

In terms of the MPRDA, BMM will be required to undertake a detailed closure and rehabilitation process at the end of the life of mine. The purpose of this Section is to outline the proposals contained in the conceptual closure plan, including closure and rehabilitation objectives and financial provisioning. The Section closes with potential suggestions for post mining landuse.

### 12.1 CLOSURE AND REHABILITATION FRAMEWORK

The planning for closure and rehabilitation is an on-going process, which will be adapted and updated during the operational phase of the Project. For purposes of this ESIA process, closure planning will include the approved Project Description (see *Section 3*), final layout plan, expected life of mine and financial provision linked to projected financial returns. Based on the current level of engineering design available and understanding of DMR requirements, a Draft Conceptual Closure Plan has been developed (*Annex D*) together with a Draft Social and Labour Plan. During the operational phase, the closure criteria will need to be refined further, together with the associated costing to develop a preliminary closure and rehabilitation plan.

As the Project approaches the end of the life of mine, a final closure and rehabilitation plan will need to be compiled, based on further refinements of the above iterations, and submitted to the DMR for final approval. The final closure plan will include an updated financial breakdown and allocation for closure, as well as approved suggestions for post mining landuse (based on further engagement with surrounding landowners and key stakeholders).

### 12.2 CLOSURE AIM AND OBJECTIVES

The aim of the Conceptual Closure Plan for the Gamsberg Project is to ensure that the area transformed by mining, processing and other operational activities is either returned to as natural a state as possible or facilities remaining at the end of the life of BMM are utilised for other economically viable and sustainable activities. The closure objectives should be achieved in as cost effective a manner as possible, and the closure solution should be sustainable in the long term.

Four Key Objectives are identified:

1. To make sure that the following commitments will be achieved as a minimum:
  - The site will be made safe for both humans and animals,
  - The site will be rehabilitated to be physically, chemically and biologically stable,
  - The residual impacts will be managed to acceptable levels and will not deteriorate over time, and
  - Closure will be achieved with minimal socio-economic upheaval.

2. To ensure that the biodiversity and environment on the site is protected.
3. To secure the effective and sustainable transfer of the municipal services of the town, Aggeneys, and the Pella-drift Water Board to the Khai Ma municipality.
4. To provide sufficient funds at the end of life of mine, to properly implement the closure plan, and also to make provision for possible premature closure, and post closure monitoring requirements.

### 12.3

#### **PROPOSED DECOMMISSIONING METHODS AND MANAGEMENT STRATEGIES TO AVOID, MINIMISE AND MANAGE RESIDUAL AND LATENT ENVIRONMENTAL AND SOCIAL IMPACTS**

A number of proposed rehabilitation methods and management strategies for the decommissioning of the various areas and elements of the Gamsberg Project will be carried out in accordance with the associated legal requirements and international standards.

The Conceptual Mine Closure Plan identified a number of decommissioning strategies for the following mine infrastructure components:

- Shafts
- Tailings Storage Facility
- Waste Rock Dump
- Open Pit
- Evaporation Ponds
- Concentrator Plant
- Workshops / Offices / Stores / Salvage Yard
- Concentrate Pads
- Conveyor Belts
- Explosives Magazines
- Fencing
- Gravel Roads
- Rehabilitation of Open Surfaces
- Residential Areas
- Construction Camp
- Landfill Sites

Post-Closure monitoring and management is also accounted for and it is recommended that this involve:

- Vegetation succession monitoring and management
- Erosion monitoring and management
- Groundwater quality monitoring
- Surface run-off monitoring
- Monitoring and management of pollution control facilities, ie the tailings dam seepage collection pond and associated evaporation ponds, cut-off trenches etc.

The costs associated with the decommissioning strategies and the monitoring and management programme up to a period of five years post-closure have been included in the closure cost estimate presented in *Table 12.1* below.

The Draft Social and Labour Plan also makes provision for various mechanisms to manage post closure social issues. The following mechanisms are recommended:

- Establishment of a Future Forum;
- Mechanisms to Save Jobs and avoid Job Losses and a Decline in Employment;
- Mechanisms to Provide Alternative Solutions and Procedures for Creating Job Security where Job Losses cannot be avoided; and
- Mechanisms to Ameliorate the Social and Economic Impact on Individuals, Regions and Economies where Retrenchment or Closure of the Mine is certain.

At this stage, no financial provision is made for the above mentioned mechanisms and BBM will ensure that sufficient provision is made for the management of these issues within in the SLP and Mine Closure Plans.

## **12.4 FINANCIAL PROVISION**

In terms of Section 41 read with Regulations 51(b)(v) and 54 of the Mineral and Petroleum Resources Development Act (Act 28/2002), BMM must make financial provision for the rehabilitation of the negative environmental impacts. BMM is further required to determine the quantum of the financial provision, which must include cost for pre-mature closure, decommissioning and final closure and post closure management of the residual and latent environmental impacts.

More specifically, Regulation 37(1) promulgated under the MPRDA requires that the quantum of the financial provision must be based on the requirements of the approved EMPr and shall include a detailed itemisation of all actual costs required for:

- the rehabilitation of the surface of the area;
- the prevention and management of pollution to the atmosphere; and
- the prevention and management of pollution of water and the soil;
- decommissioning and final closure of the operation; and
- post-closure management of residual and latent environmental impacts.

In view of the above and for the purpose of this EMPr, BMM has determined the quantum of the financial provision for the entire mining area as shown in *Table 12.1* below. The detailed costing is included in Conceptual Closure Plan included in the EMPr (*Annex D*).

**Table 12.1 Gamsberg Draft Closure Quantum - April 2013**

Ref	Item	R (2011)	
1	Open Pit	R 1 289 251	
2	Tailings Dam and Environs	R 27 113 315	
3	Waste Rock Dump	R 3 447 472	
4	Broken Hill Decline Portal	R 241 900	
5	Evaporation Ponds	R 8 516 784	
6	Concentrator Plant	R 11 691 098	
7	Workshops,Stores,Lab, Offices,Storeyard	R 5 684 680	
8	Concentrate Pads	R 1 972 349	
9	Conveyor Belts	R 80 997	
10	Explosives Magazines and Area	R 453 880	
11	Fencing	R 379 996	
12	Gravel Roads	R 2 528 600	
13	Open Surface Areas	R 6 826 390	
14	Construction Camp	R 378 075	
15	Landfill Sites	R 742 486	
16	Post Closure Monitoring / Maintenance	R 8 846 214	
	<b>TOTAL</b>	<b>R 80 193 488</b>	R (2011)
	<b>QUANTUM TOTAL (2011)</b>	<b>R 80 193 488</b>	R (2011)
	<b>QUANTUM TOTAL (2013)</b>	<b>R 86 893 192</b>	R (2013)
	DMR Weighting Factor 2 for Remote Location: 1.1	R 95 582 511	R (2013)
	Preliminary and General of 6%	R 5 734 951	R (2013)
	Contingencies of 10%	R 9 558 251	R (2013)
	<b>SUB-TOTAL</b>	<b>R 110 875 713</b>	R (2013)
	Vat 14%	R 15 522 600	R (2013)
	<b>GRAND TOTAL</b>	<b>R 126 398 312</b>	R (2013)

**Note:** Items excluded from this assessment, covered within Black Mountain Mine Closure Quantum; Gamsberg Underground Mine; Gamsberg Existing Evaporation Pond for pumped minewater; Railtrack and sidings (Loop 10 and Saldanha); and Aggeneys township.

## 12.5 SUGGESTIONS FOR POST MINING LANDUSE

The potential post mining landuses will continue to be discussed with the DMR and DENC, the Namakwa District and Khai-Ma municipalities and other key stakeholders. Future landuses will need to be identified, based on the manner in which the Project impacts civil infrastructure, agreements reached with surrounding landowners and local authorities, closer to the time of decommissioning. In terms of post mining land use it is recommended that the biodiversity sensitivity of the remaining sensitive habitat on the site and the local Spatial Development Plans and Integrated Development Plan be considered.