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

Northern Cape Lithium and Tungsten Pty Ltd
Portion of Plot 226 Vioolsdrift Settlement

Reference NC30/5/1/1/2/13317PR

Contends

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 plans

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 acount 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 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 agricultural, historic mining and other activities.
Re-vegetation of the disturbed areas on virgin land will follow a process of natural plant succession starting with pioneer plants.

Post prospecting topography for most of the area will follows the original landform shape except where changes due to historical 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 mainly drilling.
Rehabilitation will involve removing of any trip and fall hazards, shaping to construct the required profile of the drill sumps and removing of drill spoils. Compacted areas must be ripped to promote natural re-vegetation.
The compacted areas due to drilling platforms will be ripped to promote natural re-vegetation. 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

Drilling activities have the potential to impact on the environment in a variety of ways, including contamination of aquifers through the ingress of contaminants from the surface, interconnection between aquifers, contamination of surface water, loss of flora and fauna, soil contamination from hydrocarbons and drill fluids, and soil erosion.
In addition, open holes pose a danger to people and wildlife and inhibit future exploration and pastoral vehicles traversing the area.
Likewise, bores used to access groundwater for exploration or mining activities can constitute a hazard to public health and safety, and can adversely affect the quality and flow of groundwater resources if abandoned without due concern. Therefore, it is imperative that drill sites are remediated and bores are adequately prepared for abandonment when they are no longer required.

The risk sources within the prospecting area are the remaining drill platforms with headgear and drill 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 were recorded
- Medium risks relate to safety, disturbance/destruction/disruption of Biodiversity, Flora & Fauna, Socio-economic standard and Paleontological Archaeological and Cultural Heritage Resources.
  - Drill holes not capped and remaining headgear above surface creating unsafe areas.
  - 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 tracks.
  - 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 natural revegetation.
  - Contamination of aquifers through the ingress of contaminants from the surface, interconnection between aquifers.
  - 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 and not removed from drill sites.
  - Noise and dust will be created by equipment (e.g., drilling rig) and vehicles.

5 RISK MITIGATION AND CLOSURE OBJECTIVES

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 EMPr 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

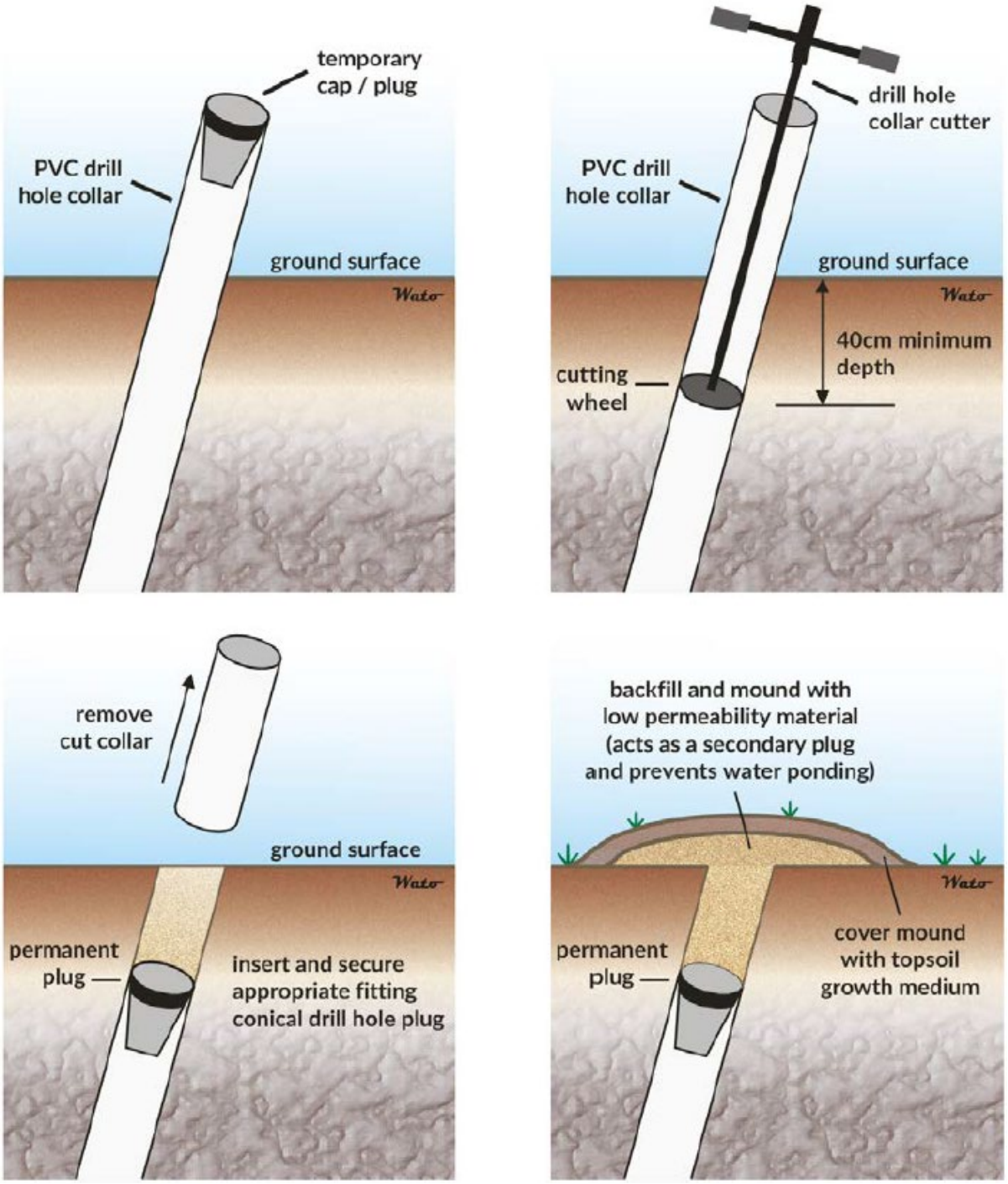
5.1.1 Mitigating and management measures regarding a safe and stable environment

- Drillholes that are abandoned and no longer required for technical studies it must be restored, as close as possible to the controlling geological conditions that existed prior to drilling. Special consideration for the protection of groundwater may be required where an exploration drillhole intersects an aquifer.
- 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 or other actions listed below). The location of each completed borehole should be marked on a map.
  - Remove all trip/fall hazards including above surface collars.
  - For collared holes the collars may be readily cut below ground level to a minimum depth of 0.4 metres using a powered brush cutter modified with a diamond masonry blade or an internal pipe cutter. The cut section of collar may be removed from the hole using chain tongs or an oil filter remover if necessary.
    A non-degradable plug, bridge (metal plate) or casing cap should be installed above the cut off casing at a minimum of 0.4 metres below ground level. The plug may be fitted with a length of wire rope and a tag as an indicator, if required.
    Exploration drillholes must be backfilled to the surface with a suitable medium e.g., drill cuttings, clean fill or cement and allowing for settlement.
    The soil backfill should be compacted and mounded over the hole to allow for subsidence and to limit the pooling of surface water.
  - For uncollared holes the drillholes should be plugged at least 1 metre below ground level with a non-degradable plug or bridge. The plug is to be at least 50 millimetres

larger than the diameter of the drillhole, but depending on the nature of the ground, must be of sufficient size as to remain firmly in position. To enable the placement of the plug the drillhole may need to be reamed-out to 1 metre depth with hand tools or counter-bored by the drill rig with a larger drill bit.

- Alternately, holes may be either backfilled with drill cuttings, clean fill or cement, allowing for settlement.
- The soil backfill should be compacted and mounded over the hole to allow for subsidence and limit the pooling of surface water.
- The intention is that water shall not ingress the hole, causing erosion. Particular care is required to ensure the long-term effectiveness of the plugging procedure.

Figure 1: Capping and plugging of uncollared and collared drillholes.



- As part of ensuring slope stability backfilling and re-shaping of the drill sump will be done where required and the land-use plan will be to create an even depression and prepare the area for natural re-vegetation by implementing erosion control measures including waterways, drainage lines and storm water infrastructure if necessary. Post prospecting topography for most of the area will follows the original landform shape. Implementing final topography changes if required

5.1.2 Mitigating and management measures regarding waste management

- All equipment and other items used during the exploration operation needs to be removed from the site. Waste material of any description, including receptacles, scrap, rubble and tires, will be removed entirely from the prospecting area and disposed of at a recognised landfill facility. It will not be buried or burned on the site. Separation of wastes into classes will ensure that waste is disposed of safely and according to the correct procedure.
- Drill spoils
  - A lined sump (with sufficient capacity) will be constructed to receive drill fluids and allow for evaporation
  - Drill sludge to be contained in lined sump and disposed of off-site at licensed facility or used as backfilling. No drill spoils will remain on site.
  - Drill cuttings that are acidic, radioactive or of a substantially different colour to the surface soil must be backfilled in the drillhole, sump or other excavation. All other cuttings are required to be dispersed around the site or raked over.
  - All sample bags, waste materials and contaminants must be removed from site and disposed of in an appropriate manner, following the completion of the drilling program.
- Stockpiles (Overburden, cover, and/or “soft" material including topsoil)
  - Remove and stockpile topsoil from drill pads on virgin areas prior to construction for use to restore disturbed areas.
  - Remove and stockpile 300mm topsoil in berms or heaps less than 1,5m high and turn soil or re-use every six months and do not use as permanent storm water control feature. To ensure long-term stability, the restored soil cover should attempt to mimic the pre-prospecting distribution of soil texture and thickness.
- Industrial waste (i.e., including hazardous wastes and oils and greases);
  - Any oil or fuel leaks caused during operations must be treated immediately by first removing the source of contamination and then removal and cleanup of spills.
  - A spill kit will be available on each site where prospecting activities are in progress; and any spillages will be cleaned up immediately and dispose at a registered facility or onsite treatment.
  - Waste materials generated on site must be stored in suitable lidded containers and removed off site to a suitable disposal facility. Waste separation must be undertaken if practical for recycling. Used oils / hydrocarbons fuels / liquids are to be collected in sealed containers and removed from site for recycling by a reputable company.
  - Fuel storage must be contained in mobile bowsers, refueling will be done with care to minimise the chance of spillages.
  - Oils and lubricants must be stored within sealed containment structures. All chemicals and hydrocarbons shall be stored within 110% bund wall capacity.
  - Avoid hydrocarbon spills by employing proper vehicle maintenance.
  - Any mechanical equipment maintenance must be undertaken on drip trays or UPVC sheets to prevents spills/ leaks onto the soil.
  - When not in use, a drip tray must be placed beneath mechanical equipment and vehicles to prevent soil and water contamination

- Domestic waste (i.e., waste that is generated from the day workers);
  - Domestic waste generated by workers needs to be sorted and materials that cannot be recycled must be disposed at a registered municipal landfill the most cost-effective option
  - Portable chemical toilets must be provided on each site where prospecting activities are in progress
- Other mitigating with regard to residual environmental impact
  - Implementing screening as part of the cleaning activities before materials are moved from the site.
  - Final walk through of drilling site to ensure no project related waste remaining on site.
  - Implementation of the environmental awareness plan will be an ongoing process.
  - Permanent survey markers should be kept to a minimum and wooden peg should be used in preference to steel pegs.

The implementation of the above mitigating measures is deemed to be adequate to ensure that the post prospecting landscape will not require any long-term monitoring and management with regard to safety, stability and waste management practices creating or leaving legacies. 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 as listed in Table 1. The criteria with the contents of these documents must comply with are also given in this table.

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

Closure objective	Document scope	Author	Success criteria (standard)
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
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
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

5.2 Create an economically viable and sustainable landform which is compatible with the surrounding landscape as close as possible to its natural state

It is important to note that for the mine to meet the key objective of productive land use, it is imperative that its other key objectives, viz. a safe post-mining area with limited residual impacts and optimal post-mining social opportunities are met. The building block of viable and sustainable land use is to prevent unnecessary destruction of vegetation by ensuring that traffic and personnel movement be restricted to demarcated areas. Mitigation of disturbed areas created by drilling is the shaping of the slope of any remaining excavations/sumps and ripping of compacted areas like drill platforms. Dependent on-site conditions and surrounding landscape, it may be necessary to conduct earthworks to stabilise and reshape the site. The site is required to be remediated to as near original condition as possible, following the completion of the drilling program

5.2.1 Mitigating and management measures regarding an economically viable and sustainable landform

- Existing farm roads and tracks must be used as far as possible, where new access tracks are required to get the drill rig to the drilling site, it will be made by driving the drilling rig (4 x 4) to such a site. This should be done under the supervision of the ECO. Tracks and gridlines are to be cleared with a minimum of disturbance to the environment and be rehabilitated in such a way as to reinstate the natural land surface, promote rapid revegetation and prevent the initiation of soil erosion.
  - Locating tracks to minimise impact upon or avoid, if possible, environmentally sensitive areas, heritage areas and culturally sensitive sites, soils with high erosion risk, steep slopes and long slope lengths, river crossings, floodplains and broad drainage lines; and areas already degraded by soil erosion or over-grazing.
  - Minimising vegetation clearing by choosing routes that avoid densely vegetated areas and the clearing of large mature trees and leave rootstock in the ground to assist with stabilisation and natural regeneration.
  - Minimising soil disturbance by not implementing clear scraping and rather using a stick rake or the 'blade up' method and wherever possible driving vehicles across unprepared terrain.
  - Ripping gridlines and tracks if the soil surface has become compacted or the topsoil has been substantially disturbed. At the time of rehabilitation, the grid line should be deep ripped the slope, or cross-ripped. This will promote water infiltration, seed capture and rapid revegetation.
  - Keeping the width of tracks to the minimum required to safely meet the needs of the largest vehicle.
  - On major projects with longer timeframes, tracks and gridlines are required to be appropriately designed, constructed and routinely maintained to prevent degradation during the life of the project.
  - Movement of vehicles will be restricted to demarcated areas so as to keep the footprint of the prospecting operation to the absolute minimum. Unnecessary destruction of vegetation should be avoided by ensuring that traffic and personnel movement be restricted to demarcated areas. No traffic should be allowed on the rehabilitated areas.
- Prepare drill pads and benches with the minimum of disturbance and earthworks required. Drilling, excavation or clearing must not occur within 50m of a watercourse or 100m of a major road or railway. The use of an excavator to assist in the construction of the pads is recommended on steep slopes to minimise earthworks and enable the storage of topsoil and subsoil for later rehabilitation operations. The use of tracked drill rigs is strongly recommended at sites on steep terrain.
  - Minimise vegetation removal by avoiding large trees and leave rootstock in the ground to assist with stabilisation and natural regeneration.
  - The soil disturbance and clearance of vegetation at drill pad areas will be limited to the absolute minimum required and will not be dozed or scraped with vegetation roots left intact for later re-growth. Only where absolutely necessary will existing vegetation be removed.
  - The dozing of earth and excavated material down steep slopes from which it cannot be readily recovered is to be avoided.
  - The creation of hard bare rock areas which cannot support vegetation is to be avoided.
  - Ground which has become compacted by the use of heavy machinery and traffic is to be ripped along contour, not down slope, to loosen soil, promote water infiltration, aid revegetation and minimise soil erosion.

- If excavations are required, remove topsoil and stockpile for re-spreading on completion of the drilling program. Remove and stockpile topsoil from drill pads on virgin areas prior to construction for use to restore disturbed areas.
  - Remove and stockpile 300mm topsoil in berms or heaps less than 1,5m high and turn or re-use every six months and do not use as permanent storm water control feature. To ensure long-term stability, the restored soil cover should attempt to mimic the original distribution of soil texture and thickness.
  - Sumps are required to be situated away from the drip line of trees to avoid impacts on the root zone.
  - Sumps require the construction of a slope to allow for fauna egress. The design of the drill fluid sump must be such that it prevents fauna from gaining access to site and becoming trapped.
  - Profiling and sloping of remaining drill sumps and ripping of all compacted areas to facilitate recovery of natural vegetation through creating micro habitats for seed collection with a higher moisture holding capacity suitable to withstand dry year conditions and limit sandblasting of seedlings.
  - Earth and overburden that was excavated from the pads and benches is required to be pushed, raked or pulled back over. The stockpiled topsoil and vegetation should be re-spread over the site.
  - Drill sumps must be backfilled with the excavated material and respread with stored topsoil.

5.2.2 Mitigating and management measures regarding a free draining landform with no impact on water quality and quantity

- Implement DWAS best practice guidelines with regard to Storm Water Management to address all impacts of the operation on the hydrological cycle and vice versa,
  - Prospecting must be conducted in such a manner as to ensure that natural drainage lines are not destabilized and that surface and ground water quality is not impaired. Prevent attenuating or diverting any of the natural flow.
  - Storm water must be diverted around the drill site to prevent ingress of storm water and storm water diversion berms will separate clean and contaminated water systems.
  - Initiate catchment management to control and reduce erosive runoff containing suspended sediment. Create and maintain clean water drainage systems to isolate contaminated areas and separate clean and dirty water systems.
  - Slow storm water runoff with contoured, low-gradient drains and channels, as well as retention ponds. A series of ponds may also be used to remove sediment and other contaminants from water before reuse or reintroduction into natural waterways.
  - Minimising disruption to natural drainage lines by crossing streams at right angles and maintaining the natural level of the stream bed at crossings.
- Although erosion and runoff are natural processes it should be managed.
  - Maintaining topsoil and maximum vegetation coverage in any areas not in use, followed by prompt rehabilitation and maintenance of erosion events including efficient storm water control to prevent erosion of steep slopes and roadways.
  - The post-prospecting topography at the drill platforms will be adjusted where possible to minimise the effect on water flow and increase potential for re-vegetation. Actions to mitigate the risk of erosion will be through implementation of practices such as leaving the profiling contours.
  - Minimise the concentration and channeling of natural surface water flows by avoiding the formation of windrows at the sides of tracks and gridlines. Even on gently sloping ground, these have the potential to intercept and channel surface water flows, leading to significant

soil erosion. Pull any windrows and vegetation back onto gridlines at the time of rehabilitation.

- Avoid natural drainage lines where possible. If crossing drainage lines is unavoidable, ensure minimal disturbance to the banks, maintain the natural stream bed level, and ensure that watercourses are not altered or blocked.
- Carefully planning and constructing tracks on sloping ground as they are susceptible to erosion. Minimise the risk of soil erosion by implementing erosion control techniques, such using switch-backs (changes in direction), and erosion control structures such as diversion banks (Figure 2), placed at suitable intervals.
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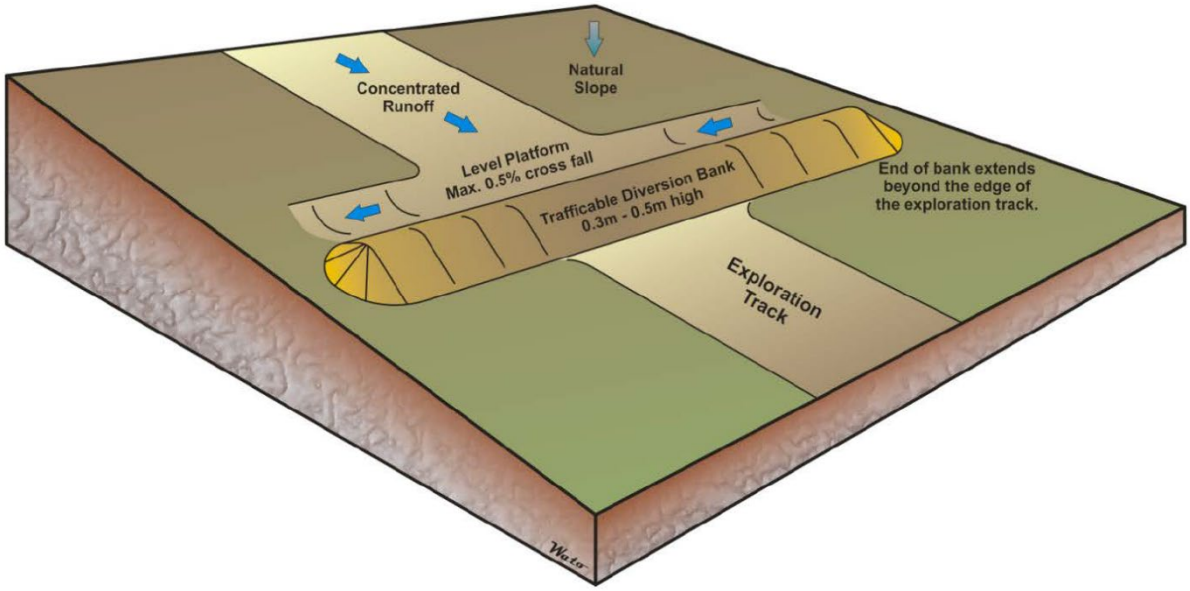
Figure 2: Diversion bank diverting concentrated water off a track or gridline. The bank allows the natural cross flow of water from upslope to down slope and minimises the potential for soil erosion.



- Implement DWAS best practice guidelines with regard to water Reuse and Reclamation to encourage the reuse and reclamation of water in order to ensure that scarce water resources are used in an effective way that is beneficial to the environment by preventing pollution and deterioration in water quality; conserve water resources by reducing consumption and minimising losses; maximise water reuse opportunities; and ensure the sustainability of water usage across the mine's life cycle.
- 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 'twee-spoor' tracks that may be required to drive the drilling rig to the drill site.

The implementation of the above mitigating measures is deemed to be adequate to ensure that the post prospecting landscape will not require any long-term monitoring and management with regard to a productive land use.

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-prospecting 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 drill platforms	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
No negative effect on surface water flow	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

5.3 Optimal post-mining social opportunities.

The goal of optimal social opportunities is to:

- Maintain positive and transparent relationships with stakeholders by maintaining communication channels and providing stakeholders with relevant information and providing information to authorities as per legislative requirements.
- Reinstate the aesthetic value of the area by management of air emissions to minimise nuisance effects and implementation of dust suppression activities.

5.3.1 Mitigating and management measures regarding transparent relationships

- All operations will be carried out under the guidance of a strong, experienced manager with proven skills in public consultation and conflict resolution.
- All prospecting personnel will be made aware of the local conditions and sensitivities in the prospecting area and the fact that some of the local residents may not welcome the prospecting activities in the area.
- Maintain positive and transparent relationships with stakeholders and maintaining communication channels. Provide stakeholders including government authorities with relevant information as per legislative requirements and maintain complaints register.
- Communication of dust, noise and increased traffic related activities to the affected community and the expected durations of these activities
- The prospecting right and environmental authorization including mine plans must be available on site and undertake environmental management in accordance with the approved EMP and Annual Rehabilitation plan.

5.3.2 Mitigating and management measures regarding reinstating the aesthetic value

- As part of the final comment SAHRA is satisfied with the HIA and the recommendations provided by the specialist and the mitigation measures provided in the Final BAR. In terms of Condition 3.18 of the issued EA, the applicant must adhere to the following conditions:
- A fossil Chance Finds Procedure must be implemented in the event of any chance finds of fossils;
- If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution;
- If any evidence of archaeological sites or remains (e.g., remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule;
- If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule;
- All drill sites should be carefully inspected by project staff to ensure that no heritage features are present;
- All personnel and contractors will be made aware of the locations of all identified resources and the necessity of avoiding them;
- Personnel will be informed about the consequences of unlawful removal of cultural and historical remains and artefacts associated with heritage sites;
- Where necessary, directional drilling will be practiced to assess ore reserves situated below identified resources;
- Prevent excessive air and noise pollution
- The only long-term sustainable solution is to have a vegetation cover preventing dust pickup. This could also include a mixture with rock to roughen up the surface.
- Retain or replace as much native vegetation as possible. Root structures help maintain soil stability, while tall vegetation, particularly trees, can act as a filter for dust plumes flowing through.
- Involve all employees/contractors in the speed reduction campaign as road surface condition is more related to speed than to frequency of use. Low vehicle speeds will be enforced on unpaved surfaces and vehicles speed must take into account the possibility of collisions with other road users and fauna.
- Drilling is generally intermittent and should be limited to daylight hours when ambient noise levels are highest. A hearing conservation program must be implemented where noise exceeds 85dB (A) in the mine or must not be more than 7dB (A) above ambient residual noise levels beyond mine boundary or nearest residential community.
- Turn off machines when not in use and consider one-way on-site traffic to lessen the use of backup sirens.
- Maintain a buffer of 500m between drill sites and dwellings as far as practical.

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-prospecting 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	Project SHE officer 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 Assesment 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:

- The only infrastructure area will be a temporary equipment laydown / storage area that will form part of the drill platform. This area will also serve as parking area and will include a chemical toilet
- 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 earthmovmg equipment rental and various other consumables refer table below.

Calculation of Cost Factors (CF)

Earth Moving Equipment	Rental Rate /hour	Fuel Cost	Total Cost /hour
Front End Loader - 30 Ton	R687.00	R825.00	R1 512.00
Excavator - 20 Ton	R322.00	R450.00	R772.00
Cat 14 H Grader	R453.00	R450.00	R903.00
Tipper Truck 10m³	R309.00	R350.00	R659.00
Manual Labour /hour	R45.00	R0.00	R45.00

CF	Closure Element	Equipment	Cost calculation			
2	**Remove waste from temporary storage and scrap from salvage yard**		**Cost/h**	**m³/h**	**Cover Charge**	**Total**
	Transport to waste disposal site	Tipper Truck 10m³	R659.00	10.00	R5 272.00	R5 337.90
	Clean out oil traps	Contractor	R0.00	0.00	R2 000.00	R2 000.00
	Clean-up	Manual Labour	R45.00	16.00	R0.00	R720.00
	Total per facility					**R8 057.90**
3	**Screen for petrochemical spills and clean**		**Cost/h**	**m²/h**	**Cover Charge**	**Total**
	Remove 20cm of contaminated soil cover	Excavator - 20 Ton	R772.00	20.0	R6 176.00	R38.60
	Dispose contaminated soil cover	Tipper Truck 10m³	R659.00	20.0	R5 272.00	R32.95
	Total cost/m²				**R11 448.00**	**R71.55**
4	**Rehabilitation of drill hole**		**Cost/h**	**Service hours**	**Cover Charge**	**Total**
	Capping and plugging of drillholes.	Manual Labour	R45.00	8.00	R0.00	R360.00
	Backfilling of drill holes	Manual Labour	R45.00	8.00	R0.00	R360.00
	Total cost/hole				**R0.00**	**R720.00**
5	**Rehabilitation of drill platform profiling and ripping**		**Cost/h**	**Service hours**	**Cover Charge**	**Total**
	Backfillig of sump and levelling and ripping of drill pad	Excavator - 20 Ton	R772.00	1.0	R6 176.00	R772.00
	Construction of erosion berms (diversion banks)	Excavator - 20 Ton	R772.00	1.0	0.0	R772.00
	Total cost/platform				**R6 176.00**	**R1 544.00**
6	**Spreading topsoil over level areas**		**Cost/h**	**m²/h**	**Cover Charge**	**Total**
	Loading and transport of topsoil	Excavator - 20 Ton	R772.00	160	R0.00	R4.83
	Spreading/Shaping of topsoil 30cm of soil cover	Excavator - 20 Ton	R772.00	160	R0.00	R4.83
	Total cost/m²				**R0.00**	**R9.65**
7	**Rehabilitation of Gridlines (traverses) and tracks**		**Cost/h**	**m/h**	**Cover Charge**	**Total**
	Ripping of drill traveses and tracks	Excavator - 20 Ton	R772.00	50.0	0.0	R15.44
	Construction of erosion berms (diversion banks) 50m spacing	Excavator - 20 Ton	R772.00	150.0	0.0	R5.15
	Total cost/running meter				**R0.00**	**R20.59**
8	**Clean-up - remove all mining related waste walk through with ECO**		**Cost/h**	**Service hours**	**Cover Charge**	**Total**
	Transport to waste disposal site	Tipper Truck 10m³	R659.00	16.00	0	R10 544.00
	Clean-up	Manual Labour	R45.00	32.00	0	R1 440.00
	Total cost/Ha					**R11 984.00**

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

Closure Element Mitigating measures	Unit	No Units	Unit Cost	Cover Charge	Cost per Element
CF2 - Remove waste from temporary storage and scrap from salvage yard	Sites	0	R8 057.90	R0.00	R0.00
CF3 - Screen for petrochemical spills and clean	m²	80	R71.55	R11 448.00	R17 172.00
CF4 - Rehabilitation of drill hole	Hole	25	R720.00	R0.00	R18 000.00
CF5 - Rehabilitation of drill platform profiling and ripping	Platform	25	R1 544.00	R6 176.00	R44 776.00
CF6 - Spreading topsoil over level areas	m²	0	R9.65	R0.00	R0.00
CF7 - Rehabilitation of Gridlines (traverses) and tracks	m	300	R20.59	R0.00	R6 176.00
CF8 - Clean-up - remove all mining related waste walk through with ECO	Ha	2	R11 984.00	R0.00	R23 968.00
Total financial provision required to fully decommision the prospecting					**R110 092.00**

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.