



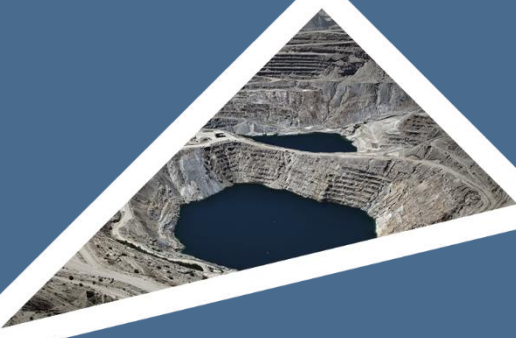
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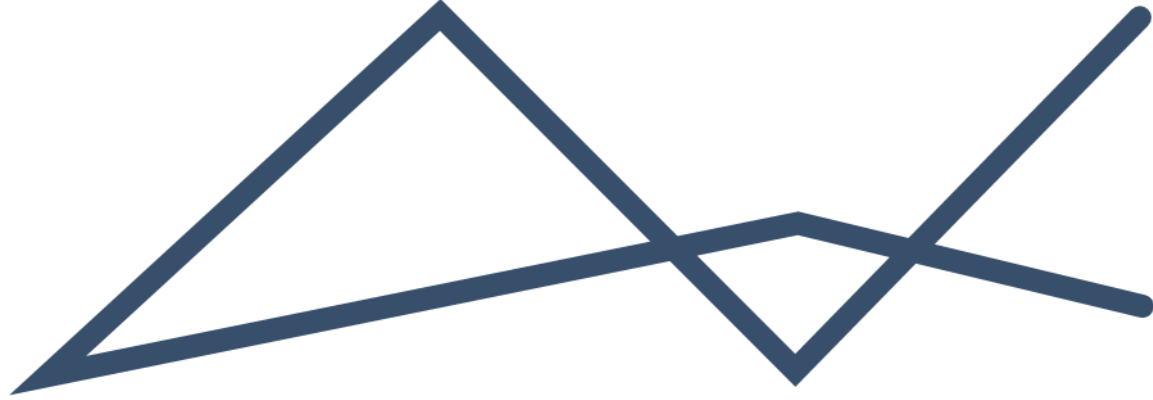
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# CLOSURE AND FINANCIAL PROVISION ASSESSMENT

MOOIPLAATS COLLIERY

MP30/5/1/2/2/68MR





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## 1 INTRODUCTION

Environmental Impact Management Services (Pty) Ltd (EIMS) was appointed by Geosol and Water (GSW) to undertake a 2018 update of the Quantum of Financial Provision for Rehabilitation and Closure, for the Mooiplaats Colliery (MPC), Mpumalanga Province. In terms of Sections 51 and Regulations 53 and 54 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) (MPRDA) the holder of a mining right is required to annually update and review the quantum of the financial provision required for the rehabilitation of negative impacts associated with any activities under the mining right and more specifically in the case of premature/un-scheduled closure.

The aim of this investigation is to define the current mine rehabilitation and closure commitments and to calculate the financial provisions associated with rehabilitation and closure in respect of closure. This report has been prepared with specific reference to the Department of Minerals and Energy (now Department of Mineral Resources, DMR) 'Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provision' provided by a Mine (DMR Guideline).

## 2 LEGISLATIVE CONTEXT FOR MINE CLOSURE

This section provides an overview of the applicable legislative requirements pertaining to the calculation of the quantum for financial provisions for un-scheduled closure of a mine. The environmental requirements pertaining to the planning, operations, and eventual closure of a mine in South Africa were recently, and continue to, exist in a transitional period as regulation moves from the MPRDA to the National Environmental Management Act (Act 107 of 1998) (NEMA). In this respect, although this report is compiled to comply with the requirements of the MPRDA, the legislative context for mine closure is presented in terms of the MPRDA as well as the NEMA.

### 2.1 MINERALS AND PETROLEUM RESOURCES DEVELOPMENT ACT

The following extracts relate to the principle of closure for any right issued under the MPRDA:

- Provisions related to financial provision for remediation of environmental damage (recently repealed by the NEMA):
  - Section 41. (1) An applicant for a prospecting right, mining right or mining permit must, before the Minister approves the environmental management plan or environmental management programme in terms of section 39(4), make the prescribed financial provision for the rehabilitation or management of negative environmental impacts.
  - Section (2) If the holder of a prospecting right, mining right or mining permit fails to rehabilitate or manage or is unable to undertake such rehabilitation or to manage any negative impact on the environment, the Minister may, upon written notice to such holder, use all or part of the financial provision contemplated in subsection (1) to rehabilitate or manage the negative environmental impact in question.
  - Section (3) The holder of a prospecting right, mining right or mining permit must annually assess his or her environmental liability and increase his or her financial provision to the satisfaction of the Minister.
  - Section (4) If the Minister is not satisfied with the assessment and financial provision contemplated in this section, the Minister may appoint an independent assessor to conduct the assessment and determine the financial provision.
  - Section (5) The requirement to maintain and retain the financial provision remains in force until the Minister issues a certificate in terms of section 43 to such holder, but the Minister may retain such portion of the financial provision as may be required to rehabilitate the closed mining or prospecting operation in respect of latent or residual environmental impacts.
- Provisions related to Issuing of a closure certificate:



- Section 43 (1): The holder of a prospecting right, mining right, retention permit, mining permit, or previous holder of an old order right or previous owner of works that has ceased to exist, remains responsible for any environmental liability, pollution, ecological degradation, the pumping and treatment of extraneous water, compliance to the conditions of the environmental authorisation and the management and sustainable closure thereof, until the Minister has issued a closure certificate in terms of this Act to the holder or owner concerned.
- Section 43 (4): An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing, abandonment, cancellation, cessation, relinquishment or completion contemplated in subsection (3) and must be accompanied by the required information, programmes, plans and reports prescribed in terms of this Act and the National Environmental Management Act, 1998.
- Section 43 (5): No closure certificate may be issued unless the Chief Inspector and each government department charged with the administration of any law which relates to any matter affecting the environment have confirmed in writing that the provisions pertaining to health and safety and management pollution to water resources, the pumping and treatment of extraneous water and compliance to the conditions of the environmental authorisation have been addressed.
- Section 43 (7): The holder of a prospecting right, mining right, retention permit, mining permit, or previous holder of an old order right or previous owner of works that has ceased to exist, or the person contemplated in sub-section (2) must plan for, manage and implement such procedures and such requirements on mine closure as may be prescribed.
- Section 43 (8): Procedures and requirements on mine closure as it relates to the compliance of the conditions of an environmental authorisation, are prescribed in terms of the National Environmental Management Act, 1998.

It is important to note that prior to November 2015 rehabilitation and closure of a mining and associated activities was regulated under the MPRDA. The MPRDA regulations (GNR527; April 2004) provide further specific content requirements applicable to mine rehabilitation and closure. Of specific reference to this report are the following provisions in the MPRDA Regulations:

- Regulation 53 (Methods for financial provision):
  - (1) Financial provision required in terms of section 41 of the Act to achieve the total quantum for the rehabilitation, management and remediation of negative environmental impacts must be provided for by one or more of the following methods:
    - (a) An approved contribution to a trust fund as required in terms of section 10(1)(cH) of the Income Tax Act, 1962 (Act No. 58 of 1962) and must be in the format as approved by the Director-General from time to time;
    - (b) a financial guarantee from a South African registered bank or any other bank or financial institution approved by the Director-General guaranteeing the financial provision relating to the environmental management programme or plan in the format as approved by the Director-General from time to time;
    - (c) a deposit into the account specified by the Director-General in the format as approved by the Director-General from time to time; or
    - (d) any other method as the Director-General may determine.
  - (2) In the case of sub regulation (1)(c), proof of payment must be submitted to the office of the relevant Regional Manager prior to the approval of the environmental management plan or environmental management programme, as the case may be.



- 54. Quantum of financial provision:
  - (1) The quantum of the financial provision as determined in a guideline document published by the Department from time to time, include a detailed itemization of all actual costs required for-
    - (a) premature closure regarding- (i) the rehabilitation of the surface of the area; (ii) the prevention and management of pollution of the atmosphere; and (iii) the prevention and management of pollution of water and the soil; and (iv) the prevention of leakage of water and minerals between subsurface formations and the surface.
    - (b) decommissioning and final closure of the operation; and
    - (c) post closure management of residual and latent environmental impacts.
  - (2) The holder of a prospecting right, mining right or mining permit must annually update and review the quantum of the financial provision -
    - (a) in consultation with a competent person;
    - (b) as required in terms of the approved environmental management programme or environmental management plan; or
    - (c) as requested by the Minister.
  - (3) Any inadequacies with regard to the financial provision must be rectified by the holder of a prospecting right, mining right or mining permit -
    - (a) in an amendment of the environmental management programme or environmental management plan, as the case may be;
    - (b) within the timeframe provided for; or
    - (c) as determined by the Minister.

## 2.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT

Prior to 8 December 2014, the environmental aspects of mining activities were regulated in terms of the MPRDA. Recent legislative amendments and the drive towards a 'one environmental system' have resulted in the inclusion of the requirement for rehabilitation, decommissioning and closure planning and associated financial provisions into the NEMA. Specific sections of the act relating to rehabilitation and closure are extracted below:

- Section 24P: Financial provision for remediation of environmental damage:
  - (1) An applicant for an environmental authorisation relating to prospecting, exploration, mining or production must, before the Minister responsible for mineral resources issues the environmental authorisation, comply with the prescribed financial provision for the rehabilitation, closure and ongoing post decommissioning management of negative environmental impacts.
  - (2) If any holder or any holder of an old order right fails to rehabilitate or to manage any impact on the environment or is unable to undertake such rehabilitation or to manage such impact, the Minister responsible for mineral resources may, upon written notice to such holder, use all or part of the financial provision contemplated in sub-section (1) to rehabilitate or manage the environmental impact in question.
  - (3) Every holder must annually-



- a. assess his or her environmental liability in a prescribed manner and must increase his or her financial provision to the satisfaction of the Minister responsible for mineral resources; and
- b. submit an audit report to the Minister responsible for mineral resources on the adequacy of the financial provision from an independent auditor.

(4)

- a. If the Minister responsible for mineral resources is not satisfied with the assessment and financial provision contemplated in this section, the Minister responsible for mineral resources may appoint an independent assessor to conduct the assessment and determine the financial provision.
- b. Any cost in respect of such assessment must be borne by the holder in question.

(5) The requirement to maintain and retain the financial provision contemplated in this section remains in force notwithstanding the issuing of a closure certificate by the Minister responsible for mineral resources in terms of the Mineral and Petroleum Resources Development Act, 2002 to the holder or owner concerned and the Minister responsible for mineral resources may retain such portion of the financial provision as may be required to rehabilitate the closed mining or prospecting operation in respect of latent, residual or any other environmental impacts, including the pumping of polluted or extraneous water, for a prescribed period.

(6) The Insolvency Act, 1936 (Act No. 24 of 1936), does not apply to any form of financial provision contemplated in sub-section (1) and all amounts arising from that provision.

(7) The Minister, or an MEC in concurrence with the Minister, may in writing make sub-sections (1) to (6) with the changes required by the context applicable to any other application in terms of this Act.

- Section 24 R: Mine closure on environmental authorisation:

(1) Every holder, holder of an old order right and owner of works remain responsible for any environmental liability, pollution or ecological degradation, the pumping and treatment of polluted or extraneous water, the management and sustainable closure thereof notwithstanding the issuing of a closure certificate by the Minister responsible for mineral resources in terms of the Mineral and Petroleum Resources Development Act, 2002, to the holder or owner concerned.

(2) When the Minister responsible for mineral resources issues a closure certificate, he or she must return such portion of the financial provision contemplated in Section 24 P as the Minister may deem appropriate to the holder concerned but may retain a portion of such financial provision referred to in sub-section (1) for any latent, residual or any other environmental impact, including the pumping of polluted or extraneous water, for a prescribed period after issuing a closure certificate.

(3) Every holder, holder of an old order right or owner of works must plan, manage and implement such procedures and requirements in respect of the closure of a mine as may be prescribed.

(4) The Minister may, in consultation with the Minister responsible for mineral resources and by notice in the Gazette, identify areas where mines are interconnected, or their impacts are integrated to such an extent that the interconnection results in a cumulative impact.

(5) The Minister may, by notice in the Gazette, publish strategies to facilitate mine closure where mines are interconnected, have an integrated impact or pose a cumulative impact.





On 20<sup>th</sup> November 2015 the Minister promulgated the Financial Provisioning Regulations under the NEMA. The regulations aim to regulate the determination and making of financial provision as contemplated in the NEMA for the costs associated with the undertaking of management, rehabilitation and remediation of environmental impacts from prospecting, exploration, mining or production operations through the lifespan of such operations and latent or residual environmental impacts that may become known in the future.

In accordance with Regulation 19 of the Financial Provisioning Regulations: “A holder, or holder of a right or permit who applied for such right or permit prior to the commencement of the Regulations but who obtained such right or permit after the commencement of the Regulations, must within 39 months of the commencement of the Regulations (i.e. by February 2019) and annually thereafter-

- (a) ensure that a review, assessment and adjustment of the financial provision is conducted in accordance with Regulation 11 of the Regulations, read with the necessary changes; and
- (b) submit an updated financial provision, including the plans and report contemplated in regulation 11(1), a copy of the independent auditor's reports and proof of arrangements to provide the financial provision for approval by the Minister responsible for mineral resources, which updated financial provision must be-
  - (i) included in any audit required in terms of an environmental authorisation issued in terms of the Act; and
  - (ii) attached to any amendment of an environmental management programme to be submitted in terms of the Environmental Impact Assessment Regulations, 2014.

### **3 METHODOLOGY**

This report has been prepared with specific reference to the 2005 DMR ‘Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provision’ provided by a Mine (DMR Guidelines). It is noted that the NEMA Financial Provisioning Regulations will, as from February 2019, be the legislated mechanism under which a mines rehabilitation, closure and associated financial provisioning must be determined. However, it is understood that the transitional arrangement associated with the NEMA Financial Provisioning Regulations allow for the continuation of the past process as defined by the DMR Guideline, until this date. For this reason, the methodology defined by these DMR Guidelines is followed for this 2018 assessment and update. The financial provision calculation process flow is presented in Figure 1.

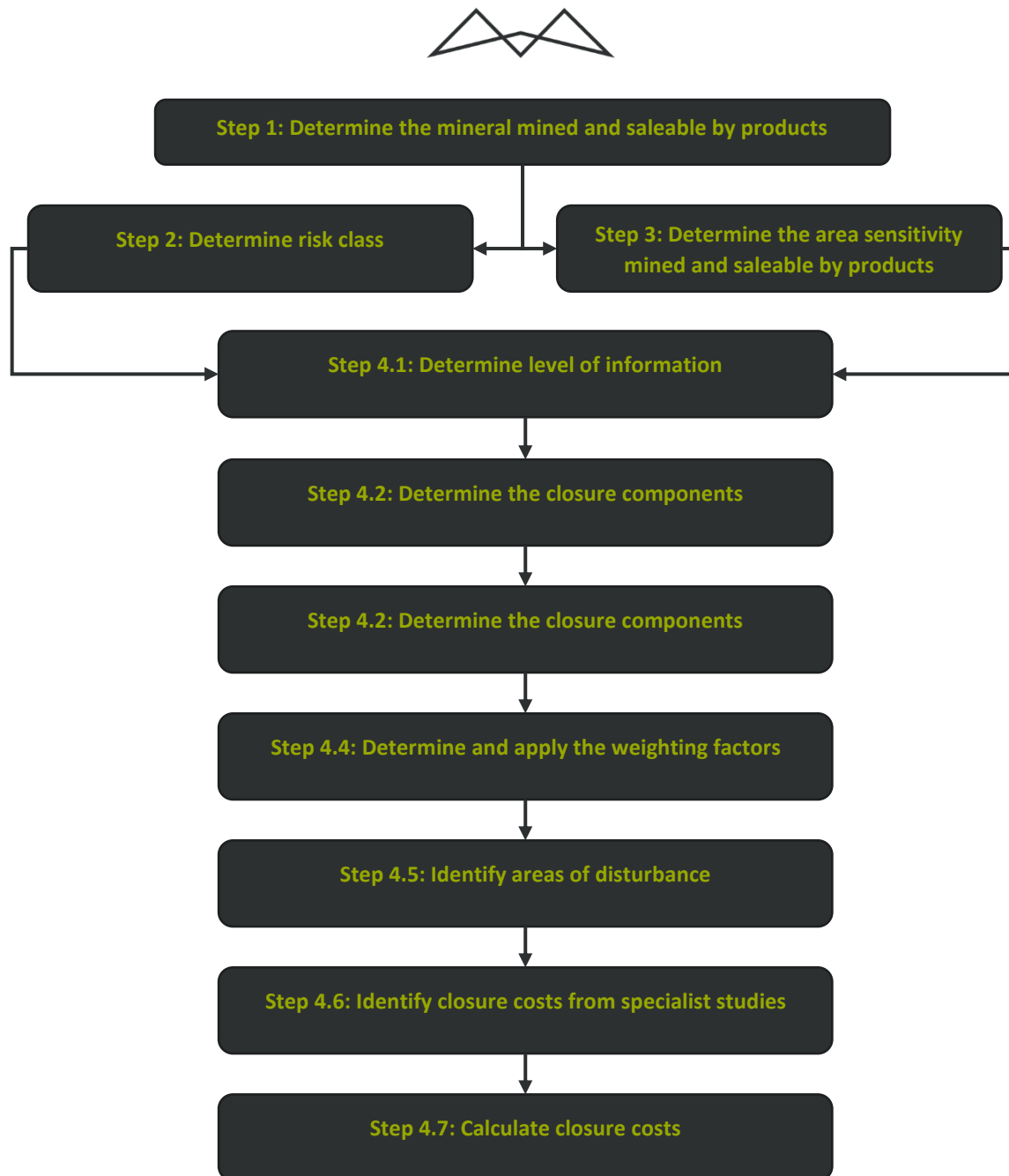


Figure 1: DMR Financial provisioning process flow.

The steps defined in the DMR Guidelines and the application of these in respect of the MPC are presented in Section 6.1. The inputs used in carrying out this assessment are provided through the following:

- Mine Survey conducted by ESS Survey in July 2014;
- Review of the following key documentation:
  - Environmental Management Plan for Mooiplaats North Colliery, compiled by Cabanga Concepts (February 2012) (herein referred to as the EMPR).
  - Mine Closure and Liability Report; 2016 Annual Financial Closure and Liability Update, compiled by Environmental Assurance (Pty) Ltd (Envass; 2016).
- A site inspection to randomly verify the accuracy of the survey and confirm the status of current mining operations.



## 4 MINE OVERVIEW

### 4.1 MINE LOCATION AND EXTENT

The MPC is located in the Msukaligwa Local Municipality, within the Gert Sibande District Municipality, Mpumalanga Province. The Mine is located approximately 2,5km south-south-east of the Eskom Camden Power Station, and approximately 16km south-east of the town of Ermelo. The mining rights area covers portions 1 and 9 of the farm Mooiplaats 290IT. Land use of the broader area is mostly agriculture (crop farming and stock grazing) with power generation at Camden Power Station and associated servitudes, some coal mining activities and some residential development associated with the industrial activities in the area.

### 4.2 CURRENT OPERATIONS

The MPC is an underground coal mine. The underground mine workings are accessed via a single decline access shaft which is accessed to the underground workings is via a T-shaped box cut. The box-cut has 1 roadway from the surface into the coal at a depth of approximately 44m. The first level is separate haul way of 167m each and 6.8m wide at a slope of 15° and carries a single conveyor system. The second level is the central paved access roadway, approximately 220m long and 6.8 m wide at a slope angle of 12°, used for the transport of staff and mining materials in and out of the mine.

The mining area lies within the Ermelo Coalfield and 3 coal seams occur on the target with the upper A and C seams being poorly developed and not economically viable to mine. The B Upper seam is developed sufficiently and is the target seam for underground mining methods (>100m below ground level).

Run of Mine (ROM) coal is extracted from the underground workings via conveyor and transported to the processing area. Processing includes amongst others, crushing and screening, and washing. Course discard is collected and disposed of on the co-disposal facility. Slurry is pumped to slurry ponds located on top of the co-disposal facility.

Mining infrastructure and features include the following:

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|  |   |
|--|---|
| <ul style="list-style-type: none"><li>• <b>Upslope diversion berms.</b></li></ul>        |   |
| <ul style="list-style-type: none"><li>• <b>Mining area:</b></li></ul>                    | <ul style="list-style-type: none"><li>• T-shaped boxcut for underground access for equipment and staff access</li><li>• Diversion berms and channels</li><li>• Overburden and soil stockpiles</li><li>• Conveyors for coal transport</li><li>• Three settling dams</li><li>• Erikson dams</li></ul>   |
| <ul style="list-style-type: none"><li>• <b>Office and Administration Area:</b></li></ul> | <ul style="list-style-type: none"><li>• Potable water tank.</li><li>• Change house.</li><li>• Sewage treatment plant.</li><li>• Sump to collect runoff from office area fitted with pump.</li><li>• Office and administrative buildings</li><li>• Workshop.</li><li>• Wash bay.</li><li>• Scrapyard.</li><li>• Substation.</li><li>• Generators.</li><li>• Diesel storage.</li><li>• Power lines.</li><li>• Parkade.</li><li>• Stores.</li><li>• First aid room.</li><li>• Lamp room.</li></ul> |

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|                      |   |
|----------------------|---|
| <b>Plant area:</b>   | <ul style="list-style-type: none"><li>• Workshop.</li><li>• Laboratory.</li><li>• Processing plant and control room.</li><li>• Coal stockpiling area.</li><li>• Conveyors.</li><li>• Substation.</li><li>• Power lines.</li><li>• Erikson dams/tanks.</li><li>•</li></ul> |
| <b>Mine residue:</b> | <ul style="list-style-type: none"><li>• Co-disposal facility.</li><li>• Return water dams.</li></ul>  |
| <b>General:</b>      | <ul style="list-style-type: none"><li>• Clean water storage tanks.</li><li>• Pollution control dam.</li><li>• Access road and secured access control.</li><li>• Weighbridges and haul roads.</li><li>• Boreholes.</li></ul>   |

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Figure 3 provides a broad overview of the mine area and the surface infrastructure.

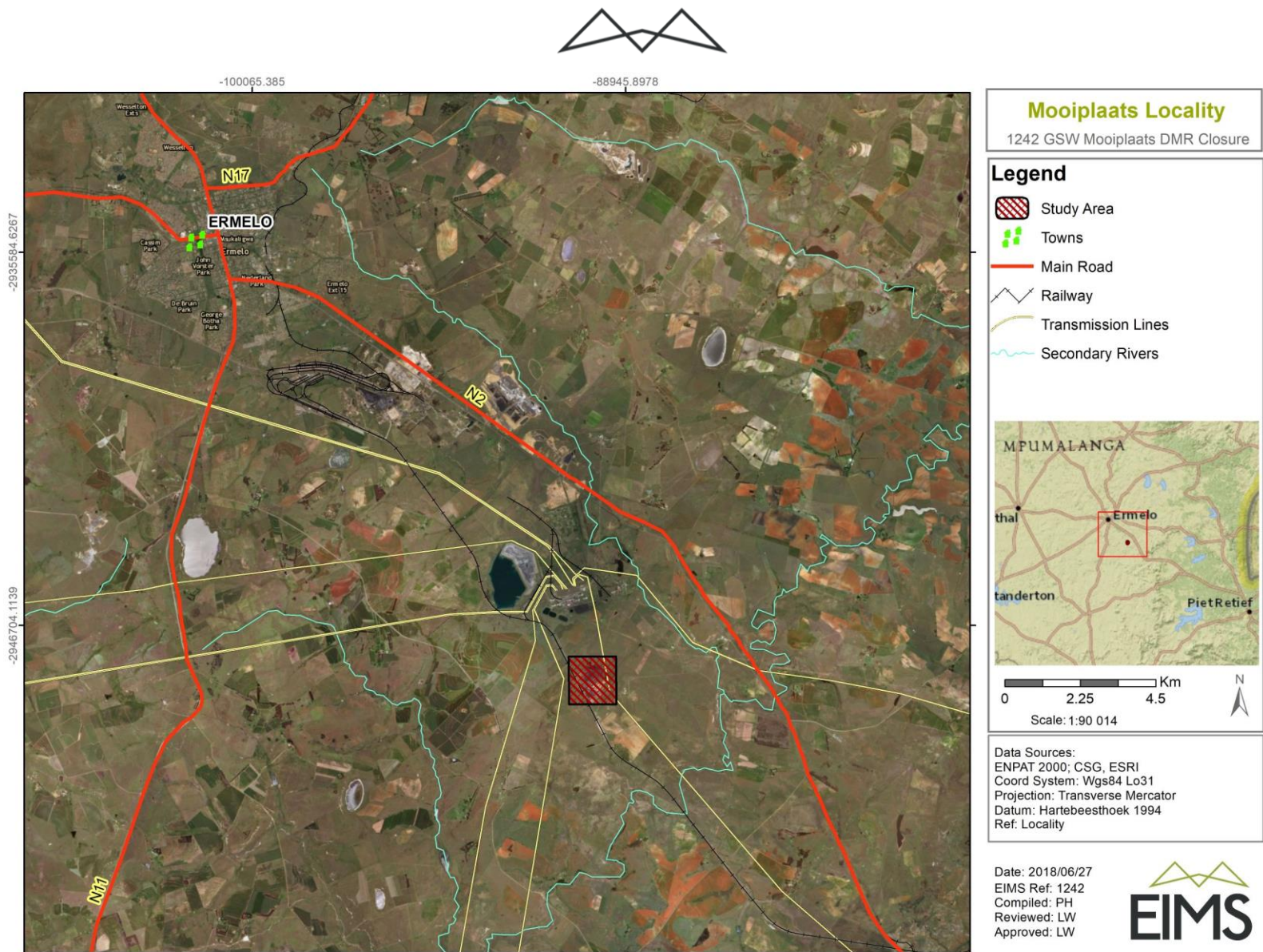


Figure 2: Locality Map.

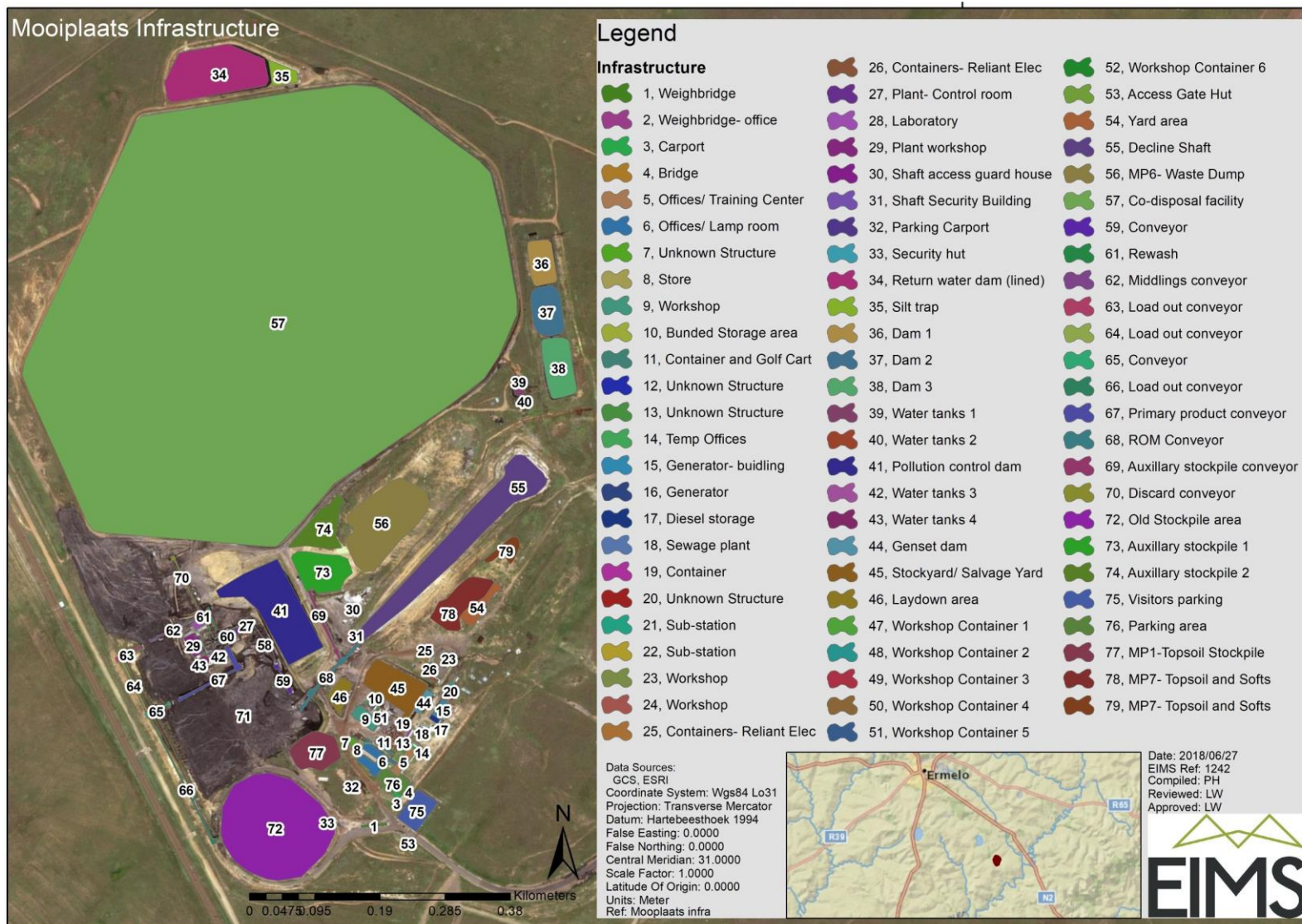


Figure 3: Current mine surface infrastructure plan.



### 4.3 PLANNED OPERATIONS

MPC re-commenced operations in January 2018, after being in care and maintenance since ~September 2013. It is anticipated that the planned mining operations will for the most part continue in accordance with the approved Mine Works Plan. Current Life of Mine (LOM) is forecast to end in 2028.

## 5 MINE CLOSURE

Mine closure is the period when the ore-extracting activities of the mine have ceased, and final rehabilitation, decommissioning and mine reclamation are being completed. Mine closure for the purposes of this report can be divided into three distinct phases, namely: Rehabilitation, Decommissioning/closure, and post Closure. It is crucial that the mine closure aligns with the commitments made in the mines original EIA and EMPR and specifically that the end land-use agreed upon in the EIA is strived for.

### 5.1 CLOSURE OBJECTIVES

The closure objectives and goals stated and committed to in the approved EMPR (2012) are:

- Ensure that all infrastructure no longer required by landowner is removed from site.
- Ensure all areas that were disturbed by mining and associated activities are rehabilitated to at least grazing land.
- Ensure adequate soil depth and soil quality is replaced to rehabilitated areas to attain grazing land capability.

Based on discussions with MPC representatives, the closure objectives presented above remain unchanged for the mine moving forward. It should be noted that in the next annual assessment and determination of financial provisions, and/or the compilation of the NEMA Financial Provisioning Reports, these closure objectives should be reviewed and, where applicable, amended.

### 5.2 REHABILITATION, DECOMMISSIONING AND CLOSURE PLAN

The 2012 EMPR states that during decommissioning all infrastructures no longer required will be demolished and the area rehabilitated. The mine will be sealed and the boxcut will be filled and rehabilitated. The road, if no longer required by the land owner, will be demolished and rehabilitated. The PCD will remain on site to monitor for residual impacts and environmental monitoring will continue into the closure phase. Table 1 lists the impacts on various environmental aspects based on activities proposed during the decommissioning phase. Impacts of high, moderate to high and moderate significance are further discussed below.

Table 1: Key environmental impacts in decommissioning phase (EMPR; 2012).

| Level of impact                     | Description of key impacts   |
|-------------------------------------|--|
| <b>Impacts of high significance</b> | <p>Impacts of high significance are centred on groundwater quality. As the mine fills with water it is highly likely that a contamination plume will develop from the mine area into surrounding areas. Should the mine fill with water quickly, the conditions for creating acidic water will be reduced and water quality will be less impaired. With the development of the plume, surrounding land owners' boreholes may be impacted, although this has a very low likelihood unless newer boreholes are drilled in the area. No mitigation measures can be put in place; however affected users must be compensated.</p> <p>Should the co-disposal facility not be adequately rehabilitated and properly capped a contamination plume will develop in the aquifer that will reach the Witpunt Spruit tributary. The impact is of high significance.</p> |



| Level of impact                                 | Description of key impacts   |
|---|--|
| <b>Impacts of moderate to high significance</b> | <p>The only impact of moderate to high significance will be the social impacts associated with job losses that will accompany the decommissioning of the mine. Mitigation measures need to be put in place and Social and Labour Plan (SLP) initiatives followed throughout the life of mine to ensure relevant training is received by staff so that they can enter other occupations. Staff will be utilised at other operations as far as is practical.</p>   |
| <b>Impacts of moderate significance</b>         | <p>As the coal stockpiles are removed from site, and the overburden stockpiles are mobilised for filling of the boxcut, air quality will be impaired, especially if these activities take place during the dry season. The impact is of moderate significance as these activities will be of short-term duration.</p> <p>Various rehabilitation activities will result in the mobilisation of soils and increase risk of silt loading into the wetlands. This will impact negatively on these systems and deteriorate ecological functioning of these systems, especially where rehabilitation activities will take place near the wetlands. According to the groundwater study, with proper sealing and rehabilitation of shafts and exploration boreholes, the likelihood of decant is negligible. Should decant occur, it is highly likely that this will also run into wetlands associated with drainage lines and surrounding tributaries. The PCD and associated berms and trenches will remain on site to capture water runoff and monitor for any potential residual impacts. Should water within these systems be of inadequate quality and spills or leaks occur, then it is also highly likely that this contaminated water will flow into the wetlands and deteriorate ecological functioning and biodiversity. These impacts are of moderate significance and mitigation measures will be needed.</p> <p>Finally, with the temporary increased activity on site, the risk for the establishment and spread of alien invasive species will increase and result in a negative impact to flora in the area. Mitigation and management needs to be implemented during construction and carried on through the life of mine so as to reduce risks associated with establishment of such species.</p> |

### 5.3 CLOSURE AND POST CLOSURE

Residual impacts above will continue into post closure phases. During closure and post-closure phases, the main activities will be monitoring and maintenance. No further impacts are expected, and impacts associated with maintenance and addressing any issues observed on site are expected to be positive. Any residual impacts, particularly those discussed in the decommissioning phase regarding groundwater will be monitored and specialist advice will be obtained should any issues arise.

## 6 FINANCIAL PROVISIONS

This section presents the basis of the calculation of the quantum for financial provisions for closure. The assessment and calculations are based on the 2005 DMR 'Guideline Document for the Evaluation of the Quantum of Closure-Related Financial Provision' provided by a Mine (DMR Guidelines).

### 6.1 CURRENT UN-SCHEDULED CLOSURE FINANCIAL PROVISION

This section provides an overview of the findings of the closure assessment and financial provision estimation.

#### 6.1.1 RULE-BASED CLOSURE ASSESSMENT

This section presents the assessment of the mine context for the purposes of determining the quantum of financial provision as is required by the "Rule-based" approach. This approach is consistent with the previous financial provision estimates undertaken by MPC. The various steps together with the assumptions and outcomes of the method are presented in below.





Table 2: DMR Rules-based method application to MPC.

| <b>Step 1: Determine the mineral mined and saleable by products</b>   |   |
|---|---|
| Identify the type of mineral mined or quarried and the saleable mineral by- products (not trace elements) to determine the primary risk class.  | MPC is a coal mine without any saleable by-products   |
|   |   |
| <b>Step 2: Determine risk class</b>   |   |
| Identify the risk class of the mineral. The risk class will be either: Class A (High risk) _a high probability of the occurrence of the impact with a severe consequence; Class B (Medium risk) _a moderate probability of occurrence of the impact with a manageable consequence; Class C (Low risk) _a low probability of occurrence of the impact with a negligible consequence.   | Coal is defined as primary risk class of "A"  |
|   |   |
| <b>Step 3: Determine the area sensitivity</b>   |   |
| <p>The mining operation can be located in a Low, Medium or High sensitivity area based on the biophysical, social and economic situation. Table B.4 provides criteria to aid with the determination of the sensitivity of the area within which the mine is located. This step thus involves the following:</p> <ul style="list-style-type: none"> <li>• Assess and rank the sensitivity of the area by individually assessing the biophysical situation, then the social situation and then the economic situation,</li> <li>• Establish the overall sensitivity of the area, by accepting the most sensitive of the three individual assessments, e.g. if the area has a Medium biophysical sensitivity, a High social sensitivity and a Low economic sensitivity, the overall sensitivity will be High.</li> </ul> | <p>MPC is assigned an areas sensitivity of “<u>Medium</u>”. This is based on the following broad categorisation:</p> <ul style="list-style-type: none"> <li>• <b>Biophysical profile - Medium:</b> <ul style="list-style-type: none"> <li>○ Mix of natural and exotic fauna and flora.</li> <li>○ Development is a mix of disturbed and undisturbed areas, within an overall planned framework.</li> <li>○ Water resources are well controlled.</li> </ul> </li> <li>• <b>Social Profile - Medium:</b> <ul style="list-style-type: none"> <li>○ The local communities are in the proximity of the mining operation (within sighting distance).</li> <li>○ Peri-urban area with density aligned with a development framework.</li> <li>○ Area developed with an established infrastructure.</li> </ul> </li> <li>• <b>Economic Profile - Medium:</b> <ul style="list-style-type: none"> <li>○ The area has a balanced economic development where a degree of income for the local communities is derived from the area.</li> <li>○ The economic activity could be influenced by indiscriminate development.</li> </ul> </li> </ul> |



|   |  |
|---|--|
| The MPC has been assigned a MEDIUM area sensitivity.  |  |
|   |  |
| <b>Step 4.1: Determine level of information</b>   |  |
| <p>Identify the information that is available for the mining operation. This will be either extensive or limited, as follows:</p> <p>a) Extensive information will include the following:</p> <ul style="list-style-type: none"> <li>○ An approved EMP as contemplated in Section 39 of the MPRDA, or an EMP that is in the process of being approved or amended,</li> <li>○ A detailed Closure Plan, based on the EMP, that covers all aspects of rehabilitation and closure of the mining operation, and</li> <li>○ A detailed breakdown of the costs envisaged for rehabilitation and closure, signed off by a competent person.</li> </ul> <p>b) Limited information is a level of information that is less comprehensive, in any way, than that given above. Extensive information must be provided by the mine and must be signed-off by a competent person. In instances where extensive information is available, the following three options are available:</p> <ul style="list-style-type: none"> <li>• Option 1: Accept the quantum provided for the financial provision, or</li> <li>• Option 2: Commission an independent review of the quantum of financial provision provided, using a competent person, or</li> <li>• Option 3: Follow a “rule-based” approach by proceeding to step 4.2. In instances where limited information is available, the “rule-based” approach must be followed.</li> </ul> | <p>Whilst MPC is in possession of an approved EMPR with the associated closure provisions, a detailed closure plan and associated breakdown of the costs envisaged for rehabilitation and closure, signed off by a competent person, is not available. In this respect the quantum for financial provision for closure will be determined using Option 3: “rule-based” approach by proceeding to step 4.2.</p> |
| <b>Step 4.2: Determine the closure components</b>   |  |
| <p>Identify the applicable closure components, based on the type of mining as well as site-specific conditions.</p>   | <p>The following applicable closure components based on site-specific conditions have been identified:</p>   |



|  |  |
|--|--|
|  | <ul style="list-style-type: none"> <li>• (1) Dismantling of processing plant and related structures (including overland conveyors and power lines).</li> <li>• (2A) Demolition of steel buildings and structures.</li> <li>• (2B) Demolition of reinforced concrete buildings and structures.</li> <li>• (3) Rehabilitation of access roads.</li> <li>• (5) Demolition of housing and facilities.</li> <li>• (6) Opencast rehabilitation including final voids and ramps.</li> <li>• (7) Sealing of shafts, adits and inclines.</li> <li>• (8A) Rehabilitation of overburden and spoils.</li> <li>• (8C) Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste).</li> <li>• (10) General surface rehabilitation, including grassing of all denuded areas.</li> <li>• (12) Fencing.</li> <li>• (13) Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater, including treatment, when required).</li> <li>• (14) 2 to 3 years of maintenance and aftercare.</li> </ul> <p>It is important to note that no information is currently available on the risk of surface and shallow sub-surface subsidence because of the mining. This aspect is likely to have a material impact on the financial provision estimate and must be investigated for the purposes of the NEMA financial provisioning reports.</p> |
|--|--|

**Step 4.3: Determine the unit rates for closure components**

Use the risk class (Class A, B or C) from Step 2 and the sensitivity of the area where the mine is located (Low, Medium or High) from Step 3 to determine the unit rates for the applicable closure components identified in Step 4.2.

The Master Rate for each closure component is based on the “generally accepted closure methods” for each of the closure components listed in Table B.4. In instances where these closure methods will not be applied (e.g. where in the approved EMP indicates different closure methods) then the costs for this closure component must be determined by a specialist study.

Appendix 1 provides a list of the rates applied. This rate includes a year on year escalation on the DMR master rate in accordance with the relevant CPI as published by StatsSA.

**Step 4.4: Determine and apply the weighting factors**



|   |  |
|---|--|
| <p>Identify the applicable weighting factors, based on the specific mine location. The two applicable weighting factors are as follows:</p> <ul style="list-style-type: none"> <li>• Weighting Factor 1: The nature of the terrain where the mine is located. This factor is applicable as it is more difficult (and hence more costly) to undertake work related to mine closure in areas that are undulating or rugged. Weighting Factor 1 is applied to each of the closure components.</li> <li>• Weighting Factor 2: The proximity of the mine to an urban centre. This factor is applicable as there will be increased costs to transport machinery, goods and personnel to more remote mine sites. Weighting Factor 2 is applied to the Preliminary and General items only.</li> </ul>                         | <ul style="list-style-type: none"> <li>• Weighting Factor 1: 1<br/>Nature of the terrain/ accessibility is rated as “flat”.</li> <li>• Weighting Factor 2: 1.05<br/>Proximity to urban area where goods and services are to be supplied is classified as “Peri-urban: Less than 150 km from a developed urban area”. Emalahleni is located &lt;150km from the mine. Ermelo is significantly closer.</li> </ul> |
| <b>Step 4.5: Identify areas of disturbance</b>  |  |
| <p>Identify areas, volumes or lengths of disturbance and/or development from the mining operations, for each of the applicable closure components. The base information can be identified from suitably scaled topographical maps, which will be augmented by one or more site visits to the mining operation.</p>  | <p>The areas of disturbance at MPC have been identified and defined by means of a survey provided by MPC, date July 2014. It is understood that the survey remains valid as there has not be recent surface mining activity. The survey data was supplemented, and randomly verified through a site visit.</p>   |
| <b>Step 4.6: Identify closure costs from specialist studies</b>   |  |
| <p>Identify closure costs from site-specific specialist studies that have been submitted by the mining operation permit holder. Table B.9 of the DMR Guideline provides details of specialist studies that should be requested from the mine operator, if not already available, depending on the risk class of the mineral mined.</p>  | <p>Site specific specialist studies were undertaken by MPC as a component of their various permit processes. No specific specialist water pollution and liability studies or specific risk assessments have been undertaken. It is proposed that these studies be undertaken to inform the next annual financial provision calculation.</p>  |
| <b>Step 4.7: Calculate closure costs</b>  |  |
| <p>Calculate two sets of quantum figures for financial provision, using the “rules based” approach and the applicable closure components, unit rates, areas of disturbance and closure costs from specialist studies. Table B.10 of the DMR Guideline provides a template for calculating the quantum under the “rules-based” approach. The quantum figures to calculate include:</p> <ul style="list-style-type: none"> <li>• A quantum for financial provision to cover the current environmental liability. The “Grand Total” in Table B.10 will be used for this calculation, as this assumes that the work will be done by a Third Party (as the mining operation will be in <u>premature closure</u>), and</li> <li>• The quantum for financial provision to cover <u>final closure</u> of the mine.</li> </ul> | <p>The DMR rules-based approach has been used to determine the quantum of financial provisions for un-scheduled closure.</p>   |



|   |  |
|---|--|
| <p>The “Sub-Total 1” in Table B.10 of the DMR Guideline will be used for this calculation, which assumes that the mine does the closure and rehabilitation work themselves.</p> |  |
|---|--|

## **6.1.2 CLOSURE METHODS AND ASSUMPTIONS**

The DMR Guideline presents generally accepted closure methods, based on experience in the field, which have been used as the basis for determining the Master Rates for the various closure components in the “rules-based” approach. Where relevant specific reference is made to the site conditions and requirements applicable to the closure of MPC. In addition, the relevant mine structures and components requiring closure are listed. Appendix 2 provides breakdown of the itemised infrastructure and the associated measurements utilised for closure calculations.

### **6.1.2.1 COMPONENT 1: PROCESSING PLANT**

The generally accepted closure methods applicable to processing plant include:

- All infrastructure and concrete buildings should be broken down to natural ground level and buried adjacent to the plant site.
- Foundations, structures and conveyors should be broken down to natural ground level.
- The areas are to be covered with 1,0m subsoil, top soiled with 300mm of topsoil and vegetation established, or as noted in the relevant EMP.
- The monitoring and maintenance of these areas has been costed under the appropriate areas.
- The concrete hardstand is the area between the plant buildings.
- Top soiling and vegetation for the areas are included under general surface rehabilitation.
- No credits are allowed for scrap steel and equipment that can be re-used or sold.

Items included in this component include:

- Plant- Surge bin, Scalping Screen, Crushers.
- Conveyor.
- Plant- Spirals, MODA, MODB.
- Rewash.
- Conveyors (Middlings, Load out, Primary product, ROM, Auxiliary stockpile, Discard).
- Powerline.

### **6.1.2.2 COMPONENTS 2 (A), 2 (B) AND 5: STEEL AND REINFORCED CONCRETE STRUCTURES AND HOUSING, FACILITIES AND SERVICES.**

The generally accepted closure methods applicable to this component include:

- All structures should be demolished to 1m below ground level.
- The rubble is to be buried adjacent to the sites, provided this adheres to the National Waste Management Strategy.
- Silos should be imploded and buried.



- The areas should be shaped, top soiled with 300mm of topsoil and vegetated or as stated in the relevant EMP document.
- Monitoring and maintenance is costed in the relevant areas.
- The concrete hardstand is the area between buildings such as workshops, offices, etc

MPC items included in this component include:

- Weighbridge and office.
- Carports and parking areas.
- Pedestrian bridge.
- Training Centre.
- Lamp room.
- Stores.
- Workshops.
- Container and Golf Cart garage.
- Temporary Offices.
- Generator- building.
- Diesel storage area.
- Sewage plant.
- Steel storage containers.
- Electrical sub-station.
- Plant- Control room.
- Laboratory.
- Security hut.
- Water tanks.
- Stockyard/ Salvage Yard.
- Laydown areas.
- Access Gate Hut.

### **6.1.2.3 COMPONENT 3: REHABILITATION OF ACCESS ROADS**

The DMR guideline does not provide a description of the extent of rehabilitation activities associated with this cost component. It is however expected that access road rehabilitation will include:

- Removal of all artificial road surface material (e.g. tarmac), and disposal at a suitably licenced facility.
- Deep ripping road surface.
- Placement of Existing culverts and storm water control infrastructure will be upgraded (using mainly gabions) to ensure its long-term effectiveness and its ability to handle a 1:50 year flood event.
- Surface topography that emulates the surrounding areas and aligned to the general landscape character. Steep slopes more than 6 percent should also be avoided if possible.
- Landscaping that would facilitate surface runoff and result in free draining areas. If possible, the drainage lines should be reinstated.
- An area without unnecessary remnants of structures and surface infrastructure to give the rehabilitated area a “neat” appearance. Special attention must be given to shape and/or removal of heaps of excess material being the legacy of prolonged mining and related activity.
- An area suitable for revegetation.

It is understood that the DMR Master Rate includes the replacement of topsoil and revegetation.

### **6.1.2.4 COMPONENT 6: OPENCAST REHABILITATION**

The generally accepted closure methods applicable to processing plant includes the infilling of opencast pits, including:



- Concurrent in-filling and subsequent spoils rehabilitation as routinely conducted for opencast pits on collieries.
- In-filling by obtaining material from adjacent opencast pits and/or other parts of the same opencast pit as routinely conducted on iron ore mines.
- Difficulties could be experienced with concurrent in-filling in those cases where the ore body is limited to a single opencast pit and various grades of ore need to be sourced from the pit. This requires access to the full pit and in-filling could sterilise ore reserves. In these cases, rehabilitation should be facilitated as follows:
  - Excess material from the opencast pit is deposited near the pit for in-filling of the opencast pit once the ore body has been removed.
  - Excess material is deposited in such a manner in relation to the opencast pit that mine residue deposit rehabilitation can be conducted with respect to this material. In this case the opencast pit perimeter walls must still be rendered safe for humans and domestic animals. This is normally achieved by means of the following: Sloping the perimeter walls of the opencast pit at 1:3 (18°) to the pit floor or to the stable groundwater level that could establish within a reasonable period within the opencast pit; and Providing enviro berms and ditches along the opencast pit perimeter when perimeter wall flattening is not feasible as in those cases where opencast mining has been conducted on steep mountainsides.

Notwithstanding the above, owing to removal of the mined product off-site, notably less material remains on site for pit in-filling than was originally removed from the opencast pit. This could be despite bulking of the removed material. Hence final voids with respect to most opencast pits would be unavoidable. These voids should be addressed in the same manner as making the opencast pit safe and pollution free.

Unit cost determination for the Master Rate is based on making the opencast pit safe for humans and domestic animals. For calculation purposes, the Master Rate is based on an opencast pit having a surface area of about 150 ha and is 30 m deep to the pit floor. A typical opencast dimension of 2500 m length and 600 m width has been assumed. Mining has been conducted in relatively stable/hard rock material, resulting in steep (near vertical) opencast perimeter walls.

The Master Rate was determined for the closure situation of sloping the opencast perimeter walls, assumed to be 3:1 (70°), to 1:3 and shaping and grassing the sloped area. A 1:1 cut to fill ratio was assumed. The fixed costs of geotechnical investigations and surveying are included, and professional fees are taken at 2,5 % of the rehabilitation cost. Supervision fees are not included.

For the purposes of MPC this closure component has only been applied to the backfilling and making safe of the shaft access ramp.

#### **6.1.2.5 COMPONENT 7: SEALING OF SHAFTS, ADITS AND INCLINES**

In accordance with the DMR Guideline the sealing of vertical and incline shafts is primarily a safety consideration and should be conducted in such a manner that potential safety risks are largely obviated. Normally, inert building rubble arising from the demolition of surface infrastructure is deposited into the shafts. A mass concrete cap of 1 000 mm thickness is placed onto the building rubble deposited into the shaft. It should be noted that, in specific circumstances, dedicated engineering design and specification of these caps could be required.

Allowance should also be made for methane venting of the underground mine workings with a methane formation potential by means of strategically placed venting boreholes. The unit cost is based on filling and capping of both vertical and inclined shafts of dimensions 12,5 m diameter and 5,5 x 5,5 m respectively. The Master Rate allows for the average cost of rendering both vertical and an incline shafts safe.

The costs of geotechnical investigations and surveying were fixed at R50 000 and R20 000 respectively. Professional fees were taken at 2,5 % of the rehabilitation cost. Supervision fees were not included.



Detailed engineering design and specifications have not been compiled for the closure of the MPC shafts (main access shaft, 3x ventilation shafts). Considering that the primary risk of mine water decant is from the shafts and mine boreholes, it is recommended that for the purposes of the 2019 rehabilitation, decommissioning and closure assessment that specific input is sought from an updated hydrogeological model, and that specific conceptual engineering designs are prepared. For the purposes of this assessment provision is made for sealing the shafts below shallow groundwater level and backfilled to surface. Based on the groundwater studies available it is understood that the weathered aquifer ranges in depth from 5m to 22m below surface. Consequently, an average depth of ~14m below surface has been assumed for the calculations.

#### **6.1.2.6 COMPONENTS 8 (A), 8 (B) AND 8 (C): OVERBURDEN AND SPOILS, PROCESS PLANT WASTE: BASIC, SALT PRODUCING AND PROCESS PLANT WASTE: ACIDIC, METAL-RICH**

Overburden and spoils normally have a low pollution potential and hence only need to be shaped to create a stable landform. The Master Rate thus includes shaping and grassing/vegetation of the overburden and spoils.

Acidic, metal-rich residue deposits are typical of coal mining activities. The generally accepted closure methods for acidic, metal-rich plant waste are primarily aimed at the following:

- Limiting seepage of contaminants from the processing waste deposit.
- Prevention of contaminated seepage entering local surface and groundwater sources.

The Master Rate includes allowances for:

- slope modification (final slope of 18° or 1:3).
- armouring and evaporative covers.
- lined pollution control dams.
- lined cut-off trenches (to control pollution and erosion).

MPC items included in this component include:

- Return water dam (lined).
- Silt trap.
- Dam 1, 2, 3.
- Pollution control dam.
- Genset dam.
- MP6- Waste rock dump.
- Co-disposal facility.
- MP7- Topsoil and Softs.

The waste facilities associated with MPC are deemed to be acidic metal rich wastes (component 8C). This is further supported by the findings of the geohydrological assessment which states that the discard is likely to have significant acid generating potential. The waste water management facilities are all interconnected and therefore are also categorised as potentially acidic components. Waste facilities for the overburden and softs are categorised as overburden and spoils (component 8A).

It is important to note that specific slope angles and covers have not been designed for MPC. It is recommended that for the purposes of the 2019 rehabilitation, decommissioning and closure assessment that specific conceptual engineering designs are prepared by a competent person for the slope stability and cover requirements, as informed by a specialist risk assessment.





#### **6.1.2.7 COMPONENT 10: GENERAL SURFACE REHABILITATION**

Final surface rehabilitation of areas disturbed by mining and related activities should be aligned to the selected final land use. The generally accepted closure methods applicable to general surface rehabilitation includes:

- Surface topography that emulates the surrounding areas and aligned to the general landscape character. Steep slopes more than 6 percent should also be avoided if possible.
- Landscaping that would facilitate surface runoff and result in free draining areas. If possible, the drainage lines should be reinstated.
- An area without unnecessary remnants of structures and surface infrastructure to give the rehabilitated area a “neat” appearance. Special attention must be given to shape and/or removal of heaps of excess material being the legacy of prolonged mining and related activity.
- An area suitable for revegetation.

MPC items included in this component include all operational areas, which don't currently have adequate vegetative cover, and which are not captured by other closure components which include re-vegetation (e.g. waste dumps). The rehabilitation of the old borrow pit located to the east south east of the mine has been rehabilitated to a large degree and therefore is excluded from this financial provision.

#### **6.1.2.8 COMPONENT 13: WATER MANAGEMENT**

Underground mine workings has the potential to eventually fill up with water and decant. Depending on the decant mode and the type of product mined, this water could be of a poor quality. Hence provision should be made to collect and handle this water to limit degradation of water resources in the vicinity of potential decant. Collection and neutralisation (with associated metal removal) is an established management practice to deal with this water. However, the elevated salt content normally associated with this water is still a matter of concern. It should be noted that the filling of a mine could involve a notable period of time and the required treatment capacity to handle the excess mine water could only be required decades after mine closure.

The surface area of the directly impacted mine areas has been included in the calculation of the water management. This includes the extent of the area defined in the Component 10 as well as component 8.

It is recommended that for the purposes of the 2019 rehabilitation, decommissioning and closure assessment that an updated groundwater model and associated water liability assessment is undertaken to inform the risk assessment for potential latent and residual impacts.

#### **6.1.2.9 COMPONENT 14: MAINTENANCE AND AFTERCARE**

The generally accepted closure methods applicable to this component include:

- Annually fertilising of rehabilitated areas.
- Monitoring of surface and subsurface water quality surface.
- Control of wattle and all other alien plants.
- General maintenance, including rehabilitation of cracks and subsidence.

The surface area of the directly impacted mine areas has been included in the calculation of the maintenance and aftercare. This includes the extent of the area defined in the Component 10 as well as Component 8.

### **6.1.3 CLOSURE LIABILITY ESTIMATE**

The quantum for financial provisions for un-scheduled closure has been estimated using the rule-based approach defined in the DMR Guideline. Refer to for a summarised breakdown of the closure liability estimate. The itemised breakdown upon which this estimated is based in provided in Appendix 2.



Table 3: Financial provisions for un-scheduled closure 2018.

| CLOSURE AND FINANCIAL PROVISION ASSESSMENT |  |                                     |             |                               |                        | Date                              | 2018/06/27      |
|--|--|-------------------------------------|-------------|-------------------------------|------------------------|-----------------------------------|-----------------|
| MOOPLAATS COLLIERY MP30/5/1/2/2/68MR       |  |                                     |             |                               |                        |                                   |                 |
| Project Details:                           |  |                                     |             |                               |                        |                                   |                 |
| Project Risk Class:                        |  | A                                   |             |                               |                        |                                   |                 |
| Project Area Sensitivity:                  |  | Medium                              |             |                               |                        |                                   |                 |
| Weighting Factor 1:                        |  | 1                                   |             |                               |                        |                                   |                 |
| Weighting Factor 2:                        |  | 1.05                                |             |                               |                        |                                   |                 |
| No   | Sub-Task   | Unit                                | A. Quantity | B. Master Rate                | C. Multiplication fact | D. Weighting Factor <sup>-1</sup> | E. = A*B*C*D    |
| 1  | Dismantling of processing plant and related structures (including overland conveyors and power lines).   | m3                                  | 14852.4208  | R 14.46                       | 1.00                   | 1.00                              | R 214 770.78    |
| 2A   | Demolition of steel buildings and structures.  | m2                                  | 623.971367  | R 201.43                      | 1.00                   | 1.00                              | R 125 684.54    |
| 2B   | Demolition of reinforced concrete buildings and structures.  | m2                                  | 194.620687  | R 296.84                      | 1.00                   | 1.00                              | R 57 771.10     |
| 3  | Rehabilitation of access roads.  | m2                                  | 126435.709  | R 36.04                       | 1.00                   | 1.00                              | R 4 557 348.60  |
| 4A   | Demolition and rehabilitation of electrified railway lines.  | m                                   | 0           | R 349.85                      | 1.00                   | 1.00                              | R 0.00          |
| 4B   | Demolition and rehabilitation of non-electrified railway lines .   | m                                   | 0           | R 190.83                      | 1.00                   | 1.00                              | R 0.00          |
| 5  | Demolition of housing and facilities.  | m2                                  | 5791.53067  | R 402.85                      | 1.00                   | 1.00                              | R 2 333 138.62  |
| 6  | Opencast rehabilitation including final voids and ramps .  | ha                                  | 1.208       | R 205 031.25                  | 0.52                   | 1.00                              | R 128 792.43    |
| 7  | Sealing of shafts, adits and inclines.   | m3                                  | 9614.4      | R 108.13                      | 1.00                   | 1.00                              | R 1 039 647.09  |
| 8A   | Rehabilitation of overburden and spoils.   | ha                                  | 2.12346827  | R 140 786.71                  | 1.00                   | 1.00                              | R 298 956.11    |
| 8B   | Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste).   | ha                                  | 0           | R 175 347.30                  | 1.00                   | 1.00                              | R 0.00          |
| 8C   | Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste).  | ha                                  | 37.9821681  | R 509 291.68                  | 0.80                   | 1.00                              | R 15 475 201.83 |
| 9  | Rehabilitation of subsided areas .   | ha                                  | 0           | R 117 887.67                  | 1.00                   | 1.00                              | R 0.00          |
| 10   | General surface rehabilitation, including grassing of all denuded areas.   | ha                                  | 58.12       | R 111 526.82                  | 1.00                   | 1.00                              | R 6 482 335.89  |
| 11   | River diversions .   | ha                                  | 0           | R 111 526.82                  | 1.00                   | 1.00                              | R 0.00          |
| 12   | Fencing.   | m                                   | 3500        | R 127.22                      | 1.00                   | 1.00                              | R 445 259.17    |
| 13   | Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater, including treatment, when required). | ha                                  | 58.12       | R 42 405.64                   | 0.67                   | 1.00                              | R 1 651 393.55  |
| SUB-TOTAL                                  |  |                                     |             |                               |                        |                                   | R 32 810 299.71 |
| SUB-TOTAL 1 (Planned Closure)              |  |                                     |             | Weighting Factor 2 (Step 4.4) |                        | 1.05                              | R 34 450 814.69 |
| <b>Time, Fee and Contingencies</b>         |  |                                     |             |                               |                        |                                   |                 |
| 1  | Preliminary and general  | 12% of Sub-total 1 if <R100 000 000 |             |                               |                        |                                   | R 4 134 097.76  |
| 1A   | Management and administration  |                                     |             |                               |                        |                                   |                 |
| 1B   | Administration and supervision   | Add 6% of Sub-total 1               |             |                               |                        |                                   | R 2 067 048.88  |
| 1C   | Engineering Drawings and specifications  | Add 2% of Sub-total 1               |             |                               |                        |                                   | R 689 016.29    |
| 1D   | Specialist inputs  | Add 2.5% of Sub-total 1             |             |                               |                        |                                   | R 861 270.37    |
| 1E   | Closure plan   | Add 1.25% of Sub-total 1            |             |                               |                        |                                   | R 430 635.18    |
| 1F   | Final groundwater modelling  | Add 1.25% of Sub-total 1            |             |                               |                        |                                   | R 430 635.18    |
| SUB-TOTAL 2                                |  |                                     |             |                               |                        |                                   | R 43 063 518.37 |
| 2  | Contingencies  | Add 10% of Sub-total 1              |             |                               |                        |                                   | R 3 445 081.47  |
| SUB-TOTAL 3                                |  |                                     |             |                               |                        |                                   | R 46 508 599.84 |
| VAT  |  |                                     |             | at 15% of Sub-total 3         |                        |                                   | R 6 976 289.98  |
| GRAND TOTAL                                |  |                                     |             |                               |                        |                                   | R 53 484 889.81 |

## 6.2 PLANNED OR SCHEDULED FINANCIAL PROVISION

For the purposes of this report the planned or scheduled closure costs and associated financial provision has not been calculated. It is anticipated that most of the closure actions will apply equally for planned closure as for un-scheduled closure. The opportunity for progressive rehabilitation on this mine is limited.

Based on the DMR Guideline the estimated cost for planned closure is R34 450 814.69 (Excl VAT). This estimate assumes that the mine undertakes all the rehabilitation and closure activities and not a third-party contractor.



### 6.3 FINANCIAL PROVISION MECHANISMS AND ADJUSTMENTS

MPC's Mining Right Financial Rehabilitation Guarantee is provided by Centrique supported by investment has been provided as collateral for this Guarantee. The details of the guarantee are presented in Table 4.

Table 4: Financial Guarantees

| Insurance Company | Guarantee number    | Amount per Guarantee |
|-------------------|---------------------|----------------------|
| Gaurdrisk         | GR/G20844 0914 0184 | R37 800 848          |
| Gaurdrisk         | GR/G20844 1015 0287 | R309 294             |
| Gaurdrisk         | GR/G20844 0217 0427 | R1 718 350           |
|                   |                     | <b>R39 828 492</b>   |

Based on this 2018 Estimate for un-scheduled closure, the current guarantees will need to be supplemented. There is a current shortfall of R13 656 397.81.

### 6.4 ASSUMPTIONS AND LIMITATIONS

The following key assumptions and limitations apply to this report:

- The Mooiplaats South Mine has not been assessed and included in the calculation of this financial provision. This is because no mining operations have commenced at Mooiplaats South Mine and therefore no un-scheduled closure actions are required.
- The potential risk of methane and consequently specific closure management and mitigation measures have not been included.
- Impacts associated with subsidence have not been included in this financial provision estimate.
- The costs associated with long term water management and where necessary treatment have not been included in this financial provision estimate.
- This report provides an estimate of the quantum of financial provision required for rehabilitation, decommissioning and closure of the mine, based on the DMR Guidelines (rule-based approach). It is understood that this method is not to be regarded as an absolute and accurate forecast for actual closure costs.
- It is assumed that the management and mitigation measures suggested in the EMPR relating to ongoing environmental management (including ongoing progressive rehabilitation where possible) are complied with. This includes post production clean-up and rehabilitation.

## 7 RECOMMENDATIONS

The following recommendations apply:

- The mine should prepare the financial provisioning reports as required by the 2015 NEMA Regulations. To inform the NEMA assessment, it is recommended that the following specialist studies are undertaken:
  - Updated groundwater model and long-term water liability assessment.
  - Long term water management and treatment options analysis.
  - Subsidence risk assessment (including long term prediction).



- Preparation of conceptual engineering designs for various closure aspects, including, but not limited to: The discard dump, sealing of the shafts, and long-term water management facilities.
- Material balance to determine the availability of backfill and topsoils required for rehabilitation.
- The mine should undertake engagements with the surrounding community to discuss the current closure objectives and plans, and where applicable revise and optimise these.



Appendix 1: DMR Master rates and year on year inflation.



| CC | Component  | CPI% Base rate | 0<br>2005 | 4.7<br>2006 | 7.1<br>2007 | 11.5<br>2008 | 7.1<br>2009 | 4.3<br>2010 | 5<br>2011 | 5.6<br>2012 | 5.7<br>2013 | 6.1<br>2014 | 4.6<br>2015 | 6.4<br>2016 | 5.3<br>2017 | 4.175<br>2018 |
|----|--|----------------|-----------|-------------|-------------|--------------|-------------|-------------|-----------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|
| 1  | Dismantling of processing plant and related structures (including overland conveyors and power lines). | R 6.82         | R 6.82    | R 7.14      | R 7.65      | R 8.53       | R 9.13      | R 9.53      | R 10.00   | R 10.56     | R 11.16     | R 11.84     | R 12.39     | R 13.18     | R 13.88     | R 14.46       |
| 2A | Demolition of steel buildings and structures.  | R 95.00        | R 95.00   | R 99.47     | R 106.53    | R 118.78     | R 127.21    | R 132.68    | R 139.31  | R 147.12    | R 155.50    | R 164.99    | R 172.58    | R 183.62    | R 193.35    | R 201.43      |
| 2B | Demolition of reinforced concrete buildings and structures.  | R 140.00       | R 140.00  | R 146.58    | R 156.99    | R 175.04     | R 187.47    | R 195.53    | R 205.31  | R 216.80    | R 229.16    | R 243.14    | R 254.32    | R 270.60    | R 284.94    | R 296.84      |
| 3  | Rehabilitation of access roads.  | R 17.00        | R 17.00   | R 17.80     | R 19.06     | R 21.25      | R 22.76     | R 23.74     | R 24.93   | R 26.33     | R 27.83     | R 29.52     | R 30.88     | R 32.86     | R 34.60     | R 36.04       |



|    |   |              |   |        |
|----|---|--------------|---|--------|
| 4A | Demolition and rehabilitation of electrified railway lines.     |              | R | 165.00 |
| 4B | Demolition and rehabilitation of non-electrified railway lines. |              | R | 90.00  |
| 5  | Demolition of housing and facilities.                           |              | R | 190.00 |
| 6  | Opencast rehabilitation including final voids and ramps.        | R 96 00.00   | R | 190.00 |
| 7  | Sealing of shafts, adits and inclines.                          | R 51.00      | R | 51.00  |
| 8A | Rehabilitation of overburden and spoils.                        | R66 400.00   | R | 400.00 |
|    |   | R 66 400.00  | R | 400.00 |
|    |   | R 69 520.80  | R | 520.80 |
|    |   | R 74 456.78  | R | 456.78 |
|    |   | R 83 019.31  | R | 019.31 |
|    |   | R 88 913.68  | R | 913.68 |
|    |   | R 92 736.96  | R | 736.96 |
|    |   | R 97 373.81  | R | 373.81 |
|    |   | R 102 826.75 | R | 826.75 |
|    |   | R 108 687.87 | R | 687.87 |
|    |   | R 115 317.83 | R | 317.83 |
|    |   | R 120 622.45 | R | 622.45 |
|    |   | R 128 342.29 | R | 342.29 |
|    |   | R 135 144.43 | R | 144.43 |
|    |   | R 140 786.71 | R | 786.71 |
|    |   | R 96 700.00  | R | 700.00 |
|    |   | R 101 244.90 | R | 244.90 |
|    |   | R 108 433.29 | R | 433.29 |
|    |   | R 120 903.12 | R | 903.12 |
|    |   | R 129 487.24 | R | 487.24 |
|    |   | R 135 055.19 | R | 055.19 |
|    |   | R 141 807.95 | R | 807.95 |
|    |   | R 149 749.19 | R | 749.19 |
|    |   | R 158 284.90 | R | 284.90 |
|    |   | R 167 940.28 | R | 940.28 |
|    |   | R 175 665.53 | R | 665.53 |
|    |   | R 186 908.12 | R | 908.12 |
|    |   | R 196 814.25 | R | 814.25 |
|    |   | R 205 031.25 | R | 031.25 |
|    |   | R 94.23      | R | 94.23  |
|    |   | R 100.92     | R | 100.92 |
|    |   | R 112.53     | R | 112.53 |
|    |   | R 120.52     | R | 120.52 |
|    |   | R 125.70     | R | 125.70 |
|    |   | R 131.98     | R | 131.98 |
|    |   | R 139.37     | R | 139.37 |
|    |   | R 147.32     | R | 147.32 |
|    |   | R 156.30     | R | 156.30 |
|    |   | R 163.49     | R | 163.49 |
|    |   | R 173.96     | R | 173.96 |
|    |   | R 183.18     | R | 183.18 |
|    |   | R 190.83     | R | 190.83 |
|    |   | R 172.76     | R | 172.76 |
|    |   | R 185.02     | R | 185.02 |
|    |   | R 206.30     | R | 206.30 |
|    |   | R 220.95     | R | 220.95 |
|    |   | R 230.45     | R | 230.45 |
|    |   | R 241.97     | R | 241.97 |
|    |   | R 255.52     | R | 255.52 |
|    |   | R 270.08     | R | 270.08 |
|    |   | R 286.56     | R | 286.56 |
|    |   | R 299.74     | R | 299.74 |
|    |   | R 318.92     | R | 318.92 |
|    |   | R 335.83     | R | 335.83 |
|    |   | R 349.85     | R | 349.85 |



|    |  |                |                |                |                |                |                |                |                |                |                |                |                |                 |                 |                 |
|----|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-----------------|-----------------|
| 11 | River diversions.  | R 52<br>600.00 | R 52<br>600.00 | R 55<br>072.20 | R 58<br>982.33 | R 65<br>765.29 | R 70<br>434.63 | R 73<br>463.32 | R 77<br>136.48 | R 81<br>456.13 | R 86<br>099.13 | R 91<br>351.17 | R 95<br>553.33 | R 101<br>668.74 | R 107<br>057.18 | R 111<br>526.82 |
| 10 | General surface rehabilitation, including grassing of all denuded areas.                         | R 52 600.00    | R 52 600.00    | R 55 072.20    | R 58 982.33    | R 65 765.29    | R 70 434.63    | R 73 463.32    | R 77 136.48    | R 81 456.13    | R 86 099.13    | R 91 351.17    | R 95 553.33    | R 101 668.74    | R 107 057.18    | R 111 526.82    |
| 9  | Rehabilitation of subsided areas.  | R 55 600.00    | R 55 600.00    | R 58 213.20    | R 62 346.34    | R 69 516.17    | R 74 451.81    | R 77 653.24    | R 81 535.90    | R 86 101.91    | R 91 009.72    | R 96 561.32    | R 101 003.14   | R 107 467.34    | R 113 163.11    | R 117 887.67    |
| 8C | Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste).    | R 240 200.00   | R 240 200.00   | R 251 489.40   | R 269 345.15   | R 300 319.84   | R 321 642.55   | R 335 473.18   | R 352 246.84   | R 371 972.66   | R 393 175.10   | R 417 158.78   | R 436 348.09   | R 464 274.36    | R 488 880.90    | R 509 291.68    |
| 8B | Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste). | R 82 700.00    | R 82 700.00    | R 86 586.90    | R 92 734.57    | R 103 399.05   | R 110 740.38   | R 115 502.21   | R 121 277.32   | R 128 068.85   | R 135 368.78   | R 143 626.28   | R 150 233.08   | R 159 848.00    | R 168 319.95    | R 175 347.30    |



|    |               |   |          |   |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|----|---------------|---|----------|---|----------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| 12 | Fencing.      | R | 60.00    |   |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | Water         | R | 60.00    |   |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | managemen     | R | 60.00    |   |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | t (Separating | R | 62.82    |   |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | clean and     | R | 67.28    |   |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | dirty water,  | R | 75.02    |   |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | managing      | R | 80.34    |   |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | polluted      | R | 83.80    |   |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | water and     | R | 87.99    |   |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | managing      | R | 92.92    |   |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | the impact    | R | 98.21    |   |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | on            | R | 104.20   |   |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | groundwater   | R | 109.00   |   |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | r, including  | R | 115.97   |   |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | treatment,    | R | 122.12   |   |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | when          | R | 127.22   |   |          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13 | required).    | R | 20000.00 | R | 20000.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | 2 to 3 years  | R | 20000.00 | R | 20000.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | of            | R | 329.00   | R | 20940.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | maintenanc    | R | 849.36   | R | 22426.74 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | e and         | R | 752.04   | R | 25005.82 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    | aftercare.    | R | 373.43   | R | 26781.23 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 |               | R | 776.49   | R | 27932.82 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    |               | R | 265.31   | R | 29329.46 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    |               | R | 840.17   | R | 30971.91 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    |               | R | 458.06   | R | 32737.31 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    |               | R | 157.00   | R | 34734.29 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    |               | R | 716.22   | R | 36332.06 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    |               | R | 530.06   | R | 38657.32 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    |               | R | 247.15   | R | 40706.15 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|    |               | R | 841.97   | R | 42405.64 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |



Appendix 2: Itemised breakdown of closure components.



| Item No ID # | Label                          | Description                                      | Section                        | CC | Closure Component                             | Unit | Quantity |
|--------------|--------------------------------|--|--------------------------------|----|---|------|----------|
| 1            | Weighbridge                    | Single storey brick- includes concrete and steel | General                        | 5  | Demolition of housing and facilities.         | m2   | 134.91   |
| 2            | Weighbridge- office            | Single storey brick.                             | General                        | 2A | Demolition of steel buildings and structures. | m2   | 9.43     |
| 3            | Carport                        | Unpaved, steel frame and roof.                   | Office and administration area | 2A | Demolition of steel buildings and structures. | m2   | 74.46    |
| 4            | Bridge                         | Concrete bridge structure. Pedestrian access.    | Office and administration area | 2A | Demolition of steel buildings and structures. | m2   | 53.66    |
| 5            | Offices/ Training Centre       | Single storey brick structure, corrugated roof.  | Office and administration area | 5  | Demolition of housing and facilities.         | m2   | 551.26   |
| 6            | Offices/ Lamp room             | Single storey brick structure, corrugated roof.  | Office and administration area | 5  | Demolition of housing and facilities.         | m2   | 1014.35  |
| 7            |                                | Single storey brick structure, corrugated roof.  | Office and administration area | 5  | Demolition of housing and facilities.         | m2   | 108.36   |
| 8            |                                | Single storey brick structure, corrugated roof.  | Office and administration area | 5  | Demolition of housing and facilities.         | m2   | 205.87   |
| 9            | Workshop                       | Single storey brick structure, corrugated roof.  | Office and administration area | 5  | Demolition of housing and facilities.         | m2   | 731.38   |
| 10           | Bunded Storage area            | Bunded Storage area with above ground tanks.     | Office and administration area | 5  | Demolition of housing and facilities.         | m2   | 113.33   |
| 11           | Container and Golf Cart garage | Single storey brick structure, corrugated roof.  | Office and administration area | 5  | Demolition of housing and facilities.         | m2   | 99.64    |
| 12           | Unknown structure              | Single storey brick structure, corrugated roof.  | Office and administration area | 5  | Demolition of housing and facilities.         | m2   | 56.71    |



| Item No ID # | Label               | Description   | Section                        | CC | Closure Component   | Unit | Quantity |
|--------------|---------------------|---|--------------------------------|----|---|------|----------|
| 13           | Unknown structure   | Prefab building   | Office and administration area | 5  | Demolition of housing and facilities.                       | m2   | 87.77    |
| 14           | Temp Offices        | Prefab building   | Office and administration area | 5  | Demolition of housing and facilities.                       | m2   | 43.03    |
| 15           | Generator- building | Single storey brick structure, corrugated roof.                                       | Office and administration area | 5  | Demolition of housing and facilities.                       | m2   | 390.14   |
| 16           | Generator           |   | Office and administration area | 5  | Demolition of housing and facilities.                       | m2   | 36.86    |
| 17           | Diesel storage      | Diesel storage bund area. 4 above ground diesel tanks (4x23000l).                     | Office and administration area | 5  | Demolition of housing and facilities.                       | m2   | 107.54   |
| 18           | Sewage plant        | Return Activated sludge treatment plant. Plastic reactors set in concrete foundation. | Office and administration area | 2B | Demolition of reinforced concrete buildings and structures. | m2   | 194.62   |
| 19           | Container           | Steel container   | Office and administration area | 5  | Demolition of housing and facilities.                       | m2   | 32.78    |
| 20           | Unknown Structure   | Brick structure. No Roof.   | Office and administration area | 5  | Demolition of housing and facilities.                       | m2   | 105.68   |
| 21           | Sub-station         | Transformer on concrete base  | Office and administration area | 5  | Demolition of housing and facilities.                       | m2   | 33.90    |
| 22           | Sub-station         | Transformer on concrete base  | Office and administration area | 5  | Demolition of housing and facilities.                       | m2   | 13.05    |
| 23           | Workshop            | Steel shelters  | Office and administration area | 2A | Demolition of steel buildings and structures.               | m2   | 103.87   |



| Item No ID # | Label                    | Description  | Section                        | CC | Closure Component   | Unit | Quantity |
|--------------|--------------------------|--|--------------------------------|----|---|------|----------|
| 24           | Workshop                 | Steel shelters   | Office and administration area | 2A | Demolition of steel buildings and structures.   | m2   | 16.50    |
| 25           | Containers- Reliant Elec | Steel shelters   | Office and administration area | 2A | Demolition of steel buildings and structures.   | m2   | 63.09    |
| 26           | Containers- Reliant Elec | Steel shelters   | Office and administration area | 2A | Demolition of steel buildings and structures.   | m2   | 207.97   |
| 27           | Plant- Control room      | Double storey brick structure, corrugated roof.  | Plant area                     | 5  | Demolition of housing and facilities.   | m2   | 102.61   |
| 28           | Laboratory               | Single storey brick structure, corrugated roof.  | Plant area                     | 5  | Demolition of housing and facilities.   | m2   | 163.40   |
| 29           | Plant workshop           | Single storey brick structure, corrugated roof.  | Plant area                     | 5  | Demolition of housing and facilities.   | m2   | 530.61   |
| 30           | Shaft access guard house | Prefab building  | Mining area                    | 5  | Demolition of housing and facilities.   | m2   | 30.53    |
| 31           | Shaft Security Building  | Single storey brick structure, corrugated roof.  | Mining area                    | 5  | Demolition of housing and facilities.   | m2   | 12.65    |
| 32           | Parking Carport          | Unpaved, steel frame and roof.   | Office and administration area | 2A | Demolition of steel buildings and structures.   | m2   | 94.48    |
| 33           | Security hut             | Single storey brick structure, corrugated roof.  | Office and administration area | 5  | Demolition of housing and facilities.   | m2   | 9.73     |
| 34           | Return water dam (lined) | The WQR show that the water in the return water dam is not acid, however the ground water study (GS, 2011, pg68) states that the discard is likely to have significant acid generating potential. This is listed as an acid generating facility for this reason. | Mine residue                   | 8C | Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste). | Ha   | 0.90     |



| Item No ID # | Label                 | Description  | Section      | CC | Closure Component   | Unit | Quantity |
|--------------|-----------------------|--|--------------|----|---|------|----------|
| 35           | Silt trap             | The WQR show that the water in the return water dam is not acid, however the ground water study (GS, 2011, pg68) states that the discard is likely to have significant acid generating potential. This is listed as an acid generating facility for this reason. | Mine residue | 8C | Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste). | Ha   | 0.11     |
| 36           | Dam 1                 | Dirty water settlement dams (lined)- water contained herein is a mix of dirty water and water from dewatering of the works. It is understood that water from the return water dam and the slurry is also pumped here.  | Mining area  | 8C | Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste). | Ha   | 0.23     |
| 37           | Dam 2                 | Dirty water settlement dams (lined)- water contained herein is a mix of dirty water and water from dewatering of the works. It is understood that water from the return water dam and the slurry is also pumped here.  | Mining area  | 8C | Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste). | Ha   | 0.29     |
| 38           | Dam 3                 | Dirty water settlement dams (lined)- water contained herein is a mix of dirty water and water from dewatering of the works. It is understood that water from the return water dam and the slurry is also pumped here.  | Mining area  | 8C | Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste). | Ha   | 0.35     |
| 39           | Water tanks 1         | Steel above ground balancing tanks.  | Mining area  | 5  | Demolition of housing and facilities.   | m2   | 169.21   |
| 40           | Water tanks 2         | Steel above ground balancing tanks.  | Mining area  | 5  | Demolition of housing and facilities.   | m2   | 169.21   |
| 41           | Pollution control dam | Dirty water PCD.   | General      | 8C | Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste). | Ha   | 0.97     |
| 42           | Water tanks 3         | Steel above ground balancing tanks.  | Plant area   | 5  | Demolition of housing and facilities.   | m2   | 147.22   |
| 43           | Water tanks 4         | Steel above ground balancing tanks.  | Plant area   | 5  | Demolition of housing and facilities.   | m2   | 147.22   |



| Item No ID # | Label                   | Description                                     | Section                        | CC | Closure Component   | Unit | Quantity |
|--------------|-------------------------|---|--------------------------------|----|---|------|----------|
| 44           | Genset dam              | Concrete lined dam.                             | Office and administration area | 8C | Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste). | Ha   | 0.04     |
| 45           | Stockyard/ Salvage Yard | Bare soil. Steel waste.                         | Office and administration area | 2A | Demolition of steel buildings and structures.   | Ha   | 0.41     |
| 46           | Laydown area            | Bare soil. Steel waste.                         | Office and administration area | 2A | Demolition of steel buildings and structures.   | Ha   | 0.10     |
| 47           | Workshop Container 1    |   | Office and administration area | 5  | Demolition of housing and facilities.   | m2   | 13.97    |
| 48           | Workshop Container 2    |   | Office and administration area | 5  | Demolition of housing and facilities.   | m2   | 16.67    |
| 49           | Workshop Container 3    |   | Office and administration area | 5  | Demolition of housing and facilities.   | m2   | 15.01    |
| 50           | Workshop Container 4    |   | Office and administration area | 5  | Demolition of housing and facilities.   | m2   | 16.06    |
| 51           | Workshop Container 5    |   | Office and administration area | 5  | Demolition of housing and facilities.   | m2   | 15.70    |
| 52           | Workshop Container 6    |   | Office and administration area | 5  | Demolition of housing and facilities.   | m2   | 15.54    |
| 53           | Access Gate Hut         | Single storey brick structure, corrugated roof. | General                        | 5  | Demolition of housing and facilities.   | m2   | 11.62    |
| 54           | Yard area               |   | General                        | 10 | General surface rehabilitation, including grassing of all denuded areas.                      | Ha   | 0.11     |
| 55A          | Decline Shaft           | Decline shaft to access mine workings           | Mining area                    | 7  | Sealing of shafts, adits and inclines.  | m3   | 3600.00  |



| Item No ID # | Label  | Description  | Section      | CC | Closure Component  | Unit | Quantity |
|--------------|--|--|--------------|----|--|------|----------|
| 55B          | Decline Shaft                                | Decline shaft to access mine workings                | Mining area  | 6  | Opencast rehabilitation including final voids and ramps .  | Ha   | 1.21     |
| 56           | MP6- Waste Dump                              | Hards waste dump- unlined                            | Mining area  | 8A | Rehabilitation of overburden and spoils.   | Ha   | 0.99     |
| 57           | Co-disposal facility                         | Co-disposal/ discard facility. Includes slurry pond. | Mine residue | 8C | Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste).          | Ha   | 35.10    |
| 58           | Plant- Surge bin, Scalping Screen, Crushers. | Plant. Calculated at a height of 3m.                 | Plant area   | 1  | Dismantling of processing plant and related structures (including overland conveyors and power lines). | m3   | 967.83   |
| 59           | Conveyor                                     | Plant. Calculated at a height of 3m.                 | Plant area   | 1  | Dismantling of processing plant and related structures (including overland conveyors and power lines). | m3   | 465.23   |
| 60           | Plant- Spirals, MODA, MODB                   | Plant. Calculated at a height of 3m.                 | Plant area   | 1  | Dismantling of processing plant and related structures (including overland conveyors and power lines). | m3   | 4397.44  |
| 61           | Rewash                                       | Plant. Calculated at a height of 3m.                 | Plant area   | 1  | Dismantling of processing plant and related structures (including overland conveyors and power lines). | m3   | 675.37   |
| 62           | Middlings conveyor                           | Plant. Calculated at a height of 1.5m.               | Plant area   | 1  | Dismantling of processing plant and related structures (including overland conveyors and power lines). | m3   | 255.07   |
| 63           | Load out conveyor                            | Plant. Calculated at a height of 1.5m.               | Plant area   | 1  | Dismantling of processing plant and related structures (including overland conveyors and power lines). | m3   | 259.73   |
| 64           | Load out conveyor                            | Plant. Calculated at a height of 1.5m.               | Plant area   | 1  | Dismantling of processing plant and related structures (including overland conveyors and power lines). | m3   | 217.64   |





| Item No ID # | Label  | Description                            | Section     | CC | Closure Component  | Unit | Quantity |
|--------------|--|--|-------------|----|--|------|----------|
| 65           | Conveyor   | Plant. Calculated at a height of 1.5m. | Plant area  | 1  | Dismantling of processing plant and related structures (including overland conveyors and power lines). | m3   | 223.18   |
| 66           | Load out conveyor                                | Plant. Calculated at a height of 1.5m. | Plant area  | 1  | Dismantling of processing plant and related structures (including overland conveyors and power lines). | m3   | 765.90   |
| 67           | Primary product conveyor                         | Plant. Calculated at a height of 1.5m. | Plant area  | 1  | Dismantling of processing plant and related structures (including overland conveyors and power lines). | m3   | 935.63   |
| 68           | ROM Conveyor                                     | Plant. Calculated at a height of 1.5m. | Plant area  | 1  | Dismantling of processing plant and related structures (including overland conveyors and power lines). | m3   | 942.87   |
| 69           | Auxiliary stockpile conveyor                     | Plant. Calculated at a height of 1.5m. | Plant area  | 1  | Dismantling of processing plant and related structures (including overland conveyors and power lines). | m3   | 777.39   |
| 70           | Discard conveyor                                 | Plant. Calculated at a height of 1.5m. | Plant area  | 1  | Dismantling of processing plant and related structures (including overland conveyors and power lines). | m3   | 269.14   |
| 71           | Product stockpile areas (ROM, Middling, Primary) | Bare soil with coal veneer             | Plant area  | 10 | General surface rehabilitation, including grassing of all denuded areas.                               | Ha   | 5.05     |
| 72           | Old Stockpile area                               | Bare soil with coal veneer             | Plant area  | 10 | General surface rehabilitation, including grassing of all denuded areas.                               | Ha   | 1.93     |
| 73           | Auxiliary stockpile 1                            |  | Mining area | 8A | Rehabilitation of overburden and spoils.   | Ha   | 0.39     |
| 74           | Auxiliary stockpile 2                            |  | Mining area | 8A | Rehabilitation of overburden and spoils.   | Ha   | 0.31     |



| Item No ID # | Label                  | Description  | Section                        | CC | Closure Component  | Unit | Quantity |
|--------------|------------------------|--|--------------------------------|----|--|------|----------|
| 75           | Visitors parking       | Bare soil with coal veneer   | Office and administration area | 10 | General surface rehabilitation, including grassing of all denuded areas. | Ha   | 0.18     |
| 76           | Parking area           | Bare soil with coal veneer   | Office and administration area | 10 | General surface rehabilitation, including grassing of all denuded areas. | Ha   | 0.11     |
| 77           | MP1-Topsoil Stockpile  | Topsoil stockpile. Assumed that this will not be a waste repository for rehab. Soil will be used to rehab the remainder of the site. | Mining area                    | 10 | General surface rehabilitation, including grassing of all denuded areas. | Ha   | 0.31     |
| 78           | MP7- Topsoil and Softs | Assumed that this is not topsoil and will require rehab.   | Mining area                    | 8A | Rehabilitation of overburden and spoils.                                 | Ha   | 0.34     |
| 79           | MP7- Topsoil and Softs | Assumed that this is not topsoil and will require rehab.   | Mining area                    | 8A | Rehabilitation of overburden and spoils.                                 | Ha   | 0.10     |
| 80           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 618.61   |
| 81           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 379.24   |
| 82           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 906.75   |
| 83           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 365.40   |
| 84           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 1013.45  |
| 85           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 1201.41  |
| 86           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 2637.37  |
| 87           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 7241.71  |
| 88           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 576.07   |
| 89           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 3775.31  |
| 90           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 1323.46  |
| 91           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 57.19    |
| 92           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 584.82   |
| 93           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 761.82   |
| 94           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 30.38    |
| 95           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 5818.87  |
| 96           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 4439.18  |
| 97           | Haul Road              | Gravel/ dirt road.   | General                        | 3  | Rehabilitation of access roads.  | m2   | 1153.41  |



| Item No ID # | Label                     | Description                          | Section | CC | Closure Component               | Unit | Quantity |
|--------------|---------------------------|--------------------------------------|---------|----|---------------------------------|------|----------|
| 98           | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 883.30   |
| 99           | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 861.13   |
| 100          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 3585.41  |
| 101          | Main access road (MPC-N2) | Tar road-product transport off site. | General | 3  | Rehabilitation of access roads. | m2   | 3476.39  |
| 102          | Main access road (MPC-N2) | Tar road-product transport off site. | General | 3  | Rehabilitation of access roads. | m2   | 1846.62  |
| 103          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 503.83   |
| 104          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 4631.06  |
| 105          | Main access road (MPC-N2) | Tar road-product transport off site. | General | 3  | Rehabilitation of access roads. | m2   | 5749.41  |
| 106          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 2651.11  |
| 107          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 7380.04  |
| 108          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 2376.02  |
| 109          | Main access road (MPC-N2) | Tar road-product transport off site. | General | 3  | Rehabilitation of access roads. | m2   | 5091.63  |
| 110          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 1344.92  |
| 111          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 1756.89  |
| 112          | Main access road (MPC-N2) | Tar road-product transport off site. | General | 3  | Rehabilitation of access roads. | m2   | 19161.96 |
| 113          | Main access road (MPC-N2) | Tar road-product transport off site. | General | 3  | Rehabilitation of access roads. | m    | 8599.37  |
| 114          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 2494.78  |
| 115          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 937.12   |
| 116          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 456.45   |
| 117          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 574.18   |
| 118          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 1477.48  |
| 119          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 1243.82  |
| 120          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 2077.72  |
| 121          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 1236.77  |
| 122          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 4792.15  |
| 123          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 2328.80  |
| 124          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 1545.43  |
| 125          | Haul Road                 | Gravel/ dirt road.                   | General | 3  | Rehabilitation of access roads. | m2   | 4487.49  |



| Item No ID # | Label                                     | Description   | Section                        | CC | Closure Component  | Unit | Quantity |
|--------------|---|---|--------------------------------|----|--|------|----------|
| 126          | Powerline                                 | 66kV powerline from NW boundary of site, around co-disposal and to the site substation. Double parallel gum poles. Assumed 'z' value of 1m. | Office and administration area | 1  | Dismantling of processing plant and related structures (including overland conveyors and power lines). | m3   | 3700.00  |
| 127          | Plant area                                | Surface area upon which processing is taking place.   | Plant area                     | 10 | General surface rehabilitation, including grassing of all denuded areas.                               | Ha   | 2.20     |
| 128          | MPD-Topsoil stockpile                     | Topsoil stockpile. Assumed that this will not be a waste repository for rehab. Soil will be used to rehab the remainder of the site.        | Mining area                    | 10 | General surface rehabilitation, including grassing of all denuded areas.                               | Ha   | 0.25     |
| 129          | MP2- Topsoil stockpile                    | Topsoil stockpile. Assumed that this will not be a waste repository for rehab. Soil will be used to rehab the remainder of the site.        | Mining area                    | 10 | General surface rehabilitation, including grassing of all denuded areas.                               | Ha   | 0.18     |
| 130          | MP3- Topsoil stockpile                    | Topsoil stockpile. Assumed that this will not be a waste repository for rehab. Soil will be used to rehab the remainder of the site.        | Mining area                    | 10 | General surface rehabilitation, including grassing of all denuded areas.                               | Ha   | 0.22     |
| 131          | MP4+5- Topsoil stockpile                  | Topsoil stockpile. Assumed that this will not be a waste repository for rehab. Soil will be used to rehab the remainder of the site.        | Mining area                    | 10 | General surface rehabilitation, including grassing of all denuded areas.                               | Ha   | 3.18     |
| 132          | MP8- Topsoil / softs stockpile            | Topsoil stockpile. Assumed that this will not be a waste repository for rehab. Soil will be used to rehab the remainder of the site.        | Mining area                    | 10 | General surface rehabilitation, including grassing of all denuded areas.                               | Ha   | 0.95     |
| 133          | MP9- Topsoil / softs stockpile            | Topsoil stockpile. Assumed that this will not be a waste repository for rehab. Soil will be used to rehab the remainder of the site.        | Mining area                    | 10 | General surface rehabilitation, including grassing of all denuded areas.                               | Ha   | 0.65     |
| 134          | MP10- Brake test ramp (Topsoil stockpile) | Topsoil stockpile. Assumed that this will not be a waste repository for rehab. Soil will be used to rehab the remainder of the site.        | Mining area                    | 10 | General surface rehabilitation, including grassing of all denuded areas.                               | Ha   | 0.01     |
| 135          | MP11- Topsoil / softs stockpile           | Topsoil stockpile. Assumed that this will not be a waste repository for rehab. Soil will be used to rehab the remainder of the site.        | Mining area                    | 10 | General surface rehabilitation, including grassing of all denuded areas.                               | Ha   | 0.19     |



| Item No ID # | Label                           | Description  | Section                        | CC | Closure Component  | Unit | Quantity |
|--------------|---------------------------------|--|--------------------------------|----|--|------|----------|
| 136          | MP12- Topsoil / softs stockpile | Topsoil stockpile. Assumed that this will not be a waste repository for rehab. Soil will be used to rehab the remainder of the site. | Mining area                    | 10 | General surface rehabilitation, including grassing of all denuded areas. | Ha   | 0.05     |
| 137          | MP13- Topsoil / softs stockpile | Topsoil stockpile. Assumed that this will not be a waste repository for rehab. Soil will be used to rehab the remainder of the site. | Mining area                    | 10 | General surface rehabilitation, including grassing of all denuded areas. | Ha   | 0.04     |
| 138          | Decline Shaft                   | Decline shaft to access mine workings  | Mining area                    | 10 | General surface rehabilitation, including grassing of all denuded areas. | Ha   | 1.21     |
| 139          | UC Vent Shaft 1                 | Ventilation shaft.   | Mining area                    | 7  | Sealing of shafts, adits and inclines.                                   | m3   | 2422.00  |
| 140          | UC Vent Shaft 2                 | Ventilation shaft.   | Mining area                    | 7  | Sealing of shafts, adits and inclines.                                   | m3   | 2478.00  |
| 141          | DC Vent Shaft                   | Ventilation shaft.   | Mining area                    | 7  | Sealing of shafts, adits and inclines.                                   | m3   | 1114.40  |
| 142          | Explosives magazine             | Explosives magazine  | Mining area                    | 5  | Demolition of housing and facilities.                                    | m2   | 338.00   |
| 143          | Fencing                         | Palisade fencing (item 044 in ENVASS)  | Office and administration area | 12 | Fencing.   | m    | 3500.00  |

