22)	4.5.5	L(22)

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

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Risk Source	Consequence / Hazard	Risk with Standard Control Measures	Proposed Control Measures Section Ref.	Residual Risk with Proposed Control Measures
<b>ENVIRONMENTAL ISSUE – BLASTING</b>				
Ground Vibration and airblast from blasting activities.	Amenity impacts on residential and other sensitive receptors.	L(25)	4.6.4	L(25)
Flyrock from blasting (property)	Flyrock ejected outside blast envelope resulting in damage to nearby residences / surrounding property / infrastructure / stock.	L(25)	4.6.4	L(25)
Flyrock from blasting (injury)	Flyrock ejected outside blast envelope resulting in injury or death.	L(25)	4.6.4	L(25)
Flyrock and airblast from blasting.	Flyrock and airblast impacting upon airborne aircraft and aerial operations.	L(25)	4.6.4	L(25)
<b>ENVIRONMENTAL ISSUE – NON-INDIGENOUS HERITAGE</b>				
Site establishment and construction operations.	Impact to known European heritage sites within the Project Site.	L(25)	4.7.6	L(25)
<b>ENVIRONMENTAL ISSUE – AIR QUALITY</b>				
Generation of blasting fume.	Amenity impacts on residents and other sensitive receptors.	L(25)	4.6.4	L(25)
Emissions of PM <sub>10</sub> /PM <sub>2.5</sub> /TSP/Deposited dust from construction activities.	Health and / or amenity impacts on residential and other sensitive receptors.	L(25)	4.8.5	L(25)
Emissions of PM <sub>10</sub> /PM <sub>2.5</sub> /TSP/Dust from mining operations.	Health and / or amenity impacts on residential and other sensitive receptors.	L(24)	4.8.5	L(24)
Emissions of PM <sub>10</sub> /PM <sub>2.5</sub> /TSP/ Deposited dust transportation operations	Health and / or amenity impacts on residential and other sensitive receptors.	L(25)	4.8.5	L(25)
Deposited dust impacting agricultural productivity.	Increased dust load on crops on surrounding agricultural land.	L(25)		L(25)
<b>ENVIRONMENTAL ISSUE – SURFACE WATER</b>				
Runoff from rainfall event causes water release.	Discharge of sediment-laden water impacting upon riverine ecology and downstream users.	L(24)	4.9.3	L(24)
Discharge/seepage of stored saline water into surface water/shallow groundwater system.	Pollution of surface water and shallow groundwater.	L(23)	4.9.3	L(23)
Retention of excess poor quality water.	Inability to discharge to surface water and groundwater systems without chemical or additional treatment.	NA		NA



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

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Risk Source	Consequence / Hazard	Risk with Standard Control Measures	Proposed Control Measures Section Ref.	Residual Risk with Proposed Control Measures
<b>ENVIRONMENTAL ISSUE – SURFACE WATER (Cont'd)</b>				
Chemical contamination of surface water from mining activities.	Impact on surface or groundwater biota within surface water and shallow groundwater environments.	L(21)	4.9.3	L(23)
Erosion/failure of sediment and erosion controls.	Diversions and retention banks erosion / instability leading to increased sediment loads.	L(24)	2.6.2	L(24)
<b>ENVIRONMENTAL ISSUE – TRAFFIC</b>				
Increased traffic on surrounding roads (workforce)	Elevated risk of accident / incident on local roads.	H(12)	4.10.3	H(12) ALARP
	Increased traffic congestion.	L(25)	4.10.3	L(25)
	Road pavement deterioration.	L(25)	4.10.3	L(25)
Increased heavy vehicle traffic on surrounding roads (operational)	Increased traffic congestion.	L(25)	4.10.3	L(25)
	Elevated risk of accident / incident on local roads.	H(12)	4.10.3	H(12) ALARP
	Road pavement deterioration.		4.10.3	
Existing road design unsuited to planned use / traffic levels.	Conflicts with other users leading to damage to existing infrastructure resulting in community complaints and impact on the local road network.	NA	NA	NA
<b>ENVIRONMENTAL ISSUE – VISIBILITY</b>				
Establishment of surface infrastructure	Amenity impact through change in content and composition of views from residences and public vantage points.	L(24)	4.11.3	L(24)
Lighting or lighting glow	Visual intrusion or reduction in scenic quality at residential and other sensitive receptors.	M(18)	4.11.3	L(23)
Transportation operations	Local amenity impact of visibility of industrial traffic on residential and other sensitive receptors.	L(25)	4.11.3	L(25)

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

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Risk Source	Consequence / Hazard	Risk with Standard Control Measures	Proposed Control Measures Section Ref.	Residual Risk with Proposed Control Measures
<b>ENVIRONMENTAL ISSUE – BUSH FIRE</b>				
Fire initiated offsite.	Fire initiated off site threatening Site operations, impacting on-site stock and infrastructure.	M(17)	4.12.3	M(17)
Fire initiated onsite.	Fire initiated on site threatening Site operations or spreading off site and impacting on stock and infrastructure.	M(20)	4.12.3	M(20)
<b>ENVIRONMENTAL ISSUE – SOILS</b>				
Inappropriate soil management.	Inadequate soil available for rehabilitation purposes leading to less successful rehabilitation and increased rehabilitation costs and maintenance.	L(25)	4.13.4	L(25)
Inappropriate soil management.	Degradation of soil in stockpiles leading to less successful rehabilitation and increased rehabilitation costs and maintenance to the Mine Area.	M(18)	4.13.4	L(21)
Inappropriate soil management.	Erosion of soil stockpiles leading to increased sediment loads in creeks.	L(24)	4.13.4	L(25)
<b>ENVIRONMENTAL ISSUE – SOCIO-ECONOMIC/AGRICULTURAL</b>				
Mining operations.	Impacts on land values and housing market within the LGA.	Positive impact	4.15.5	Positive impact
Proposal operations	Impacts of land values and housing markets within the LGA.	Positive impact	4.15.5	Positive impact
Mining operations.	Perception of negative health impacts on the community at surrounding residences.	L(25)	4.15.5	L(25)
Mining operations.	Equity imbalance in wages / access to resources between miners and other sectors within the surrounding community.	Positive impact	4.15.5	Positive impact
Mining operations.	Community division between support and opposition for the Proposal within the community.	NA	NA	NA
Mining operations.	Inability of local business to compete with mining wages leading to antagonism towards the Proposal from local businesses.	L(25)	4.15.5	L(25)

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

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Risk Source	Consequence / Hazard	Risk with Standard Control Measures	Proposed Control Measures Section Ref.	Residual Risk with Proposed Control Measures
<b>ENVIRONMENTAL ISSUE – SOCIO-ECONOMIC/AGRICULTURAL (Cont'd)</b>				
Population increase associated with employment growth.	Stress on the local services leading to community disharmony and poor relationships with the Applicant.	Positive impact	4.15.5	Positive impact
Mining operations.	Mining operations lead to negative impacts on agriculture within the LGA.	Positive impact	4.15.5	Positive impact
Mining Operations	Loss of High Quality Agricultural Land.	NA	4.14.3	NA
Proposal Operations	Increased pressure on local infrastructure.	L(25)	4.15.5	L(25)

 Low	 Moderate	 High	 Extreme
ALARP = As Low as Reasonably Practicable			

### 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.

#### 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, the various studies undertaken by recognised specialist consultants and invaluable input provided by the Applicant gained from similar nearby mining operations to provide an appreciation of the potential impacts that may result from the Proposal.

R.W. Corkery and Co Pty Limited has been involved in similar mining projects throughout the western region of NSW for over 33 years and has been involved in providing environmental advice and documentation to the Applicant since 1992. Throughout this time, R.W. Corkery and 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.

- Mr Gerard Niemoeller (BA(Hons)) of On Site Cultural Heritage Management Pty Ltd, for the assessment of Aboriginal and Historic Heritage.
- Mr Steve Sass (B.App.Sci (Env.Sci) (Hons)) of EnviroKey Pty Ltd, for the assessment of Ecology.
- Mr Tim Chambers (M.Eng Sc, B.A Geology (Honours), B.Sc Comp. Sc.) of Environmental Strategies, for the assessment of groundwater.
- Mr Oliver Muller (BSc (REM & HGeog), MAAS) and Mr. Teanuanua Villierme of EMGA Mitchell McLennan, for the assessment of noise and blasting.

Further to the above, the Applicant has been undertaking mining and processing operations within the immediate and local area since 1991 (as described fully in Section 1.4.3) and has continued to gain an appreciation of the local environmental setting. The information gathered and understood from the Applicant's extensive experience and knowledge throughout this time, and the fact that the Proposal is effectively an extension of existing mining operations (albeit in a separate orebody), has provided invaluable information in the collation of information and the designation of appropriate mitigation and management measures based upon its experiences.

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 nature of the proposed operations would result in the prolonging of an industry that would continue to provide ongoing training to local employees and contractors who could potentially use these skills to benefit the local or regional economy.

Intra-generational equity was considered in the Proposal as the ongoing operations would continue to provide the 51% of current employees who reside within the Bogan Local Government Area, further opportunity to provide employment in close proximity to their residences, adding to the regions overall economy.

It is concluded that due to the isolated nature of the Project Site, the nature and proposed post-mining land uses, namely intermittent low intensity agricultural operations, as well as the proposed management measures as outlined in Section 4, 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.

Disturbance to native vegetation within the Project Site would be limited and would only remove vegetation from the most common vegetation community being the 'Benson 103 – Poplar Box – Gum-barked Coolibah – White Cypress Pine shrubby woodland mainly in the Cobar Peneplain Bioregion vegetation community'.

As assessment of the Proposal on the biological diversity and ecological integrity of the local area identified that no endangered ecological communities or species listed under either the TSC Act or EPBC Act would be affected, concluding that 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 design and operation of an underground mining operation in a manner that minimises surface disturbance and any impact on the environment and surrounding residents. The Applicant has financially committed to this and other such measures by providing adequate financial resources (from the sale of processed products) to reinstate any disturbed habitat through appropriate rehabilitation procedures, as well as providing for the installation and ongoing management of fences to reduce the chance for any interaction with the identified Aboriginal and historic heritage sites.

It is planned that the income received from the sale of the processed ore 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 community representative groups, potentially affected local residents and various government agencies and emphasis on the application of safeguards to minimise potential environmental, social and economic impacts. The design of the Proposal has addressed each of the Ecologically Sustainable Development principles and is concluded that the proposed Avoca Tank Project 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 Avoca Tank Project 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 copper-gold-silver resources from the Avoca Tank deposit;
- minimise the total disturbance footprint by maximising the volume of waste rock to be used as backfill within the completed underground stopes;
- avoid all identified sites of cultural heritage value to the Aboriginal community;
- minimise the requirement to clear native vegetation, ensuring no threatened or vulnerable species are significantly impacted upon;
- minimise the potential for pollution to the groundwater aquifers, including the discharge of contaminants from the Project Site such as sediment-laden water or hydrocarbons;
- utilise the nearby and existing infrastructure to process the ore in such a way that negates the requirement for an on-site processing plant and minimises impacts on the surrounding environment; and
- rehabilitate the disturbed areas of the Project Site to create a landform that maximises its value for future land users.

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.

- Five sites of Aboriginal heritage significance were identified within the Project Site. The Applicant has committed to avoid each of the identified sites and would implement measures to avoid inadvertent disturbance. As a result, there would be no significant adverse impacts on Aboriginal heritage as a result of the Proposal.
- The development of the Proposal would involve the clearing of approximately 34ha of a total of 1 798ha within the Project Site. The vegetation community to be disturbed, namely the Benson 103 – Poplar Box – Gum-barked Coolibah – White Cypress Pine shrubby woodland mainly in the Cobar Peneplain Bioregion vegetation community, is a commonly occurring native vegetation community. The assessment of significance determined that this disturbance would not significantly affect the life cycle of any threatened species, population or community within the Project Site.
- Groundwater within the Project Site is of poor quality, with very limited potential for beneficial use or value to the environment through support of groundwater dependent ecosystems or discharge to surface water. The closest registered groundwater user is located approximately 15km to the east of the Project Site. In addition, all groundwater that would flow into the proposed mine would be used for mining-related purposes. As a result, neither groundwater dependent

ecosystems nor surrounding groundwater users are expected to be adversely impacted by the Proposal.

- Operational noise and vibration generated by the Proposal would, assuming the implementation of the nominated safeguards and controls, not exceed the relevant criteria at any privately-owned residence.
- A surface water management system has been designed to ensure segregation of clean, dirty (sediment laden) and contaminated (salt, hydrocarbon or chemical-laden) water. Accumulated dirty water would be used for mining-related purposes or would be discharged following testing to ensure that the water meets the quality criteria identified in the Environment Protection Licence to be issued for the Proposal. Contaminated water would also be used for mining-related purposes and would not be discharged to natural drainage. As a result, the Proposal would not result in a significant impact on surface water within the Project Site.
- The proposed traffic from the Project Site to the Tritton Copper Mine would primarily displace existing and approved traffic from the Applicant's North East and Murrawombie Copper Mines. As a result, the Proposal would not result in additional adverse traffic-related impacts.
- Activities within the Project Site would not be visible from publically accessible vantage points.
- Bushfire, soil 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, with the proposed activities largely replacing current activities that will soon cease. As a result, the Proposal would result in the continued employment of existing employees of which over half (51%) live within the Bogan LGA and a further 39% of whom live in surrounding areas of NSW.

Through the payment of wages, purchase of consumables and local goods and services and commissioning of local contractors, the Proposal would contribute approximately \$25.8 million and \$93.6 million per year to the Bogan LGA and NSW economies, with a further \$15 million in taxes royalties and rates.

Less tangible, but also an important benefit of the Proposal would be the continuation of the mining industry locally. Mining has traditionally, and continues to be an important driver to the economy of the Bogan LGA and the addition of a new mine would strengthen the industry locally.

The nature of land use surrounding the Project Site, as well as proposed future land use, has been considered as part of this assessment. Importantly, the Proposal would not adversely impact on any current or future land use on, or surrounding the Project Site.



Overall, the Proposal has been designed to ensure all potential adverse impacts are, to the maximum extent practicable, controlled which, in turn, would result in limited negative social impacts.

#### **5.3.3.4 Planning Considerations**

This subsection reviews the compliance of the Proposal with relevant State planning instruments, regional strategies, the Bogan LEP 2010 and Section 79C of the *Environmental Planning and Assessment Act 1979*.

##### **State Environmental Planning Policy (State and Regional Development) 2011**

The Proposal is classified as “Regional Development” under this SEPP. As a result, Bogan Shire Council is required to accept and assess the application for development consent, with the Joint Regional Planning Panel to be the determining authority.

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

The State Environmental Planning Policy (Mining SEPP) specifies matters requiring consideration in the assessment of any mining, petroleum production and extractive industry development, as defined in NSW legislation. **Table 3.2** presents a summary of each element requiring consideration and a reference to the section in the *Environmental Impact Statement* where each is addressed.

##### **Central Western Catchment Management Authority – Catchment Action Plan 2006 – 2016**

The *Central Western Catchment Management Authority (CW-CMA) – Catchment Action Plan 2006 – 2016* (CW-CMA Catchment Action Plan 2006 – 2016) requires addressing for any development within the CW-CMA area. The Applicant contends that the Proposal adequately addressed each of the matters identified in that document.

##### **Central Western Transitional Catchment Action Plan**

The *Central Western Transitional Catchment Action Plan* identifies goals, strategies, actions and targets for the Central Western Local Land Services Area. The Applicant contends that the Proposal adequately addresses each of the matters addressed in that document.

##### **Bogan Local Environment Plan 2011**

The *Bogan Local Environmental Plan*, and specifically the land zoning identified in that document, has been addressed in Section 3.3.5 of this document. It is noted that although underground mining is not identified as permissible with consent within the Project Site, Clause 70(1)(b) of the Mining SEPP identifies that mining is permissible, with consent, on any land where agriculture is permissible. As agriculture is permissible under Zone RU1 of the Bogan LEP, underground mining is also permissible, with consent.

Furthermore, as the Project Site occurs on land identified being with the “Moderate Biodiversity Sensitivity” zone, Section 4.3 of this document details that the management measures to protect native fauna and flora, protect ecological processes and encourage the conservation and recovery of native flora fauna and their habitats. That section concludes that

the Proposal would not have a significant effect upon biological diversity within and surrounding the Project Site.

### 5.3.3.5 Section 79C Considerations

Section 79C of the *Environmental Planning and Assessment Act 1979* requires the consent authority, when determining a non-State Significant Development, development application, to take into consideration the following matters:

a) *the provision of:*

i. *any environment planning instrument;*

The relevant environmental planning instruments being:

- *State Environmental Planning Policy (State and Regional Development) 2011;*
- *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007;*
- *State Environmental Planning Policy 33 – Hazardous and Offensive Developments;*
- *State Environmental Planning Policy No. 44 – Koala Habitat Protection*
- *State Environmental Planning Policy 55 – Remediation of Land; and*
- *Bogan Local Environmental Plan 2011 is considered in detail in Section 3.3.*

Each of these instruments are addressed in full in Section 3.3 of this document.

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 Director-General has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved; and*

The Applicant is not aware of any proposed instruments that are relevant to the Proposal.

iii. *any development control plan and 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*

No Development Control Plan has been identified as being relevant to the Proposal.

iii. a) *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*

No planning agreement has been entered into or is required for the Proposal.

- iv. *the regulations (to the extent that they prescribe matters for the purposes of this paragraph); and*

Schedule 3(1) of the *Environmental Planning and Assessment Regulation 2000* is considered in determining that the Proposal is considered as “Designated Development” and is discussed in Section 3.3.2.

- v. *any coastal zone management plan (within the meaning of the Coastal Protection Act 1979); and*

No coastal zone management plans are relevant to the Proposal.

- 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; and*

The likely impacts of the Proposal, including environmental impacts on both the natural and built environments and social and economic impacts are assessed in Section 4 of this document.

- c) *the suitability of the site for the development; and*

The suitability of the Project Site for the Proposal, including a description of surrounding lands and their use, is discussed in Section 4.1.

- d) *any submissions made in accordance with this Act or the regulations; and*

The Applicant anticipates that submissions related to the Proposal will be provided following completion of the public exhibition and that it will be provided with an opportunity to respond to those submissions at that time.

- e) *the public interest*

Information relating to community and socioeconomic setting of the Proposal and the Proposal-related contributions to the local, regional and national economies is presented in Sections 2.11 and 4.15. throughout this document. Overall, the Applicant contends that the Proposal would satisfy public interest.

#### **5.3.3.6 Consequences of not Proceeding with the Proposal**

The consequences of not proceeding with the Proposal include the following.

- i. 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. The opportunity to secure the existing 318 full-time positions would be foregone.
- iii. The continued \$25.8 million and \$93.6 million per year expenditure on wages, consumables, services and goods within the Bogan and NSW economies, with an additional \$15 million per year in royalties and other taxes, would be foregone.
- iv. 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 Avoca Tank 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 production and transportation of copper-gold-silver ore whilst minimising the residual impacts on the biophysical environment.
- Through the creation of local employment within and contribution of a considerable expenditure with the regional economy, the socio-economic impacts of the Proposal are considered to be almost entirely positive.
- The post-mining landform would integrate the re-establishment of vegetation conducive to the use of ongoing native conservation with the potential to be utilised for historical agricultural purposes.