

11. ENVIRONMENTAL REHABILITATION PLAN

11.1 INTRODUCTION

This Environmental Rehabilitation Plan details a framework which aims to address environmental issues related to the rehabilitation, decommissioning and closure of the proposed:

- Central Discard Dump;
- Maquasa West Extension Underground Works; and
- Adit 5 and Overland Conveyor.

This plan has been developed as per the requirements of Section 51 of the MPRDA Regulations (GN.R 26275), and describes the manner in which environmental rehabilitation will be implemented during the various phases of the proposed infrastructure and activities.

This Environmental Rehabilitation Plan has been compiled within the context that the proposed Project components will be evaluated, planned, constructed and operated so as to reduce adverse social and environmental impacts and to meet or exceed requirements set out in applicable laws, regulations and standards. Also, where these laws are absent, Kangra Coal will apply cost effective good management practices to protect the social and biophysical environments.

Recommendations and commitments relating to rehabilitation have been included based on the Project plans. It is expected that this rehabilitation programme plan will be updated when Project designs are finalised. Accordingly, this programme will be regularly reviewed and updated to reflect revised Project design and learning experienced during its implementation.

Rehabilitation and closure planning is a complex and iterative process that involves interaction with a wide range of parties to ensure that it progresses smoothly. Closure objectives have been outlined so that planning can ensure that all activities during construction, operation, decommissioning and closure are planned with the end use in mind.

11.2 KEY COMPONENTS AND CONSIDERATIONS OF THE REHABILITATION PLANS

11.2.1 *Factors Influencing Rehabilitation Plans*

During the preparation and review of rehabilitation plans, a number of different factors need to be considered which may influence decisions in selecting a rehabilitation strategy. These include:

- The conservation value of a proposed environmental outcome;
- The importance to local communities and land owners of the economic productivity of the proposed future land capability;
- The consistency of the proposed land use with local and regional plans; and
- The long term ownership of the land.

Irrespective of the rehabilitation outcome, the environmental authority must ensure that rehabilitation will endure expected climatic variations and that the land will be sustained for a land use consistent with the surrounding area.

11.2.2 *Roles and Responsibilities*

Overall accountability for rehabilitation, decommissioning and closure, and setting and reviewing related targets related to this Plan, will lie with Kangra Coal.

Furthermore, Kangra Coal has the responsibility for defining, communicating and monitoring the requirements of contracting third parties and suppliers operating under their control and influence.

11.2.3 *Verification and Monitoring*

The objective of monitoring during the decommissioning and closure phase is to ensure that the agreed rehabilitation processes are successful and that the closure objectives prescribed are met. There is thus a need to carefully monitor the progress of the physical aspects of rehabilitation during the construction, operational and closure phase, and the progress of re-establishment of the desired final land use.

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. Post closure monitoring will be required to ensure rehabilitation has been successfully achieved and there are no residual impacts. Monitoring of the social aspects will also take place during decommissioning and closure.

11.2.4 *Reporting and Documentation*

A final closure plan contemplated in Section 43(3) (d) of the MPRDA must be developed and submitted to the Regional Department of Minerals and Resources for approval prior to closure. This Plan must conform to Section 62 of the MPRDA Regulations (GN.R26275 of 2004).

Post closure monitoring results will be incorporated into a report and submitted to authorities for review.

The Kangra Coal environmental function will be required to ensure monitoring is on-going (until predictable trends are established) and are to liaise with the Kangra Coal Board of Directors.

11.2.5 *Financial Provisions for Mine Closure*

Furthermore, financial provision is required in terms of Section 41 of the MPRDA to achieve the total quantum for the rehabilitation, management and remediation of negative environmental impacts.

This plan should be read in conjunction with the Financial Provision (refer to *Chapter 10*), which provides the costs associated with the actions required for rehabilitation.

11.2.6 *Post Closure*

Post closure follows decommissioning and rehabilitation and is the phase during which monitoring continues to ensure that residual impacts are being managed and to ensure that necessary maintenance activities are carried out. Monitoring will continue until predictable trends are established. Residual impacts are expected to include impacts associated with ground water and potential socio-economic impacts which are currently difficult to quantify.

The measures for post closure that are developed and agreed include:

- Groundwater:
 - Monitoring of groundwater quality will be undertaken as per the Environmental Management Plan until a predictable trend is established. In the event that water quality does not meet the RWQO prescribed at the time, water quality monitoring shall be ongoing to identify the source(s) of impact and implement mitigation measures as required. The analysis of water quality data will be cognisant of surrounding landuse such as farming and animal husbandry. The impacts of these activities will be separated out when assessing whether Kangra are meeting their objectives or not. Ongoing treatment of groundwater decant, if applicable, may be required to ensure the RWQO are met.
 - Should the water quality analysis show that Kangra is responsible for adverse impact on the water quality and that this is impacting upon local water users, Kangra Coal will provide an alternative reliable, clean water supply to impacted communities and farmers, if required, until water availability and quality of their initial water sources have reached pre-mining values.

- Surface Water:
 - Monitoring of surface water quality until a predictable trend is established. In the event that water quality does not meet the RWQO prescribed at the time, water quality monitoring shall be ongoing to identify the source(s) of impact and implement mitigation measures as required.

Post closure is managed through a monitoring plan and liaison with the relevant authorities. Post closure objectives should comply with objectives and targets for closure. Towards the end of the life of the proposed Project, the post closure objectives will be refined to accommodate the site conditions at the time.

It is required that post closure monitoring be continued until it can be proven that the above categories satisfy the post closure objectives. At this stage an application for closure can be made.

11.3 *CENTRAL DISCARD DUMP REHABILITATION PLAN*

The Rehabilitation Plan for the Discard Dump has been compiled in accordance with the overall land use vision for the Maquasa East, West and West Extension mining areas. This is to ensure the operations are safe, stable and non-polluting over the long-term in order to be integrated into the current agricultural, eco-tourism and economic activities of the area in which the activities are located.

11.3.1 *Closure Objectives*

In keeping with the aims of the mine-wide Rehabilitation Plan (as per the 2013 EMPr Amendment), the aim of the Central Discard Dump Rehabilitation Plan is to:

- Return the disturbed areas to an acceptable state;
- Ensure all areas are stable, and there is no risk of erosion;
- Prevent alien plant invasion on the site and allow for the establishment of indigenous plant communities; and
- Ensure that all areas are free-draining and non-polluting.

The general project area includes areas of natural and disturbed grassland. The continuous rehabilitation program will attempt to restore the area to an acceptable standard as close to its baseline environmental state as possible.

The overall closure objectives for the Central Discard Dump are in keeping with those for the larger mining area:

- Minimise the visual impact of Central Discard Dump and rehabilitated areas by carefully shaping the dump to blend with the surrounding landscape and by using indigenous vegetation from the area for rehabilitation;
- Ensure that the plant communities which establish within the rehabilitated areas comprise of indigenous vegetation only;
- Ensure that all areas are stable;
- Prevent erosion or dust creation by ensuring that all bare areas are efficiently rehabilitated;
- Ensure that all areas are non-polluting and free draining; and
- Ensure that the area is safe for the intended end land use.

11.3.2 *Management Actions*

Post-construction rehabilitation

During the construction phase, various activities will be undertaken outside of the final layout areas to access the site, store material, etc. All these areas have to be rehabilitated with a view of returning it to pre-construction land use.

The post construction phase rehabilitation makes provision for the rehabilitation of areas disturbed around and outside the approved footprints:

- All compacted and disturbed areas along the edge of the Central Discard Dump infrastructure footprint will be ripped, topsoiled and vegetated;
- Disturbed areas will be sloped to enhance natural run-off patterns;
- Grassing of slopes, berms and areas outside of the footprints will be undertaken;
- All material and rubble from the construction phase will be removed and disposed of at a suitably licensed facility;
- Most of the rehabilitation will take place once the construction phase is over, however concurrent rehabilitation should be undertaken during construction where possible; and
- The removal and disposal of alien vegetation should be undertaken on an ongoing basis.

Post-decommissioning Rehabilitation

Phase 1

Phase 1 of the Central Discard Dump rehabilitation will involve the following activities (refer to Figure 11.1):

- Final contouring/shaping of the Central Discard Dump side slopes; and

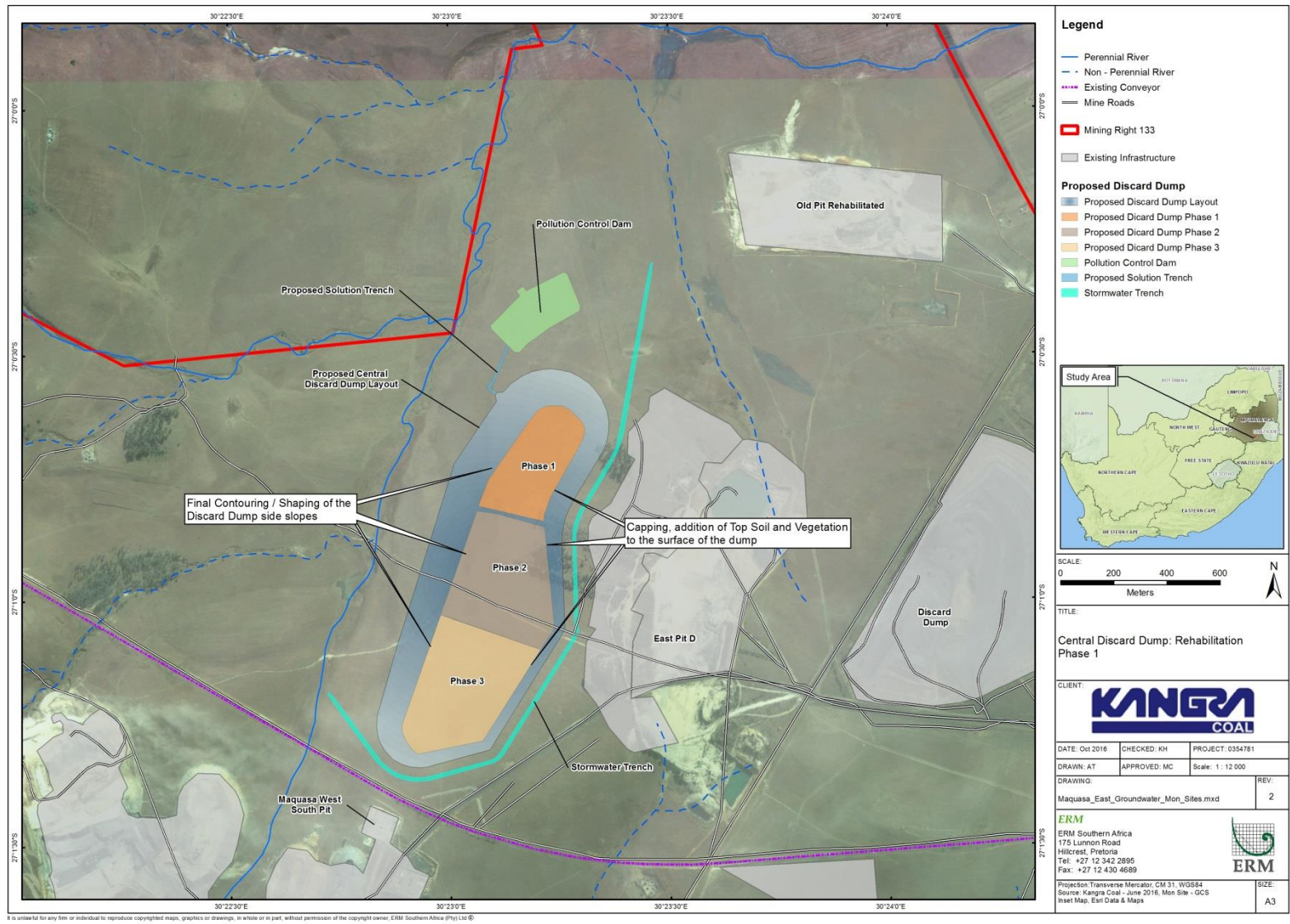
- Capping (in accordance with the approved design), addition of topsoil and vegetation to the surface of the dump.

Phase 2

Phase 2 of the Central Discard Dump rehabilitation will take place once vegetation establishment has been successful and the monitoring of the PCD water quality indicates that the surface runoff from the dump no longer contains contaminants from the Central Discard Dump. This phase will involve the following activities (Figure 11.3):

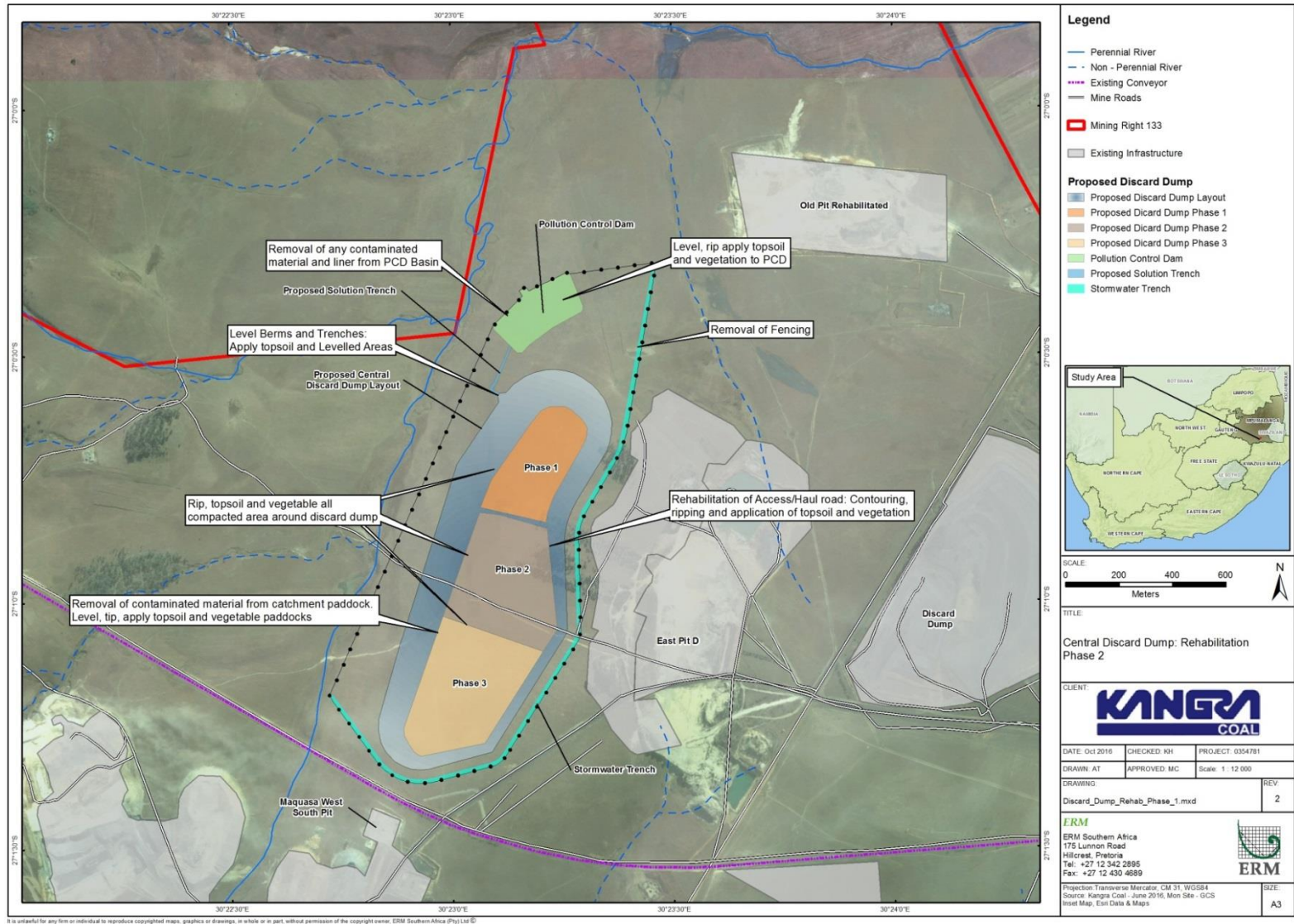
- Removal of any contaminated material and liner from the PCD basin;
- Level, rip, apply topsoil and vegetation to the PCD area;
- Removal of contaminated material from catchment paddocks. Level, tip, apply topsoil and vegetate paddocks;
- Rip, topsoil and vegetate all compacted areas around the Central Discard Dump;
- Rehabilitation of access/haul road: contouring, ripping and application of topsoil and vegetation;
- Level berms and trenches. Apply topsoil and vegetate levelled areas; and
- Removal of fencing.

Figure 11.1 Central Discard Dump Phase 1 of Rehabilitation



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Figure 11.2 Central Discard Dump Phase 2 of Rehabilitation



11.4.1 *Closure Objectives*

The following closure objectives are set for the Maqwasa West Extension Underground Workings:

- To restore the topography to its pre-mining condition.
- To restore the depths of soil stripped pre-mining
- To restore the affected areas to their pre-mining land capability.
- To restore land to grazing use.
- To re-vegetate the affected areas to prevent erosion and re-establish the biodiversity present in the surrounding areas.
- To make the affected area clean and free-draining, limit the risk of erosion, manage the post closure water make and comply with the Heyshope Dam Standards at decommissioning as to obtain a closure certificate.
- To prevent the pollution of groundwater and surface water.

11.4.2 *Management Actions*

Decommissioning and Closure Phase

Topography

All surface infrastructures will be removed. The decline to the underground workings will be sealed. After sealing, the overburden will be returned to the shaft excavation to re-establish the ground level. Soils will be replaced to pre-mining stripping depths over the shaft and conveyor areas. The areas will be shaped to be free-draining and contoured, fertilised and re-vegetated to prevent erosion.

Soils

All surface infrastructures will be removed. The decline to the underground workings and ventilation shaft will be sealed. After sealing, the overburden will be returned to the shaft excavation to re-establish the ground level. Soils will be replaced to pre-mining stripping depths (20-35cm topsoil and 50 cm subsoil) over the shaft and conveyor areas. The areas will be shaped to be free-draining and contoured, fertilised and re-vegetated to prevent erosion.

Land Capability

All surface infrastructure will be removed. The decline to the underground workings and ventilation shaft will be sealed. After sealing, the overburden will be returned to the shaft excavation to re-establish the ground level. Soils will be replaced to pre-mining stripping depths (20-35cm topsoil and 50 cm

subsoil) over the shaft and conveyor areas. The areas will be shaped to be free-draining and contoured, fertilised and re-vegetated to prevent erosion.

Land Use

Make the land available for grazing use once rehabilitation has been successful.

Vegetation

Re-vegetation of the affected areas will occur as follows:

- After soil placement, harrow the area using a large disc harrow;
- Add the fertiliser using a standard industrial spreader;
- Harrow the area again to ensure that adequate mixing has occurred;
- The soil will be lightly disturbed using rakes for broadcast sowing or sharp pointed hoes for row sowing;
- Seed during late spring/ early" summer to yield the optimum germination and growth.

A mixture of terrestrial grass species as identified in Table 11.1 will be used for the re vegetation programme. Preference will be given to local pioneer species and primarily annual pioneer species.

Table 11.1 *Dominant plant species found in the Terrestrial Grassland at Maquasa West*

Sandstone Plains	Dolerite Ridges
<i>Gerpera ambigua</i>	<i>Dispyros lycioides</i>
<i>Pelargonium lutidum</i>	<i>Cyariotis Sfle.ciosa</i>
<i>Haplocarpha scaposa</i>	<i>Berkeya setifera</i>
<i>Eucomis autumnalis</i>	<i>Knipofia cf. linearifolia</i>
<i>Hypoxis ssp.</i>	<i>Rhoicissus tridentate</i>
<i>Ledebburia ovatifolia</i>	<i>Rhus discolour</i>
<i>Tristachya leucothrix</i>	<i>Cymbopogan sp.</i>
<i>Hyparrhenia sp.</i>	<i>Pellaea calomelanos</i>
<i>Eragrostis racemosa</i>	<i>Aloe cf. mutabilis</i>
<i>Acalypha sp.</i>	<i>Seteria sphacelata</i>
<i>Brunsvigia radulosa</i>	
<i>Rendlia altera</i>	
<i>Pteridium aquilinum</i>	

The following maintenance will be undertaken:

- All grazing animals will be kept off the area until the vegetation is self-sustaining;
- Newly seeded areas will be protected against compaction and erosion;
- Plants will be watered and weeded when necessary;
- Plants will be checked for pests and diseases at least once every two weeks during establishment and treated if necessary;
- Unhealthy or dead plant material will be replaced.

- Grassed areas will be fertilised for the first year after rehabilitation and thereafter self-sustainability will be monitored;
- The soil will be analysed to determine if the addition of lime and manure is required for vegetation establishment; and
- Any erosion damage will be repaired and reseeded.

Surface Water

Rehabilitation of the surface infrastructure areas as set out above in the soils section will achieve the objective of restoring the topography to its pre-mining condition. Water management to avoid decant will occur as follows:

Water levels in the mine will be monitored as set out in the groundwater section below. In order to prevent the management of decant at more than one elevation, mine water will be pumped to pollution control facilities from a borehole at a mine water level of not more than 1400 mamsl.

Groundwater

- Adit 5 and stockpiles will be rehabilitated according to the relevant mine safety standards.
- Sampling and monitoring of ground water under and around residual footprints of all mining infrastructure will be required to determine whether further clean-up is required.
- Mine water must be managed at an elevation of 1400 mamsl in order to prevent decant and seepage. All excess water must be pumped to pollution control facilities. The treatment method and financial provisions will be updated as the decant model is calibrated and the treatment techniques improved.

Six monthly groundwater monitoring reports must be compiled and consist of the following components:

- System Audit
- Efficiency and Design
- Status of the Monitoring System
- Data Audit
- Compliance Protocol
- Water Quality Trends
- Comparative Protocols
- Water Quality Comparison
- Hydrochemical Image Comparison
- Vibrational Protocol
- Ion Balance
- Ground Water Level Data

- Upgrading of Groundwater Monitoring System
- Conclusions
- Recommendations

The current recommended groundwater monitoring intervals and parameters are listed in Table 11.2.

Table 11.2 *Closure Groundwater monitoring requirements for the Maquasa West Extension Underground Workings*

Locality	Frequency and Implementation	Variables
Adit 5	Six monthly, if and when decant is reported.	Water levels, pH, EC, TDS, Ca, Mg, Na, K, F, Talk, Cl, S04, N03, Fe, Al and Mn.
Representative external user's fountains and streams identified in potentially impacted areas*	Three- monthly, immediately after mining takes place in the same sub-catchment in which the fountain/ stream is located.	Discharge rates. if water quality complaints aris. analyse for Water levels, pH, EC, TDS, Ca, Mg, Na, K, F, Talk, Cl, S04, N03, Fe, AI and Mn.
All other decant not related to Adit 5	Six-monthly, post-closure.	pH, EC, TDS, Ca, Mg, Na, K, F, Talk, Cl, S04, N03, Fe, AI and Mn.

*The actual fountains and streams to be monitored listed in Table 11.3 and Table 11.4 and can be seen in Figure 11.3.

Each of the individual fountains and streams must be incorporated into the monitoring system as soon as mining commences in the respective sub-catchment area. If a mining impact is suspected, the monitoring system must be expanded to include all the fountains listed in Table 11.5 and Table 11.6 and all fountains and streams where specific complains arise.

Table 11.3 *Location of Fountains to be monitored at the Maquasa West Extension Underground Workings*

Number on Map	Y Co-ordinates	X Co-ordinates	Farm Number
MWG-F11	62493.28	2990975.43	19 HT
MWG-F37	63091.17	2990906.51	19 HT
MWG-F39	63131.43	2991109.39	19 HT
MWG-F40	63135.30	2991330.73	19 HT
MWG-F60	66299.75	2988409.76	3811T
MWG-F63	64671.59	2988308.61	18 HT
MWG-F64	64099.55	2988285.96	18 HT
MWG-F65	64085.76	2988107.88	18 HT
MWG-F80	64629.87	2993185.79	20 HT
MWG-F81	64825.25	2993210.83	20 HT
EF-1	67231.29	2991474.52	15 HT
EF-2	67279.66	2991521.32	15 HT
EF-4	67437.65	2992219.14	15 HT
BF-1	68816.15	2993985.14	34 HT

Number on Map	Y Co-ordinates	X Co-ordinates	Farm Number
BF-2	67958.69	2994210.92	34 HT

Table 11.4 *Location of Streams to be monitored at the Maquasa West Extension Underground Workings*

Number on Map	Y Co-ordinates	X Co-ordinates	Farm Number
MWS-S3	65588.25	2987165.94	381IT
MWS-S5	61045.94	2991644.42	19 HT
MWS-S8	61099.06	2988232.32	18 HT
MWS-S9	62717.21	2994405.25	20 HT
ES-15	67449.935	2987361.505	15 HT

Table 11.5 *Location of the fountains which will possibly be impacted by the Maquasa West Extension Underground Workings*

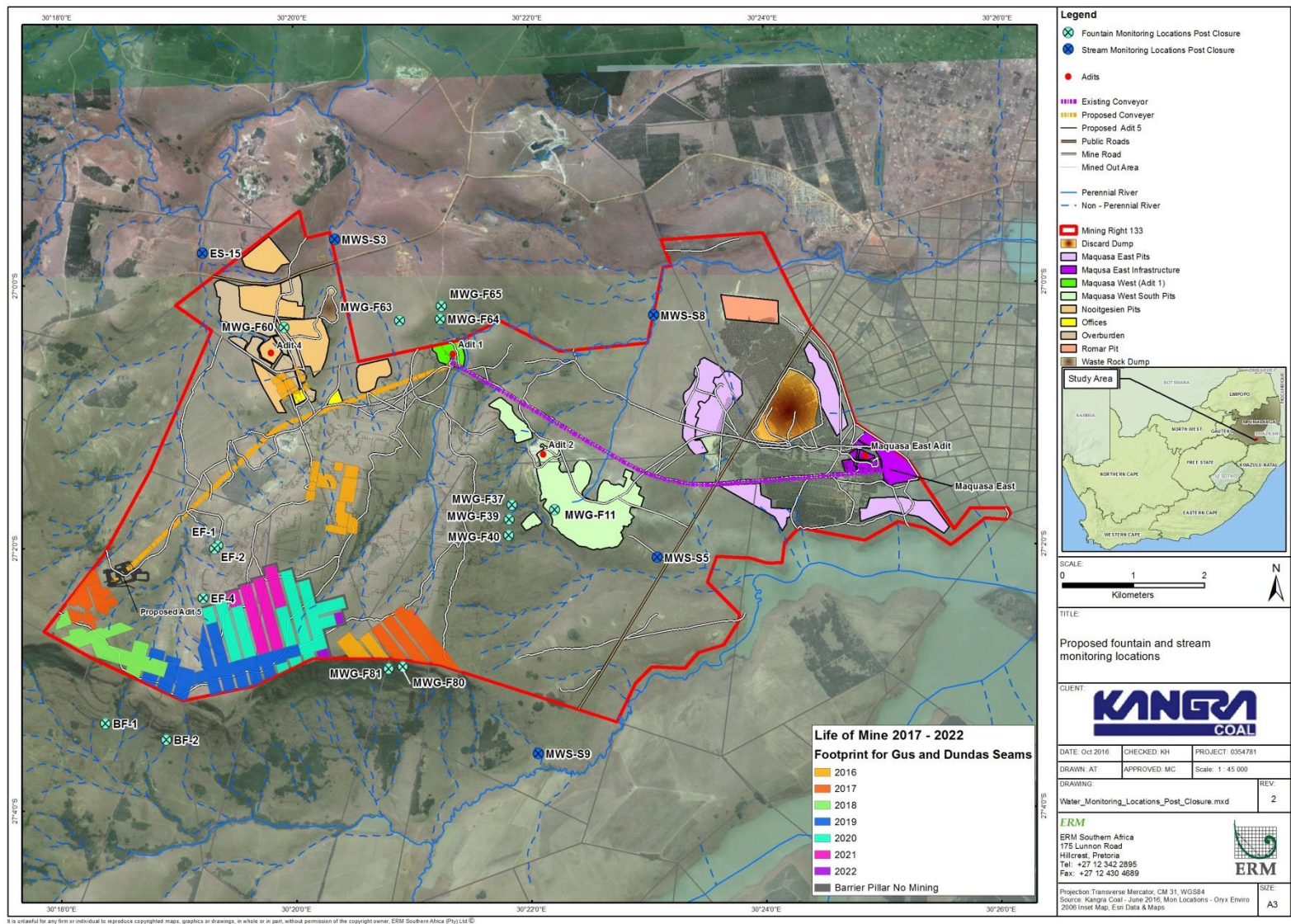
Number on map	Y Co-ordinates	X Co-ordinates	Farm number	Status
MWG-F5	62755.75	2990693.44	19HT	Not in Use
MWG-F11	62493.28	2990975.43	19HT	NotIn Use
MWG-F15	62606.19	2990327.10	19HT	NotInUse
MWG-F22	63464.58	2992915.94	19HT	NotIn Use
MWG-F23	63480.13	2992962.42	19HT	Nolin Use
MWG-F24	63514.86	2992699.23	19HT	Nolin Use
MWG-F25	63557.91	2992634.74	19HT	Not in Use
MWG-F26	63553.05	2992566.10	19HT	Not In Use
MWG-F36	63021.54	2990891.96	19HT	Not In Use
MWG-F37	63091.17	2990906.51	19HT	Not In Use
MWG-F36	63100.61	2991029.61	19HT	Not In Use
MWG-F39	63131.43	2991109.39	19HT	Not in Use
MWG-F40	63135.30	2991330.73	19HT	Not in Use
MWG-F60	66299.75	2988409.76	381HT	Not in Use
MWG-F62	66006.94	2987992.54	381HT	Nolin Use
MWG-F63	64671.59	2988308.61	18HT	NotIn Use
MWG-F64	64099.55	2988285.96	18HT	NotIn Use
MWG-F65	64085.76	2988107.88	18HT	Nolin Use
MWG-F75	63973.22	2993177.96	20HT	Not in Use
MWG-F76	64080.50	2993472.00	20HT	Not in Use
MWG-F79	64721.40	2993313.47	20HT	Not in Use
MWG-F80	64629.87	2993185.79	20HT	Nolin Use
MWG-F81	64825.25	2993210.83	20HT	Nolin Use
EF-1	67231.29	2991474.52	15HT	In Use
EF-2	67279.66	2991521.32	15HT	In Use
EF-3	67539.05	2991817.46	15HT	In Use
EF-4	67437.65	2992219.14	15HT	In Use
EF-5	67536.12	2991625.75	15HT	In Use
BF-1	68816.15	2993986.14	34HT	In Use

Table 11.6 *Location of the fountains possibly impacted by the existing Maquasa West mine.*

Number on map	Y Co-ordinates	X Co-ordinates	Farm number	Status
MWG-F60	66299.75	2988409.74	381HT	Not in use
MWG-F62	66006.94	2987992.54	381HT	Not in use
MWG-F63	64671.59	2988308.61	18HT	Not in use

Number on map	Y Co-ordinates	X Co-ordinates	Farm number	Status
MWG-F64	64099.55	2988285.95	18HT	Not in use
MWG-F65	64086.76	2988107.88	18HT	Not in use

Figure 11.3 The location of streams and fountains to be monitored Post-Closure



11.5 *ADIT 5 AND OVERLAND CONVEYOR REHABILITATION PLAN*

This Plan applies to the rehabilitation, decommissioning and closure of the proposed Adit 5 and Overland Conveyor.

11.5.1 *Closure Objectives*

The overall closure objective for the area occupied by the Adit 5 and the overland conveyor is to leave the area in a condition that minimises adverse impacts on the social and natural environment and with a legacy that makes a positive contribution to sustainable development. The rehabilitation objectives for the area affected by Adit 5, the overland conveyor and associated surface infrastructure are the following:

- Leaving a safe environment for both humans and animals;
- Minimise impacts on the social and natural environment due to ground and surface water contamination;
- Minimise impacts on the social and natural environment due to reduced ground and surface water quantity;
- Minimise impacts on biodiversity;
- Return the land to pre-mining land use as far as possible;
- Compliance with Local, Regional and National regulatory requirements;
- Following a process of closure that is progressive and integrated into the short and long term mine plans and that will assess the closure impacts proactively at regular intervals throughout the Project life cycle;
- Managing the retrenchment of employees and the cessation of procurement contracts in such a way so as to avoid or minimise potential negative impacts of closure; and
- Initiate active partnerships with local communities, where possible.

The final post-closure land use for the proposed Project is to restore the land use to as close as possible to the pre-mining environment (aquatic and wetland ecosystems, open grasslands). The area in which rehabilitation of the surface will be required is the area occupied by Adit 5 and associated surface infrastructure (145 100 m²) and the overland conveyor servitude (113 400 m²). This proposed final land use may be amended as this closure plan is revised. In general rehabilitation would take place concurrently even though closure only occurs once operations cease. In this case, Adit 5 and overland conveyor will be used throughout operations, therefore concurrent rehabilitation is not possible and will occur at the end of operations, once mine closure commences.

11.5.2 *Management Actions*

Construction Phase

The key factors to consider during the construction phase are the minimisation of the area affected by the development and the maximisation of

the recovery and effective storage of topsoil for which will be essential for the rehabilitation process after the proposed Project is complete. In other words, construction should be carried out with closure in mind.

The following management actions apply:

- Concurrent rehabilitation can be undertaken on land cleared for the construction of Adit 5 and overland conveyor. These areas will be rehabilitated upon completion of the construction phase and will be monitored thereafter to ensure rehabilitation is successful.
- Plan the Project to minimise the impacted area. This area will be clearly demarcated on a map. In the event that additional areas are to be disturbed, the absolute necessity for this disturbance will be confirmed and permission sought from the appropriate personnel (i.e. the Kangra Coal Environmental Function).
- Design and shape the overburden dump such that it meets closure objectives.
- Restrict movement of construction crews to demarcated areas.
- Plan soil stripping to take place during the winter months. This will help to maintain the structural integrity of the soils and reduce the potential for erosion.
- Strip soils sequentially and store soils separately (topsoil and sub soils).
- Locate all soil and overburden stockpiles in areas where they will not require relocation prior to replacement for final rehabilitation.
- Seed indigenous grasses on soil stockpiles to ensure the soil viability is retained as well as to control dust and erosion.
- Demarcate all soil stockpiles and locate in areas where they will not be impacted upon.
- Construct berms to ensure storm water is diverted around the relevant infrastructure at Adit 5 and to prevent pooling of water as well as erosion of topsoil stockpiles.
- Undertake regular monitoring during construction of Adit 5 and overland conveyor to ensure there is no erosion and to ensure concurrent rehabilitation is being undertaken.
- Develop and implement a wetland specific rehabilitation plan for the areas affected by the construction of the servitude road and overland conveyor.

- Restore disturbed wetland vegetation along the overland conveyor, servitude road and transmission line route as soon as construction of sections have been completed.
- Stabilise stream banks where the overland conveyor, servitude road and transmission line intersect wetland and aquatic ecosystems.

Operational Phase

The key factors to consider during the operations phase are the continual monitoring of rehabilitated areas to ensure recovery is occurring as well as ensuring that further impacts on surrounding areas are minimised. The following management actions apply:

- Immediate rehabilitation of areas that are impacted by mining related activities.
- Maintain records of rehabilitation activities, such that any future certification requirements can be met.
- Carry out checks at regular intervals to identify areas where erosion may be occurring. Appropriate remedial action, including the rehabilitation of the eroded areas, and where necessary, the relocation of the paths causing the erosion, will be undertaken.
- Undertake monitoring of rehabilitated areas for the presence of alien invasive species.
- Undertake monitoring of rehabilitated areas to confirm rehabilitation has been successful.
- Undertake monthly monitoring of all areas impacted by Adit 5 and overland conveyor to ensure no erosion is occurring, in particular, soil/topsoil stockpiles and where the overland conveyor, servitude road and transmission line crosses streams or wetlands.
- Apply fertilizer where self-succession does not establish within 18 months.
- Appoint a reputable contractor to clean contaminated areas following any major spillages. Immediately clean and rehabilitate any other minor spillages.

Decommissioning and Closure Phase

Once operations at Adit 5 cease decommissioning and closure can commence. This section describes management measures for Project related infrastructure, and environmental and social aspects.

- Remove relevant surface infrastructures at Adit 5 should no alternative use be found for the structures. All material recovered from the demolition of the surface infrastructure will either be transported to a permitted disposal site, sold as scrap or made available to the local community as building materials (provided they are in a satisfactory condition following demolition).
- Remove linear infrastructure including the overland conveyor and 6.6 kV overhead transmission line. Where possible infrastructure will remain for future mining operations as determined by the applicant or for social investment opportunities, this will be decided in conjunction with the IDP of the area and the local authorities (i.e. municipality).
- Handover the use of the servitude road to the local municipality.
- Dismantle the fencing along the route of the overland conveyor and servitude road and recycle, dispose of at a permitted disposal site or sell as scrap (provided these structures will no longer be required by the post-mining land owner). Fences erected to cordon-off dangerous excavations will remain in place and will be maintained as and when required.
- Remove overland conveyor material at wetlands and stream crossings. In terms of concrete plinths or piles, these may either be removed or left in-situ depending on the preference of the relevant authorities. Should these items be removed sufficient soil and vegetation rehabilitation will be implemented.
- Remove foundations to a depth of 1 m below surface.
- Rip compacted surfaces to a depth of at least 500 mm (if possible) and cover with topsoil and seed with indigenous species.
- If necessary the areas where dust is being generated will need to be watered or the use of certain chemical binders investigated to limit dust.
- Seal Adit 5 by means of concrete walls appropriately built at the Adit 5 entrance to the underground. Once the entrance is sealed and any infrastructure removed or demolished, Adit 5 will be backfilled from the overburden dump which was initially constructed with the material excavated from Adit 5 (during the construction phase).
- Monitor surface areas during and after rehabilitation to confirm rehabilitation has been successful. Monitoring can cease once rehabilitation objectives have been met.
- Monitoring and active management can be stopped once rehabilitated areas reach sub-climax status, with at least 50% of the pre-mining species having established themselves and able to regenerate themselves.

- Management actions associated with surface and groundwater during closure and post-closure:
 - Monitor the quality and quantity of surface water at springs and watercourses associated with the Project Area throughout closure and post closure. This will enable the detection and quantification of contamination and changes in water quantities and flow rates.
 - Treat contaminated water in order to release the water into the natural system in accordance with South African Water Quality Guidelines.
 - Determine through monitoring where Kangra Coal has impacted on groundwater users. Quantify the impact in terms of quality and quantity and supply those that are affected with equivalent supplies of clean water for domestic use.

- Management actions for the Pollution Control Dam (PCD):
 - The PCD will remain until the completion of all demolition and associated rehabilitation activities and will then only be demolished should the area prove to be free draining with no pollution potential after rehabilitation.
 - The PCD will be rehabilitated as follows:
 - Maintain the PCD to ensure that no leakages occur; and
 - Keep overflow pipes and sumps clean.

- Management actions associated with social closure are as follows:
 - Plan an 'exit strategy' for all community development activities.
 - Plan for the retrenchment of employees and the cessation of procurement contracts.
 - Define the required engagement in preparation for decommissioning and closure.

Active Rehabilitation - Landscaping

Landscaping activities will involve the active rehabilitation of the area with the following activities taking place:

- Recovery of all saleable infrastructure;
- Demolition and removal of all auxiliary surface infrastructure;
- Ripping of all compacted areas to a depth of at least 500mm (if possible) followed by planting of indigenous plant species;

- Ensure that all remaining piles and slopes are sufficiently shaped to blend in with the surrounding environment;
- Planting of all disturbed areas with indigenous vegetation;
- Maintenance of all re-vegetated areas up until such areas initiate succession and create a sustainable cover;
- Monitoring of key environmental variables (i.e. soils, vegetation, groundwater and surface water) in order to demonstrate stability of rehabilitated areas;
- Weed management after closure, limited to areas disturbed by Adit 5, the overland conveyor and associated surface infrastructure;
- All illegal invader plants and weeds shall be dealt with as required in terms of the relevant legislation; and
- Appropriate erosion control measures (i.e. contour banks) will be undertaken when required.

It is proposed that all rehabilitation of Adit 5, the overland conveyor and associated surface infrastructure be undertaken in accordance with the relevant legislative requirements of the Republic of South Africa as well as in accordance with Best Practise Guidelines for rehabilitation. As a starting point for the rehabilitation it is proposed that the following three (3) phases be assessed and implemented:

Phase 1

Phase 1 of the rehabilitation plan will involve the dismantling and removal of the following infrastructure:

- Containerized offices, security house, containerized potable water treatment plant and sewage treatment plant, wash bay and oil trap, fuel and oil depot, parking bays, lime silo and temporary waste storage facilities. ;
- Overland conveyor and related infrastructure;
- Overhead power line; and
- Access road.

The PCD and silt traps will be left with the clean and dirty water system through to Phase 2 and 3.

Phase 2

Phase 2 of the rehabilitation plan will involve the active rehabilitation of compacted areas.

Landscaping of the surface infrastructure area must be undertaken.

Where sites have been denuded of vegetation or where soils have been compacted or covered, these sites will be ripped and ploughed. The topsoil shall be appropriately fertilized to allow vegetation to grow rapidly. If a reasonable assessment indicates that the re-establishment of vegetation is

unacceptably slow, the soil will be analysed and any deleterious effects must be corrected and the area be seeded with a seed mix to specification.

Culverts will be maintained and be kept clean to ensure that no obstructions occur should a 1:100 year flood occur. The culverts will only be demolished should the area prove to be free draining with no pollution potential after rehabilitation.

The PCD will be maintained to ensure that no leakages occur. Overflow pipes will be kept clean. Sumps will be kept clean and all pumps will be maintained. The PCD will only be demolished should the area prove to be free draining with no pollution potential after rehabilitation.

Phase 3

Phase 3 of the rehabilitation plan will involve the following activities:

- Two to three years of maintenance and aftercare; and
- Removal of boundary fencing once the site is sustainable and in a stable state.

Disposal of Material

The disposal of waste material pertaining to the decommissioning of Adit 5, the overland conveyor and associated surface infrastructure will include the following:

- No building rubble or any other types of waste shall be dumped in the surrounding environment. In cases where it has already happened the sites shall be cleaned up and the waste and/or rubble removed to appropriate sites in consultation with the Environmental Coordinator.
- All types of waste shall be removed entirely from the application area and appropriately dealt with in respect of the general waste handling procedure.
- All foreign matter shall be removed from the site.
- Inert ceramics such as bricks, concrete, gravel etc. will be used as backfill or disposed of in a licensed waste disposal site.
- Inert waste, which is more than 500 mm underground, such as pipes will be left in place.
- Inert ceramic and buried waste with a salvage value to individuals such as scrap metal, building materials, etc. will be removed and disposed of at a licensed facility.

Maintenance

The aim of the maintenance measures are to ensure that the area affected by Adit 5, the overland conveyor and associated surface infrastructure is rehabilitated to enable Kangra Coal to apply for closure. The objective is for the area to be rehabilitated sustainably, ensuring self-succession of plants and the associated return of natural wildlife; as well as the improvement of the natural watercourses and groundwater systems.

The following maintenance measures will be implemented as part of the post-closure process:

- All natural physical, chemical and biological processes for which a closure condition has been specified must be monitored for two (2) to three (3) years after closure. Such processes include erosion of the rehabilitated surfaces, surface water drainage, surface water quality, groundwater quality, vegetative re-growth, weed encroachment and colonization by animals.
- Measures must be implemented to curb environmental impacts and to ensure that they do not worsen/cumulate over time.
- The closure plan will be reviewed every two (2) years.
- All rehabilitated areas will be monitored and maintained until such time, as required, to enable the mine to apply for closure.

The following activities will be included during the maintenance phase:

- The closure costs (demolition, removal, re-shaping and rehabilitation quotes per key quantity) for each facility must be included in the database so that the total closure cost can be determined.
- All facilities that become redundant during the life of mine must be rehabilitated concurrently to lighten the rehabilitation process at the end of the mine's life.
- Attention must be paid to the latest developments in mine rehabilitation sciences.
- Ensure that the area is free draining.
- Ensure that self-succession has been attained.
- Ensure that all slopes are safe in the long term.
- Submission of closure report and application for closure to the authorities.
- Environmental monitoring and maintenance for two to three years after closure.