



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

NAME OF APPLICANT: XAKWA COAL (Pty) LTD

REFERENCE NUMBER: NC30/5/1/1/2/11199 PR

ENVIRONMENTAL MANAGEMENT PLAN

**SUBMITTED
IN TERMS OF SECTION 39 AND OF
REGULATION 52 OF THE MINERAL AND
PETROLEUM RESOURCES DEVELOPMENT
ACT, 2002,
(ACT NO. 28 OF 2002) (The Act)**

STANDARD DIRECTIVE

Applicants for prospecting rights or mining permits, are herewith, in terms of the provisions of Section 29 (a) and in terms of section 39 (5) of the Mineral and Petroleum Resources Development Act, directed to submit an Environmental Management Plan strictly in accordance with the subject headings herein, and to compile the content according to all the sub items to the said subject headings referred to in the guideline published on the Departments website, within 60 days of notification by the Regional Manager of the acceptance of such application. This document comprises the standard format provided by the Department in terms of Regulation 52 (2), and the standard environmental management plan which was in use prior to the year 2011, will no longer be accepted.

IDENTIFICATION OF THE APPLICATION IN RESPECT OF WHICH THE ENVIRONMENTAL MANAGEMENT PLAN IS SUBMITTED.

ITEM	COMPANY CONTACT DETAILS
Name	XAKWA COAL(PTY) LTD
Tel no	012 347 0609
Fax no:	012 347 9815
Cellular no	072 061 5569
E-mail address	dimpho@xakwa.com
Postal address	Waterkloof Corporate Park Erasmus House Ground Floor Erasmusrand Pretoria 0181

ITEM	CONSULTANT CONTACT DETAILS (If applicable)
Name	XAKWA COAL(PTY) LTD
Tel no	012 347 0609
Fax no:	012 347 9815
Cellular no	072 061 5569
E-mail address	dimpho@xakwa.com
Postal address	Waterkloof Corporate Park Erasmus House Ground Floor Erasmusrand Pretoria 0181

1 REGULATION 52 (2): Description of the environment likely to be affected by the proposed prospecting or mining operation

1.1 The environment on site relative to the environment in the surrounding area.

2 The surrounding environment will be technically disturbed as per the boreholes to be drilled also in terms of roads, site camp however such establishments will be done with an undertaking to avoid impacting on species , as most of the land is used for communal livestock grazing.

The proposed Prospecting area consists of the remainder of Middle Post no 60 RD of the farm covering approximately 11285 ha in extent. The area is within the magisterial district of KAI GARIB/SIYANDA local municipality in the Northern Cape.

The study area falls within the Nama-Karoo Biome (Mucina & Rutherford, 2006), a biome which is not particularly rich in plant diversity. Unlike other biomes in southern Africa, local endemism is very low. The most recent and detailed description of the vegetation of this region is part of a national map produced by Mucina & Rutherford 2006. This map shows that the Olyven Kolk site comprises only one natural vegetation type, Bushman Basin Shrubland (NKb 6) (see *Figure 5.4*). This habitat features slightly irregular plains with dwarf shrubland dominated by a mixture of low sturdy and spiny (and sometime succulent) shrubs including *Rhigozum*, *Salsola*, *Pentzia* and *Erioccephalus* species. Grasses found include 'white' grasses such as *Stipagrostis* species.

The site has largely been transformed for agricultural purposes, grazing of sheep and goats. The carrying capacity of the land is approximately 2 – 5 goats per hectare. The agricultural potential of the land is classified as low (see *Figure 5.2*). Much of the site is very dry, with exposed soil and little vegetation (see *Figure 5.4*). Within the site area evidence of grazing pressure can be seen in the form of relatively open grass and herb layers and a network of animal paths through the vegetation.

Typical fauna associated with the habitats that are supported by the site area is likely to include breeding and foraging birds, small rodents, reptiles and small mammals including antelope. Predators that hold territory in the area are known to include raptors and black-backed jackal (*Canis mesomelas*).

The two additional species typically found in the Northern Cape especially also in Gordonia are the Karoo thorn, *Acacia karroo*, and the camel thorn, *A erioloba*, both of

which can reach a considerable height.

The coronet is made up of a bead headring and an embellishment that includes further beadwork motifs. The headring is a characteristic ornament of the hunter-gatherer Bushman people, the aboriginal inhabitants of the Northern Cape, who were closely related to the cattle-keeping

Any impact will be mitigated as outline in the documents tables

2.1 The specific environmental features on the site applied for which may require protection, remediation, management or avoidance.

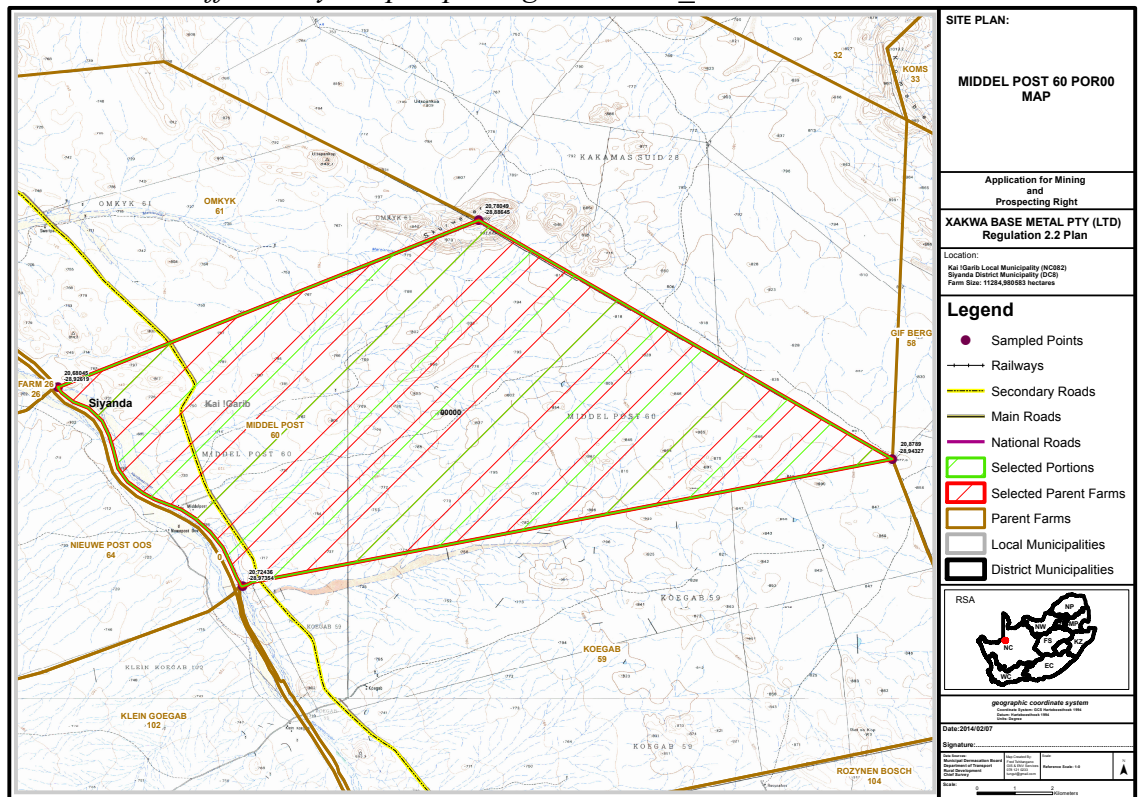
There is no sensitive environmental features (river that runs through the site) that will require specific protection measures. All potential environmental impacts will be managed in accordance with the mitigation measures in the EMP. The area is generally flat to slightly undulating with steep slopes in other areas. There are several intermittent non-perennial streams.

The potential biophysical and socio-economic environmental impacts of the project, both beneficial and adverse, were assessed during the impact assessment. Given the limited duration and extent of the prospecting activities, the impacts on the environment are not likely to be significant. A number of the impacts may however be residual and continue beyond the cessation of drilling activities if the appropriate mitigation measures are not put in place. The actions required to address the impacts identified in the environmental impact assessment are detailed in the environmental management programme. The environmental management programme provides an elaboration of how to implement the mitigation measures documented in the environmental impact assessments in order to minimise negative and enhance positive impacts that may occur during establishment, operation and rehabilitation of drilling sites

2.2 Map showing the spatial locality of all environmental, cultural/heritage and current land use features identified on sit

Map attached:

It is identified that there are no grave sites within the area. However, should any cultural or heritage materials be identified, these areas will be demarcated and treated as no-go areas during the prospecting activities. Detailed heritage studies would then be undertaken if it is deemed that these sites would be affected by the prospecting activities.



2.3 Confirmation that the description of the environment has been compiled with the participation of the community, the landowner and interested and affected parties,

The Basic Information Document has been made available to the identified interested and affected parties in the area with a news paper advert, in which comments we invited in which an EMP and a PWP were also made available to the interested and affected party within the area for inputs and comments. Participants were also given an opportunity to provide and share their knowledge on the general environmental information of the proposed area.

3 REGULATION 52 (2) (b): Assessment of the potential impacts of the proposed prospecting or mining operation on the environment, socio-economic conditions and cultural heritage.

3.1 Description of the proposed prospecting or mining operation.

3.1.1 The main prospecting activities (e.g. access roads, topsoil storage sites and any other basic prospecting design features)

Phase 1 (Month 1 to 6)

- *Desktop studies: This will include a study of historical geological data for the commodities of interest*
- *Reconnaissance mapping: Geological Mapping of the area using historical data and satellite photography;*
- *Geochemical surveys: this involves the sampling of rock chips or surface samples to understand the geochemical make-up of the rocks and the mineralization potential;*

Phase 2 (Month 7 to 18)

- *Diamond and percussion drilling: stratigraphic data will be obtained through drilling of boreholes; it is estimated that*
- *Diamond core drilling of 5(FIVE) bore holes with additional 10 boreholes determine by the pre feasibility to a maximum depth of 500 meters on a Wide Grid*

Phase 3 (Month 19 to 30)

- *Geological mapping will be done by way of field mapping and map interpretation. Land Sat 7 space maps will be used*

Phase 4 – Grid Soil Sampling

Grid soil sampling will be undertaken in areas identified through previous work as well as the desktop studies.

During this phase the collection of soil samples will be undertaken on a grid pattern over the most prospective areas of the properties. Samples will be collected and composited along lines that will probably be spaced 200m apart. The spacing depends on the results and the program.

Soil samples will be collected using a hand-shovel from 20 – 30 cm below the surface. The sample will be placed in plastic bags and sealed. Sample sizes vary between 10 kg and 20 kg. All the necessary information (e.g. sample

number, volume and screen sizes used, soil color, local geology, vegetation etc.) about the samples will be recorded and captured into a standard database. Rehabilitation due to surface sampling is nominal and no rehabilitation is required after the sampling program.

Phase 5 – Detailed Soil Sampling

Collection of closely spaced samples over the defined mineral anomaly found during grid sampling. A sampling interval of 25 m will be used along lines 50 m apart in order to locate the source of any anomalous base metal values.

Rehabilitation due to surface sampling is nominal and no rehabilitation is required after the sampling program.

Phase 6 – Geophysical survey

Ground geophysical surveys may be undertaken over defined target areas selected from sampling results and desktop studies. Ground magnetics, gravity, electromagnetics and resistivity may be carried out along grid lines. These methods are used to assist in finding possible drill targets.

Phase 7 – Drilling

Percussion drilling is used initially to identify the position of a suspected mineral deposit. Angled percussion holes are planned to locate and intersect the mineralization. A traverse line or grid drilling is used to identify and define the extent of any mineralization. The sizes of the boreholes drilled will be determined by such factors as costs, proposed sampling, availability of drilling machines, and the volume of sample required among others. All drilling is short term and is undertaken by a contractor using truck-mounted equipment. During this drilling program samples are collected and processed for initial estimates of metal content and petrographic analysis. For budgeting purposes 10 boreholes (50m deep) are planned.

Core drilling will only be used if mineralization has been found.

The drill sites will be rehabilitated. Immediately the holes will be filled with drill chips and covered with topsoil. Normally nominal, drilling material, liquid spills and refuse are cleared and transported to the relevant municipal dumpsite.

Phase 8 – Follow-up / In-fill drilling

Depending on the previous results, further confirmation and exploratory drilling may be required. The methodology is the same as for drilling above. For budgetary purposes a further minimum of 10 percussion holes are planned for this phase.

Phase 9 – Consolidation and Interpretation of results data

All data will be consolidated and processed to determine the Rare Earth resource on the property. This will be a continuous process throughout the prospecting work program.

Each phase of prospecting will be followed by desktop studies involving interpretation and modeling of all data gathered and how the applicant will proceed with the work program in terms of activity, quantity, resource expenditures and duration.

A pre-feasibility study will be done to determine the preliminary economic assessment of the resource and to determine whether additional evaluation of the deposit will be warranted to increase confidence in the resource estimation.

Prospecting work will be conducted by a multi-disciplinary team to be lead by a geologist to determine whether the resource can be viable exploited and if the results can support an application for a mining right.

Environmental impacts will potentially occur during phases 4 to 8.

Access Roads

Note that only existing access roads would be used during the soil sampling phases. Should drilling become necessary, it will depend on the mineralisation where the activity would take place. Should it be required to construct access roads, this will be done in consultation with the relevant landowner(s).

Topsoil storage

No topsoil storage sites would be required. Limited volumes of topsoil will be stored adjacent to the relevant activity (drilling areas) for immediate replacement after drilling had been finished.

Construction camp

The identification of site for a small construction camp (mostly applicable to the drilling phase) will be negotiated with the relevant landowner(s). This will mostly consist of two to three tents, an ablution facility for cooking and washing and a chemical toilet.

Water supply

A limited volume of water supply for the purpose of drilling could be required. Water for cooking and washing should also be supplied. The contractor will negotiate with the relevant landowner(s) for water. If this supply is not possible, then the contractor will have to provide municipal water via a water truck. No water may be taken from any streams or dams for the purpose of the prospecting activities.

3.1.2 Plan of the main activities with dimensions

Phase	Activity (what are the activities that are planned to achieve optimal prospecting)	Skill(s) required (refers to the competent personnel that will be employed to achieve the required results)	Timeframe (in months) for the activity)	Outcome (What is the expected deliverable, e.g. Geological report, analytical results, feasibility study, etc?)	Timeframe for outcome (deadline for the expected outcome to be delivered)	What technical expert will sign off on the outcome? (e.g. geologist, mining engineer, surveyor, economist, etc)
1.1	<p>Non-Invasive Prospecting</p> <p>Geotechnical Investigations:</p> <p>Core has been inspected and a review of the work done by The Mineral Corporation In the Open Pit area is being completed. Core samples to be cut will be selected And sent to AMEC for ABA analysis. Additionally, a small sample of tailings is in the possession of AMEC and this will be sent to the Lab for initial analysis as soon as the programme is confirmed and Approved.</p>	Geotechnical engineer	2 months	<p>Identify the potential requirement for special measures in dealing with ARD generating tailings/waste rock.</p> <p>Identify the potential impact of ARD generation in underground workings such to identify potential required mitigation measures on management of underground water</p>	4 month.	Geotechnical engineer
1.2	<p>Non-Invasive Prospecting</p> <p>Options Study:</p> <p>With the available information and the definition of mining throughput and estimated life of mine, the Options study Could be completed. An important consideration here is the definition within</p>	Mining Engineer	2-4 months	Definition of Mining Method and likely mining throughput and life of Mine. Requirements for surface disposal	4 month.	Mining engineer

	the scoping study of the likely mining Method to be used.					
1.3	<p>Non-Invasive Prospecting</p> <p>Hydrology & Hydrogeology studies Rainfall data will be required to establish an initial Tailing Material Facility water Balance. Flood lines will need to be estimated to determine areas where no tailings dam Encroachment can occur.</p>	<p>Geohydrologist</p> <p>Hydrologist</p>	2-4 months	<p>Preliminary water balance</p> <p>Floodlines</p>	4 months	<p>Geohydrologist</p> <p>Hydrologist</p> <p>Civil engineer (floodlines)</p>
1.4	<p>Non-Invasive Prospecting</p> <p>Prefeasibility study report incorporating the above elements</p>	Mining Engineer	2-4 months	Scoping report	4 months	Mining Engineer
2.1	<p>Non-Invasive Prospecting</p> <p>Geotechnical Investigations: Trial pits to a depth of approximately 2 meters will be required for each site option being considered. It is assumed that up to 4 sites will be included and that up to 5 trial pits will be required with a total of 20 trial pits. Selected materials will be sampled and sent to the lab for preliminary strength Testing.</p> <p>Borrow material (borrow Sites) will need to be identified and some trial pits to obtain Samples will need to be collected. Material characterization (strength and classifications tests) will need to be Completed.</p>	Geotechnical engineer	4-6 months	<p>Test-pit profiles</p> <p>Characterisation of founding materials and geotechnical suitability</p>	16 months	Geotechnical engineer
2.2	Non-Invasive Prospecting Condemnation	Geologist	4 months	Confirmation that mineralised areas exist at sites for	16 months	Geologist

	Drilling: It is envisaged that 1000m of condemnation drilling will be required to ensure that there is no mineralization at potentially economic grades in the vicinity Of proposed mining infrastructure.			proposed surface infrastructure		
2.3	Non-Invasive Prospecting Geochemical Assays: Acid-Base Accounting (ABA) testing will be completed on the tailings samples available as well as on any proposed construction materials to determine the likelihood of Acid Rock Drainage problems and establish if mitigation measures are required in the Tailings Material Facility Design. ABA will require minimal sample size (1 kg maximum).	Geohydrologist Analytical chemist	2 months	ABA profile of tailings material	16 months	Geohydrologist Analytical chemist
2.4	Non-Invasive Prospecting Topographical Survey: Topographical information for the sites Being considered will be required. 1m contours will be required derived from either surface topography, Aerial photographs or LIDAR Surveys	Surveyor	1.5 months	Detailed topographical survey with contour information of the proposed site	16 months	Surveyor
2.5	Non-Invasive Prospecting Options Study	Mining Engineer	2-4 months	The sites for the construction of TMF (s) will be selected and passed-on for inclusion in the Feasibility level design.	16 months	Mining Engineer
2.6	Non-Invasive Prospecting Prefeasibility-level Hydrology & Hydrogeology (flood lines, rainfall etc.)	Hydrologist Geohydrology	4-6 months	Hydrology and Hydrogeology Reports. Climate report including flood events information for Water Balance and flood	16 months	Geohydrology Hydrologist Civil engineer (flood lines)

				design. Flood lines to prefeasibility level for areas where the proposed TMF might be affected		
2.7	Non-Invasive Prospecting Prefeasibility study report incorporating the above elements	Mining Engineer	4-6 months	Prefeasibility report with CAPEX and OPEX	16	Mining Engineer
3.1	Non-Invasive Prospecting Geotechnical Investigations: It is assumed that Rietfontein 2KS will be put forward for feasibility level design. If more than 1 site is required, the geotechnical investigation described here will have to be completed for each site. Approximately 7 boreholes will need to be drilled to a depth of app 30 meters below Surface or to bedrock. The characteristics and specification of the investigation will Be defined at the prefeasibility stage. Samples will need to be recovered from the boreholes for Geotechnical testing (Classification, strength and permeability). In situ tests will be required during the drilling of the boreholes (Standard Penetration Test – SPT). Additional infill trial pits will also be Required. It is estimated approximately 10 additional trial pits will be required with selected samples of the materials encountered chosen for geotechnical	Geotechnical Engineer	4 months	Geotechnical classification and suitability of selected site for construction of tailings material facility	26 months	Engineer

	Testing. Borrow areas testing of materials will be Required as per samples of trial pits. Tailings geotechnical testing (strength and sedimentations test on the different Fractions - if backfill is required). Sample size for geotechnical testing will be Approximately 25 kg's.					
3.2	Non-Invasive Prospecting Geochemical Assays: Long-term leach testing based on outcomes of Acid-Base Accounting (ABA) Exercise at Prefeasibility level. Sample Size required will be approximately 1 kg.	Geohydrologist Analytical Chemist	12 months	ABA profile of tailings material, specifically constituents likely to leach from tailings material	26 months.	Geohydrologist Analytical chemist
3.3	Non-Invasive Prospecting Topographical Survey: Topographical information for the site/-s Being considered will be required. 1m contours will be required derived from either surface topography, Aerial photographs or LIDAR Surveys	Surveyor	1.5 months	Detailed topographical survey with contour information of the proposed site	26 months.	Surveyor
3.4	INon-Invasive Prospecting Options Study	Mining Engineer	6 months	One option for construction. This should include definition of the mining method and the assessment of volumes required and fraction definition for any backfill that can or should be used for underground Filling.	26months.	.Mining Engineer
3.5	Non-Invasive Prospecting Feasibility-level Hydrology & Hydrogeology (flood lines, rainfall etc.)	Hydrologist Geohydrologist	6months	Hydrology and Hydrogeology Reports. Climate report including flood Events information for Water balance and flood design. Flood lines to prefeasibility level	26 months.	Geohydrologist Hydrologist Civil engineer Geologist.

				for areas where the proposed TMF might be affected		
3.6	Non-Invasive Prospecting Feasibility study report incorporating the above elements	.Mining engineer	6-12 months	Geological ore model. Compile Feasibility report plus CAPEX / OPEX and issue report. At this stage a specialist company (Fraser Alexander tailings, Enviroserve, etc.) will be contacted to provide a specific quote for third party operation of the tailings facility	26 months.	Mining Engineer
3.7	Non-Invasive Prospecting Environmental approvals	Environmental specialist.	12 months	Well rehabilitated area in line with the approved EMP. Prepare environmental authorisations for various competent authorities to follow submission of mining right application	26 months.	Environmental Scientist

3.1.3 Description of construction, operational, and decommissioning phases.

The prospecting process will consist of three phases. The desktop evaluation of the available geological data and the drilling of boreholes at identified target sites. The second phase would require the temporary installation of a mobile, rotary diamond-core and percussion drilling rig mounted to a truck or as stand-alone. This will be accompanied by a compressor, generator and water bowser and require operating area of approximately 1000m². The third phase will include infill diamond core drilling of further boreholes and the geological analysis thereof.

Time frame		Planning	Construction	Operational	Decommissioning
6 months	Phase 1 Desktop Studies	X			
	Phase 2 Imaginary Analysing	X			
	Phase 3				

	Geological Mapping	X			
12 months	Phase 4 Grid Soil Sampling		Sampling by hand, shovel and plastic bags - Non-invasive- Insignificant impact	Not applicable	Rehabilitate immediately after sampling
	Phase 5 Detailed Soil Sampling		Sampling by hand, shovel and plastic bags - Non-invasive- Insignificant impact	Not applicable	Rehabilitate immediately after sampling
6 months	Phase 6 Geophysical Survey	Geophysical equipment used– Non-invasive Insignificant impact	Not applicable	Not applicable	Not applicable
12 months	Phase 7 Drilling	-	Access roads (if required) and small construction camp - Invasive -Impact to be mitigated	Not applicable	Rehabilitate borehole and construction camp immediately after drilling; roads to be rehabilitated if required by landowner
	Phase 8 Follow-up / In-fill drilling	-	Access roads (if required) and small construction camp – Impact to be mitigated – invasive	Not applicable	Rehabilitate borehole and construction camp immediately after drilling; roads to be rehabilitated if required if required by landowner
Throughout the prospecting phases 4-8 plus an additional 6 months	Phase 9 Consolidation and Interpretation of results data	All data to be consolidated and processed.			

3.1.4 Listed activities (in terms of the NEMA EIA regulations)

No listed activities are triggered. However should there be any activities that require environmental authorisation in terms of NEMA, the applicant shall ensure that such requirements are met.

3.2 Identification of potential impacts

(Refer to the guideline)

The main environmental impacts identified are listed on this prospecting EMP.

3.2.1 Potential impacts per activity and listed activities.

- *The impacts on biodiversity would range from loss of plants during site clearance for the establishment of the drilling sites and access routes and temporary relocation of animal species due to increased noise levels.*
- *There is a potential for introduction of alien weed species during Prospecting that could have considerable impact on the ecosystem.*
- *Soil structure will be affected during the Prospecting activities and the impacts would be limited to individual drilling sites e.g. soil compaction due to vehicle movement, low infiltration rate, contamination from lubricants and drilling sludge, etc. Areas with high potential for erosion should be avoided and access roads to follow natural contours of the land as far as possible.*
- *Prospecting activities pose potential impacts on groundwater resulting from cross contamination of aquifers during borehole Prospecting. Spillage of oil, fuel or lubricants may result in contamination of surface water and through runoff end up contaminating ground water as well. All repair, refuelling and maintenance work for vehicles must be done offsite and for leaking containers, a drip tray or impermeable plastic sheeting must be placed underneath.*
- *There is also a possibility of reduction in ground water levels due to production of water during drilling of a Prospecting well. Water is normally pumped out from the coal bed to reduce pressure and subsequently allow flow of gas up the well.*
- *Air quality will be less impacted and for short duration by emissions from machinery or vehicle exhausts, gas escapes and dust. Prospecting Boreholes with potential for production are to be capped with plinth and gas monitoring equipment whereas boreholes not to be used will be sealed with cement.*
- *Wide range of wastes such as drilling mud, used oil, and hydraulic fluids are to be produced during the operations. Accidental release of hazardous materials, oil and chemical waste may cause substantial impacts on the environment. Containers should be provided for the disposal of hazardous waste materials at an authorized hazardous waste facility site. A request for use of municipal disposal site will be sent to Makhado Municipality in Limpopo province.*
- *Sewage and grey water would be managed to ensure protection of soil and water resources. French drain will be situated not less than 200m from a water body to manage all effluents from washing facilities. There will be chemical toilet on site for Prospecting team.*

- *Specific area should be created for the storage of hazardous chemicals with bunds to hold 110% of the total storage volume and the designate area must be at least 10m away from work but within the demarcated drilling areas. There will be emergency procedures and measures for implementation in the event of spillage of hazardous substances.*
- *Subsurface sumps shall be lined with PVC plastic to minimize water loss and contamination of ground water and the area must be clearly barricaded as well.*
- *Farming and other land use activities would be temporarily disturbed due to preclusion of land use and occupation of space for Prospecting activities. The footprint of disturbance to cater for drill rig and equipment's would be generally less than 100m² and would be demarcated with barricade.*
- *Prior to site establishment and during Prospecting activities, permission to use water resources would be obtained from landowners, however water consumption is to remain within the limits of the General Authorization as prescribed in terms of the National Water Act (Act No. 36 of 1998). There will be no alteration of river banks to access water for drilling purpose and no activities are to be within 1:50 year flood line or within 100m from water resources.*
- *In case where drill sites are within 200m of springs or water borehole, a hydro-census would be undertaken and Prospecting borehole will be isolated by lining from upper aquifer to prevent contamination or loss of water.*
- *Employment opportunities for the local unskilled labourers may be created for works such as site clearing, traffic control, waste clean-up, rehabilitation, etc. There are also possible negative impacts that may arise as a result of the Prospecting activities such as site access through farms, trespassing, farm security, spread of diseases due to social influx, etc.*
- *The potential discovery of the mineral deposits will bring positive impacts in the local economy.*
- *The workforce involved in the prospecting works will be generally subjected to high levels of pollutants such as noise, dust, hazardous substances and accident risks. All members of prospecting team would have to wear identifiable protective clothing equipment when working on site at all the times.*
- *There is potential for visual impacts (intrusion) to the neighbourhood in the area from high drilling rigs, machineries and vehicles during the operations. Capping of boreholes above ground would also cause visual impact to farm owners and land users.*
- *Potential damage to service infrastructures such as pipeline, electricity and telephone lines existing within the Prospecting area is identified and this would be mapped out during the selection of drilling sites.*

- Interested and affected parties will be kept informed of the project development from the stage the right is issued, during phase 1 till completion of the project. This will be to ensure good relationship with land owners and avoiding conflicts with landowners and holders of other rights. Agreements for working relationships in relation to access and with holders of other rights would be entered into.

- Heritage Impact Assessment would only be undertaken if any of the listed heritage resources in terms of National Heritage Resources Act (Act No. 25 of 1999) are identified and there is potential for impacts upon them due to prospecting activities.

- There is a potential of veld fires as a result of flammable gas from the boreholes, smoking of cigarettes and setting of fires in the area. The entire drill site is to be demarcated as a no smoking zone and setting up fires will be prohibited. Fires for cooking purpose would be restricted to designated areas and monitored appropriately.

- The objectives of the EMP are to reduce the significance or avoid the occurrence of negative impacts, maximize positive impacts, ensure that prospecting activities are not harmful to the wellbeing of affected communities, implement best practicable environmental practice, outline mitigation measures, to prevent long term or permanent environmental degradation, outline functions & responsibilities of personnel implementing the EMPR, ensure compliance with the guidelines and stipulations from authorities.

- The disturbed land will be rehabilitated as close as to pre-prospecting condition and all waste, structure, equipment and materials removed. Requests by landowners to retain certain structures on site may be considered if such structures do not pose any environmental risks. Compacted areas will be scarified to a depth of 300mm and French drains to be compacted and covered with 100mm topsoil.

3.2.2 Potential cumulative impacts.

Impact	Significance rating of Impacts	Proposed mitigation	Significance rating of Impacts after mitigation
Prospecting Phase			
Potential Biophysical Impacts			
	<i>This definite negative impact will</i>	<ul style="list-style-type: none"> • If Red List species are observed on site, the Environmental Control Officer 	<i>Medium negative significance.</i>

Loss of flora Site clearance will result in a loss of habitat for a number of plant species that occur on the proposed site.	occur to a local extent, with a high intensity over a long term. The significance of this impact will thus be of high negative significance.	<p>(ECO) should be notified immediately, and he/she must also inform Mpumalanga Department of Economic Development, Environment and Tourism (DEDET).</p> <ul style="list-style-type: none"> • All invasive species should be removed as stipulated by CARA (Act No 43 of 1983) an ongoing monitoring programme is required. • Removal of these species should take place in an environmentally friendly manner. 	
---	--	---	--

3.2.3 Potential impact on heritage resources

There are identified heritage resources such as graves within the proposed prospecting area and these areas will be clearly demarcated as no-go zones. Strict caution will be exercised in these areas and in case of any accidental discovery of any remains, excavation or drilling operation will be ceased and professional advice from heritage expert will be sought.

3.2.4 Potential impacts on communities, individuals or competing land uses in close proximity.

(If no such impacts are identified this must be specifically stated together with a clear explanation why this is not the case.)

During construction/ prospecting phase, the likely impacts on the surroundings will be mainly dust and noise generation. Interested and affected parties from the nearby communities will be kept informed of the project development and activities. All the issues of concern, it may be dust, noise, visual impacts, etc., shall be addressed in consultation with community representatives to find common solution. The applicant shall strive to maintain a good working relationship with land owners and community members to avoid any form of conflict or complaints. Agreements for working relationships in relation to access and with holders of other rights would be entered into.

3.2.5 Confirmation that the list of potential impacts has been compiled with the participation of the landowner and interested and affected parties,

The EMP has been compiled with the participation of the landowner and interested & affected parties.

3.2.6 Confirmation of specialist report appended. (Refer to guideline)

No specialist studies have been conducted at this stage, as they were deemed unnecessary. However, shall there be a need to undertake any specialist studies in the future or during the prospecting process, such report will be made available to the relevant authorities.

4 REGULATION 52 (2) (c): Summary of the assessment of the significance of the potential impacts and the proposed mitigation measures to minimise adverse impacts.

Key environmental impacts are identified in the EMP and their possible mitigation measures. It is identified that the proposed prospecting activities will not result in significant negative environmental impact provided that all recommended mitigation measures herein are implemented.

4.1 Assessment of the significance of the potential impacts

Impact Assessment Methodology

The impacts were evaluated on the parameters of nature, extent, duration, intensity and probability from which the significance of the impact is derived.

Nature of Impact

This is an appraisal of the type of effect the activity would have on the affected environment, as well as a description of what is being affected and how.

Extent

This determines the impact on:

- *Site - impacts occurring only within the boundaries of the site, e.g.: loss of vegetation*
- *Local - impacts occurring within the boundaries of the site and outside the boundaries of the site but restricted to the immediate surrounding area e.g.: noise created by the prospecting process.*
- *Local - impacts occurring within the boundaries of the site and outside the boundaries of the site but restricted to the immediate surrounding area e.g.: noise created by the prospecting process.*
- *Regional – impacts that occur on a regional scale e.g.: excessive surface water pollution impacting on communities a significant distance downstream of the site.*

Intensity

- *Low – the impact does not affect physical, biophysical or socio-economic functions and processes.*
- *Medium – the impact has an effect on physical, biophysical and socio economic functions and processes, but in such a way that these processes can still continue to function albeit in a modified fashion.*
- *High – where the physical, bio-physical and socio economic functions and processes are impacted on in such a way as to cause them to temporarily or permanently cease.*

Duration

- *Short term – impacts occurring within 0-2 years.*
- *Medium term – impacts occurring within 2-10 years.*
- *Long term – impacts that will only cease after the operational phase.*

Probability

This determines the likelihood of the impact occurring:

- *Improbable – the probability of the impact occurring is low.*
- *Probable – there is a distinct probability of the impact occurring.*
- *Highly probable – where it is most likely that the impact will occur.*
- *Definite – where the impact will occur regardless of any prevention measures.*

4.1.1 Criteria of assigning significance to potential impacts

The impacts has been categorised into low, medium, high impacts and fatal flow for each and every identified potential impacts as indicated below.

Significance

Significance of the impact is determined by evaluating the cumulative impact of nature, extent, duration, intensity and probability. Significance will be described as:

- Low – where it will not have a significant impact on the environment.
- Medium – where it will have a medium significance on the environment.
- High – where it will have a high significance on the environment.
- Fatal flaw – where it will cause the planning for development to be suspended.

Positive Impacts – Notation of Significance

Low	Medium	High
-----	--------	------

Negative Impacts Notation of Significance

Low	Medium	High
-----	--------	------

4.1.2 Potential impact of each main activity in each phase, and corresponding significance assessment

The identified impacts are limited to prospecting phase as no other significant impacts are envisaged.

4.1.3 Assessment of potential cumulative impacts.

Cumulative impacts as the results of combination of few factors were also considered.

4.2 Proposed mitigation measures to minimise adverse impacts.

Impact	Significance rating of Impacts	Proposed mitigation	Significance rating of Impacts after mitigation
Prospecting			

Phase			
Potential Biophysical Impacts			
<i>Loss of flora Site clearance will result in a loss of habitat for a number of plant species that occur on the proposed site.</i>	<i>This definite negative impact will occur to a local extent, with a high intensity over a long term. The significance of this impact will thus be of high negative significance.</i>	<ul style="list-style-type: none"> <i>• If Red List species are observed on site, the Environmental Control Officer (ECO) should be notified immediately, and he/she must also inform Mpumalanga Department of Economic Development, Environment and Tourism (DEDET).</i> <i>• All invasive species should be removed as stipulated by CARA (Act No 43 of 1983) an ongoing monitoring programme is required.</i> <i>• Removal of these species should take place in an environmentally friendly manner.</i> 	<i>Medium negative significance.</i>

Impact	Significance rating of Impacts	Proposed mitigation	Significance rating of Impacts after mitigation
---------------	---------------------------------------	----------------------------	--

	<ul style="list-style-type: none"> • <i>Topsoil must be removed from all areas where physical disturbance of the surface might occur.</i> • <i>The topsoil should not be stored to a height exceeding 1.5m and should not be compacted.</i> • <i>Do not remove topsoil long in advance of the Prospecting activities since this may result in erosion.</i> • <i>On completion of the Prospecting, all evidence of materials storage and concrete mixing should be removed and deposited at a registered landfill site.</i> • <i>Topsoil must be returned to where it was originally removed from if possible for rehabilitation purposes.</i> 		
--	--	--	--

<i>Impact</i>	<i>Significance rating of Impacts</i>	<i>Proposed mitigation</i>	<i>Significance rating of Impacts after mitigation</i>
<i>Loss of fauna Site</i>	<i>This definite negative</i>	<i>• If any faunal species of concern are observed on site, the ECO must be</i>	<i>Low negative</i>

<i>clearance will result in habitat loss, which may have a direct impact on the continued existence of a number of faunal species utilizing the site.</i>	<i>impact will occur to a local extent, with a high intensity over a long term. The significance of this impact will thus be of medium negative significance.</i>	<i>contacted immediately and she/he must inform the DEDET.</i> <ul style="list-style-type: none"> <i>• The workers shall stay within the demarcated area on the Prospecting site, and are not permitted to hunt, capture, kill or disturb any animals (including herpetofauna and avifauna) encountered onsite.</i> 	<i>significance.</i>
<i>Potential surface water pollution and contamination of storm water Other potential impacts such as soil erosion could have cumulative effects like siltation of water bodies, which could severely damage aquatic</i>	<i>This highly probable negative impact may occur to a regional extent, with a high intensity over a long term. The significance of this impact will thus be of high negative significance.</i>	<ul style="list-style-type: none"> <i>• As far as possible, Prospecting should commence in the dry season.</i> <i>• Limiting the area of earthworks will decrease the probability of erosion.</i> <i>• Movement of Prospecting vehicles must be restricted to demarcated areas.</i> 	<i>Medium negative significance.</i>

<i>Impact</i>	<i>Significance rating of Impacts</i>	<i>Proposed mitigation</i>	<i>Significance rating of Impacts after mitigation</i>
<i>Ecosystems on the proposed study area. Water pollution could also occur in the form of</i>	<i>• Rehabilitation is to commence as soon as possible after Prospecting</i>		

<p><i>hydrocarbons/chemicals contaminating the surrounding environment from Prospecting activities.</i></p>	<ul style="list-style-type: none"> • <i>Earth, stone, and rubble must be properly disposed of in order to ensure that water pathways on the site are not blocked.</i> • <i>Measures must be implemented to distribute storm water as evenly as possible to avoid point sources of erosion.</i> • <i>Ensure that concrete residue from washing concrete trucks and equipment is either diverted to the area that is being concreted or deposited in a contained area on site and allowed to set before disposal.</i> • <i>When hosing down concreted areas should use minimal water and allow sediments to settle in a confined area (settlement ponds/sumps).</i> • <i>All spillages must be rectified as soon as possible after occurrence. This is necessary to prevent the spillage from penetrating the ground or spreading and to mitigate the impact of the spillage on the environment.</i> • <i>All concrete mixing must be done on mixing trays where possible.</i> • <i>Inspect storage containers and transport vehicles regularly for leaks.</i> 		
---	---	--	--

<i>Impact</i>	<i>Significance rating of Impacts</i>	<i>Proposed mitigation</i>	<i>Significance rating of Impacts after mitigation</i>
<i>Potential soil pollution Seepage of hydrocarbons and</i>	<i>This probable negative impact may occur to a site extent, with a</i>	<ul style="list-style-type: none"> • <i>After concrete mixing is complete, all waste concrete must be removed from the batching area and disposed of at an approved landfill site if it cannot be re-used for infilling.</i> • <i>Rubble must be removed from the Prospecting site frequently and disposed of at an approved landfill site.</i> <ul style="list-style-type: none"> • <i>In accordance with the requirements of the Water Act, surface and ground water should not be polluted (i.e. by oil, cleaning materials, herbicides, ash, etc.) under any circumstances.</i> • <i>Ensure that concrete residue from washing concrete trucks and Equipment is either diverted to the area that is being concreted or deposited in a contained area on site and allowed to set before disposal.</i> • <i>When hosing down concreted areas should use minimal water and allow sediments to settle in a confined area.</i> • <i>Ensure the concrete batching plant is protected from wind to reduce cement sand being dispersed during handling.</i> • <i>All spillages must be rectified as soon as possible after occurrence. This is necessary to prevent the spillage from spreading and to mitigate the impact of the spillage on the environment.</i> 	<i>Low negative significance.</i>

<i>Impact</i>	<i>Significance rating of Impacts</i>	<i>Proposed mitigation</i>	<i>Significance rating of Impacts after mitigation</i>
		<ul style="list-style-type: none"> • <i>All concrete mixing must be done on mixing trays where possible.</i> <p><i>After concrete mixing is complete, all waste concrete must be removed from the batching area and disposed of at an approved landfill site.</i></p> <ul style="list-style-type: none"> • <i>Rubble must be removed from the Prospecting site frequently and disposed of at an approved landfill site.</i> <ul style="list-style-type: none"> • <i>In accordance with the requirements of the Water Act, surface and ground water should not be polluted (i.e. by oil, cleaning materials, herbicides, ash, etc.) Under any circumstances.</i> 	

Impact	Significance rating of Impacts	Proposed mitigation	Significance rating of Impacts after mitigation
<p><i>Solid waste/littering</i> Littering and incorrect disposal of waste could result in water and soil pollution and could potentially impact on habitats of a number of faunal and floral species.</p>	<p><i>This probable negative impact may occur to a local extent, with a low intensity over a short term. The significance of this impact will thus be of low negative significance.</i></p>	<ul style="list-style-type: none"> • Refuse bins must be strategically placed throughout the site for non-hazardous refuse such as glass, bottles, plastic bags, scrap metal, paper, food leftovers, etc. • Refuse must be collected on a regular basis for disposal at a registered landfill site. • Workers must be trained and warned against littering. <ul style="list-style-type: none"> • Disposal prospecting waste at a licence land fill site. • Store and replant indigenous vegetation in the garden of the prospecting • Dispose exotic vegetation as per legislative requirements 	<p><i>Low negative significance.</i></p>
<p><i>Fire Risk</i> Potential uncontrolled fires pose a risk to the biodiversity on site in the form of habitat destruction especially in winter when the vegetation is dry.</p>	<p><i>This probable negative impact may occur to a local extent, with a high intensity over a short term. The significance of this impact will thus be of medium negative significance.</i></p>	<ul style="list-style-type: none"> • Hold fire prevention talks and reminders regularly with the staff on fire prevention. • No fires may be made other than for the purpose of cooking. Cooking fires must be contained in a fire drum and located as far as possible from flammable materials. • Ensure adequate firefighting equipment on site and in all major working areas and train workers on how to use it. • Ensure that all workers on site know the proper procedure in case of a fire incidence on site. 	

<i>Impact</i>	<i>Significance rating of Impacts</i>	<i>Proposed mitigation</i>	<i>Significance rating of Impacts after mitigation</i>
		<ul style="list-style-type: none"> • <i>Smoking must not be permitted in those areas considered a fire hazard. Smoking should only be allowed in designated areas.</i> • <i>“No-smoke” signs must be placed at areas with high fire risk.</i> 	
<p><i>Air pollution</i> <i>Dust will cause a nuisance factor to floral and faunal species utilizing the proposed development site and surrounding properties. Dust could also contribute to siltation of water bodies, which will impact on aquatic ecosystems utilizing these water bodies.</i></p>	<p><i>This probable negative impact may occur to a local extent, with a medium intensity over a short term. The significance of this impact will thus be of medium negative significance.</i></p>	<ul style="list-style-type: none"> • <i>Internal roads must be tarred to limit generation of dust.</i> • <i>Traffic on site must be limited to transportation of building materials and workers, therefore the anticipated generation of dust will be minimised.</i> • <i>Prospecting vehicles must adhere to maximum speed limit of 40km/h.</i> • <i>The extent of the disturbed area must be limited to avoid excessive generation of dust.</i> • <i>Appropriate dust suppression measures, e.g. dampening with Water, must be used when dust generation is unavoidable, particularly during prolonged periods of dry weather.</i> • <i>Rehabilitation must start immediately upon completion of Prospecting activities.</i> 	<p><i>Low negative significance.</i></p>

Impact	Significance rating of Impacts	Proposed mitigation	Significance rating of Impacts after mitigation
<p><i>Ambient noise</i> <i>Prospecting vehicles and machinery as well as contractors on site will result in increased ambient noise level on site and the surroundings, which is likely to have an impact on faunal species utilizing the proposed development site and surrounding properties.</i></p>	<p><i>This definite negative impact may occur to a local extent, with a medium intensity over a short term. The significance of this impact will thus be of medium negative significance.</i></p>	<ul style="list-style-type: none"> • <i>Work hours should be restricted between 7h30 and 17h30 on weekdays and between 8h00 and 12h00 on a Saturday.</i> • <i>Prospecting work must be restricted to working hours as per SANS 10103:2004.</i> • <i>Work must be confined to demarcated areas and workers must not be allowed to trespass onto private property.</i> • <i>Workers should not be allowed reside on the property, but be transported to and from work every day.</i> • <i>Where necessary, the machines must be equipped with appropriate noise reduction equipment and all vehicles must be roadworthy (including meeting maximum noise specifications).</i> • <i>The vehicles' exhaust and baffle systems must be maintained regularly to ensure that the noise from these vehicles is within the required noise specification.</i> • <i>If noisy Prospecting activities are required it should be done in the afternoons after the end of the school day.</i> 	<p><i>Medium negative significance.</i></p>
Potential Socio Economic Impacts			

<i>Impact</i>	<i>Significance rating of Impacts</i>	<i>Proposed mitigation</i>	<i>Significance rating of Impacts after mitigation</i>
<i>Health It can be anticipated that a number of the people working on the Prospecting site will be young males. High-risk behaviour associated with sexual behaviour is not uncommon amongst this group. This behaviour is likely to increase the number of people infected with sexually transmitted diseases such as HIV/AIDS in the area.</i>	<i>This probable negative impact will occur to a local extent, with a medium term period. The overall significance of the impact will this be of medium negative significance.</i>	<i>The best mitigation to suggest would be to educate the group in question in order to assist them to make informed decisions.</i>	<i>Medium negative significance.</i>
<i>Crime More people move through the area, and opportunistic criminals often use these unsettled times to conduct their criminal activities.</i>	<i>This probable negative impact will occur to a local extent, with a medium term period. The overall significance of the impact will this be of medium negative</i>	<ul style="list-style-type: none"> <i>• The proponent and community leaders should devise a safety plan for Prospecting and operation in conjunction with the police.</i> <i>• Contractors working on site must wear visible identification cards/uniforms.</i> 	<i>Low negative significance</i>

	<i>significance</i>	
--	---------------------	--

<i>Impact</i>	<i>Significance rating of Impacts</i>	<i>Proposed mitigation</i>	<i>Significance rating of Impacts after mitigation</i>
		<ul style="list-style-type: none"> • <i>There should be visible security on site, especially when the workers are not there.</i> • <i>Work should not be done before 07h00 in the morning or after 19h00 at night if at all possible.</i> • <i>The proponent should be responsible for the transport of the Prospecting workers, using a reliable contractor.</i> • <i>Workers should not be allowed to stay overnight on the site.</i> • <i>Members of the community and a representative of the Prospecting could be involved via a community police forum.</i> • <i>Security for the operational phase of the development should be similar to that of other Developments of this nature.</i> 	

Impact	Significance rating of Impacts	Proposed mitigation	Significance rating of Impacts after mitigation
<p>Creation of sustainable jobs</p> <p>The Prospecting phase of the proposed Prospecting can create a number of economic opportunities, which will be beneficial to the economic growth, and development of the area.</p>	<p>This probable negative impact will occur to a local extent, with a medium term period. The overall significance of the impact will thus be of medium negative significance.</p>	<p>The project will have a positive economic impact on the area, and therefore no mitigation is required.</p>	<p>Medium positive significance.</p>
<p>Traffic and road safety could be impacted on by additional vehicles turning into and from the property onto main roads.</p>	<p>This definite negative impact will occur to a local extent, with a low intensity over a short term. The significance of this impact will thus be of low significance.</p>	<ul style="list-style-type: none"> • Prospecting vehicles will not travel from site during peak hours. • Prospecting vehicles will be equipped with chevrons and will be clearly identifiable 	<p>Low negative significance.</p>
<p>Abnormal vehicles may deliver equipment and machinery to site which could result on disruptions on the main roads.</p>	<p>This definite negative impact will occur to a regional extent, with a medium intensity over a short term. The significance of this impact will</p>	<ul style="list-style-type: none"> • Abnormal vehicles will not travel from site during peak hours. • Abnormal vehicles will be equipped with chevrons and will be clearly identifiable • Traffic officials will at all times accompany abnormal vehicles. 	<p>Low negative significance.</p>

	<i>thus be of medium</i>		
--	--------------------------	--	--

<i>Impact</i>	<i>Significance rating of Impacts</i>	<i>Proposed mitigation</i>	<i>Significance rating of Impacts after mitigation</i>
<i>The Prospecting and upgrade activities of the roads in the area will result in traffic disruptions.</i>	<i>This definite negative impact will occur to a local extent, with a high intensity over a short term. The significance of this impact will thus be of medium significance.</i>	<ul style="list-style-type: none"> <i>• Prospecting activities of roads will only occur from 08:30 to 15:00</i> <i>• The neighbouring community must be notified of the Prospecting activities one week prior to it occurring.</i> <i>• Where possible Prospecting will occur during government school holidays.</i> 	<i>Medium negative significance</i>
<i>Should locals not be employed for Prospecting this could result in friction with locals and protest action at the site.</i>	<i>This probable negative impact may occur to a local extent, with a medium intensity over a short term. The significance of this impact will thus be of low significance.</i>	<i>Local residents from Kuruman and surrounding areas as well as the neighbouring residents must be given first priority when employing Prospecting workers.</i>	<i>Low negative significance</i>
<i>Operational Phase</i>			
<i>Potential Biophysical Impacts</i>			

Impact	Significance rating of Impacts	Proposed mitigation	Significance rating of Impacts after mitigation
<p><i>Loss of fauna</i> <i>An operational commercial development on the site will result in habitat loss for seasonal faunal species that may utilize the site.</i></p>	<p><i>This definite negative impact will occur to a local extent, with a medium intensity over a long term. The significance of this impact will thus be of medium negative significance.</i></p>	<p><i>If any faunal species of concern are observed on site, the ECO must be contacted immediately and she/he must inform DEDET.</i></p>	<p><i>Low negative significance.</i></p>
<p><i>Potential surface water pollution</i> <i>Potential soil erosion could have cumulative effects like siltation of water bodies, which could severely damage aquatic ecosystems on the proposed study area. Water pollution could also occur in the form of hydrocarbons/chemicals contaminating the surrounding environment from operational activities and vehicles.</i></p>	<p><i>This highly probable negative impact may occur to a regional extent, with a medium intensity over a long term. The significance of this impact will thus be of high negative significance.</i></p>	<ul style="list-style-type: none"> <i>• Measures must be implemented to distribute storm water as evenly as possible to avoid point sources of erosion.</i> <i>• When hosing down concreted areas should use minimal water and allow sediments to settle in a confined area.</i> <i>• All spillages must be rectified as soon as possible after occurrence. This is necessary to prevent the spillage from spreading and to mitigate the impact of the spillage on the environment.</i> <i>• Inspect storage containers and transport vehicles regularly for leaks.</i> <i>• In accordance with the requirements of the Water Act, surface and ground water should not be polluted (i.e. by</i> 	<p><i>Low negative significance.</i></p>

		oil, cleaning materials, herbicides, ash, etc.) under any circumstances.	
--	--	--	--

Impact	Significance rating of Impacts	Proposed mitigation	Significance rating of Impacts after mitigation
<i>Potential soil pollution Seepage of hydrocarbons and chemicals used during operational activities could lead to potential soil pollution.</i>	<i>This probable negative impact may occur to a site extent, with a low intensity over a medium term. The significance of this impact will thus be of medium negative significance.</i>	<ul style="list-style-type: none"> • <i>When hosing down concreted areas should use minimal water and allow sediments to settle in a confined area.</i> • <i>All spillages must be rectified as soon as possible after occurrence. This is necessary to prevent the spillage from spreading and to mitigate the impact of the spillage on the environment.</i> • <i>Inspect storage containers and transport vehicles regularly for leaks.</i> • <i>In accordance with the requirements of the Water Act, surface and ground water should not be polluted (i.e. by oil, cleaning materials, herbicides, ash, etc.) under any circumstances.</i> 	<i>Low negative significance</i>
<i>Solid waste/littering Littering and incorrect disposal of waste could result in water and soil pollution and could</i>	<i>This probable negative impact may occur to a local extent, with a low intensity over a short term. The</i>	<ul style="list-style-type: none"> • <i>Each store will have dedicated bins for domestic waste, paper waste, plastic waste and glass waste</i> • <i>Refuse must be collected on a daily basis and put into designated waste skips.</i> • <i>Waste skips must be collected on a weekly basis and the contents disposed</i> 	<i>Low negative significance.</i>

<i>potentially impact on habitats of a number of faunal and floral species, and water sources.</i>	<i>significance of this impact will thus be of low negative significance.</i>	<i>at a licensed landfill site.</i> <ul style="list-style-type: none"> <i>• The paper waste, plastic waste and glass waste must be recycled, along with the oil from the restaurants.</i> <i>• The light fittings must be installed by a service provider which will ensure that redundant light bulbs are disposed as per legislative requirements.</i> <i>• Workers must be trained and warned against littering</i> 	
--	---	---	--

<i>Impact</i>	<i>Significance rating of Impacts</i>	<i>Proposed mitigation</i>	<i>Significance rating of Impacts after mitigation</i>
<i>Fire Risk Potential uncontrolled fires pose a risk to the biodiversity on site in the form of habitat destruction especially in winter when the vegetation is dry.</i>	<i>This improbable negative impact may occur to a local extent, with a low intensity over a short term. The significance of this impact will thus be of low negative significance.</i>	<ul style="list-style-type: none"> <i>• Hold fire prevention talks and reminders regularly with the staff on fire prevention.</i> <i>• Ensure adequate firefighting equipment on site and in all major working areas and train workers on how to use it.</i> <i>• Ensure that all workers on site know the proper procedure in case of a fire incident on site.</i> <i>• Smoking must not be permitted in those areas considered a fire hazard. Smoking should only be allowed in designated areas.</i> <i>• “No-smoke” signs must be placed at areas with high fire risk.</i> 	<i>Low negative significance.</i>
<i>Air pollution Vehicle emissions</i>	<i>This probable negative</i>	<i>• Investigate filter systems for restaurant fires.</i>	<i>Low negative significance.</i>

<i>and restaurants will contribute to air pollution.</i>	<i>impact may occur to a local extent, with a low intensity over a long term. The significance of this impact will thus be of medium negative significance.</i>	<i>• Implement reasonable measures to minimize potential air pollution.</i>	
--	---	---	--

<i>Impact</i>	<i>Significance rating of Impacts</i>	<i>Proposed mitigation</i>	<i>Significance rating of Impacts after mitigation</i>
<i>Ambient noise Vehicles and an operational commercial development will result in increased ambient noise levels on site, which is likely to have an impact on surrounding properties.</i>	<i>This definite negative impact may occur to a local extent, with a medium intensity over a long term. The significance of this impact will thus be of medium negative significance.</i>	<ul style="list-style-type: none"> <i>• Deliveries should be done off peak hours, not after 19h00 or before 07h00 in the mornings.</i> <i>• Walls and trees that can absorb noise should be constructed and planted at the boundaries of the Prospecting, or between the Prospecting and its closest neighbour.</i> <i>• Air conditioning and other house-keeping facilities should not be constructed in close proximity to the hostel or any other residence.</i> 	<i>Medium negative significance.</i>
<i>Light pollution Lighting on site during night times will most likely have a negative impact on surrounding properties.</i>	<i>This definite negative impact may occur to a local extent, with a medium intensity over a long term. The significance of this impact will thus be of</i>	<ul style="list-style-type: none"> <i>• Properly install lighting in a downward angle in order to prevent light pollution to surrounding properties</i> <i>• Keep lighting during night-times to a bare minimum.</i> <i>• Investigate most effective lighting colours to minimise impact on night sky.</i> 	<i>Low negative significance</i>

	<i>medium negative significance.</i>		
<i>Potential Socio Economic Impacts</i>			

<i>Impact</i>	<i>Significance rating of Impacts</i>	<i>Proposed mitigation</i>	<i>Significance rating of Impacts after mitigation</i>
<i>Crime</i> <i>A busy Prospecting with people coming and going provides an opportunity for criminals to operate without being noticed.</i>	<i>This definite negative impact may occur to a local extent, with a medium intensity over a long term. The significance of this impact will thus be of medium negative significance.</i>	<ul style="list-style-type: none"> • <i>The proponent and community leaders should devise a safety plan for Prospecting and operation in conjunction with the police.</i> • <i>There should be visible security on site, especially when the workers are not there.</i> • <i>Work should not be done before 07h00 in the morning or after 19h00 at night if at all possible.</i> • <i>Workers should not be allowed to stay overnight on the site.</i> • <i>Members of the community and a representative of the Prospecting could be involved via a community police forum.</i> • <i>Security for the operational phase of the development should be similar to that of other developments of this nature.</i> 	<i>Low negative significance.</i>

4.2.1 List of actions, activities, or processes that have sufficiently significant impacts to require mitigation.

Refer to table (item 3.2) above with summary of all significant impacts.

4.2.2 Concomitant list of appropriate technical or management options

(Chosen to modify, remedy, control or stop any action, activity, or process which will cause significant impacts on the environment, socio-economic conditions and historical and cultural aspects as identified. Attach detail of each technical or management option as appendices)

Refer to table (item 3.2) above with summary of all management control measure to remedy, control significant impacts.

4.2.3 Review the significance of the identified impacts

(After bringing the proposed mitigation measures into consideration).

Impact	Significance rating of Impacts	Significance rating of Impacts after mitigation
Prospecting Phase		
<i>Potential Biophysical Impacts</i>		
<i>Loss of flora</i>	<i>High negative significance.</i>	<i>Medium negative significance.</i>
<i>Potential surface water pollution</i>	<i>High negative significance.</i>	<i>Medium negative significance.</i>
<i>Loss of fauna fauna.</i>	<i>High negative significance.</i>	<i>High negative significance.</i>
<i>Potential Socio Economic Impacts</i>		
<i>Storm Water Management</i>	<i>High and fatal flow negative significance.</i>	<i>High negative significance.</i>
Operational Phase		
<i>Potential Biophysical Impacts</i>		
<i>Potential surface water pollution</i>	<i>High negative significance.</i>	<i>Low negative significance.</i>
<i>Potential Socio Economic Impacts</i>		

Impact	Significance rating of Impacts	Significance rating of Impacts after mitigation
<i>Sense of place</i>	<i>High negative significance.</i>	<i>High negative significance.</i>
<i>Storm Water Management</i>	<i>High and fatal flow negative significance.</i>	<i>High negative significance.</i>
<i>Creation of sustainable employment</i>	High positive significance	<i>High negative significance.</i>
<i>Economic opportunities.</i>	High positive significance	<i>High negative significance.</i>
<i>Social infrastructure.</i>	High positive significance	<i>High negative significance.</i>

5 REGULATION 52 (2) (d): Financial provision

5.1 Plans for quantum calculation purposes.

(Show the location and aerial extent of the aforesaid main mining actions, activities, or processes, for each of the construction operational and closure phases of the operation).

Refer to below cost estimate table – Financial Provision

5.2 Alignment of rehabilitation with the closure objectives

(Describe and ensure that the rehabilitation plan is compatible with the closure objectives determined in accordance with the baseline study as prescribed).

Refer to below cost estimate table – Financial Provision

5.3 Quantum calculations.

(Provide a calculation of the quantum of the financial provision required to manage and rehabilitate the environment, in accordance with the guideline prescribed in terms of regulation 54 (1) in respect of each of the phases referred to).

Refer to below cost estimate table – Financial Provision

<i>Cost Estimate for the Financial Provision for Land Rehabilitation as required in terms of Regulation 52 (2) d</i>				
Activity	Unit	Quantity	Rate (R)	Cost (R)
Workforce				
<i>10x Labourers</i>	<i>p/h</i>	<i>15</i>	<i>10</i>	<i>1500.00</i>
<i>1x Supervisor</i>	<i>p/h</i>	<i>24</i>	<i>22</i>	<i>528.00</i>
Disturbed site/ associated structures				
<i>Backfilling</i>	<i>No</i>	<i>2</i>	<i>540</i>	<i>1300.00</i>

<i>Sump refilled and compacted</i>	<i>m3</i>	<i>18</i>	<i>40.1</i>	<i>721.80</i>
<i>Site levelling</i>	<i>m2</i>	<i>700</i>	<i>2.00</i>	<i>1400.00</i>
<i>Revegetation</i>	<i>m2</i>	<i>700</i>	<i>5.8</i>	<i>4060.00</i>
<i>Remediation of contaminated soil</i>	<i>m2</i>	<i>14</i>	<i>200.00</i>	<i>3000.00</i>
Camp site				
<i>Breakdown of structures</i>	<i>m2</i>	<i>1</i>	<i>300.00</i>	<i>300.00</i>
<i>Ripping of compacted surfaces</i>		<i>1000</i>	<i>2.90</i>	<i>2900.00</i>
<i>Revegetation</i>	<i>m2</i>	<i>700</i>	<i>2.00</i>	<i>1400.00</i>
Access Roads				
<i>Ripping of compacted surfaces</i>	<i>m2</i>	<i>1500</i>	<i>2.50</i>	<i>2250</i>
<i>Revegetation</i>	<i>m2</i>	<i>800</i>	<i>1.00</i>	<i>800.00</i>
Waste Management				
<i>Collection & disposal</i>	<i>m3</i>	<i>3.5(2)</i>	<i>400.00</i>	<i>2800.00</i>
<i>Transport per load</i>	<i>km</i>	<i>60(2)</i>	<i>12.90</i>	<i>1548.00</i>
Monitoring				
<i>Maintenance (weeding, watering, fertilisation, etc.)</i>	<i>days</i>	<i>4</i>	<i>250.00</i>	<i>1000.00</i>
<i>Follow up monitoring</i>	<i>days</i>	<i>2</i>	<i>280.00</i>	<i>560.00</i>
Fertilisers & seeds	<i>12 kg</i>	<i>10</i>	<i>280.00</i>	<i>2800.00</i>

Project Management (Travelling, equipment costs, etc.)			2680.02	2680.02
Total				30,000.00

5.4 Undertaking to provide financial provision

(Indicate that the required amount will be provided should the right be granted).

R30,000.00

The above indicated financial provision will be provided for by the project proponent using one of the recommended methods.

6 REGULATION 52 (2) (e): Planned monitoring and performance assessment of the environmental management plan.

The EMP will be enforced throughout the prospecting phase as well as during the rehabilitation phase to ensure that all environmental impacts are minimised.

6.1 List of identified impacts requiring monitoring programmes.

Dust, noise, waste, water and biodiversity.

6.2 Functional requirements for monitoring programmes.

The appointed environmental consultant or Environmental Control Officer will provide the overall independent function pertaining to compliance enforcement. The applicant will also have environmental representative who will be in charge of ensuring daily compliance and execution of daily operation requirements.

6.3 Roles and responsibilities for the execution of monitoring programmes.

To ensure that all the conditions of the EMP are adhered to at all the times. Each and every workforce/ personnel will be trained on environmental management and they will sign acknowledgement form.

The oversight responsibility will be vested with the site manager to ensure compliance by the entire workforce.

6.4 Committed time frames for monitoring and reporting.

Monthly environmental reporting will be undertaken to relevant authorities. Daily monitoring will be undertaken using specified pro-forma checklist.

7 REGULATION 52 (2) (f): Closure and environmental objectives.

7.1 Rehabilitation plan

(Show the areas and aerial extent of the main prospecting activities, including the anticipated prospected area at the time of closure) at the time of closure).

Refer to the Locality Map included in this EMP, attached as Appendix A for the location of the planned prospecting sites. This relevant area for this application is indicated in Red.

In order to obtain a self-sustainable and stable post-closure rehabilitated environment, the following will be done where natural veld has been disturbed during the prospecting process:

The clearing of soil surface areas would be restricted to what is really necessary of the construction of infrastructure. During rehabilitation of these sites, or where vegetation is lacking or compacted, the areas would be ripped or ploughed and levelled in order to re-establish a growth medium and if necessary appropriately fertilised to ensure the re-growth of vegetation and the soil ameliorated based on a fertilizer recommendation (soil sample analysed).

Rehabilitation of access roads (if road is not required by surface owner)

- Whenever a prospecting right is suspended, cancelled or abandoned or if it lapses and the holder does not wish to renew the permit or right, any access roads or portions thereof, constructed by the holder and which will no longer be required by the landowner/tenant, shall be removed and/or rehabilitated to the satisfaction of the Regional Manager.
- Any gate or fence erected by the holder which is not required by the landowner/tenant, shall be removed and the situation restored to the pre-prospecting situation.
- Roads shall be ripped or ploughed, and if necessary, appropriately fertilised (based on a soil analysis) to ensure the re-growth of vegetation. Imported road construction materials which may hamper re-growth of vegetation must be removed and disposed of in an approved manner prior to rehabilitation.

- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the prospecting operation, be corrected and the area be seeded with a seed mix to the Regional Manager's specification.

Rehabilitation of the borehole sites

On completion of operations, all buildings, structures or objects on the camp/office site shall be dealt with in accordance with section 44 of the MPRDA, which states:

- (1) *When a prospecting right, mining right, retention permit or mining permit lapses, is cancelled or is abandoned or when any prospecting or mining operation comes and end, the holder of any such right of permit may not demolish or remove any building, structure, object –*
 - (A & B) *which may not be demolished in terms of any other law; Which has been identified in writing by the Minister for purposes of this section; or*
 - (C) *Which is to be retained in terms of an agreement between the holder and the owner or occupier of the land, which agreement has been approved by the Minister in writing.*
- (2) *The provision of subsection (1) does not apply to bona fide mining equipment which may be removed.*

After all the foreign matter has been removed from the prospecting sites, disturbances shall be backfilled with subsoil, compacted and levelled with previously stored topsoil. No foreign matter such as cement or other rubble shall be introduced into such backfilling.

On completion of prospecting operations, the above areas shall be cleared of any contaminated soil. The surface shall then be ripped or plough to a depth of at least 300mm and the topsoil previously stored adjacent the site, shall be spread evenly to its original depth over the whole area. The area shall then be fertilised if necessary. The site shall be seeded with a vegetation seed mix supplied in the EMP adapted to reflect the local indigenous flora. The seed mixture takes into account the availability of seed, different soil situations and the prevailing climatic condition of the area. The following mixture will be applicable to the prospecting site: *Cenchrusciliaris*; *Cynodondactylon*; *Digitariaeriantha*; *Heteropogoncontortus*; *Panicum maximum*

Rehabilitation of the new topographical landscape will be in such a way that it would blend in with the surrounding landscape and allow normal (controlled) surface drainage to continue.

Water control systems must be implemented to prevent erosion.

Visual impact would be addressed by means of:

- Re-vegetation (grasses);
- Removal of any building, scrap, domestic waste, etc. that would otherwise contribute to a negative visual impact.

Fertilising of Areas to be rehabilitated

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arise from the prospecting operation be corrected and the area be seeded with a seed mix to his specification.

7.2 Closure objectives and their extent of alignment to the pre-mining environment.

The applicant will ensure that all disturbed areas are returned to a normal state, which approximates the state which it was before disruption. Rehabilitation for the purposes of these guidelines is aimed at post-reinstatement re-vegetation of a disturbed area.

7.3 Confirmation of consultation

(Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties).

The landowner and representative from the community will inspect the land prior to any excavation, drilling or prospecting and the plans of making sure that the land is rehabilitated will be communicated and agreed.

8 REGULATION 52 (2) (g): Record of the public participation and the results thereof.

8.1 Identification of interested and affected parties.

(Provide the information referred to in the guideline) **see attached**

Letters and notifications sent out to land owners to their postal addresses.

8.2 The details of the engagement process.

Notification letters were sent out, direct consultation with landowners was also conducted.

8.3 The manner in which the issues raised were addressed.

Notification letters, questionnaires and BID documents were provided to the community to their postal addresses.

8.4 List of which parties identified in 7.1 above that were in fact consulted, and which were not consulted.

See attached supporting documents.

7.4.1 List of views raised by consulted parties regarding the existing cultural, socio-economic or biophysical environment.

See attached.

7.4.2 List of views raised by consulted parties on how their existing cultural, socio-economic or biophysical environment potentially will be impacted on by the proposed prospecting or mining operation.

7.4.3 Other concerns raised by the aforesaid parties.

No concerns raised but the community requested time to seat down with the community and discuss the final comment.

7.4.4 Confirmation that minutes and records of the consultations are appended.

Refer to attached.

7.4.5 Information regarding objections received.

No objection with regard to the development has been received.

7.5 The manner in which the issues raised were addressed.

Not applicable.

9 SECTION 39 (3) (c) of the Act: Environmental awareness plan.

9.1 Employee communication process

(Describe how the applicant intends to inform his or her employees of any environmental risk which may result from their work).

The EMP will be communicated to all the work force through induction and other training means to ensure its effective implementation.

9.2 Description of solutions to risks

(Describe the manner in which the risk must be dealt with in order to avoid pollution or degradation of the environment) t.

The identified environmental risks will be handled in accordance with the proposed mitigation control measures as contained in the EMP.

9.3 Environmental awareness training.

(Describe the general environmental awareness training and training on dealing with emergency situations and remediation measures for such emergencies).

The EMP provided a satisfactory plan pertaining to environmental awareness training for the work force during Prospecting. The applicant's awareness plan is aimed at promoting general environmental awareness amongst all employees, inform employees of environmental policies and procedures, provide training on implementation of environmental management actions training to ensure protection of the environment. The training programme will include the appointment of qualified environmental practitioner, identification of environmental risks associated with each job, preparation of environmental emergency procedures & code of practice, induction of workforce and conducting audits on their knowledge of environmental risks and emergencies. The provided environmental awareness plan complies with the requirements of section 39(3) (c).

10 SECTION 39 (4) (a) (iii) of the Act: Capacity to rehabilitate and manage negative impacts on the environment.

10.1 The annual amount required to manage and rehabilitate the environment.

R28 185.04

10.2 Confirmation that the stated amount correctly reflected in the Prospecting Work Programme as required.

Refer to attached cost estimates for rehabilitation.

R28 185.04

11 REGULATION 52 (2) (h): Undertaking to execute the environmental management plan.

H.UNDERTAKING

I **Mguzalala Walter Mongwe** the undersigned and duly authorized thereto by **XAKWA COAL (Pty) Ltd**, the Company/Close Corporation/Municipality (Delete that which is not applicable) have studied and understand the contents of this document in its entirety and hereby duly undertake to adhere to the conditions as set out there in including the amendment(s) agreed to by the Regional Manager in Section G and approved on

Signed at PRETORIA this 1ST June day 2014



Director

Signature of applicant

Designation

Agency declaration: This document was completed

By Mguzalala Walter Mongwe on behalf

Of XAKWA COAL (Pty) Ltd

J.APPROVAL

Approved in terms of section 93(4) of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002)

Signed atthisday
of.....200.....

REGIONAL MANAGER:

.....

REGION:

Herewith I, the person whose name and identity number is stated below, confirm that I am the person authorised to act as representative of the applicant in terms of the resolution submitted with the application, and confirm that the above report comprises EIA and EMP compiled in accordance with the guideline on the Departments official website and the directive in terms of sections 29 and 39 (5) in that regard, and the applicant undertakes to execute the Environmental management plan as proposed.

Full Names and Surname	Mguzalala Walter Mongwe
Identity Number	7002285720081

-END-