

Annexure 1: Final Rehabilitation, decommissioning and mine closure plan Including Environmental Risk Assessment

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1 INTRODUCTION

This document serves to comply with regulation 6 of the NEMA Financial Regulations (2015) that states that an applicant must determine the financial provision through a detailed itemisation of all activities and costs, calculated based on the actual costs of implementation of the measures required for—

- (a) annual rehabilitation, as reflected in an annual rehabilitation plan;
- (b) final rehabilitation, decommissioning and closure of the prospecting, exploration, mining or production operations at the end of the life of operations, as reflected in a final rehabilitation, decommissioning and mine closure plan; and
- (c) remediation of latent or residual environmental impacts which may become known in the future, as reflected in an environmental risk assessment report.

1.1 The annual rehabilitation plan

The annual rehabilitation plan provide for concurrent or progressive rehabilitation and contain information that defines activities on an annual basis and how these relate to the Final closure vision, as detailed in this final rehabilitation, decommissioning and mine closure plan.

The objective of the annual rehabilitation plan is to—

- review concurrent rehabilitation and remediation activities already implemented;
- establish rehabilitation and remediation goals and outcomes for the forthcoming 12 months, which contribute to the gradual achievement of the post-mining land use, closure vision and objectives identified in the holder's final rehabilitation, decommissioning and mine closure plan;
- establish a plan, schedule and budget for rehabilitation for the forthcoming 12 months;
- identify and address shortcomings experienced in the preceding 12 months of rehabilitation; and
- evaluate and update the cost of rehabilitation for the 12 month period and for closure, for purposes of supplementing the financial provision guarantee or other financial provision instrument.

Taking into account the objective of the annual rehabilitation plan it is clear that it cannot form part of the environmental management programme to be submitted in terms of section 24N of the Act and the Environmental Impact Assessment Regulations, 2014 but will be submitted on an annual basis as part of the environmental audit report in terms of Regulation 34 (1)(b) of the NEMA EIA Regulations (2014).

1.2 Final rehabilitation, decommissioning and mine closure plan

According to the NEMA Financial Regulations the final rehabilitation, decommissioning and mine closure plan will form a component of the environmental management programme to be submitted in terms of section 24N of the Act and the Environmental Impact Assessment Regulations, 2014 and will be subjected to the same requirements of the environmental management programme with regards opportunities for stakeholder review and comment as well as auditing.

The objectives of this final rehabilitation, decommissioning and mine closure plan is to identify a post-mining land use that is feasible through-

- providing the vision (goals), objectives, targets and criteria for final rehabilitation, decommissioning and closure of the project;
- outlining the design principles for closure;
- explaining the risk assessment approach and outcomes and link closure activities to risk rehabilitation;

- detailing the closure actions that clearly indicate the measures that will be taken to mitigate and/or manage identified risks and describes the nature of residual risks that will need to be monitored and managed post closure;
- committing to a schedule, budget, roles and responsibilities for final rehabilitation, decommissioning and closure of each relevant activity or item of infrastructure;
- identifying knowledge gaps and how these will be addressed and filled;
- detailing the full closure costs for the life of project at increasing levels of accuracy as the project develops and approaches closure in line with the final land use proposed; and
- outlining monitoring, auditing and reporting requirements.

1.3 Environmental risk assessment report

According to the NEMA Financial Regulations the environmental risk assessment report will also form a component of the environmental management programme to be submitted in terms of section 24N of the Act and the Environmental Impact Assessment Regulations, 2014 and will be subjected to the same requirements of the environmental management programme with regards opportunities for stakeholder review and comment as well as auditing.

The objective of the environmental risk assessment report is to—

- ensure timeous risk reduction through appropriate interventions;
- identify and quantify the potential latent environmental risks related to post closure;
- detail the approach to managing the risks;
- quantify the potential liabilities associated with the management of the risks; and
- outline monitoring, auditing and reporting requirements.

This document then fulfill the requirements of both the Final rehabilitation, decommissioning and mine closure plan and the Environmental risk assessment report

2 CONTEXT OF THE PROJECT

2.1 Issues that have guided the development of the plan

Three approaches were employed to identify the key aims for the closure process:

- Technical assessments which involved the recording of the project activities over the full life cycle of the prospecting operation (including closure) and the consequent potential impacts on the environment (including cumulative impacts). This resulted in the compilation of a draft closure plan that facilitated discussions with the authorities as well as Interested and Affected Parties (I&APs).
- Identification and consultation with the relevant authorities to record their requirements as well as public meetings with I&APs to solicit/record their suggestions/issues/concerns.
- The collection of available/published environmental data, the review thereof for adequacy and hence the identification of the need for more comprehensive environmental studies/investigations and/or further information gathering.

As a result of the consultation and recommendations from the basic assessment report and EMPr completed the company identified three key closure goals for the final closure of the prospecting operation that are listed below.

- To create a safe and healthy post-mining environment with no residual environmental impact.
- To create a stable, free draining post mining landform, which is compatible with the surrounding landscape and which is capable of a productive land use that achieves a land capability equal to that of pre-prospecting conditions
- To provide optimal post-mining social opportunities

Each goal is supported by a suite of key objectives and activities which are elaborated on in section 3 of this report. This report also describes how these objectives are planned to be met and elaborate on the implementation of certain risk mitigation actions (section 5). With risk assessment and mitigation being integral to the planning and executing of the rehabilitation and closure of the mine. Aftercare and maintenance of rehabilitated sites is often the difference between the ultimate successes or failure of rehabilitation and monitoring of rehabilitation will determine whether rehabilitation objectives and requirements are being achieved.

This report fulfils the requirements of both the Final Rehabilitation, Decommissioning and Mine Closure Plan and the Environmental Risk Assessment Report required in terms of the NEMA (Act 107 of 1998) regulations and applicable MPRDA (Act No. 28 of 2002) regulations.

Several pieces of legislation are applicable to mine closure. Importantly, public participation is an integral part of mine closure and the process followed needs to fulfil the requirements of all relevant legislation. The following government departments have been identified amongst others as playing a key role in the closure process:

- Department of Minerals Resources (DMR). Lead agent, facilitator of closure inspections and issues the closure certificate,
- Department of Water and Sanitation (DWAS). Lead agent for potential water related issues and signs off on the mine closure certificate. Cancellation of Water Use license.
- Provincial Department of Environment and Nature Conservation. Gives input into the closure plan and guides and monitors protection of the natural environment.
- The local municipality and district municipality. Gives input into the mine closure plan and interfacing thereof with their integrated development plan (IDP) of the local area.

3 MINE CLOSURE PLAN AND SCHEDULE

3.1 EMPr requirements

The requirement proposed to be included as part of the EMPr is that after prospecting, the site must be rehabilitated to its original land use, stock farming (grazing). The objectives to meet the set goals as applied to the final decommissioning and mine closure is discussed in section 5 and can be summarised as follow:

- Objective 1 - To create a safe and healthy post-mining environment
 - Safe mining area
 - Limited residual environmental impact
- Objective 2 - To create a stable, free draining post mining landform, which is compatible with the surrounding landscape
 - Economically viable and sustainable land fit for grazing, as close as possible to its natural state.
- Objective 3 – To provide optimal post-mining social opportunities
 - Optimised benefits for the social environment
 - Minimal negative aesthetic impact

3.2 Basic rehabilitation methodology

Rehabilitation will take place according to the approved EMPr and Closure Plan and the post closure objective proposed in the EMPr is to restore the land to its pre-prospecting land use for stock farming taking into account the transformed areas due to historic mining activities.

Post prospecting topography for most of the area will follows the original landform shape except where changes due to historic disturbances occurred that will not form part of the environmental responsibilities of the applicant due to the specific nature of the exploration program that only include limited invasive prospecting activity.

Shaping/profiling will be required to construct the required profile of the sampling areas including excavations/sumps and removing of spoils. Compacted areas must be ripped to promote natural re-vegetation. Re-vegetation of the disturbed areas on virgin land will follow a process of natural plant succession starting with pioneer plants.

The objective regarding safety is to remove all trip/fall hazards.

Water contamination must be prevented by preventing the borehole acting as a conduit, stopping the mixing of water from different aquifers and to stop the wastage of borehole water from the overflow from artesian boreholes.

The operation will not create any overburden or fine residue dumps. No water reticulation will be laid-on to the mine work area(s) either. No processing plant and services will be developed on the prospecting area and no offices and accommodation will be provided onsite that need decommissioning. Roads, access control and fencing will remain as part of agricultural operations.

3.3 Closure Strategy

Concurrent or progressive rehabilitation is good practice and has advantages for the company as it reduces its overall financial exposure. Concurrent rehabilitation and remediation are provided for in the annual rehabilitation plan and contain information that defines activities on an annual basis and how these relate to the Final closure vision, as detailed in this final rehabilitation, decommissioning and mine closure plan. Annual reviews in terms of regulations 6(a) and 11(1)(a) of the NEMA Financial Regulations, that form part of the Annual Environmental Audit, assesses what closure objectives and criteria are being achieved through the implementation of the plan.

Areas that are not covered during concurrent rehabilitation as described in the Annual closure plan that require specific intervention as part of this Final rehabilitation, decommissioning and mine closure plan are discussed below.

Maintenance of rehabilitated sites is often the difference between the ultimate successes or failure of rehabilitation and monitoring of rehabilitation will determine whether rehabilitation objectives and requirements are being achieved.

As the final phase in the project cycle, decommissioning may present positive environmental opportunities associated with the return of the land for alternative use and the cessation of impacts associated with operational activities. However, depending on the nature of the operational activity, the need to manage risks and potential residual impacts may remain well after operations have ceased. Examples of potential residual impacts and risks include erosion, slow recovery of vegetation, stock that has been abandoned (e.g., oil drums, scrap equipment) and old (unserviceable) structures.

The main closure objective is to hand back the rehabilitated properties to the respective landowners in a state that is fit for grazing, as close as possible to the original carrying capacity. The aim is to ensure that the affected environment is maintained in a stable condition that will not be detrimental to the safety and health of humans and animals and that will not pollute the environment or lead to the degradation thereof. The aim of this mine closure therefore is to leave the site in as safe and self-sustaining a condition as possible and in a situation where no post-closure intervention is required.

4 RISK ASSESSMENT

Identified risk with their potential impacts are assessed in terms of: nature (character status); extent (spatial scale); duration (time scale); probability (likelihood) of occurring; reversibility of the impact; the degree to which the impact may cause irreplaceable loss of resources; the significance (size or magnitude scale) prior to mitigation; the degree to which the impact can be mitigated; and, the significance (size or magnitude scale) after mitigation as per the criteria provided in the Environmental Authorisation (EA). Any unforeseen risks and related impacts with their associated mitigating actions will be included as part of this Final Rehabilitation, decommissioning and mine closure plan during the annual environmental assessment and reviews.

4.1 Risk identification & risk sources

The only risk sources identified within the prospecting area are the remaining cleared areas (drill platforms and tracks) and excavations (sumps). The risks arising from these sources are listed below and the impact rating and mitigation actions of each risk are addressed in the risk assessment.

- No significant risks have been identified
- Medium risks relate to disturbance/destruction/disruption of Biodiversity, Flora & Fauna, Socio-economic standard and Paleontological Archaeological and Cultural Heritage Resources.
 - Localized change in ecological functioning (processes and services) due to sampling footprint although <1 Ha. The clearing of areas for sampling will result in the removal of existing vegetation and habitat destruction of species of conservation concern (SCC) due to site clearance.
 - Soil compaction slowing natural re-vegetation will result from ongoing repeated use of movement areas and driving off-road.
 - The prospecting sites are located in a rural farming area with farm dwellings. Some landowners cherish the peaceful and quiet lifestyle of the area and friction between local residents and a crew of strangers is very possible.
 - Conflict with other mining companies on the same property is also a possibility.
 - Impacts on archaeological resources (e.g., graves) when creating new tracs.
 - Impact on paleontological resources during earthmoving activities.
- Low and Insignificant risks relate to Potential Impacts on Soil (contamination, erosion, and compaction) & Land capability, Aquatic biodiversity & Water Resources, Emissions (Air Quality, Visual intrusion & Noise Generation),
 - Drill platforms and compacted areas including drill traverses limiting agricultural potential
 - Agricultural not viable on disturbed areas
 - Higher erodibility of compacted areas after it has been ripped
 - Ground Water abstraction and pollution
 - Drill spoils not removed or erosion sediment polluting water sources
 - Oil, fuel and lubricant spills during drilling activities
 - Waste classes not kept in separate streams
 - Noise and dust will be created by mining equipment (e.g., drilling rig) and vehicles.

5 RISK MANAGEMENT, IMPACT MITIGATION AND CLOSURE OBJECTIVES

Internationally, there seem to be three schools of thought:

- “What the affected community wants, the affected community gets” – that is, the key focus is on providing the end product requested by the affected communities, rather than focusing on the previous status quo of the receiving environment
- “Restoration of previous land use capability” – the original thought process in the South African context, because mining often occurs on land with high agricultural potential
- “No net loss of biodiversity” – the focal point in the ICMM/IUCN dialogue sponsored guidelines for mining and biodiversity, and of many mining corporate policies.

The thought process for the closure of this operation is based on the last two. The main closure objective therefore is to leave the site in as safe and self-sustaining a condition as possible and in a situation where no post-closure intervention is required.

The aim is to ensure that the affected environment is maintained in a stable condition that will not be detrimental to the safety and health of humans and animals and that will not pollute the environment or lead to the degradation thereof. The aesthetic value of the area will also be reinstated.

To meet the objectives the risk management strategies and impact mitigating measures described in the EMPr needs to implemented, monitored and evaluated.

Risk management strategies were identified for the potentially significant risks, while data collection and analysis programs were pursued to evaluate the uncertain risks. The risks and associated impacts with ratings are provided in the EA together with the planned actions to mitigate the impacts if the risk occurs and hence enable reaching the closure objective.

The aim with impact mitigation actions is to over time manage significant and medium risks to become insignificant, or at least medium and under control with management actions. Once the desired state has been achieved, a risk will continue to be monitored to confirm its insignificance rating or medium and controlled rating.

The three key mine closure objectives are elaborated on in more detail and in context of the relevant risks below (each of the objectives are supported by several key aims):

- Objective 1 - To create a safe and healthy post-mining environment
 - Safe mining area
 - Maintain affected environment in a stable condition that will not be detrimental to the safety and health of humans and animals and that will not pollute the environment or lead to the degradation thereof.
 - No potentially dangerous areas; secured if required
 - Limited residual environmental impact
 - No surface and/or groundwater contamination
 - Waste management practices not creating or leaving legacies
 - Develop a landscape that reduces the requirement for long term monitoring and management
- Objective 2 - To create a stable, free draining post mining landform, which is compatible with the surrounding landscape
 - Economically viable and sustainable land fit for grazing, as close as possible to its natural state.
 - Improve Land use with an increased production with regard to grazing.
 - Minimise disturbance of ecology due to loss of habitat and noise/visual/dust
 - Minimise risk of erosion from either increased base flow or prospecting operations:

- Management of air emissions to minimise nuisance effects; implementation of dust suppression activities.
- Increase of land with agricultural potential: profiling and sloping of remaining drill sumps and removal of all drill spoils and ripping of all compacted areas to facilitate recovery of natural vegetation through colonization by dispersing species.
- Prevent long term changes in land use: revert back to mainly stock farming.
- Prepare area to promote natural re-establishment of vegetation that is self-sustaining, perpetual and provides a sustainable habitat for local fauna and successive flora species
- Objective 3 – To provide optimal post-mining social opportunities
 - Optimised benefits for the social environment
 - Maintain positive and transparent relationships with stakeholders: maintaining communication channels to all stakeholders and forums.
 - Provide stakeholders with relevant information: making all information available to stakeholders and providing information to authorities as per legislative requirements.
 - Undertaking environmental management in accordance with the implementation, maintenance and auditing of an environmental management system.
 - Minimal negative aesthetic impact
 - Maintain affected environment in an improved state containing no foreign debris or other materials.

The legal framework within which all the above lies entails:

- Defining and meeting closure standards.
- Complying with legislation.
- Sufficient financial provision for mine closure activities.
- Monitoring and plan for latent environmental impact.

The closure process involves a series of actions, with continual monitoring, review and remedial actions (if required). Identified and assessed risks feed into mitigation actions of which successful implementation result in achievement of the mine closure objectives and aims.

5.1 Create a safe and healthy post-mining environment

At the time of final decommissioning there will be no significant risks and no significant risks will remain post decommissioning and closure.

Documentation and monitoring results will be provided as objective evidence of achieving the objective of minimum legacies as listed in Table 1. The criteria with the contents of these documents must comply with are also given in this table.

Accurate records of the decommissioning should be kept as proof that decommissioning was undertaken. The records should include the reason for abandonment, measurement of groundwater level prior to backfilling, depth and position of each layer of backfilling and sealing materials, the type and quantity of backfilling and sealing materials used, any changes made to the borehole (e.g., removal of casing) and any problems encountered during the capping procedure. The location of each borehole should be marked on a map.

Table 1: Objective evidence and closure criteria for safe post-mining environment

Closure objective	Document scope	Author	Success criteria (standard)
Slope stability	Inspection of the post-mining prospecting areas with the objective to identify unstable areas and formation of erosion gulley's	Independent EAP	Post-mining area declared stable by DMR mine health and safety
No negative effect on surface water flow and waste management practices do not leave/create legacies	Inspection of the post-mining surface area with the objective to identify erosion due to storm water and sheet flow	Independent EAP	Post-mining area declared stable by DMR
	Assessment of the completeness of removal of mine waste	Independent EAP	Final performance assessment report declares 100% removal of waste and equipment
Secured potentially Dangerous post-mining sites	Inspection of the post-mining surface area with the objective to identify unsafe areas	Independent EAP	Post-mining area declared safe by DMR

5.2 Create a productive land use that achieves a land capability equal or better than pre-mining

At the time of final decommissioning there will be a risk regarding the viability and sustainability of agriculture on the rehabilitated areas. Successful rehabilitation will only be proven over time once results from a few consecutive vegetation surveys are available. The risk of possible changes in the surface water quantities and flow patterns leading to erosion on the rehabilitated areas will also remain. When more information becomes available during the post-mining period, appropriate actions will be taken if proved necessary.

The documentation which will be submitted as objective evidence of the state of the above risks at the time of closure is listed in Table 2. With the contents of these documents showing compliance with the closure criteria - also listed in Table 2 - it will be accepted that the mine has achieved the objective of economically viable and sustainable small stock agriculture.

Table 2 Objective evidence and closure criteria for economically viable and sustainable small stock agriculture

Closure objective	Document scope	Author	Success criteria (standard)
Viable stock production	Report on the monitoring results with regard to succession tempo of total cover in comparison with virgin vegetation adjacent to sample areas	Independent EAP	Total cover and species composition is comparable to that of the adjacent virgin area
Sustainable production of grazing	Monitoring results of erosion on steep slopes (20% gradient) and disturbed areas	Independent EAP	At the time of closure, soil loss has stabilised over the whole previously disturbed area

5.3 Optimal post-mining social opportunities.

At the time of final decommissioning there will be no significant risks.

The documentation which will be submitted as objective evidence and the closure criteria against which the contents of these documents will be measured are summarised in Table 3. Achieving these criteria will be evidence of achieving the objective of optimum post-mining social opportunities.

Table 3 Objective evidence and closure criteria for optimum post-mining social opportunities

Closure objective	Document scope	Author	Success criteria (standard)
Limited environmental impacts during demolition activities	Summary of all complaints received during demolition activities and follow up actions	Mine SHE Head, audited by independent EAP	Nuisance levels consistently on par with legislative standards after completion of demolition activities All incidents older than 90 days investigated and feedback given to complainant

6 ESTIMATED COST FOR REQUIREMENTS TO FULLY DECOMMISSION THE SITE

6.1 Assessment of financial provision

According to regulation 6 of the NEMA Financial Provisioning Regulations, 2015 as amended an applicant must determine the financial provision through a detailed itemisation of all activities and costs, calculated based on the actual costs of implementation of the measures required for— (a) annual rehabilitation, as reflected in an annual rehabilitation plan; (b) final rehabilitation, decommissioning and closure of the prospecting, exploration, mining or production operations at the end of the life of operations, as reflected in a final rehabilitation, decommissioning and mine closure plan; and (c) remediation of latent or residual environmental impacts which may become known in the future, including the pumping and treatment of polluted or extraneous water, as reflected in an environmental risk assessment report.

6.2 Quantified Closure elements

The following risk -based criteria and assumptions were used to calculate the final rehabilitation, decommissioning and closure cost:

- Access to the drill site will be via existing farm tracks. Equipment will be transported to site via the existing roads (including gravel and jeep track). No new roads will be required.
- If no tracks area available, ‘twee-spoor’ tracks will be made by offroad driving the drilling rig (4 x 4) to such a site. This should be done under the supervision of the Environmental Officer
- Any new tracks created by offroad driving to the sampling site will be rehabilitated by means of raking and/or scarifying trampled and compacted surfaces (tracks).
- The area of each drill pad which will be disturbed (total surface area) is approximately 160m².
- Only where necessary will existing vegetation be removed. The topsoil will be kept aside for later rehabilitation around each drill pad to prevent contamination.
- Rehabilitation is carried out on a continuous basis as work progresses. It consists mostly of backfilling drill holes with the drill chips, removing of drill spoils from possible sumps, backfilling and profiling of sumps and ripping and cleaning up of drill pads and tracks used for drilling.
- Such rehabilitation is undertaken manually by raking over the disturbed site (scarifying) and placing topsoil over the raked area. This will be monitored continuously to ensure

effective rehabilitation of disturbed areas. The rehabilitation work will be conducted in-house under the supervision of an Environmental Officer.

- Water required for drilling purposes (which may be required if drilling through soft clays is required) will be brought to site.
- The limited amount of water required for drilling purposes will be transported to site and stored in bowsers in the immediate area of prospecting.
- Vehicle routes between the water source and the prospecting drilling site will be along existing vehicle tracks and/or the limited 'twee-spoor' tracks that may be required to drive the drilling rig to the drill site.
- Should any clay horizons be intersected in the drilling of boreholes, it may be necessary to use water mixed with a drilling lubricant to assist with removing the clay and rock chips from the borehole. Such lubricant will also prevent the sides of the borehole collapsing.
- If such drilling is required, a drill sump will be excavated at each drill pad where clay is intersected and will be approximately 2.5m x 2.5m x 1.7m in extent and will be used to store and manage drilling fluid used during the drilling process (recycling of water).
- Each sump will be lined with a thick plastic liner to prevent seepage of the drilling water into the subsurface layers. The plastic liner will be reused at the other drill sites. The sumps will be demarcated with red and white tape or by other appropriate means. Each site will be rehabilitated directly after drilling.
- The drilling mud captured in the sumps will be dried and stored in leak proof receptacles and drill spoils will be removed from site and disposed of at a suitably licensed Municipal waste disposal facility.
- The drill sumps will be filled in with overburden, the top 150 mm being topsoil
- The general approach adopted for excavations is to reinstating the original profile of the landscape and ensuring the hydrological integrity of the area. Topography to follow the original landform shape.
- It is assumed that the post-mining sump stability will be addressed as part of the operation and necessary remedial actions implemented prior to closure
- In case of sudden un-planned closure there will always only be 2 drill platforms present on site one in the process of rehabilitation and one in the process of development.
- All compacted areas due to drilling platforms must be ripped to 300 mm
- All disturbed and exposed surfaces will be covered with at least 150 mm of topsoil and re-vegetation must be allowed to take place naturally
- A temporary equipment laydown / storage area will form part of the drill platform, where the drill rig will be parked when not in use and will include an equipment/ materials laydown (storage) area and a chemical toilet.
- Diesel will be contained in a mobile bowser.
- Accommodation will be provided off-site in one of the nearby towns, and not at the drill site.
- All vehicles, plant and workshop equipment will be removed for salvage or resale.
- Any item that has no salvage value to the mine, but could be of value to individuals, will be sold (zero salvage assumed in cost estimation) and the remaining treated as waste and removed from site
- All services related to the operation, water supply lines and storage on site will have to be demolished; the closure cost is therefore included in this estimate.

6.3 Calculation of Closure cost

For each closure element, various possible combinations of required rehabilitation work were identified and costs were calculated for each of these, based on quotations obtained from independent third party suppliers for earthmoving equipment rental and various other consumables refer table below.

Equipment	Cost/h	Fuel/h @	Total /day Lease	
		R16.00	Long term	Short term
30 ton ADT – HM400	R161.35	R320.00	R3 850.80	R5 776.20
40 ton Excavator – PC450	R280.00	R448.00	R5 824.00	R8 736.00
20 ton FEL – WA250	R124.38	R176.00	R2 403.04	R3 604.56
Bulldozer – D65	R120.30	R288.00	R3 266.40	R4 899.60
Grader Cat 140K	R124.38	R176.00	R2 403.04	R3 604.56
Tipper Truck 15m ³	R124.38	R176.00	R2 403.04	R3 604.56
Manual labour	R25.00		R200.00	R300.00
Cost factor 1 - Reinstate topography of drill holes				
Back filling by means of manual labour <20m ³	R /day	Labour/days	R/pad	
Labour	R300.00	2	R600.00	
Cost factor 2 - Level and reinstate topography level disturbed areas				
Ripping and levelling	R /day	m ² /day	R/160m ²	
40 ton Excavator – PC450	R8 736.00	2500	R559.10	
Labour - manual raking and/or scarifying trampled surfaces	R300.00	1000	R48.00	
Total per drill pad 8mX20m			R607.10	
Cost factor 3 - Final rehabilitation of drill traverses "tweespoor" tracks				
Manual raking and/or scarifying trampled surfaces drill traverses	R /day	m/day	R/Km	
Manual labour	R300.00	200	R1 500.00	
Cost factor 4 - Final maintenance of dual use roads still required by landowner				
Grade farm roads used	R /day	m ² /day	R/Km	
Grader Cat 140K	R3 604.56	20	R180.23	
Cost factor 5 - Final clean-up Remove waste from temporary storage and scrap from salvage yard				
Transport of waste & scrap	R /day	Days	Total	
Tipper Truck 15m ³	R3 604.56	0.5	R1 802.28	
Manual labour	R300.00	2	R600.00	
Total Cost			R2 402.28	
Cost factor 6 - Aftercare and Maintenance				
	R /day	Ha/day	R/Ha	
Manual labour erosion control	R300.00	0.25	R1 200.00	
Total Cost per Ha over 2 years			R1 200.00	

Total estimated cost for requirements to fully decommissioned the mining site at final closure

Mining Area				
Risk based criteria and assumptions with regard to rehabilitation drilling sites				
Backfilling of drill holes will be done by hand				
Level and reinstate topography level disturbed areas at drill sites will be done by hand				
No plant or sub-structures will be present that requires decommissioning				
Final rehabilitation of drill traverses "tweespoor" tracks will be done by hand				
All disturbed and exposed surfaces will be covered with at least 150 mm of topsoil and re-vegetation must be allowed to take place naturally				
All compacted areas must be ripped to 300 mm				
It is assumed that the post-mining drill pad stability will be addressed as part of the operation and necessary remedial actions implemented prior to closure				
Reinstating the original profile of the landscape and ensuring the hydrological integrity of the area.				
Topography to follow the original landform shape.				
The drill holess will be filled in with overburden, the top 150 mm being topsoil				
Closure Element Mitigating measures	Unit	No Units	Unit Cost	Cost per Element
Backfilling of drill holes and capping	Holes	30	R600.00	R18 000.00
Level and reinstate topography level disturbed areas	160m ²	30	R559.10	R16 773.00
Final rehabilitation of drill traverses "tweespoor" tracks	Km	5	R1 500.00	R7 500.00
Sub-Total			R42 273.00	
Risk based criteria and assumptions with regard to final decommissioning				
All vehicles, plant and workshop equipment will be removed for salvage or resale				
A hazardous disposal site will not be constructed and all hazardous waste will be removed from site and transported to the nearest licensed facility				
All services related to the operation, water supply lines and storage on site will have to be demolished; the closure cost is therefore included in this estimate				
All compacted areas due to hauling and salvage must be ripped to 300 mm				
Existing tracks will be used and new tracks must be restricted to the absolute minimum.				
All fences and access roads must be handed back to the landowner in a good state of repair				
Closure Element Mitigating measures	Unit	No Units	Unit Cost	Cost per Element
Final maintenance of access roads	Km	5	R180.23	R901.15
Final clean-up	Ea	1	R2 402.28	R2 402.28
Aftercare and Maintenance	Ha	5	R1 200.00	R6 000.00
Sub-Total			R9 303.43	
Total financial provision required to fully decommission the prospecting operation				R51 576.43

7 THE PUBLIC PARTICIPATION PROCESS

7.1 Principles and Objectives

The Public Participation Process (PPP) was designed to fulfil the requirements of several pieces of legislation applicable to mine closure. It forms an integral component of the mine closure process by affording Interested and Affected Parties (I&AP) the opportunity to identify environmental issues and concerns relating to the proposed closure, which they feel should be addressed. This is consistent with the provisions of the National Environmental Management Act (Act No. 107 of 1998), Section 2(4)(f), which states that "the participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured".

The objective of the prospecting operation is to develop a working PPP that informs key stakeholders', I&APs and the general public about mine closure objectives and activities during the life of the mine. The PPP was designed to provide sufficient and accessible information to I&APs in an objective manner to assist them to:

- Identify issues of concern, and provide suggestions for enhanced benefits and alternatives associated with mine closure,
- Identify risks not yet identified during the risk assessment exercise,
- Identify risks associated with mine closure and rehabilitation,
- Contribute local knowledge and experience,
- Verify that their issues have been considered.
- Comment on the Risk Assessment and Mine Closure Plan at the time of final decommissioning of the project, including the significance of potential risks that have been identified and associated impacts,
- Play an oversight role in the monitoring and evaluation of mine closure.

7.2 Stakeholder Identification and Project Data Base

Existing data bases were used to inform the list of stakeholders. Special consideration was given to ensure that organizations and individuals that had expressed interest in the activities of the operation, and those who are potentially affected by mine closure, were included on the data base. The following are principles which governed the PPP:

- Key stakeholder groups and the general public comprised the target audience in the development of the PPP.
- Providing information to lay people to allow them to contribute to and participate meaningfully in the process.
- Stakeholder participation is most effective when the proponent and the practitioner recognise, acknowledge and validate stakeholder values when designing a PPP (i.e., there should be no underestimation of the technical and professional competence of citizens).
- The recognition that in the current political climate of South Africa, consultation, empowerment and capacity building is particularly important.

The process of involving stakeholders had three main objectives:

- Steps should be taken to ensure that stakeholder input into the project is relevant and representative.
- Stakeholders should be made aware of their objectives and role in the process,
- An efficient communication and feedback mechanism should be developed during the process to ensure that all stakeholders are kept informed of progress.

Stakeholders were drawn from the sectors outlined below:

- National (DWAS, DMR), Provincial and Local Government (Local and District Municipalities)
- Industry (commercial farmers)
- Corporations and businesses (service providers to operation)
- Operations staff

The operation set up a database of I&APs using existing project databases as a starting point. Names of persons and organisations will be added to or deleted from the database where appropriate.

8 WAY FORWARD

This final Rehabilitation, Decommissioning and Mine Closure Plan will be reviewed on an annual basis to align such approved financial provision set out in regulations 9 and 11, of the NEMA Financial Regulations. Concurrent rehabilitation and remediation will be provided for in the annual rehabilitation plan and will contain information that defines activities on an annual basis and how these relate to the closure vision, as detailed in this final rehabilitation, decommissioning and mine closure plan.

When final planned closure is applied for the operation will submit a final environmental performance audit report to DMR as lead agent for final perusal with the objective to issue a closure certificate. At that point, the closure process, and associated public participation program, will close.