CHAPTER 19 ECOLOGICALLY SUSTAINABLE DEVELOPMENT AND CONCLUSIONS

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19 ECOLOGICALLY SUSTAINABLE DEVELOPMENT AND CONCLUSIONS

This chapter assesses the Project against the principles of sustainability and provides a conclusion for this Environmental Assessment Report.

This assessment and chapter was completed by ERM.

19.1 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

ESD embraces the multiple objectives of social well being, environmental sustainability, and economic prosperity. The National Strategy for Ecologically Sustainable Development is governed by the Department of the Environment and Water Resources and provides broad strategic directions and framework for governments to direct policy and decision-making. The strategy defines ESD as *"using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased*". The CBH Environmental Policy states "*We (CBH) share the desire of the community to develop our operations in ways that meet the needs of the present, without compromising the environment for future generations".*

The Project has been designed to meet society's needs through the provision of a valuable reserve, while maintaining a balance with the potential impacts on the physical and social environment of not only the local and regional areas but also the national and global implications associated with greenhouse gas emissions.

The principles of ESD are considered following.

19.1.1 Precautionary principle

Interpretation

According to the *PoEO Act*, the precautionary principle means that if there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

This principle was developed in response to one of the great difficulties of interpreting scientific data. The scientific method produces results based on confidence limits. These are controlled by the scope of data acquisition, interpretation methods and general understanding within a particular scientific discipline of a particular phenomenon. This has been used as a way of validating a lack of response to a potential threat of serious or irreversible environmental degradation.

In the application of this principle:

- careful application should always be undertaken to avoid serious or irreversible environmental damage; and
- an assessment of consequences of various options should be undertaken in formulating a proposal.

ESD requires that uncertainty and the associated risk level be considered in decision making.

Justification

The Project is consistent with the precautionary principle with potential threats to the environment and appropriate mitigation measures identified to reduce such impacts. All management

procedures form part of the draft statement of commitments as outlined in *Chapter 18* and will be implemented as required throughout the life of the Project.

The environmental consequences of the Project have been assessed as accurately as possible using appropriate specialists in relevant disciplines where required. Assessments were undertaken in accordance with the relevant State Government Technical and Policy Guidelines listed in the Project DGRs. The assessment process involved computer modelling, field validation, scientific analysis and interpretation of the individual and cumulative environmental impacts of the proposed development. This process has enabled the impacts of the proposed operations to be predicted with a reasonable degree of certainty. Where there has been any level of uncertainty in the prediction of impacts throughout the assessment process, a conservative approach was adopted in the assessment of impacts. The Project therefore meets the objectives of the precautionary principle of ESD.

19.1.2 Social equity including intergenerational equity

Interpretation

Social equity involves 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 improve the well-being and welfare of the community, population or society. Social equity does not imply equality but that there should be equal access to opportunities for improved welfare, with a bias towards advantaging the least well-off sectors of society.

Social equity includes intergenerational equity, which requires 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.

Justification

The Project will ensure the resource is extracted in an efficient and sustainable manner and that the existing benefits afforded to the community are maintained or enhanced. The Project will provide access to 8.5 Mt of new ore reserves.

Social and economic benefits to the local community are expected through the production of local employment opportunities, the transfer of technical and commercial skills to local industry and positive multiplier effects in the region (see *Chapter 16*). This is in accordance with the concept of intergenerational equity.

A detailed health risk assessment has been undertaken as part of this EA (see *Chapter 9*). Design measures aimed at reducing dust impacts have significantly decreased the risk of lead bearing dust impacts.

19.1.3 Conservation of biological diversity and maintenance of ecological integrity

Interpretation

Biological diversity refers to the diversity of genes, species, populations, communities and ecosystems, and the linkages between them. Biological resources provide food, medicines, fibres and industrial products. They also provide for vital ecological services such as maintaining soil fertility and the supply of clean and fresh water. Maintaining biological diversity safeguards life support functions and can be considered a minimal requirement for intergenerational equity.

Justification

The Project Area has limited ecological value. The ecological assessment did not identify any threatened flora or fauna as occurring or having the potential to occur within the Project Area. In addition, it was considered that the Project Area did not provide suitable habitat for the threatened species previously recorded within the locality.

Vegetation within the Project Area is restricted to isolated pockets generally adjacent to the lease boundaries. The pockets of vegetation will be maintained with no works proposed in these areas.

19.1.4 Improved valuation and pricing of environmental resources

Interpretation

This principle is a component of intergenerational equity. The principle relates to the need to determine proper values for services provided by the natural environment, such as the atmosphere's ability to receive gaseous emissions, cultural values and visual amenity.

Applying standard methods of valuation and pricing to environmental resources is a difficult process. This is largely due to the intangible nature of much of the natural environment. The environment has conventionally been considered a free resource, with the true cost to the environment not factored into cost of production or use of that resource.

This principle involves placing a monetary or social value on the environment that ultimately increases its value so as to decrease future exploitation.

Pollution and future exploitation can be controlled under the polluter pays principle, whereby polluters who degrade the natural environment are responsible and accountable for returning it to its previous condition.

Justification

Given the proximity of the mine to the surrounding community, it was clear during the mine design process that environmental and social considerations were critical. As outlined in *Table 2.19*, a significant number of the preferred key Project components (haul road, vent location and design) require additional capital cost when compared to non preferred options. Noise and dust amelioration equipment and structures including enclosure of the crusher, noise suppression kits on front end loaders, noise abatement screening and earth bunds will result in additional capital costs for BHOP. These options have been preferred to minimise impacts to environmental resources providing a more sustainable outcome. In addition, the preferred water management system will maximise water conservation by greatly reducing the volume of town water supply required for the operation and negating the need for off-site discharge.

Given the nature of the Project Area, a significant post mining community benefit will be achieved through the maintenance and enhancement of the sites cultural heritage value (see *Chapters 11 and 17*). The adaptive use of several historically significant items for proposed operations will preserve these items. Post-mining planning will maintain the historic value of the site for future generations.

19.2 CONCLUSIONS

Mining and associated operations have been conducted within Project Area for over 125 years. Substantial tonnages of unmined zinc-lead-silver ore remain within the Project Area. As technology and market conditions have improved, full scale mining at the Rasp Mine has once again become economically feasible. The high grade zinc-lead-silver mineralisation is the focus of

this application. BHOP aims to recover this resource from within Project Area, re-establish a supply of zinc and lead concentrates from the site for the domestic market and for overseas export and ultimately realise the potential financial benefits of the resource.

Multiple options for key Project components have been canvassed over the Project's development phase to meet economic, social and environmental objectives.

The key environmental issues associated with the Project were identified as:

- airborne dust and lead dust;
- noise from operations;
- vibration and overpressure from blasting activities;
- storage of tailings; and
- damage to heritage values along the Line of Lode.

Accordingly, strong consideration was given to designing key Project components to minimise impacts arising from these key environmental issues.

In addition to design considerations, management and monitoring measures have been presented throughout this report to manage any potential adverse environmental impacts. Key management and monitoring measures include:

- attended as well as unattended noise monitoring in specified locations and operating conditions;
- continuous and real time air quality monitoring;
- a comprehensive lead management plan;
- a Heritage Management Plan; and
- water management measures to maximise recycling and reduce potential impacts on the town water supply.

As a result of the extensive mining history of the site, the site is highly modified and disturbed. The original landform has been significantly altered, the majority of native vegetation has been removed and soils have been degraded. However, the site has a highly significant heritage value and therefore the mine closure strategy aims to enhance this value.

Implementation of the rehabilitation and mine management strategy will maintain the historic mining character of the site preserving it for future generations and minimising adverse environmental impacts. Environmental outcomes from the strategy will include rehabilitation of disturbed area, preservation of historic heritage values and implementation of appropriate drainage and erosion controls.

The Project will provide the following environmental, social and economic benefits including:

- provision of employment for Broken Hill residents, with 107 people to be directly employed during the open cut, construction and commissioning and 143 people during full-scale mining operations;
- indirect employment generated via support services such as maintenance workers and short term sub-contractors;

- economic benefits to the Broken Hill community via capital injection and value added spending;
- enhancement of the economic position of CBH which in turn will fuel investment in other projects;
- extraction of a valuable mineral resource before the site reverts to other uses, thus preventing its sterilisation;
- extension of the life of Broken Hill mining ensuring continued provision of government royalties; and
- assurance that the historical heritage significance of the site is maintained for future generations.

This Project will allow for the extraction of a valuable resource whilst not significantly impacting on the environment. The Project will generate both local and regional employment opportunities and will provide positive multiplier effects for the region.