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DRAFT

BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT FOR THE PROPOSED MINING PERMIT ON THE FARM ROODEPOORT 40 IS PORTION OF PORTION 15 IN WITBANK WITHIN THE EMALAHLENI LOCAL MUNICIPALITY IN MPUMALANGA PROVINCE.

PREPARED BY: MUKHADAKHOMU ENVIRONMENTAL SERVICES

APPLICANT: TUNNEL VISION RESOURCES (PTY) LTD

SAMRAD FILE REFERENCE NUMBER: MP 30/5/1/3/2/12423MP

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Client:	Tunnel Vision Resources(Pty)Ltd.
Report Title:	BASIC ASSESSMENT REPORT AND ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT FOR THE PROPOSED MINING PERMIT ON THE FARM ROODEPOORT 40 IS PORTION OF PORTION 15 IN WITBANK WITHIN THE EMALAHLENI LOCAL MUNICIPALITY IN MPUMALANGA PROVINCE.
Date issued:	
PreparedBy:	Sedzani Mulaudzi

mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

BASIC ASSESSMENT REPORT
And
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATIONS IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

NAME OF APPLICANT : **TUNNEL VISION RESOURCES (PTY)LTD**
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FILE REFERENCE NUMBER SAMRAD : **MP 30/5/1/3/2/12423MP**

1. IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002 as amended), the Minister must grant a prospecting or mining right if among others the mining "will not result in unacceptable pollution, ecological degradation or damage to the environment".

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it cannot be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17 (1) (c) the competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

It is furthermore an instruction that the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

2. Objective of the basic assessment process

The objective of the basic assessment process is to, through a consultative process—

(a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;

(b) identify the alternatives considered, including the activity, location, and technology alternatives;

(c) describe the need and desirability of the proposed alternatives,

(d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage , and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on the these aspects to determine:

(i) the nature, significance, consequence, extent, duration, and probability of the impacts occurring to; and

(ii) the degree to which these impacts—

(aa) can be reversed;

(bb) may cause irreplaceable loss of resources; and

(cc) can be managed, avoided or mitigated;

(e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to—

(i) identify and motivate a preferred site, activity and technology alternative;

(ii) identify suitable measures to manage, avoid or mitigate identified impacts; and

(iii) identify residual risks that need to be managed and monitored.

PART A
SCOPE OF ASSSSMENT AND BASIC ASSESSMENT REPORT

3. Contact Person and correspondence address
   a) Details of

   i) Details of the EAP

Name of The Practitioner:	Sedzani Mulaudzi
Organisation	Mukhadakhomu Environmental Services(Pty) Ltd
Address	99 Bushypark,Mashamba,Makhado,Limpopo,0942
Telephone:	076 560 8193
E mail:	sedzani@mukhadakhomu.com

ii) **Expertise of the EAP.**
(1) **The qualifications of the EAP**
(with evidence).

Bachelor of Science in Environmental and Resource Studies

(2) **Summary of the EAP's past experience**.
(In carrying out the Environmental Impact Assessment Procedure)

Ms. Sedzani Mulaudzi is a member of IAIAsa. with 8 years' working experience in environmental management and the consulting industry and managing various account clients, she understands the South African Regulatory System, and can advise client with due diligence on their environmental regulatory requirements and offer a solution driven service to their project life cycle . She is equipped with exceptional project management and coordination skills, which especially enhances the service she offers clients within the environmental permitting system.

Her key focus is environmental management and compliance with extensive experience in the mining industry. Project Management and Coordination of projects form a critical component of her duties, which include project planning, initiation of projects, client, authority and stakeholder consultation and timeframe management.

Her interest lies in a client advisory capacity, being involved during pre-project development and assist the client in adding value to develop the project in an environmental sustainable manner, considering client costs and liabilities, as well as considering the implication of environmental authorisation conditions and requirements on project deliverables. Her involvement in projects has spanned over the project life cycle from Prospecting Right applications, Mining Permit, Mining Right applications, Basic Assessment reporting ,Environmental Management Plans, Scoping Reports, Environmental Impact Assessment reports and Authorisations.

a) Location of the overall Activity.

Name:	ROODEPOORT 40 IS PORTION OF PORTION 15
Application area (Ha)	5 ha
Magisterial district:	Emalahleni Municipality
Distance and direction from nearest town	Approximately 23 kilometres south east of Ogies
21 digit Surveyor General Code for each farm portion	T0IS00000000004000015

b) Locality map

(Show nearest town, scale not smaller than 1:250000).

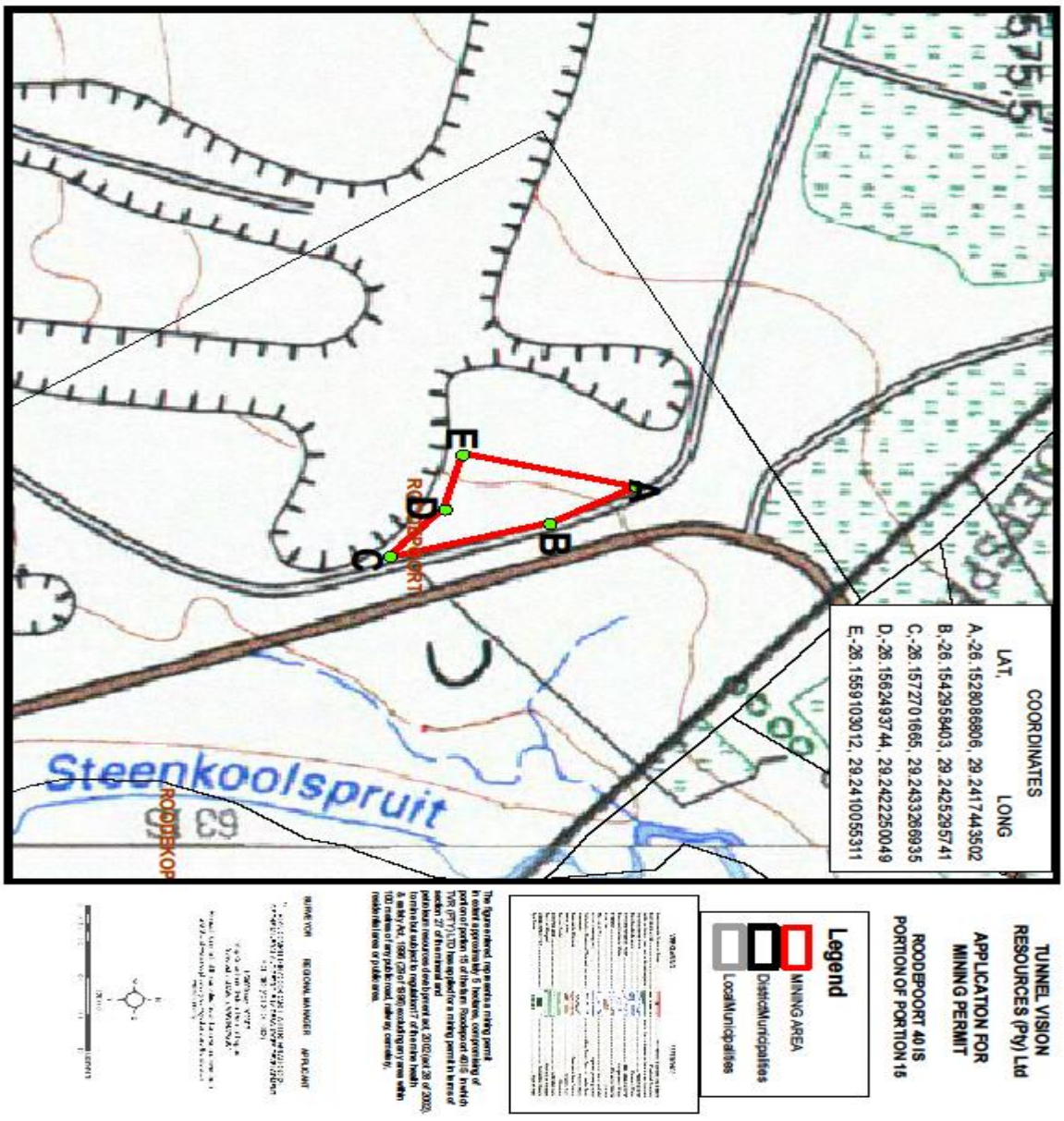


Figure 1: Locality map

b) Description of the scope of the proposed overall activity.

Provide a plan drawn to a scale acceptable to the competent authority but not less than 1: 10 000 that shows the location, and area (hectares) of all the aforesaid main and listed activities, and infrastructure to be placed on site

(i) Listed and specified activities

Table 1: Listed and specified activities

NAME OF ACTIVITY **(E.g. For prospecting -** drill site, site camp, ablution facility, accommodation, equipment storage, sample storage, site office, access route **etc…etc…etc** **E.g. for mining**,- excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	**Aerial extent of the Activity Ha or m²**	**LISTED ACTIVITY Mark with an X where applicable or affected.**	**APPLICABLE LISTING NOTICE (*GNR 544, GNR 545 or GNR 546)***
Mining Permit application	5 ha	X	GNR. 327: Activity 21 as amended
Excavation/boxcut area	2.06 ha		GNR. 327: Activity 27 as amended
Access road	700m^2		GNR. 327: Activity 56(ii) as amended
Topsoil stockpile	0.9ha		
Overburden stockpile	0.08ha		
Dirty water trench	0.015ha		
Clean water trench	0.015ha		
Pollution control dam	0.3ha		
Mobile office	0.11ha		
Mobile toilets	0.02ha		
Fuel storage	0.002ha		
Workshop	0.005ha		
ROM	0.28ha		

(ii) Description of the activities to be undertaken

(Describe Methodology or technology to be employed, including the type of commodity to be prospected/mined and for a linear activity, a description of the route of the activity)

The activity to be undertaken by Tunnel Vision Resources(Pty)Ltd on the study area is a mining permit project on farm Roodepoort 40 IS portion of portion 15 situated in Witbank within Emalahleni Local Municipality in Mpumalanga Province in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) triggering some of the listed activities of Environmental Impact Assessment 2014 Regulations.

Coal reserve will be mined by means opencast mining methods. The mining operations will be done by the Truck and Shovel (T&S) method.

The coal seams are believed to have ore which is of high grade export grade, as well as a high grade Eskom product at an overall yield of 67%. The geology and coal quality is well understood and with additional washability information that will be obtained from further investigations, blending of the product range can be optimized.

Mining Methods

Due to the depth of the coal reserve, which lies at a depth of approximately 15 – 25m, opencast mining is the preferred mining method that has been considered and will take place in boxcut strip. The method will involves the removal of the non-coal material, usually termed "overburden", which will be temporarily stored within the site boundary, to get access to the coal layers.

This method of opencast mining will involves pre-stripping topsoil followed by blasting and excavation of the overburden to expose the coal. Topsoil will be stockpiled separately to prevent mixing of the soil layers. Subsoil would comprise C horizon material and soft weathered overburden. Typically, the subsoil and the overburden will be excavated together and disposed into the pit as returned spoils. The coal will be removed, the overburden will be re-turned to the pit and the topsoil replaced. This is also known as the roll-over mining method and ensures minimum void space and exposure.

The return of the overburden material and topsoil will be a continuous rehabilitation process with a sequence of replacing overburden material, then subsoil. Once levelled, it will be topped with a layer of topsoil. The disturbed areas will be re-seeded for vegetation establishment.

Surface infrastructure
All surface infrastructure is indicated on the surface layout plan.

- Roads
    - Roads: Existing gravel haul roads will be extended.

- Solid waste management facilities

    Industrial & Domestic waste.

    Industrial waste:

    - Scrap iron will be gathered and sold to scrap iron merchants on a regular basis.
    - Oils and grease will be captured in 210 litre drums and returned to the supplier for recycling.
    - Oil and grease rags will be stored in metal containers and will be collected to a licensed facility for recycling or treatment and disposal.

    Mine residue disposal site.

    - No discarded material will be produced based on the proposed markets.
    - And because the coal will be hauled straight to the markets and no processing will be done on site.

- Water pollution management facilities

    Pollution control dam

    - The PCD will have a total measurement of 0.3 hectares
    - Dirty water trench that leads to the PCD will be constructed
    - A clean water trench will be constructed.

- Buildings
  - No concrete buildings will be constructed for site office only mobile structures will be used.
  - Bunding / concrete flooring and oil traps will be constructed in areas of hydrocarbon storage.

- Transport
  - Transportation will be on existing gravel haul roads.
  - Coal will be transported by 25 ton articulated trucks to the points of sale.

- Storm Water
  - Storm water falling directly into the mining pit will be captured in a pollution control dam. This water will be utilized for dust suppression.

  - Dirty water trenches will be designed to cater for the runoff from a 1:50 year 24 hour storm event with a 0,8 meter freeboard. These trenches will capture the runoff water from stockpiling areas to the PCD.

  - A 1,0 meter high soil berm will be constructed on the up-slope side of the dirty water trench to divert clean water away from the dirty area.

Construction Phase

Construction of Access and Haul Roads

Tunnel Vision Resources(Pty)Ltd will use an existing access road for accessing the mining area. Several haul roads will be constructed within the opencast mining areas, which will be used for haulage of material from the mining areas to the stockpile stockpiling areas. The mine will construct main and minor haul roads. The main haul roads will be used to access the opencast mining areas and the minor roads will be used within the opencast mining areas. Since the minor haul roads will be used to access active opencast pits, these haul roads will migrate with the progression of the opencast workings. Except for the haulage of material, these roads will also be used by mine personnel to access the mining areas for their day-to-day duties. All topsoil on the roads will be stripped and stockpiled before the construction of the roads. A method statement will be prepared by a civil engineer appointed to design all water management structures at the mine.

Excavation of initial box cuts

An initial box cut will be constructed as depicted in the surface layout plan. Access pit ramps will be constructed within the initial box cut for access to the mining pits. The access ramps will be constructed to have a maximum slope of 12°. Topsoil from the initial box cuts will be stripped and will be removed to the relevant topsoil stockpile. Subsoil from the box cuts will be stripped and stockpiled separately at the subsoil stockpile. Hard overburden material from the initial box cuts will be drilled, blasted and removed to the overburden stockpile. Finally all coal material will be drilled, blasted, removed to the coal stockpile for crushing and screening before being sold to the destined clients.

Construction of the run of mine coal stockpiling area

Stockpile areas will be constructed. The stockpiling area will be used for the stockpiling of coal generated from the opencast mining areas and product coal produced from the mobile crushing and screening plant. The coal stockpile will be operated not to exceed an average height of 5 meters. Besides the use for loading coal from the mining area, the other reason for the coal stockpile area will be to cater for coal if any breakdowns or work stoppages within the workings occur, resulting in a cease in production (financial implications).As with all other construction sites, topsoil from the coal stockpiling area will be stripped and stockpiled.

Construction of office/workshop complexes

The mine will have an office and workshop complex. This complex will be equipped with all necessary infrastructures such as stores, offices, workshops, wash/change rooms, ablution facilities, etc. As much as possible all infrastructures on the mine will be semi-permanent and will be moveable where necessary.

Waste generate from the use of the complex will be collected and disposed of by a contractor to relevant permitted disposal sites. All necessary arrangements will be made with the relevant Local Municipality and disposal sites for the disposal of the generated waste.
The mine will also have store areas that will be located within the confines of the mining office/workshop complex. There will also be diesel and oil storage areas within the complex.

The main security offices will be located at the main entrance of the mine.

The office and workshop complex areas will be prepared before the construction of the structures. Preparation of the site will involve topsoil stripping and compaction of the ground for foundation construction.

An explosive magazine, which will be used for the storage of explosives used during blasting at the proposed mining area, will also be constructed. The construction of the explosive magazine will be undertaken to conform to the regulations stipulated under the Mine Health and Safety Act.

Construction of the Water Pollution Control Facilities

Pollution Control Dam

A pollution control dam will be required. The pollution control dam will be used for the storage of polluted water from the mining area. Polluted water generated from the mine will include runoff water from the dirty water areas of the mine and seepage water from the opencast mining area.

The pollution control dam will ideally be constructed to the down slope side of the dirty water areas. This will be conducted so that the water will be gravity fed to the dam. The pollution control dam will be designed by a civil engineer and the mine will ensure that the dam is constructed to the engineer's design specifications. These specifications will be designed to ensure that the dam have sufficient capacity to handle all dirty water emanating from the dirty water areas of the mining area i.e. seepage and storm water runoff from all the dirty water areas of the mine and including runoff water from a 1:50 24-hour storm event.
Topsoil from the dam area will be stripped and stockpiled as per recommendation. Any other usable material from the excavation area will be used for the construction of the dam walls, and if no suitable material is available, material will be imported elsewhere.

Construction of the Storm Water Diversion Trenches

Note that the positions of the facilities may change after the completion of the civil designs. All material excavated during the construction of the clean and dirty water trenches will be used to construct a 1,0m high berm on the down slope (clean water diversion trenches) and upslope sides (clean water diversion trenches) of the trenches. These will be used to divert clean water away from the mining area and dirty water from the mining area into the pollution control dam. Note that a civil
engineer will be appointed by the mine to ensure that design specifications compliant with the requirements of the Department of Water and Sanitation.

Operational Phase

The following activities will be undertaken during the operational phase of the proposed Opencast Mining Project:

Activities

Systematic Removal of economic coal found from the targeted Coal Seams by opencast mining

Mining Activity

Mining project will be undertaken by opencast mining methods.

The following will occur after the opening of the initial box-cut at the opencast mining area. The opencast pit will migrate forward as per the mining plan. Successive cuts will not exceed the width of 50m and length of 250m. Following removal of the extractable coal reserves, material from successive cuts will be used to backfill preceding cuts. Each cut will be systematically filled with overburden first, subsoil second and topsoil last viz. Overburden from cut 1 will be drilled, blasted and placed in the box-cut, subsoil from cut 2 will be used to cover the overburden placed in the box-cut, and topsoil from cut 3 will be placed over the subsoil in the box-cut area at a minimum thickness of 300 mm.
Only four successive cuts will thus be open at any time, and rehabilitation of the opencast pit will be ongoing during the operational phase.

Exploration for continuation of mining

As part of mining, it will be necessary that drilling be undertaken in order to confirm the coal reserve being mined prior to opening up a new cut. This will be required that drilling be undertaken on virgin ground ahead of mining. Note that this will form part of the mining process hence no prospecting right is applied for.

Transportation of R.O.M. coal

R.O.M. coal from the opencast mining area will be transported by dump trucks via haul roads from the to the coal stockpiling area. The crushing and screening of the coal will produce coal products in different sizes. The coal will be

transported by a front end loader to be stockpiled at the coal product side of coal stockpiling area. Sized coal product will then be loaded into trucks and transported via the existing roads to the destined clients.

Use of Mine Surface Infrastructure

The constructed mine surface infrastructure will include the following:

Use of Workshops and other Buildings

The opencast mining will have an administrative building. As much as possible the buildings will be semi-permanent ("Porta- Cabins"), and can be moved to a new location should they no longer be required. The workshops will be associated with the maintenance and repairs of opencast mining contractor machinery and vehicles.

The mine will also have store areas that will be located within the confines of the mine area. There will also be diesel and oil storage tanks within the workshop complex. These will be used for the refilling of mine vehicles.

Use of Roads, Railways, Power Lines and Water Pipelines

The roads will be used for the following:

- Transportation of excavated material (overburden and mined coal) from the active mine workings.
- Accessing the mining area and associated surface infrastructures.

Pipelines will be used for pumping clean water, dirty water and sewage waste to the office/workshop complexes and pollution control dam.
Electrical cables or power line will be used for the supply of electricity to the mining area's workshop/offices complexes and the pollution control dam.

Management of Industrial and Domestic Waste

A Contractor will be employed to transport domestic waste from mine area to the relevant Municipal dumping site for disposal. Prior to disposal by the contractor and should the volumes of waste warrants, the domestic waste will be sorted, and paper and cardboard are separated and send for re-cycling.

Industrial waste arising from the mine (classified as hazardous waste – old paint tins, degreaser containers, oily rags, etc.) will be collected in a different waste collection system and disposed of by a contractor in a registered hazardous waste site. Batteries, tyres, used oil drums and waste metal will also be collected at the mine and sorted. The waste will then sold to scrap and recycling companies.

Hazardous waste bins will be stored on concrete floors and under roof. No hazardous waste will be stored on site for a period longer than 90 days.

Operation of Water Management Facilities

Sewage treatment plants:

The mine will operate a sewage treatment system in the office/workshop complex. The system used will be a septic tank connected to a conservancy tank. A contractor will be employed to empty the tanks on regular basis. The removed sludge will be disposed of onto a registered municipal sewage treatment plant.

Pollution Control Dam:
The mine will have a pollution control dam on the mine property. The pollution control dam will be operated in accordance with the GN704 and will be operated to have a 0.8 meter free board. This will form a network of water containment structures.

Maintenance of constructed infrastructure

During the operational phase all constructed infrastructure will require maintenance, which may have detrimental impacts on the environment. The maintenance activities include the following:

- Cleaning and maintenance of the diversion drains and culverts at strategic points along the roads.
- Cutting and clearing of vegetation within the used mine servitudes. This will be particularly done in the winter season to prevent the occurrence of fire, which could destroy the infrastructure. The firebreaks shall also need to be maintained.
- Maintenance of gravel roads will be conducted by regular grading as well as watering to suppress dust.
- Fences will need regular inspection for damage and deterioration and repairs as required.
- Buried and surface pipelines will require periodic inspection of the fitted air valves, scour valves, isolation valves and non-return valves that are essential for the proper functioning of the systems.
- Regular cleaning of silt trap drying beds, oil traps and the dirty water dam.

Decommissioning / Closure Phase

Activities

Dismantling and demolition of Surface Infrastructure and buildings at the mine
All erected structures such as the mobile crushing and screening plant, workshop/office buildings or structures will be dismantled, demolished or removed (mobile). Waste rubble from the demolishing will be used as pit backfill material. Any industrial waste from the dismantling will be recycled (sold) or disposed of properly.

Filling of final voids

Backfilling and rehabilitation of the opencasts final voids will be undertaken during the decommissioning phase of the opencast mining areas. The hards, softs (subsoil) and topsoil material that was stockpiled during the construction phase will be used to backfill the final voids. Method of material placement will be placement of hards overburden fisrt, followed by subsoil material and finally layer of topsoil. The final void will be filled to surface and shaped to ensure that the area is free draining.

Rehabilitation Coal Stockpile

The coal stockpiling area will be graded to a depth of 100 mm to remove all carbonaceous material build-up. In addition to this, the base of the coal stockpile area will be removed and disposed of appropriately. Carbonaceous and non-hazardous material from the coal stockpile will be placed in the bottom of the pit prior to backfilling. All material used for the construction of the coal stockpile area foundation will be removed and used for backfilling the pit. The area will then be ripped to a depth of 150mm, covered with topsoil and seeded.

Rehabilitation of haul roads

All hardened areas, which include roads that will not be used after mining will be ripped, to a depth of 250mm to reduce compaction. The area will then be covered with a layer of topsoil before it will be seeded.

Maintenance and monitoring of rehabilitated and surrounding environments

All rehabilitated areas will be monitored for cracks, erosion and settlements. All cracks, erosion gullies and settlement depressions will be repaired.

e) Policy and Legislative Context

Table 2: Policy and Legislative context

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLIY WITH AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. In terms of the National Water Act a Water Use License has/ has not been applied for)
National Environmental Management Act, 1998 (Act No. 107 of 1998)	GNR 327 Listing Notices 1. Activates Number 21 is triggered	Submission of Basic Assessment Report and Environmental Management Programme Report to the Competent Authority as required by NEMA
National Heritage Resources Act,1999 (Act No. 107 of 1999)	An investigation of cultural heritage impact needs to be conducted in terms of section 24(1)(c) of NEMA	Heritage Impact Assessment should be conducted on identification of any heritage feature at any phase of the proposed mining activity
Constitution of the Republic of South Africa, 1996	During the Construction, Operational and	The Bill of Rights, in the Constitution of South Africa (No. 108 of 1996), states that everyone has a right to a

	were necessary Decommissioning phase of the proposed development	non-threatening environment and requires that reasonable measures are applied to protect the environment. This protection encompasses preventing pollution and promoting conservation and environmentally sustainable development. These principles are embraced in NEMA and given further expression.
Mineral and Petroleum Resources Development Act	The mining activities requires the permit from the DMR	A mining permit application has been lodged with the DMR
National Environmental Biodiversity Act The National Environmental Management Biodiversity Act (NEM:BA), 2004 (Act No.10 of 2004), provides for: (i) the management and conservation of South Africa`s biodiversity within the framework of the National Environmental Management Act, 1998; (ii) the protection of species and ecosystems that warrant national protection; (iii) the sustainable use of indigenous biological resources; (v) the establishment and functions of a South African National Biodiversity Institute;	Impact Assessment	Impacts on the biodiversity have been identified and mitigation has been provided.
National Water Act The NWA (Act No. 36 of 1998) objectively ensures that water or water resources are protected, used, developed, conserved, managed and controlled in a sustainable and equitable manner for the benefit of all people. Water use refers to all activities that have direct or indirect impact on the source, environment, quality, and quantity of water. Authorisation of water use for any designated activities above Schedule 1 of the NWA (Act No. 36 of 1998), is subjected Water Use Licence Application (WULA). The conditions of WULA are based in terms of Section 21 principles of the NWA (Act No. 36 of 1998:	Due to the nature of the proposed mining activities, Section 21 water uses will be triggered, therefore there is a requirement to apply for Water Use authorisation in terms of the NWA.	In terms of the National Water Act, Water Use License will be applied for.
Mine Health and Safety Act, 1996 (Act No. 29 of 1996);	Health and	Risk Impact Assessment will be

	Safety Policy	conducted
National Environmental Management: Waste Act, Act 59 of 2008 (NEMWA	Management measures. The waste licence is not required for the project because there will be no mine residue deposits that will occur on the property after closure.	All waste generated as a result of the mining permit activities will be disposed of appropriately. Proof of legal disposal will be maintained on site. In addition, the generation of potential waste will be minimised through ensuring employees are subjected to the appropriate environmental awareness campaign before commencement of mining permit activities.

- **Environmental Authorisation Process**

➢ **Mineral and Petroleum Development Act**

In terms of the Mineral and Petroleum Resources Development Act (Act 28 of 2002), a Mining Permit must be issued prior to the commencement of any mining activities. As per Section 79(4)(a) and (b) of the MPRDA, the Applicant is required to conduct an Basic Assessment and submit an EMPR for approval as well as to notify in writing and consult with Interested and Affected Parties (I&APs) within 90 days of acceptance of the application. The MPRDA also requires adherence with related legislation, chief amongst them is the National Environmental Management Act (Act 107 of 1998, NEMA) and the National Water Act (Act 36 of 1998, NWA).

Several amendments have been made to the MPRDA. These include, but are not limited to, the amendment of Section 102, concerning amendment of rights, permits, programmes and plans, to requiring the written permission of the Minister for any amendment or alteration; and the Section 5A(c) requirement that landowners or land occupiers receive twenty-one (21) days' written notice prior to any activities taking place on their properties.

One of the most recent amendments requires all mining related activities to follow the full NEMA process as per the 2014 EIA Regulations (as amended), which came into effect on 8th December 2014.
A Mining Permit is exclusive, transferable, and valid for two (2) years and may be renewed for three periods of which may not exceed one year.

➢ **National Environmental Management Act**

The main aim of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) is to provide for co-operative governance by establishing decision-making principles on matters affecting the environment. In terms of the NEMA Environmental Impact Assessment (EIA) regulations, the proponent is required to appoint an environmental assessment practitioner (EAP) to undertake the EIA 9 as well as the public participation process. In South Africa, EIA became a legal requirement in 1997 with the promulgation of regulations under the Environmental Conservation Act (ECA). Subsequently, NEMA was passed in 1998. Section 24(2) of NEMA empowers the Minister and any MEC, with the concurrence of the Minister, to identify activities which must be considered, investigated, assessed and reported

on to the competent authority responsible for granting the relevant environmental authorisation. On 21 April 2006 the Minister of Environmental Affairs and Tourism promulgated regulations in terms of Chapter 5 of the NEMA.

The objective of the Regulations is to establish the procedures that must be followed in the consideration, investigation, assessment and reporting of the activities that have been identified. The purpose of these procedures is to provide the competent authority with adequate information to make decisions which ensure that activities which may impact negatively on the environment to an unacceptable degree are not authorized, and that activities which are authorized are undertaken in such a manner that the environmental impacts are managed to acceptable levels.

The aim of the EIA process is to identify and assess the potential impacts associated with the proposed project and to develop measures through which potential negative biophysical and socio-economic impacts can be mitigated and positive benefits can be enhanced. The EIA will ensure that all issues are integrated into the lifecycle of the mining operation and its infrastructure. This will occur during the planning, construction, operation and decommissioning and site closure phases.

The Basic Assessment Report and the associated EMPR will indicate how the identified impacts will be avoided, mitigated and/or managed by setting environmental objectives and goals. The EMPR will further outline the implementation programme for the environmental objectives and goals. The EMPR is a legal requirement of the MPRDA and all mines, existing or new, are required to possess an approved EMPR prior to initiating any mining operations. The EMPR is legally binding and the proponent is required to meet the requirements specified in the document.

The written decision called an Environmental Authorisation, is a legal document setting out the conditions of the authorisation and the actions required to protect human health and the environment. Any affected party may appeal against the decision contained in an Environmental Authorisation. Appeals must be lodged with the Minister who considers appeals in terms of the relevant provisions of NEMA and the Environmental Regulations.

An important amendment to the NEMA (December 2014) Regulations is that the Department of Mineral Resources has been the responsible authority for approving and issuing of Environmental Authorisations under the NEMA for mining related activities. The Department of Environmental Affairs is the appeal authority for mining related Environmental Authorisations

- **National Environmental Management: Waste Amendment Act**

The Regulations pertaining to the NEMWA activities were published on 3rd July 2009 in Government Gazette 32368 under GN 718. These were amended in August 2013 in Government Notice Regulation 921. Regulations regarding the planning and management of residue stockpiles and residue deposits were published and commenced on 24 July 2015 in Government Notice Regulation 632 and the List of waste management activities that have or are likely to have a detrimental effect on the environment were amended on the same date by Government Notice Regulation 921. As per this list the following is of important to note:

- Category A: (15) The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining permit or mining permit, in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

- Category B: (11) The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

On the 2nd June 2014 the National Environmental Management: Waste Amendment Act came into force. Of importance for mining activities is that according to this amendment, waste resulting from exploration, mining, quarrying, and physical and chemical treatment of minerals is classified as Hazardous Waste. Waste is accordingly no longer governed by the MPRDA, but is subject to all the provisions of the National Environmental Management: Waste Act, 2008 (NEMWA). Section 16 of the NEMWA must also be considered which states as follows:

"A holder of waste must, within the holders power, take all reasonable measures to:

- Avoid the generation of waste and where such generation cannot be avoided, to minimise the toxicity and amounts of waste that are generated.
- Reduce, re-use, recycle and recover waste.
- Where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner.
- Manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odour, or visual impacts.
- Prevent any employee or any person under his or her supervision from contravening the Act.
- Prevent the waste from being used for unauthorised purposes.

These general principles of responsible waste management are incorporated into the requirements in the EMPR to be implemented for this project.

Schedule 3: Defined Wastes have been broken down into two categories: Category A being hazardous wastes and category B being general wastes. Under Category A (hazardous wastes) the act makes allowance for "wastes resulting from exploration, mining, quarrying, and physical and chemical treatment of minerals".

In order to attempt to understand the implications of this it is important to ensure that the definitions of all the relevant terminologies are defined:

- Hazardous waste: means "any waste that contains organic or inorganic elements or compounds that may, owning to the inherent physical, chemical or toxicological characteristic of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within business waste, residue deposits and residue stockpiles.
- Residue deposits: means "any residue stockpile remaining at the termination, cancellation or expiry of a prospecting right, mining right, mining permit, exploration right or production right.
- Residue stockpile: means "any debris, discard, tailings, slimes, screening, slurry, waste rock, foundry sand, mineral processing plant waste, ash or any other product derived from or incidental to a mining operation and which is stockpiled, stored or accumulated within the mining area for potential re-use, or which is disposed of, by the holder of a mining right, mining permit or, production right or an old order right, including historic mines and dumps created before the implementation of this Act.

Various regulations have been drafted in support of the NEMWA, as discussed below:

- Proposed Regulations regarding the planning and management of waste from a prospecting, mining, exploration or production operations (2014):
    - Chapter 2, Section 3 states the identification and assessment of any environmental impacts, including those on groundwater, arising from waste must be done as part of the Environmental Impact Assessment (EIA) conducted in terms of the National Environmental Management Act, 1998 (Act No.107 of 1998) (hereafter referred to as the NEMA). The pollution control barrier system shall be defined by the (a) Waste Classification and Management Regulations (2013); (b) National Norms and Standards for the Assessment of Wastes for Landfill Disposal (2013); and (c) National Norms and Standards for Disposal of Waste to Landfill (2013).
    - Waste Characterisation must be done in terms of physical and chemical composition as well as content. The classification must be done in terms of the health and safety classification and the environmental classification.

- Proposed Regulations to exclude a waste stream or a portion of a waste stream from the definition of a waste (2014):
    - This regulation will give the holder of the right the opportunity to exclude a waste stream, or a portion of a waste stream from the definition of a waste. Chapter 2, Section 4 of this Regulation, Sub-section (1) states that any portion of a waste generated from a source listed in Category A of Schedule 2 of the NEMWA, may be excluded from being defined as hazardous on demonstration that such portion of waste in non-hazardous in accordance with the Waste Management and Classification Regulations of 2013.
    - The application process will be in the form of a prescribed process and application must be made to the Minister.
    - This Regulation is however not yet in force.

- National Norms and Standards for the assessment of waste for landfill disposal (23 August 2013):
    - These norms and standards prescribe the requirements for the assessment of waste prior to disposal to landfill.
    - The aim of the waste classification tests is to characterise the material to be deposited or stored in terms of the above-mentioned waste classification guidelines set by the Department of Environmental Affairs (DEA).

- The outcomes of the tests provide the necessary information in terms of:
    - Identification of chemical substances present in the waste.
    - Determination of the total concentrations (TC) and leachable concentrations (LC) of the elements and chemical substances that have been identified in the waste and that are specified in Section 6 of the above-mentioned Regulations. The obtained TC and LC values of the waste material will be compared to the threshold limits for total concentrations (TCT limits) and leachable concentrations (LCT limits) specified in Section 6 of the above-mentioned Regulations. Based on the TC and LC values of the elements and chemical substances in the waste exceeding the corresponding TCT and LCT limits respectively, the specific type of waste for disposal to landfill will be determined in terms of Section 7 of the Regulations.

➢ **The National Environmental Management: Biodiversity Act**

The National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004, NEMBA), "provides for: the management and conservation of South Africa's biodiversity within the framework of the NEMA; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute (SANBI); and for matters conducted therewith".

- In terms of the Biodiversity Act, the applicant has a responsibility for: The conservation of endangered ecosystems and restriction of activities according to categorization of the area (not just by listed activity as specified in the EIA regulations):
    - Promote the application of appropriate environmental management tools in order to ensure integrated environmental management of activities thereby ensuring that all developments within the area are in line with ecological sustainable development and protection of biodiversity.
    - Limit further loss of biodiversity and conserve endangered ecosystems

Regulations published under the NEMBA also provide a list of protected species, according to the Act (GNR 151 dated 23 February 2007, as amended in GNR 1187 dated 14 December 2007). Section 57 of NEMBA identifies restricted activities involving threatened or protected species. Restricted activities include the gathering, collecting, cutting, uprooting, damaging or destroy a listed species.

- **The National Environmental Management: Protected Areas Act**

The National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003) (NEMPAA) serves to: "provide for the protection and conservation of ecologically viable areas representative of South Africa's biological biodiversity and its natural landscapes and seascape; for the establishment of a national register of all national, provincial and local protected areas; for the management of those areas in accordance with national norms and standards; for intergovernmental co-operation and public consultation in matters concerning protected areas; for the continued existence, governance and functions of South African National Parks; and for matters in connection therewith.

The objectives of this Act are –

- To provide, within the framework of the national legislation, including the National Environmental Management Act, for the declaration and management of protected areas.
- To provide for co-operation governance in the declaration and management of protected areas.
- To effect a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity.
- To provide for a diverse and representative network of protected areas on state land, private land, communal land and marine water.
- To promote sustainable utilisation of protected areas for the benefit of people, in a manner that would preserve the ecological character of such areas.
- To promote participation of local communities in the management of protected areas, when appropriate
- To provide for the continued existence of South African National Parks.

- **National Water Act**

The National Water Act, 1998 (Act 36 of 1998) (NWA) makes provision for two types of application for water use licences, namely individual applications and compulsory applications. The NWA also provides that the responsible authority may require an assessment by the Applicant of the likely effect of the proposed licence on the resource quality, and that such assessment be subject to the EIA regulations. A person may use water, if the use is-

- Permissible as a continuation of an existing lawful water use (ELWU).
- Permissible in terms of a general authorisation (GA).
- Permissible under Schedule 1.
- Authorised by a licence.

The NWA defines 11 water uses. A water use may only be undertaken if authorised. Water users are required to register certain water uses that actually took place on the date of registration, irrespective of whether the use was lawful or not.

Section 21 of the National Water Act 1998 lists the following 11 water uses which can only be legally undertaken through the water use authorisation issued by the Department of Water and Sanitation (DWS):

a) Taking water from a water resource.
b) Storing water.
c) Impeding or diverting the flow of water in a watercourse.
d) Engaging in a stream flow reduction activity contemplated in Section 36.
e) Engaging in a controlled activity identified as such in Section 37(1) or declared under Section 38(1).
f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduits.
g) Disposing of waste in a manner which may detrimentally impact on a water resource.
h) Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process.
i) Altering the bed, banks, course or characteristics of a watercourse.
j) Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people.
k) Using water for recreational purposes.

In terms of the National Water Act, Water Use Licence will be applied for this project.

- **National Heritage Resources Act**

The National Heritage Resources Act, 1999 (NHRA) stipulates that cultural heritage resources may not be disturbed without authorisation from the relevant heritage authority. Section 34(1) of the NHRA states that, “no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority…” The NHRA is utilised as the basis for the identification, evaluation and management of heritage resources and in the case of CRM those resources specifically impacted on by development as stipulated in Section 38 of NHRA, and those developments administered through NEMA, MPRDA and the DFA legislation. In the latter cases the feedback from the relevant heritage resources authority is required by the State and Provincial Departments managing these Acts before any authorisations are granted for development. The last few

years have seen a significant change towards the inclusion of heritage assessments as a major component of Environmental Impacts processes required by NEMA and MPRDA. This change requires us to evaluate the Section of these Acts relevant to heritage (Fourie, 2008b).

The NEMA 23(2)(b) states that an integrated environmental management plan should, "…identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage". A study of subsections (23)(2)(d), (29)(1)(d), (32)(2)(d) and (34)(b)and their requirements reveals the compulsory inclusion of the identification of cultural resources, the evaluation of the impacts of the proposed activity on these resources, the identification of alternatives and the management procedures for such cultural resources for each of the documents noted in the Environmental Regulations. A further important aspect to be taken account of in the Regulations under NEMA is the Specialist Report requirements laid down in Section 33 (Fourie, 2008b).

MPRDA defines 'environment' as it is in the NEMA and therefore acknowledges cultural resources as part of the environment. Section 39(3)(b) of this Act specifically refers to the evaluation, assessment and identification of impacts on all heritage resources as identified in Section 3(2) of the National Heritage Resources Act that are to be impacted on by activities governed by the MPRDA. Section 40 of the same Act requires the consultation with any State Department administering any law that has relevance on such an application through Section 39 of the MPRDA. This implies the evaluation of Heritage Assessment Reports in Environmental Management Plans or Programmes by the relevant heritage authorities (Fourie, 2008b).

The NHRA identifies 5 activities that require a Heritage Impact Assessment (HIA). An HIA is the process to be followed in order to determine whether any heritage resources are located within the area to be developed as well as the possible impact of the proposed development thereon. An Archaeological Impact Assessment (AIA) only looks at archaeological resources.

An HIA must be done under the following circumstances:

1. The construction of a linear development (road, wall, power line, canal etc.) exceeding 300 m in length.
2. The construction of a bridge or similar structure exceeding 50 m in length.
3. Any development or other activity that will change the character of a site and exceed 5 000 m2 or involve three or more existing erven or subdivisions thereof.
4. Re-zoning of a site exceeding 10 000 m2.
5. Any other category provided for in the regulations of SAHRA or a provincial heritage authority.

In accordance with the legislative requirements and EIA rating criteria, the regulations of the South African Heritage Resources Agency (SAHRA) and Association of Southern African Professional Archaeologists (ASAPA), an onsite heritage assessment and desktop palaeontology assessment have been included in this project.

f) Need and desirability of the proposed activities.

(Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location).

The mining of the area will benefit the general society in that it will create much needed employment opportunities for the people of Emalahleni Local Municipality. The project will create wide range of jobs from semi-skilled to skilled jobs that the local people will benefit from.

A successful mine of coal in Emalahleni Local Municipality will further enhance the revenue of the country and mainly that of the Mpumalanga Province which has an unemployment rate which is higher than the national.

The potential benefits of the proposed project area:

- Long-term, national benefits of reliable power supply and the resultant socio-economic benefits.
- Highly significant benefits to the province of Mpumalanga in terms of the coal supply to Eskom.
- Potential reduction in crime because of short-term job creation during construction (providing farm safety and security measures are implemented), but also in the long-term in the region, as a result of job creation.
- Local growth in the economy of the towns of Witbank and surrounding areas, and for local businesses including those that supply accommodation, transport etc.
- Economic benefits for contractors and other suppliers of goods and services.
- Economic opportunities and other potential benefits for land owners from compensation for impacts.

g) Motivation for the overall preferred site, activities and technology alternative.

The identification of alternatives is a key aspect of the success of the Basic Assessment process. All reasonable and feasible alternatives must be identified and screened to determine the most suitable alternatives to consider in this application. There are, however, some constraints that have to be taken into account when identifying alternatives for a project depending on the scope. Such constraints include financial, social and environment related constraints. Alternatives can typically be identified according to:

- Activity alternatives.
- Location alternatives.
- Design or layout alternatives.
- Technology alternatives.
- Operational alternatives.
- No-Go alternative.

For any alternative to be considered feasible, such an alternative must meet the need and purpose of the development proposal without presenting significantly high associated impacts. Alternatives are typically distinguished into discrete or incremental alternatives. Discrete alternatives are overall development options, which are typically identified during the pre-feasibility, feasibility and/or Basic Assessment process. Incremental alternatives typically arise during the Basic Assessment process and are usually suggested as a means of addressing/mitigating identified impacts (drilling and trenching in low sensitivity areas). These alternatives are closely linked to the identification of mitigation measures and are therefore not specifically identified as distinct alternatives.

For the purpose of this project, the need and justification for alternatives was specifically guided by the relatively low sensitivity of the receiving socio-economic and biophysical environment as well as the geology. The types of alternatives considered are presented below.

h) Full description of the process followed to reach the proposed preferred alternatives within the site.

NB!! – This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout.

i) Details of the development footprint alternatives considered.

The development footprint is 5 ha, which is the maximum legislated aerial extent that may be approved for a Mining Permit application in terms of the MPRDA, 2002 (as amended). The geology is the primary driver in determining the location for mining. As such, no assessment of alternative development scenarios was conducted.

(a) the property on which or location where it is proposed to undertake the activity;

The study site, as well as the infrastructure that is required in order to support the proposed mining project is dictated by the locality of the coal reserve. Existing infrastructure will be used as far as possible and these will be expanded as required.

The location alternatives are selected based on a number of criteria, which include the environmental considerations (how sensitive is the area in terms of soils, wetlands, groundwater etc.), sensitive receptors (proximity to communities and farmsteads) and the dependency to targeted coal reserves.

Regarding the coal mining operation, no alternatives in terms of the location were considered since the proposed project is dependent on the coal reserves which cannot be relocated.

(b) the type of activity to be undertaken;

The proposed activity is mining. The geology is the primary driver in determining the location for mining. As such, no activity alternative was considered.

Opencast mining method is considered namely truck and shovel.

- Truck and shovel: this mining method affords considerably more flexibility in execution of a mine plan given the manoeuvrability of the relatively small mining equipment within the pit environment. In addition, capital cost of equipment can be better managed in conjunction with the increase in tonnage of mining as equipment volumes on site can be ramped up as mining expands. Consequently truck and shovel is favoured.

(c) the design or layout of the activity;

The design and layout alternatives for the proposed project involved the determination of the best possible surface infrastructure layout. The following alternatives were considered:

<u>Water Management Options</u>

In view of the topographical and drainage settings within the project area, the construction of new dirty water management facilities was preferred.

<u>Opencast Mining Design/Layout</u>

The design and layout alternatives for the proposed project involved the determination of the best possible mining methods. Regarding the mining designs, the coal reserve delineation was used to determine the preferred mining design option. Based on the geological investigation, the reserve was delineated into underground and opencast reserves. The decision on the opencast mining instead of underground mining took into consideration all constraints such as lease boundaries, surface structures, environmentally sensitive areas, geological and safety aspects.

(d) The technology to be used in the activity

The method that will be employed is a very basic form of open pit mining, and a 5 ha area will be demarcated for mining activities. Blasting and subsequent mining of the ore body utilising a truck and shovel operation will be conducted. The mined ore will be crushed and screened utilising a mobile crushing and screening plant. A front-end loader will be utilised to load the material into haulage trucks. The ore will be processed off-site. Should the proposed mining activities change, this will be indicated in the form of a Section 102 Amendment Application of the MPRDA.

(e) No Go Alternative

Mining contributes greatly to local economic stimulation through direct employment, business opportunities, royalties and tax revenues. If the chromite ore reserves on the property are not mined, South Africa and the local communities will forego the benefits of the associated employment, business opportunities, royalties and tax revenues.

ii) Details of the Public Participation Process Followed

- Public Participation Methodology

South Africa, being one of the countries with the most progressive constitutions, enshrined the public's right to be involved in decisions. Section 57(1) of the new Constitution that provides: "The National Assembly may (b) make rules and orders concerning its business, with due regard to representative and participatory democracy, accountability, transparency and public involvement". This provision, along with several others gave rise to many new trends in South African legislation. In environmental legislation, the idea of public participation (or stakeholder engagement) features strongly and especially the National Environmental Management Act, 1998 (Act 107 of 1998, NEMA – as amended) and the recent regulations passed under the auspices of this Act make very strict provisions for public participation in environmental decision-making.

Public participation can be defined as "a process leading to a joint effort by stakeholders, technical specialists, the authorities and the proponent who work together to produce better decisions than if they had acted independently" (Greyling, 1999). From this definition, it can be seen that the input of the public is regarded as very important indeed.

The Public Participation Process (PPP) is designed to provide sufficient and accessible information to Interested and Affected Parties (I&APs) in an objective manner to assist them to:

- Raise issues of concern and suggestions for enhanced benefits.
- Verify that their issues have been recorded.
- Assist in identifying reasonable alternatives.
- Contribute relevant local information and knowledge to the environmental assessment.
- Comment on the findings of the environmental assessments.
- Obtain information on the outcome, i.e. the competent authority's decision, and how and by when the decision can be appealed.

1. Notification of I&APs

The PPP commenced on the 28th May 2021 with an initial notification and call to register. Initial notification was given in the manner described below.

2. E-mails

Notification e-mails were distributed to all pre-identified I&APs including affected and adjacent surface landowners, government organisations, NGOs, relevant municipalities, and other organisations that might be affected. The notification emails included the following information:

- List of anticipated activities to be authorised.
- Scale and extent of activities to be authorised.
- Sufficient detail of the intended operation (to enable I&APs to assess/surmise what impact the activities will have on them or on the use of their land).
- The purpose of the proposed project.
- Details of the affected properties (including a locality map).
- Details of the MPRDA and NEMA Regulations that must be adhered to.
- Date by which any request to register as I&AP must be forwarded through to Mukhadakhomu Environmental Services.
- Contact details of the EAP.

3. Newspaper advertisements:

Newspaper advertisements in English describing the proposed project and BA process were placed in the Witbank news on the 28th May 2021. The newspaper adverts included the following information:

- Project name.
- Applicant name.
- Project location.
- Nature of the activity.
- Relevant Mukhadakhomu Environmental Services contact person for the project.

4. Site notices:

Correx site notices were placed along and within the perimeter of the proposed project area on the 28th May 2021. The on-site notices included the following information:

- Project name.
- Applicant name.
- Project location.
- Project description.
- Legislative requirements.
- Relevant Mukhadakhomu Environmental Services contact person for the project.

5. Delivery of background information documents:

A Background Information Document (BID) was prepared and distributed on the 28th May 2021. The BID includes the following information:

- Project name.
- Applicant name.
- Project location.
- Map of affected project area.
- Description of the application process.
- Information on document review.
- Relevant Mukhadakhomu Environmental Services contact person for the project.

6. Availability of Draft BAR and EMPR Notification

The draft BAR and EMPR was made available for public review and comment for a total period of at least 30 days, from the 8th May 2021. All registered I&APs were notified of the availability of the draft BAR and EMPR. I&APs were asked to provide comment either in writing or telephonically, to Mukhadakhou Environmental Services by no later than the 31st May 2021 regarding the findings of the BA process.

Notification regarding the availability of the draft BAR and EMPR was given in the following manner:

- Notification e-mails were distributed to all pre-identified I&APs, I&APs registered during the initial notification period and the BA notification period, as well as affected and adjacent surface landowners.

7. Availability of Final BAR and EMPR Notification

The final BAR and EMPR will be made available on for public review and comment. All registered I&APs will be notified of the availability of the final BAR and EMPR.

Notification regarding the availability of the final BAR and EMPR will be given in the following manner:

- Notification e-mails will be distributed to all pre-identified I&APs, I&APs registered during the initial notification period and the BA notification period, as well as affected and adjacent surface landowners.

iii) Summary of issues raised by I&Aps

(Complete the table summarising comments and issues raised, and reaction to those responses)

Table 3: Summary of issues raised by I&Aps

Interested and Affected Parties List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.	Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
<u>AFFECTED PARTIES</u>				
Landowner/s				
Lawful occupier/s of the land				
Landowners or lawful occupiers on adjacent properties				
Municipality				

-Emalahleni Local Municipality				
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWAe				
-Department of Water and Sanitation				
- Mpumalanga Tourism Parks Agency				
-South African Heritage Resource Agency				
- Department of Agriculture Forestry and Fisheries				
Communities				

Dept. Land Affairs				
-Department of Rural Development and Land Reformation				
Traditional Leaders				
Dept. Environmental Affairs				
Other Competent Authorities affected				
<u>OTHER AFFECTED PARTIES</u>				
<u>INTERESTED PARTIES</u>				

iv) The Environmental attributes associated with the alternatives.(The environmental attributed described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)

(1) Baseline Environment

(a) Type of environment affected by the proposed activity.

(Its current geographical, physical, biological, socio- economic, and cultural character)

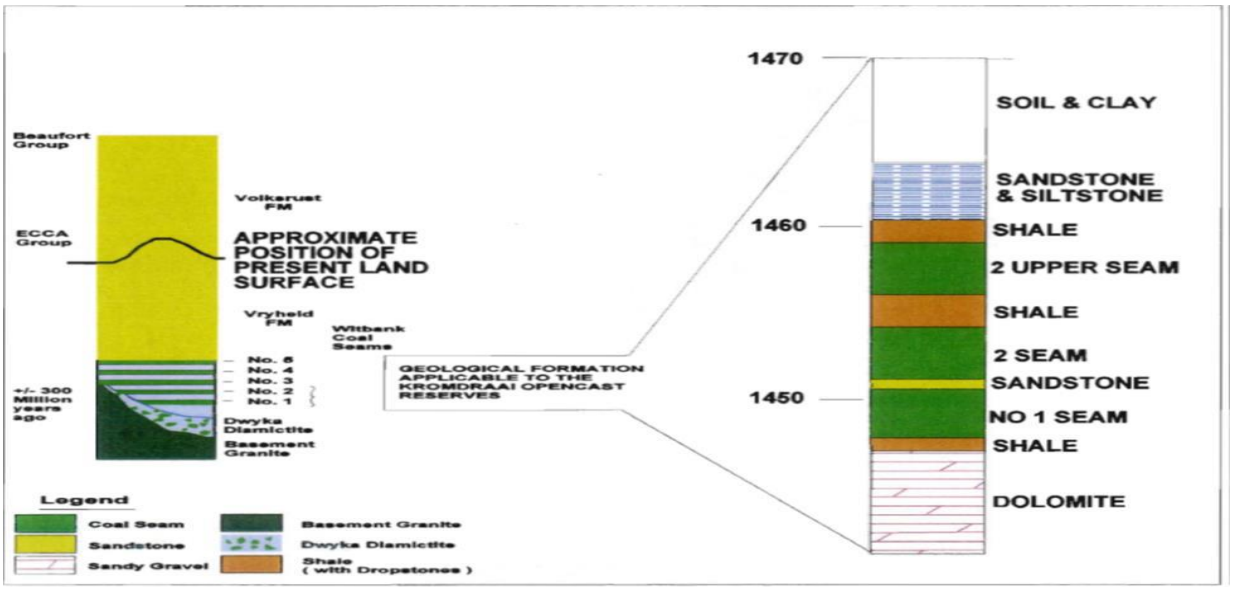
This section describes the baseline receiving environment of the Mining Permit application area. Information in this section is based on specialist studies undertaken in support of this application, desktop studies and a site visit by the EAP as well as input from the public through the I&AP questionnaire. As such, the descriptions below of environmental features represent a consolidation of relevant information to the application area.

- **Topography**

The natural topography of the area has generally been disturbed by mining activities in the region. These mining activities have been conducted over the past several decades with the main contributors to the topography disturbance being that of opencast mining and rehabilitation activities. The surface is gently undulating with elevations of between 1 350 and 1 400 mamsl. The area is typical of the Eastern Highveld with gently rolling hills and shallow valleys where watercourses often display “ox bow” configurations or form marshes with undefined channels. A number of small rock outcrops are found on the northern side of the mentioned unnamed tributary of the Grootspruit. Surface runoff flows into marshy pans or tributaries, which in turn flow into either the Tweefonteinspruit or the Olifants River.

- **Geology**

The eMalahleni area is underlain by the Karoo supergroup. The Karoo Supergroup comprises mainly a sedimentary succession of sandstone, siltstone, shale, mudstone, coal, diamictite and tillite. The Karoo Supergroup is lithostratigraphically subdivided into the Dwyka, Ecca and Beaufort groups, succeeded by the Molteno, Elliot and Clarens formations and the Drakensburg Formation. The Ecca Group comprises successions of formations, which consists of sandstone, shale and coal and were developed within the Karoo basin locally. Figure below indicates a general geological profile. The positions of the dykes have been interpreted from geophysical surveys, but have mostly been delineated through mapping when intersected in the underground workings (Scoping Report for AOL Kleinkopije, 2016).



General geological profile of the Witbank region depicting the five (5) coal seams

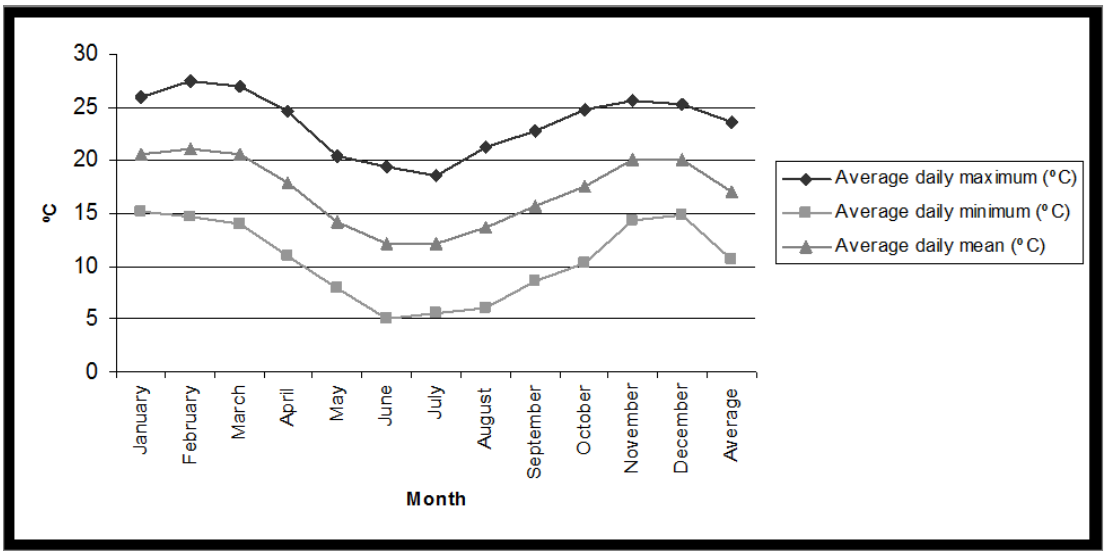
The thickest portions of the Ecca Group were deposited in the southern Karoo basin in contrast to the relatively thin sequence which is now preserved in the East Rand. This succession of sedimentary rocks generally overly the well-consolidated conglomerates/diamictites of the Dwyka Formation, but in places the Ecca Group rocks rest directly on the felsites and granites of the pre-Karoo Basement rocks. Igneous intrusions of late Karoo Supergroup age in the form of dolerite dykes and sills also occur through the sedimentary succession. The sills usually precede the dykes, with the latter being emplaced during a later period of tensional forces within the earth's crust. Tectonically, the Karoo sediments are practically undisturbed. Faults are rare. However, fractures are common in competent rocks such as sandstone and coal.

The sediments of the Vryheid Formation overlie an uneven Dwyka floor, which is controlled by the topography of the pre-Karoo platform upon which the Karoo sediments were deposited. The Vryheid Formation is present throughout the Witbank Area. At their thickest these sediments attain some 120 – 140m and can contain a number of coal seams of which four are considered to have economic potential. This area is known as the Witbank Coal fields (Shangoni, EIA, 2016)

- **Climate**

The area lies in the summer rainfall region (Eastern Highveld) of Southern Africa, with cold and dry winters, and warm and wet summers. Temperatures range from 9°C to 32°C in summer and from 6°C to 22°C in winter. Frost occurs frequently between May and September. During summer months prevailing winds are northerly or easterly and during the winter months prevailing winds are north westerly to south westerly.

Temperature information from the Witbank Weather Station is presented in Figure below (South African Weather Service, 2006). The highest average maximum daily temperatures occur from November to March ranging from 25.2ºC to 27.5ºC. June, July and August are the coldest months of the year with the average minimum temperatures ranging from 5ºC to 6ºC.



Average monthly maximum and minimum temperatures (Witbank weather station)

Precipitation in the area is highly seasonal with a mean annual rainfall of 702.7 mm according to the rainfall data from the DWA hydrological datasets. Most of the rainfall occurs during the summer months with the majority of rain events between October and April. The region receives the highest rainfall in January and the lowest in July. Wind in the area blows predominantly in a northerly direction during winter and spring, and predominantly in a south easterly direction during summer and autumn. The average monthly wind speed for the period 1993 - 2003 was 10.26 m/s. The maximum wind speed of 13.6 m/s was measured in October 1995 and the minimum wind speed of 8 m/s was experienced in June and July 2000 (Shangoni, EIA, 2016).

- **Soils and land use**

➢ **Soils**

The majority of the study area is considered to be heavily modified, and comprising of modified old cultivated lands and remnants of natural land areas, (Mpumalanga Terrestrial Biodiversity Sector Plan**)**

Additional desktop assessment data was obtained from various data sources including but not limited to the Agricultural Geo-referenced Information System (AGIS) and other sources as listed under references:

➢ **Current land uses**

During the site visit it was observed that coal mining is the dominant land use in the vicinity of the area, with limited cultivation and livestock grazing under current conditions. Maize is the only arable crop observed during the visit.

➢ **Dominant soil types**

The proposed study area is within a plinthic catena; with the Glencoe soil form identified as the dominant soil type, comprising approximately 38% of the proposed study area. The remainder of the study area comprises of Hutton/Clovelly identified on gently sloping and higher landscape positions, Avalon/Bainsvlei, Westleigh, and Katspruit soil forms on depressed and/or valley bottom position. Extensively disturbed soils with no recognizable diagnostic soil

morphological characteristics were also identified within the surveyed area; these soils were classified as the Witbank soil form, corresponds to anthrosols in the international soil classification terminology.

- **Land capability**

In South Africa, agricultural land capability is generally restricted by climatic conditions, particularly water availability. However, even within similar climatic zones, different soil types typically have different land use capabilities attributed to their inherent characteristics. High potential agricultural land is defined as having the soil and terrain quality, growing season and adequate available moisture supply needed to produce sustained economically high crops yields when treated and managed according to best possible farming practices (Scotney et al., 1987). For the purpose of this assessment, land capability was inferred in consideration of observed limitations to land use due to physical soil properties and prevailing climatic conditions. Climate Capability (measured on a scale of 1 to 8) was therefore considered in the agricultural potential classification. The study area falls into Climate Capability Class 4 at best, with a moderately restricted growing season for arable crops.

Surface water

The study area is located within the Olifants River Catchment (Primary Catchment B). The main tributary is the Naauwpoortspruit (Noupoort), which discharges directly into the upper reaches of the Witbank Dam.

The proposed project falls within the quaternary catchment B11G and B11K in WMA 4 (Olifants River Management Area). Quaternary catchment B11G is drained by the Olifants River and its tributary the Naauwpoortspruit and quaternary catchment B11K is drained by the Klipsruit and its tributaries.

The catchment has been extensively modified due to historic and current mining activities and also has a large pan that greatly reduces the catchment area. Although the construction site does not cross the river, the catchment area was identified as a point opposite the dump and was delineated on 1:50 000 topographical maps. A number of smaller farm dams were observed in the catchment but it is not expected that these will have a significant influence on the hydrology.

- **Groundwater**

According to the regional aquifer classification map of South Africa, the surrounding Karoo aquifer has been identified as a minor aquifer. Drill logs indicate that the study area is underlain by three types of aquifers. Based on the underlying geohydrology of the project area the aquifers can classified according to Parsons and system as follows:

- Shallow weathered/perched unconfined aquifer
- Non-aquifer
- Fractured confined or semi-confined aquifer in the Vryheid Formation
- Minor aquifer
- Pre-Karoo aquifer
- Non-aquifer.

The baseline groundwater levels ranged between 1.18 mbgl and 2.85 mbgl with an average 2.29 mbgl. The quality can be described as neutral, non-saline and soft to moderately hard with low to medium levels of nutrients (NO3

and NH4) within acceptable drinking water standards as proposed by the SANS (SANS 241: 2011) and the DWS (DWAF, 1998).

- **Air Quality**

Key sources of particulate pollution are likely to be mining, agriculture and industrial operations. Although apportionment of dust deposition to mining and transport sources close to the site was without reasonable doubt, the sources of suspended particulate matter may have extended further than the immediate industrial and mining operations, up to a distance of 10 km.

- **Biodiversity**

The biome associated with the study area is the Grassland Biome and Eastern Highveld Grassland Vegetation type. Two habitat units were identified during the assessment of the study area, namely Transformed habitat and Degraded Grassland. The Transformed habitat unit is characterised by the extensive loss and transformation of the natural floral habitat as a result of alien floral species proliferation forming dense thickets, crop cultivation and extensive anthropogenic disturbance due to mining. The Degraded Grassland habitat unit is characterised by conditions the where edge effects from agriculture and other activities have led to the transformation of natural grassland habitat to a secondary state of ecological succession. Disturbances to this habitat unit include overgrazing, grass baling, historic farming practices and an altered fire regime.
Habitat has been modified by mining activities, existing roads, livestock grazing and agricultural activities.

- **Noise**

Noise pollution can be generated from the surrounding agricultural and mining activities
Background noise within the proposed site is thus as a result of:

- Vehicles using the various gravel roads from the surrounding sites;
- Agricultural activities associated with the various farms on site and the immediate surrounding area;
- Surrounding mining activities

- **Sites of archaeological and cultural interest**

No sites of archaeological or cultural interest occur within close proximity to the proposed prospecting site. Property owners were provided with a registration and comment sheet in order to raise or highlight cultural or archaeological features that may be occurring on site. The project area is comprised of open-spaces and is currently being utilized for mining.

(b) Description of the current land uses.

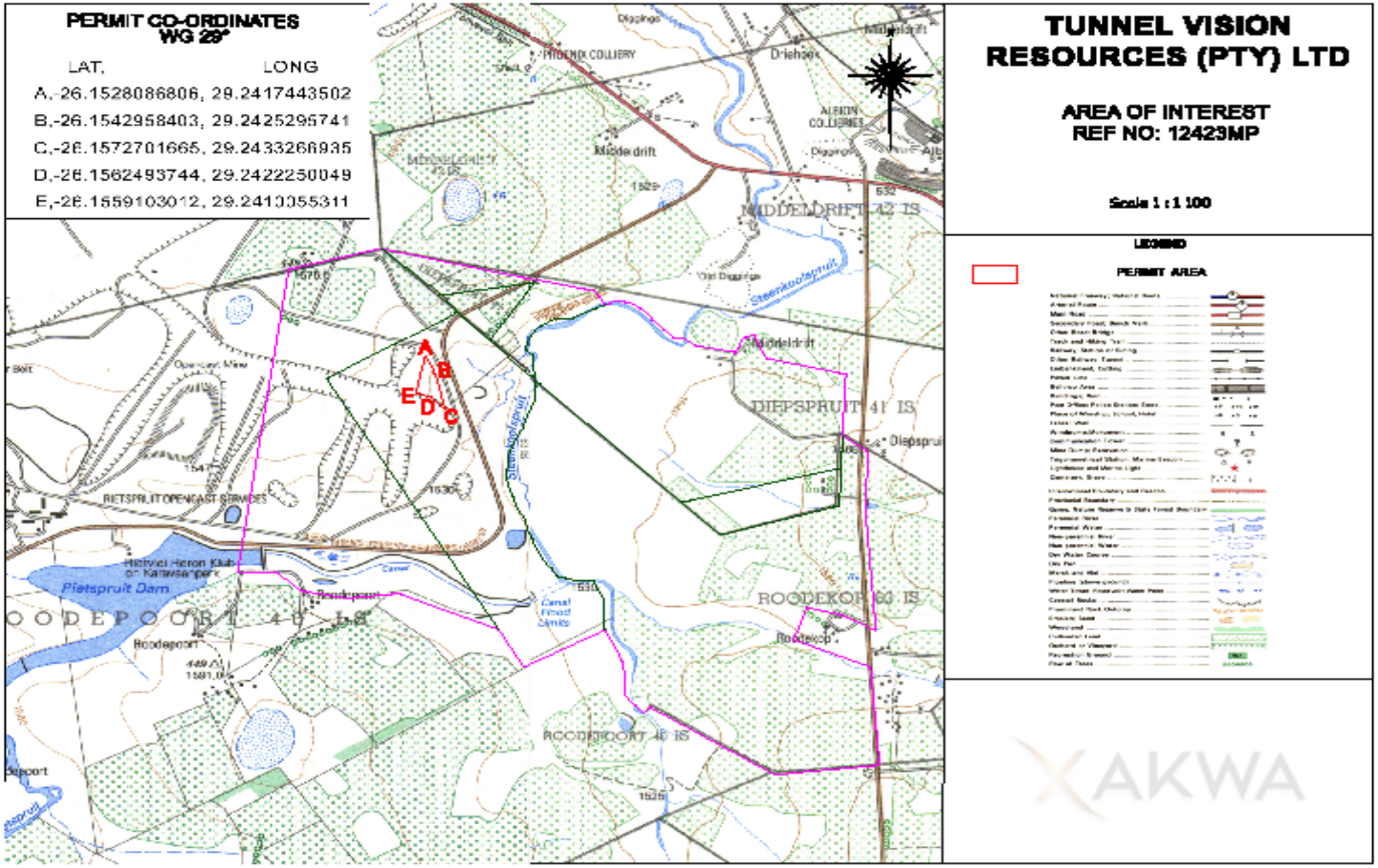
The proposed site is currently utilized for crop cultivation, cattle grazing. Refer to the current land use maps below.

(c) Description of specific environmental features and infrastructure on the site

There are no any environmental features and infrastructures on site.

(d) Environmental and current land use map.

(Show all environmental and current land use features)



v) Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts

(Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability, and duration of the impacts. Please indicate the extent to which they can be reversed, the extent to which they may cause irreplaceable loss of resources, and can be avoided, managed or mitigated)

Impacts and risks were identified based on the proposed mining activities to take place on-site.

The significance of the impacts is determined through the consideration of the following criteria:

- Probability -Likelihood of the impact occurring
- Area -the extent over which the impact will be experienced.
- Duration -the period over which the impact will be experienced.
- Intensity -the degree to which the impact affects the health and welfare of humans and the environment (includes the consideration of the unknown risks, reversibility of the impact, violation of laws, precedents for future actions and cumulative effects).

The above criteria are expressed for each impact in tabular form according to the following definitions:

Probability:

	Definition
Low	There is slight possibility (0 – 30%) that the impact will occur
Medium	There is a 30 - 70% possibility that the impact will occur
High	The impact is definitely expected to occur (70%+) or is already occurring.

Area:

	Definition
Small	0 - 1 ha
Medium	2 -3 ha
Large	4+ ha

Duration*:*

Term	Definition
Short	0 – 6mnths
Medium	7- 10 mnths
Long	12 - 15 years
V long	15+ years

***Intensity**:*

	Definition
Low	➢ Does not contravene any laws ➢ Is within environmental standards or objective ➢ Will not constitute a precedent for future actions ➢ Will have a slight impact on the health and welfare of humans and the environment.
Medium	➢ Does not contravene any laws ➢ Will not constitute a precedent for any future actions ➢ Is not within environmental standards or objectives ➢ Is not irreversible ➢ Will have a moderate impact on the health and welfare of humans or the environment
High	➢ Does contravene laws ➢ May continue a precedent for future actions ➢ Is not within environmental standards or objectives ➢ Is not irreversible ➢ Will have a significant impact on the health and welfare of humans or the environment

Impact significance has been expressed quantitatively as follows:

	Definition
Negligible	The impact is insubstantial and does not require management.
Low	The impact is of little importance, but requires management

Medium	The impact is important; management is required to reduce negative impacts to acceptable levels.
High	The impact is of greater importance, negative impact could render options or the entire project unacceptable if they cannot be reduced to significant positive impacts, and management of these impacts is essential.

Phase	Main Mining activity	Potential Impacts	Severity (Nature)	Spatial Scale (Extent)	Duration	Occurrences of activity	Certainty impact	Likelihood (probability)	Consequences	Impact significance (before	Impact ranking (after)
Construction phase	a) Site establishment preparation and construction b) Guard house and portable toilet delivery and set up	• Dust	3	2	2	3	3	9	12	108	Low/reversible
		• Noise	3	3	1	3	3	9	9	81	Low/reversible
		• Habitat disruption and destruction	3	3	3	2	2	4	27	108	Low/reversible
		• Animal life disruption	3	3	3	2	2	4	27	108	Low/reversible
		• Poaching	3	3	3	2	2	4	27	108	Low/reversible

	c) Removal of surface and sub-surface sediments by mechanical means	• Potential loss of natural grassland cover	Negative	Local	Long term		Moderate-Low	Definite		Moderate	Moderate/can be managed or mitigated
		• Increased wind and water erosion	Negative	Local	Short term		Low	Probable		Moderate	Low/reversible
		• Increased alien plant invasion	Negative	Local	Short term		Low	Definite		Moderate	Moderate/can be managed or mitigated
		• Direct and indirect faunal impacts	Negative	Local	Short term		Low	Definite		Moderate	Moderate/ can be managed or mitigated
		• Loss of any stone artefacts in the sediment layer within the pit area	Negative	Local	Long term		Low	Low		Low	Medium/ can be managed or mitigated

		• Loss of the structures dating from a period where the area was active and more prosperous	Negative	Local	Long term		Low	Low		Low	Medium/ can be managed or mitigated
		• Soil compaction	2	3	5			8	10		Medium/can be managed or mitigated
		• Sterilization of topsoil layer	4	3	4			10	11		Medium/ can be managed or mitigated
		• Chemical soil pollution	3	1	3			5	7		Low/reversible
		• Loss of current land capability	2	3	4			8	9		Medium/ can be managed or mitigated
Operational phase	• Mining	• Loss of geology	3	2	5	5	5	25	30	750	High

	• Toilet use c) workshop and fuel area d) Waste rock stockpiling e) Topsoil stock piling g) Use of access roads h) Blasting activities i) Machinery and equipment										
		• Damming of water	3	1	1	3	3	9	3	27	Low/reversible
		• Soil erosion	3	2	3	3	3	9	18	162	Low/reversible
		• Soil/land contamination	3	2	2	3	3	9	12	108	Low/reversible
		• Dust	3	3	2	5	5	25	18	450	Low/reversible
		• Noise	3	3	1	5	5	25	9	225	Low/reversible
		• Natural grassland cover removal	3	2	3	5	5	25	18	450	Low/reversible

		• Habitat disruption	3	2	3	3	3	9	18	162	Low/reversible
		• Animal life disruption	3	2	3	3	3	9	18	162	Low/reversible
		• Ground and surface water contamination	3	4	4	4	4	16	48	768	Low/reversible
		• Impact on heritage structures	3	1	5	1	1	1	15	15	Low/reversible
		• Poaching	3	2	4	2	2	4	24	96	Low/reversible
		• Soil erosion	3	2	3	3	3	9	18	54	Low/reversible
		• Sterilization of topsoil layer	4	3	4			10	11		Medium/ can be managed or mitigated
		• Chemical soil pollution	3	1	3			5	7		Low/reversible

		• Loss of current land capability	2	3	4			8	9		Medium/ can be managed or mitigated
		• Dust	3	2	1	5	5	25	6	54	Low/reversible
Decommissioning phase		• Noise	2	1	5	5	25	6	54		Low/reversible
		• Impacts on farming	3	3	2	2	1	2	18	36	Low/reversible
	a) Back-filling of the pits b) Re-vegetating denuded areas c) Removal of all infrastructures d) Final maintenance of the access roads	• Animal disruption	3	2	1	5	5	25	6	150	Low/reversible
		• Poaching	3	3	3	2	2	4	7	28	Low/reversible
		• Soil compaction	2	3	5			8	10		Medium/ can be managed or mitigated

Consequence

The factor of the Severity x Spatial Scale x Duration = the Consequence Severity: how severe is the impact that the activity has on the environment?

Spatial Scale: over what area does the activity impact?

Duration: for how long does the activity have a continuous impact?

Likelihood

The factor of the Occurrence of Activity x Certainty of Impact = the Likelihood.

Occurrence of activity: what is the probability for the activity to occur?

Certainty of the Impact: How often does the activity impact on the environment?

Each parameter is rated from 1 (Lowest risk) to 5 (Highest risk).

Consequence x Likelihood = Significance.

Table 5:Rating table

CONSEQUENCE	
SEVERITY	
How severe does the activity impact on the Environment?	
Disturbance of degraded areas, which have little conservation value. Minor change in species occurrence or variety. (Low)	1
Inactive, benign area. Very deep water tables (>50m). Plentiful and available renewable resources.	2
Disturbance of areas that have potential conservation value or are of use as resources. Complete change in species occurrence or variety. (Medium)	3

Sensitive. Threatened, protected and or endangered areas not in immediate proximity, but not far away. Close proximity of large water courses (within 1: 50 year flood line), very high water tables (<1m). Limited non-renewable resources.	4
Disturbance of pristine areas that have important conservation value. Destruction of rare or endangered species (High)	5
SPATIAL SCALE	
How big is the area that the activity is impacting on?	
Immediate Area	1
Only the site controlled by the organization is affected. Within Site Boundary. (Low)	2
Beyond site boundary. Local area. Neighbours' and surrounding properties are affected. (Medium)	3
Local/Regional. Impact of the substance is noticeable in the surrounding community or municipal region.	4
Widespread. Far beyond site boundary. National to global (High)	5
DURATION	
How long does the activity impact on the Environment?	
< Few days, no measurable sign of pollutant or its effects. Within one day there is no observable or detectable sign of the pollutant. The substance is no longer impacting on the environment.	1
Up to 1 month. Substance has dissipated or disappeared within a month of release. Minimal loss of resource, species, habitat.	2
Quickly reversible. Less than the project lifespan. Short term (0 – 5 years).	3

Reversible over time. Lifespan of the project. Medium term (5 – 15 years).	4
Permanent. Beyond decommissioning. Long term (More than 15 years).	5
LIKELIHOOD	
OCCURRENCE	
What is the probability for the activity to occur?	
Negligible. Less than 1:20 chance of occurrence *(P<0.05).*	1
Occasionally. Less than 1:30 chance of occurrence	2
Low Likelihood. Less than or equal to a 50:50 chance, but at least a 1:30 chance of occurrence *(P<0.5, but >1:30).*	3
High Likelihood Greater than 50:50 chance of occurrence *(P>0.5).*	4
100% chance of occurring	5
CERTAINTY OF IMPACTS	
How often does the activity impact on the environment?	
Unsure. Less than 40% sure of a particular fact or the likelihood of an impact occurring. Rare (could happen but unlikely)	1
Possible. Only over 40% sure of a particular factor of the likelihood of an impact occurring. Unlikely (has occurred somewhere	2

Probable. Over 70% sure of a particular fact of the likelihood of that impact occurring. Likely (known to occur)	3
Almost certain (occurs often)	4
Definite. More than 90% sure of a particular fact. Substantial supportive data exist to verify the assessment. Inevitable (Expected to happen often)	5
CALCULATIONS	
Severity X Spatial scale X Duration = Consequence Occurrence X Certainty = Likelihood Consequence X Likelihood = Impact	
IMPACT SIGNIFICANCE	
How reversible is the impact?	Impact Rating
Low (reversible). No risk to public health; environment.	< 1042
Medium (Manageable (can be managed or mitigated)). With regulatory controls. With project proponent's Commitments	1042 - 2084
High (irreplaceable loss of resources). Redesign project to remove or avoid impact. Abandon project if no mitigation is possible	> 2084

vi) The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected.

(Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties)

Positive impacts

The following are the potential positive impacts the activity will have on the environment and community in terms of the initial site layout.

- ***Job protection and creation***: the local people of Emalahleni and surrounding areas will benefit greatly from employment opportunities during the construction and operational phase of the proposed activities

- ***Up-liftment and strengthening of the local and national economy:*** The local economy will be up lifted because the local business will get income with profit from the employees during the construction and operational phases of the proposed mining activities. The local business people will get employees of the mine supporting the business by being the customers while on the other side the local business can as well provide required services to the mine as contractors. This in turn strengthening of the national economy.

- ***Improved standard of living:*** The creation of sustainable jobs during the construction and operational phases will equate to the improved standard of living, not just for the employees and their families but also for the local business people and their families. Since the strong local economy strengthen the country's economy; the lives of few more people who will not be directly benefiting from the proposed mining activities also will also have their lives positively impacted

- ***Good environmental management:*** The Environmental Authorisation together with the approved BAR/EMPr report will guide the mine in terms of managing the physical and socio-economic environment that is impacted by the mining activities. This will be possible through the implementation of the requirements and conditions of the Environmental Authorisation and the approved BAR/EMP report.

Negative impacts

The following are the potential negative impacts identified for the proposed activities

Surface and ground water pollution: The highest risk is during rainfall and during process failure where slurry may overflow. Potential leakage of oil and other industrial liquids from the trucks, excavators are also potential risk of both ground and surface water contamination. Storm water management berms (clean and dirty water separation berms) must be erected around the pits to prevent the contamination of clean runoff by the dirt water.

- ***Dust:*** The use of the access dusty roads and the excavation or mining will cause dust. This impact on the plants surrounding the area as it is (the dust) deposited on the leaves. This interferes with the photosynthesis process of the plants. If the plants leaves are covered in dust, the animals (herbivores) are therefore also impacted as the plants are their food.

- ***Noise:*** blasting, mining equipment (trucks and excavators) and the movement of the mine's vehicles, all causes noise. The noise levels depend on the type of equipment and activity. The blasting noise level may go over the immediate site, while the noise levels of the trucks and excavators depending on their size may be localised around the specific site.

- ***Soil erosion:*** Soil erosion on denuded areas and topsoil stockpile is a potential negative impact.

- ***Accumulation of water into the pits:*** The probability of the pits to accumulate water is definite when it rains. It is therefore important that the designs of the pits be in a way that damming will be minimised and that there must be pumping equipment to pump out water that will accumulate in the pits during rains.

vii) The possible mitigation measures that could be applied and the level of risk.

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/ discussion of the mitigations or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered).

This section contains guidelines, operating procedures and rehabilitation/pollution control requirements which will be binding on the holder of the permit after approval of the Environmental Management Plan. It is essential that this portion be carefully studied, understood, implemented and adhered to at all time. The applicant shall ensure that this Environmental Management Plan is provided to the Project Manager and any other person or organisation who may work on the site. The company will ensure that any person or organisation that works on the site complies with the requirements of this Environmental Management Plan.

Responsibility

- The environment affected by the mining operations will be rehabilitated, as far as is practicable, to its existing state.
- The environment affected by mining project will be maintained in a stable condition that will not be detrimental to the safety and health of humans and animals.
- The mining project will not result in the pollution of the environment or lead to the degradation thereof.
- It is the responsibility of the Company to ensure that the Project Manager, employees and contractors are capable of complying with all the statutory requirements which must be met in order to mine, which includes the implementation of this EMP.
- The Project Manager will be responsible for the practical implementation of this EMP.

Schedule

Ongoing, during the mining period.

Community relations

The Company will notify the landowners before operations commence. The notice will include contact details for any complaints about the actual mining activities. The Company will keep a "Complaints Register" on site. The Register will contain the contact details of the person who made the complaint, and information regarding the complaint itself. The Company will respond to all complaints within seven days. Copies of all responses will be kept together with the Register.

Schedule

Ongoing, during the mining period.

Layout Plan

A copy of the layout plan as provided for in Regulation 2(2) will be available at the mining site for scrutiny when required.

Schedule
Ongoing, during the mining period.

Workers
Environmental awareness training will be provided to all workers. Workers will not be allowed to trespass onto neighbouring properties.

Schedule
Ongoing, during the mining period.

Protection of flora and fauna
No endangered species found in the project area, the area is transformed by agricultural activities- therefore responsive grasses are found on site. The habitat is therefore also disturbed which resulted to the unavailability of fauna. No domestic pets are permitted on site.

Schedule
Ongoing, during the mining period.

Road safety and access
The access road to and routes in the mining area will be established in consultation with the landowner and existing roads and tracks will be used as far as practicable. The erection of temporary gates in fence lines and the open or closed status of farm gates will be clarified in consultation with the landowner. No new roads are to be constructed on this site.
Employees will comply with all speed and traffic regulations on public roads and will not exceed 40km/hour on farm roads.

Schedule
Ongoing, during the mining period.

Water
Water for the mining activities will be brought by the water tankers. No groundwater will be used or abstracted during the mining operation. Employees will bring in their own drinking water on a daily basis.

Schedule
Ongoing, during the mining period.

Office / Camp Site
In order to minimise impacts in the mining area, a small area will be used for mobile office establishment. The employees will drive to the site every day when operations are in progress. A security company may be contracted to protect the mining equipment overnight or over weekends if the drill contractors have a weekend off.

Schedule
Ongoing, during the mining period.

Vehicles and Fuel

Vehicles will be kept to the absolute minimum required to complete the mining tasks. All servicing and refuelling of the support vehicles will take place on site.
Bunding / concrete flooring and oil traps will be constructed in areas of hydrocarbon storage areas where diesel-driven equipment is serviced. The Company will ensure that no pollution occurs. When servicing equipment, drip trays will be used to collect the waste oil, hydraulic fluid and other lubricants. Drip trays will be provided in the mining area for stationary plant. Vehicles and equipment used in the mining operation will be adequately maintained so that no spillage of oil, diesel, petrol or hydraulic fluid occurs. If any hazardous substances such as fuels and oils etc. are brought to the site and left overnight then they will be securely stored in an approved bunded areas. The relevant Health and Safety Standards for the handling and storage of these goods will be strictly adhered to.

The Company will ensure that there is always a supply of absorbent material available to absorb / breakdown / encapsulate minor hydrocarbon spills. The quantity of such materials will be able to handle a minimum of a 200 litre hydrocarbon spill. Used oil will be collected in a suitable container and this will then be removed from the site, either for resale or for recycling.

Any effluents or waste containing oil, grease or other industrial substances will be collected in a suitable container and removed from the site, either for resale, recycling or for appropriate disposal at a recognised facility.

Schedule
Ongoing, during the mining period.

Toilet facilities
Portable chemical toilets will be brought to the site during the mining phases. These toilets will be serviced regularly.

Schedule
Ongoing, during the mining period.

Waste management
Suitably covered containers will be available at the mining area at all times and conveniently placed for the disposal of waste. Biodegradable waste and non-biodegradable waste (e.g. glass bottles, plastic bags, metal scrap, etc.) will be disposed of in different containers. All waste will be removed from the site on a daily basis and disposed of at a recognised waste disposal facility (e.g. nearest municipal waste site). Specific precautions will be taken to prevent waste from being dumped on or in the vicinity of the mining site.
If any hazardous waste is generated, then this will be transported to a recognised waste disposal facility.

Schedule
Ongoing, during the mining period.

Effluents

Any effluents or waste containing oil, grease or other industrial substances will be collected in a suitable container and removed from the site, either for resale, recycling or for appropriate disposal at a recognised facility.

Schedule

Ongoing, during the mining period.

List of potential Impacts	Possible mitigation measures	Level of risk
Surface and ground water pollution	• Construct berm walls around the pits to avoid dirty water running off into the environment. • The design and technology to be used in reclaiming the pit must minimise seepage of dirty water and runoff. • Pump out the water that accumulate within the berms every day to keep the containment empty and minimise seepage. • Construct proper process water dam to contain the process water in the pit • Pump out water in the pits as soon as possible to minimise seepage • Maintain and fix equipment to avoid leakage of oils and other industrial liquids. • Monitor ground and surface water monthly to check if the water quality is being impacted. • Contain hydrocarbons at the area where there is proper oil and other industrial liquids storage. • Place drip trays under parked vehicles and machineries to contain any unnoticed leakage. • Service the portable toilet properly, regularly and by trained personnel.	The level of risk is low before the implementation of the mitigation measures and the risk will be even lower after implementing the mitigation measures.
Noise	• Work during the day time only. Sound is louder during the night than during the day. To minimise disruption of animal life and noise in the night • Service equipment, machineries, trucks and other vehicles regularly to minimise noise. • Provide ear plugs to the employees and ensure they wear them for the protection of their ears.	The level of risk is low before the implementation of the mitigation measures and the risk will be even lower after implementing the mitigation measures.
Dust	• Water that is sufficient to supress dust and not allow it to escape into the atmosphere should be sprayed with a pipe however the volume of water used should not cause surface water runoff and removal of topsoil • Regulate speed to be 40 km/h on site to reduce dust emission.	The level of risk is low before the implementation of the mitigation measures and the risk will be even lower after implementing the mitigation measures.

	• Provide dust masks to employees to help them avoid inhaling the dust particles.	
Disruption of natural grassland cover	• Use the mobile infrastructure where possible to avoid removal of natural grassland cover • Where no mobile infrastructure is available construct the infrastructure on a disturbed area • Rehabilitate and revegetate denuded areas as soon as possible	The level of risk is low before the implementation of the mitigation measures and the risk will be even lower after implementing the mitigation measures.
Loss of geology	• Rehabilitate as soon as possible (start before decommissioning phase)	The level of risk is low before the implementation of the mitigation Measures and the risk will be even lower after implementing the measures.
Change of topography	• Rehabilitate as soon as possible (start before decommissioning phase)	The level of risk is low before the implementation of the mitigation measures and the risk will be even lower after implementing the mitigation measures.
-Removal of grassland cover -Soil erosion	• Place infrastructures in places that are already disturbed. • Usage of mobile equipment that will only require positioning and not construction	The level of risk is low before the implementation of the mitigation measures and the risk will be even lower after implementing the mitigation measures.
Increased wind and water erosion	• Precautions should be taken to avoid excessive disturbance and re-vegetation should take place as soon as possible after construction to avoid wind erosion. • Wherever possible, roads and tracks should be constructed so as to run along the contour. • Any extensive cleared areas that are no longer or not required for construction activities should be re-seeded with locally-sourced seed of suitable species. Bare areas can also be packed with brush removed from other parts of the site, encourage natural vegetation regeneration and limit erosion. • All construction vehicles should remain on properly demarcated roads.	The level of risk is low before the implementation of the mitigation measures and the risk will be even lower after implementing the mitigation measures.
Accumulation of water into the pits. .	• Construct trenches around the pits to avoid water flowing into the pits • Drain the pits of stagnant water as soon as possible.	The level of risk is low before the implementation of the mitigation measures and the

		risk will be even lower after implementing the mitigation Measures
Impact or loss of sensitive plant species during construction and operational phase .	• Ensure that the disturbed footprint is kept to a minimum, • Trans-locate sensitive species prior to construction/mining site clearance and ensuring compliance to the recommended mitigation measures by any contractors (project proponent) used on the project • Where soil disturbance is required for the laying of service infrastructure, the topsoil should be put aside and replaced after the infrastructure has been installed. • Areas to be cleared should be demarcated and only those individuals of protected plant species directly within the foot print should be cleared/ removed. • No alien or indigenous species should be allowed to invade the natural vegetation and regular monitoring for and clearing of such species should occur. • Construction personnel should be restricted to the construction area and access to the surrounding area controlled and monitored. • All alien plants present at the site should be controlled at least annually using the best practice methods for the species present. • Bare soil should be kept to a minimum	Level of risk will be much lower after applying the mitigation measures.
Impacts on fauna	**Construction Phase Mitigations:** • Any fauna directly threatened by the construction activities should be removed to a safe location by the ECO or other suitably qualified person. • The collection, hunting or harvesting of any plants or animals at the site should be strictly forbidden. The rocky outcrops are particularly sensitive in this regard and construction personnel should not be allowed off of the construction site and onto these areas. • All staff and contractors should undergo an environmental induction course by the ECO. • Fires should only be allowed within fire-safe demarcated areas. • No fire wood collection should be allowed on-site. • No dogs should be allowed on site. • All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at	Level of risk will be much lower after applying the mitigation measures.

	the site should be cleaned up in the appropriate manner as related to the nature of the spill. • Should the site need to be fenced, the fencing should be constructed in manner which allows for the passage of small and medium sized mammals, at least at strategic places, such as along drainage lines or other areas of dense vegetation. • Domestic waste mitigation measures to prevent an increase of scavengers and knock on effects on protected avifauna in the region. **Operational Phase mitigations:** • No unauthorized persons should be allowed onto the site. • Staff present during the operational phase should receive environmental education so as to ensure that that no hunting, killing or harvesting of plants and animals occurs.	
Increased alien plant invasion	**Construction Phase Mitigations:** • Soil disturbance and grassland cover clearing should be kept to minimum. • Cleared areas that are not going to be used should be re-vegetated with locally-collected seed of indigenous species. • Regular monitoring to ensure that alien plants are not increasing as a result of the disturbance that has taken place. **Operational Phase mitigations:** • All alien plants present at the site should be controlled at least annually using the best practice methods for the species present. • Bare soil should be kept to a minimum.	Level of risk will be much lower after applying the mitigation measures.
Impact on heritage resources	• If a heritage feature is identified at any phase of the proposed activity, the heritage feature should be fenced and left undisturbed and a heritage specialist must be appointed immediately to conduct a Heritage Impact Assessment study in accordance to the SAHRA. .	Level of risk will be much lower after applying the mitigation measures.
Soil compaction	• When stripping machinery is used for stripping, stockpiling and Backfilling/top soiling operations, it should operate when the soil moisture content is below approximately 8 % (during the dry winter months) in order to limit soil compaction and machinery getting stuck.	Level of risk will be much lower after applying the mitigation measures

	• For use on site, tracked vehicles are more desirable than wheeled vehicles due to their lower point loading and slip, while vehicle speed should be maintained in order to reduce the duration of applied pressure, thereby minimizing compaction. • The width of the levelled or disturbed area for haul roads must be minimized as much as possible. Unnecessary dirt tracks (outside of the area to be disturbed) should not be allowed during the construction of the haul road. • Impact beyond the site boundary can be reduced by using existing roads and reducing new roads to a minimum.	
Soil erosion	• Stripping of topsoil should not be conducted earlier than required (maintain grass cover for as long as possible) in order to prevent the erosion by wind and water of organic matter, clay and silt. • Stripped soils should be stockpiled as a berm upslope (the majority) and surrounding the disturbed areas. • Topsoil stockpiles must be sampled, ameliorated (fertilized) and backfilled as soon after construction as possible. This is in order to limit raindrop and wind energy, as well as to slow and trap runoff, thereby reducing soil erosion.. • The soils stripped for levelling purposes must be stockpiled as a berm along the entire length of haul roads (upslope). • Erosion control measures such as intercept drains and toe berms must be constructed where necessary. • Gravel roads must be well drained in order to limit soil erosion. • The vegetative cover on the soil stockpiles (berms) must be continually monitored in order to maintain a high basal cover. Such maintenance will limit soil erosion by both the mediums of water (runoff) and wind (dust). • The gravel haul road drainage system and surface must be well maintained in order to limit soil erosion.	Level of risk will be much lower after applying the mitigation measures.
Chemical soil pollution	• An intercept drain should be constructed upslope of construction and operational areas, in order to re-direct clean water away to avoid soil chemical pollution to clean groundwater resources. • An intercept drain should possibly be constructed downslope of polluted areas, in order to drain potentially polluted water into a pollution control dam.	Level of risk will be much lower after applying the mitigation measures.

	• Drains and intercept drains should be maintained to ensure that it continue to redirect clean water away from the polluted areas. • Conduct proper chemical waste management to avoid spillage of chemicals during all the phases of the project cycle	
Loss of current land capability	• Although the stockpiles will be backfilled, it is not anticipated that areas where grazing land capability was lost will be remediated to such an extent that the land capability will return. At most, the site will be rehabilitated to wilderness land capability. However, it is still recommended that the natural vegetation be re-established once the mining operations have ceased and that the grazing capacity be restored as good as possible. Should the land capability be re-established, the impact after mitigation is considered to be medium-low.	Level of risk will be much lower after applying the mitigation measures.

Table 6: Possible mitigation measures

viii) Motivation where no alternative sites were considered.

There is no alternative site considered for the proposed mining project because the material that will be mined are located within the preferred site.

ix) Statement motivating the alternative development location within the overall site. (Provide a statement motivating the final site layout that is proposed)

There is no alternative site considered for the proposed mining project because the material that will be mined are located within the preferred site.

i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity. (Including (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures.)

The following prediction and evaluation of impacts is based on the proposed Opencast Mining Project and associated activities.

The evaluation distinguishes between significantly adverse and beneficial impacts and allocates significance against national regulations, standards and quality objectives governing:

1. Health & Safety;

2. Protection of Environmentally Sensitive Areas;

3. Land use; and

4. Pollution levels.

Irreversible impacts are also identified.

The significance of the impacts is determined through the consideration of the following criteria:

Probability : likelihood of the impact occurring

Area (Extent) : the extent over which the impact will be experienced.

Duration : the period over which the impact will be experienced.

Intensity : the degree to which the impact affects the health and welfare of humans and the environment (includes the consideration of unknown risks, reversibility of the impact, violation of laws, precedents for future actions and cumulative effects).

The above criteria are expressed for each impact in tabular form according to the following definitions:

Probability (P)	Definition
Low	There is a slight possibility (0 – 30%) that the impact will occur.
Medium	There is a 30 –70% possibility that the impact will occur.
High	The impact is definitely expected to occur (70% +) or is already occurring.
Area/Extent (E)	Definition
Small	0 – 40 ha/Local
Medium	40 – 200 ha/Regional
Large	200 + ha/National and International
Duration (D)	Definition
Short	0 – 5 years
Medium	6 – 25 years
Long	26 – 100 years or impact cease after operational life of project
Permanent	101 + years
Intensity (I)	Definition
Low	Does not contravene any laws. Is within environmental quality standards, thresholds, targets or objectives. Will not constitute a precedent for future actions. Effects observable and is reversible with time without human intervention. Will not result in the loss of irreplaceable resources or will result in the loss of least concerned resourced. Will have a slight impact on the health and welfare of humans or the environment.
Medium	Does not contravene any laws. Will not constitute a precedent for future actions. Is not within environmental quality standards, thresholds, targets or objectives. Effects observable and is reversible through rehabilitation or human intervention. Will result in the loss of irreplaceable resources (Vulnerable and Near Threatened). Will have a moderate impact on the health and welfare of humans or the environment.

High	Contravene laws. May constitute a precedent for future actions. Is not within environmental quality standards, thresholds, targets or objectives. Extensive effects – irreversible alteration to the environment. Will result in the loss of irreplaceable resources (Endangered or critically endangered). Will have a significant impact on the health and welfare of humans or the environment.
Significance and Risk Category (S)	Definition
Negligible	The impact/risk is insubstantial and does not require management
Low	The impact/risk is of little importance, but requires management
Medium	The impact/risk is important; management is required to reduce negative impacts to acceptable levels
High	The impact/risk is of great importance, negative impacts could render options or the entire project unacceptable if they cannot be reduced or counteracted by significantly positive impacts, and management of these impacts is essential
Positive (No risk identified)	The impact, although having no significant negative impacts, may in fact contribute to environmental or economical health

RESULTS OF THE ENVIRONMENTAL IMPACT ASSESSMENT

Assessment of the Opencast Mining Project impacts / risks identified

Pre -Construction and Construction Phases

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
PRE-CONSTRUCTION AND CONSTRUCTION PHASES							
Excavation of the Initial Box cut. Construction of Mine Office/Workshop Complex (Office, workshop, ablution facility etc.) and Coal Stockpiling Facility and Mine Water Management Facilities (Storm water management system and pollution control dam)							
The excavation of the initial box cut and construction of mine office/workshop complex and mine water management facilities will result in the disturbance of the geological profile. Carbonaceous material remaining from the removal of run of mine coal may cause acid mine drainage after rehabilitation of the opencast pits.	Geology	Without Mitigation					No mitigation measures can be undertaken for the predicted impact. However the mine will use removed material to backfill the opencast voids. All remaining carbonaceous material will be placed at the bottom of the mining pits and should be covered with the rest of the remaining overburden material. This will reduce the exposure of the carbonaceous material to free oxygen, hence limiting the formation of acid mine generation.
		S	H	M	M	M	
		With Mitigation					
		S	S	M	L	L	
The excavation of the initial box cut and construction of mine office/workshop complex and mine water management facilities will result in the formation of topographical voids, which will impact on the local topographical patterns.	Topography	Without Mitigation					Use material from the successive cuts to backfill the voids created by the construction of the initial box cut. Note that since concurrent rehabilitation will be used at the mine, only three to four cuts will at all times be open at the opencast mining area. Ensure that the disturbed areas are rehabilitated during the decommissioning phase.
		S	H	S	H	H	
		With Mitigation					
		S	L	S	L	L	
The stripping of soil layers during the excavation of the initial box cut and construction of mine office/workshop complex and mine water management facilities may result in the degradation of topsoil i.e. loss of arable	Soils	Without Mitigation					Bush clearing of all bushes and trees taller than one meter. Assign and demarcate all access routes
		S	H	S	H	M	
		With Mitigation					

land/topsoil, loss of the original spatial distribution of soil types, loss original soil fertility, original soil depths, changes in land surface and loss of volume and natural functioning of the soil. The activities may also result in the erosion of soils, pollution of soil by chemicals from the site. Soil compaction will also result from heavy vehicles, which will further impact on the land use and capability i.e. the current land use will be lost to mining.		S	M	S	M	M	Stockpile topsoil to appropriate height hence reducing loss of fertility. Avoid activity at the topsoil stockpiles. Use of topsoil for rehabilitation of the backfilled opencast pits, which will render the rehabilitated areas available for other suitable land use. Use sites of lower potential soils for development whenever possible and if development is unavoidable, strip topsoil clean from underlying non-topsoil materials and stockpile/use as mentioned above. Avoid bare, disturbed surfaces or embankments for long periods (i.e. re-vegetate) and undue storm-water concentration (i.e. construct runoff measures according to soil conservation principles). Vegetate these stockpiles according to the rehabilitation plan.
The excavation of the initial box cut and construction of mine office/workshop complex and mine water management facilities will result in the removal of natural vegetation due to the stripping of topsoil. Open cast mining is a permanent destruction and rehabilitation cannot restore any pre-mining habitats.	Terrestrial Ecology	Without Mitigation					Implementation of a rehabilitation plan, concurrent to the mining operation; All High sensitivity areas must be avoided and declared "No-go" areas. The areas to be developed/mined must be specifically demarcated to prevent movement into high sensitive surrounding environments. The open cast areas mining infrastructure outlines must be realigned to be outside of the wetland and wetland buffer zone habitat;
		S	H	P	H	H	
		With Mitigation					

		S	H	P	L	M	Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be minimized and avoided where possible; The areas to be developed must be specifically demarcated to prevent movement of workers into, especially high sensitive areas and the surrounding environments. Signs must be put up to enforce this.
Runoff from the exposed un-weathered surface as well as runoff from the berm structures will have higher velocities thereby resulting in erosion and sedimentation in downstream watercourse which will be compounded by altered hydrological patterns (reduced infiltration, increased flood peak). Coarse dust generated from the activities will also settle within the local vicinity and may act to increase the concentration of fine substrates collected in the receiving waterbodies.	Aquatic Ecology	Without Mitigation					Conduct a modelling exercise to determine the loss of groundwater and surface water inputs to local watercourses and its subsequent impacts to local water balances. Should the water loss be significant, ecological flow releases of treated water are recommended. The implementation of a buffer zone, a 100m horizontal distance from the delineated watercourse edge; Clean and dirty surface and ground water separation must be put into place via standard best practice methods; Mitigation actions recommended in the hydrogeological must be implemented; Berms must be vegetated and alien invasive species must be controlled on established berms; Aquatic biomonitoring, surface and groundwater monitoring; Implement dust suppression from water sourced inside the pit areas and avoid the abstraction of water from clean sources as is the current practice.
		S	M	S	M	M	
		With Mitigation					
		S	L	S	L	L	
Areas that have been stripped of vegetation and topsoil will be prone to erosion. This could lead to increased suspended solids being deposited into the local streams.	Surface Water	Without Mitigation					Areas that are stripped should be optimised to limit unnecessary stripping. Storm water from upslope of the stripped areas should be diverted around these areas to limit the amount of storm water flowing over from these areas.
		S	H	S	M	M	
		With Mitigation					
		S	L	S	L	L	

							The timing of the topsoil stripping should be optimised to limit the time between stripping and construction. Where practical constraints exist and areas need to be left stripped for long periods, contour ploughing, or ripping could reduce run-off and hence reduce erosion. Dry season construction is preferable where practical. Hydro seeding of the topsoil stockpile is recommended to speed up vegetation cover.
This phase should thus cause very little additional impacts in the groundwater quality. It is expected that the current status quo will be maintained.	Groundwater	Without Mitigation					Pollution prevention consideration. Deterioration of water quality must be prevented wherever possible and minimised where complete prevention is not possible. Conservation consideration. Losses of water and consumptive use of water must be minimised. Water users within the mine must be provided with water of a quality as poor as possible but good enough quality that it does not cause significant user, water quality, product quality or process related problems (scaling etc.). The plan must be sustainable over the life cycle of the mine and over different hydrological cycles.
		S	L	S	L	L	
		With Mitigation					
		S	L	S	L	L	
The stripping of soils from the excavation of the initial box cut and construction of mine office/workshop complex and mine water management facilities will result in the exposure of soils causing dust generation by blowing wind and movement of mine vehicles. This may ultimately affect the residents of the nearby properties.	Air Quality	Without Mitigation					Conduct dust suppression daily using water from the pollution control dam. If the use of the water from the pollution control dam does not field satisfactory results chemicals will be used for the suppression of dust from the roads and other dust generation areas. Enforce appropriate speed limits for the mine vehicles. Implement a dust and noxious gas minimisation strategy where necessary.
		S	H	S	H	H	
		With Mitigation					
		S	L	S	L	L	
	Blasting Aspects	Without Mitigation					

Blasting operations may affect nearby structures. This may be due to ground vibration, air blast pressure and fly rock. Dust and noxious fumes may be generated during blasting that can affect the neighbouring residents and the public.		M	H	S	H	H	Best practises must be used during blasting to ensure that the ground vibration and air blast pressure is within acceptable limits. Undertake a full risk assessment in order to address the aspects and to put proper controls in place. Proper stemming and use of stemming material. Blasts can be delayed when prevailing wind is blowing towards the area of concern and not leaving blasts standing for long periods of time.
		With Mitigation					
		S	L	S	M	L	
Increased noise levels experienced in the homestead during daylight hours due to construction related activities.	Noise	Without Mitigation					Ensure routeing has less impacts on sensitive receptors. Limit vehicle speed within the mining right areas; Ensuring all equipment in use is maintained and equipped with the OEM's required muffler/exhaust/silencer; Consider the acoustic rating of equipment when selecting equipment; Minimise site and plant activities after hours; Limiting the number of activities that take place simultaneously in close proximity to SR's; and Maintaining a healthy consultative relationship with SR's in order to facilitate the sharing of knowledge and possible complaints as well as proposed corrective/preventative actions between parties.
		S	H	S	H	H	
		With Mitigation					
		S	M	S	L	L	
The initial box cut and constructed mine office/workshop complex may be visible from the nearby roads and properties. These areas will be visually affected by these mining activities.	Visual Aspects	Without Mitigation					A perimeter berm will be constructed around the initial box cut to shield the cuts away from the affected structures. Ensure that the initial box cut, successive cuts and the associated stockpiles and surface infrastructure are
		S	M	S	M	M	
		With Mitigation					

		S	L	S	L	L	removed or rehabilitated during the decommissioning phase of the mine.
Construction of Access and Haul Roads							
During the construction of the haul and access roads soils and natural vegetation will be stripped and removed, which will result in the loss of the potential for the area to be used for its current land use. The area's land capability will also be lost.	Soils	Without Mitigation					All removed topsoil must be stockpiled along the roads as perimeter berms. The berms will not be more than one meter high; hence will not have leaching effects on the soils. This will also assist in maintaining the seed bank of the removed vegetation in the soils. Excess soils will then be stockpiled at the topsoil stockpiling area, which will not be more than four meters high. The soils stockpiled or used as berms must be used to rehabilitate that area after mining have been completed and once the roads rehabilitated.
		S	M	S	M	M	
		With Mitigation					
		S	L	S	L	L	
The following potential impacts may result from the construction of roads and bridges i.e.: Destruction, fragmentation and degradation of habitats, ecosystems and loss of CBA; Spread and/or establishment of alien and/or invasive species; and Displacement of faunal community (including SCC) due to habitat loss, direct mortalities and disturbance (road collisions, noise, light, dust, vibration).	Terrestrial Ecology	Without Mitigation					Implementation of a rehabilitation plan; Prioritise and incorporate existing roads and routes before new roads are constructed; The existing western access route that bisects the Mesic Grassland and wetlands should be decommissioned and rehabilitated, alternative routes within the low sensitivity areas should be considered; and Areas that are denuded during construction need to be revegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species.
		S	H	S	H	M	
		With Mitigation					
		S	L	S	L	L	
The construction of the roads will involve the active clearing of vegetation, altering of banks/active channel as well as general catchment drainage modification. Direct unavoidable impacts is anticipated in the associated watercourses. The	Aquatic Ecology	Without Mitigation					Construction must be conducted under an approved methodstatement, which must address issues relating to access routes, demarcation of construction activities including no go areas, streams flow maintenance, adherence to approved design specifications, migrations
		S	H	S	H	H	
		With Mitigation					

maintenance of interflow is a key aspect to consider. The activity will disturb the stream habitat. The expected impacts are inundation immediately upstream/downstream of the crossings, as a resultant impact of ineffective areas, compounded by sedimentation and erosion of downstream reaches as a resultant impact of concentrated flows.		S	L	S	L	L	of aquatic fauna, sedimentation/erosion protection, construction monitoring and storm water management.
During the construction of the roads, surface water runoff from such areas will be contaminated with silt, which can add to the nearby surface water features. Through the clearing of vegetation, the exposure and movement of top and sub-soils present risk to altering chemical and physical conditions in local watercourses.	Surface Water	Without Mitigation					The roads must be constructed to have berms that will be used as diversion structures. The berms must be constructed such that any exit point for the water will have silt trap that will settle the silt from the roads before reporting to the clean water environment. No mining activities will be allowed within the 1:100 year floodlines.
		S	H	S	H	H	
		With Mitigation					
		S	M	S	M	L	

								Ensure that no equipment is washed in the streams and the affected wetlands. All washing must be undertaken at the mine's workshop area. No abstraction of water from any water course should be allowed unless authorized in the IWULA. In order to reduce the potential impacts associated with the introduction of contaminants dissolved or suspended in the runoff from construction sites, where practically possible, no runoff will be introduced into any water course directly. Introduction into dry land areas will be preferred as the vegetation, soils will provide an opportunity to limit the movement of contaminants, and the environment is conducive for natural degradation. All construction must be undertaken in line with the approved method statement and civil design reports and drawings.
Movement of mine vehicles over exposed areas will result in the generation of dust. Generated dust will migrate towards the predominant wind direction and may settle on surrounding farmhouses.	Air Quality	Without Mitigation						Dust suppression must be conducted during the construction of the road. Water carts will be used for the suppression of the dust on the roads.
		S	M	S	M	M		
		With Mitigation						
		S	L	S	L	L		
Noise generated from construction activities may add to the current noise levels. This may have impacts on surrounding property owners and occupiers.	Noise	Without Mitigation						The mine vehicles used during the construction must be well maintained and measures should be implemented by the mine to ensure that the noise generated from the mine machinery is lowered.
		S	M	S	L	L		
		With Mitigation						
		S	L	S	L	L		
Preparation of the topsoil, subsoil and overburden stockpiling area.								

Formation of the topsoil, subsoil and overburden stockpiles			
The formation of overburden stockpiles (topsoil, subsoil and hards) will result in topographical highpoints, whichmay alter the local topographical patterns of the immediate area. These impacts will remain for the life of mine.	Topography	Without Mitigation S H M M M With Mitigation S L L L L	Mitigation for these impacts is limited. The mine must however ensure that as little space as possible is used for the stockpiling of the overburden material. All overburden material must be utilised for the rehabilitation of the disturbed areas, which will ensure their remove and elimination of the impacts.
All activities will result in the stripping and removal of the topsoil layer, which will disrupt the soil profile. This will results in the loss of prime agricultural land/topsoil, changes on the land surface, soil erosion, soil compaction and chemical soil pollution from the mine vehicles.	Soils	Without Mitigation S H S M M With Mitigation S L S L L	Stockpile removed topsoil on a topsoil stockpile area separate from other overburden materials. Ensure that all practices recommended (general rehabilitation plan) are adhered to.
The above activities will result in the removal of natural vegetation due to the stripping of topsoil. The following impacts will occur during the construction phase i.e.:	Terrestrial Ecology	Without Mitigation S H S H H With Mitigation	Implementation of a rehabilitation plan, concurrent to the mining operation; All High sensitivity areas must be avoided and declared “No-go” areas. The areas to be developed/mined must be specifically demarcated to prevent movement into high

• Destruction, fragmentation and degradation of habitats, ecosystems and loss of CBA; • Spread and/or establishment of alien and/or invasive species; and • Displacement of faunal community (including SCC) due to habitat loss, direct mortalities and disturbance (road collisions, noise, light, dust,vibration and poaching).		S	H	S	M	M	sensitive surrounding environments. The open cast areas mining infrastructure outlines must be realigned to be outside of the wetland and wetland buffer zone habitat; Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be minimized and avoided where possible; The areas to be developed must be specifically demarcated to prevent movement of workers into, especially high sensitive areas and the surrounding environments. Signs must be put up to enforce this.
Exposure of soils may lead to increased silt loads in surface water runoff. Diesel, oil and chemical spills will have potential groundwater pollutants during this phase if allowed to occur .	Surface and Groundwater	Without Mitigation					Construct berms along the stockpiles and disturbed areas to reduce the levels of silt that may report to the nearby stream. Remove used oil after vehicle servicing, supply absorbent fibre at site, store all potential sources in secure facilities, waste, e.g., sewage must either be treated at site according to accepted standards or removed by credible contractors
		S	M	S	M	M	
		With Mitigation					
		S	L	S	L	L	
Movement of mine vehicles over exposed areas will result in the generation of dust. Generated dust will migrate towards the predominant wind direction and may settle on surrounding farm houses.	Air Quality	Without Mitigation					Conduct dust suppression on haul and access roads on a regular basis. Monitor the dust fall out concentration and ensure that significant source of pollution are managed.

Operation Phases

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
Systematic removal of the target coal seam by opencast mining methods							
Removal of coal by opencast mining and subsequent replacement of overburden material during the mining will result in the disturbance of the geological layers overlying the target coal seams.	Geology	Without Mitigation					No mitigation can be undertaken for the disturbance of the geological layers. The mine will however replace the overburden material in the mined out opencast pits during rehabilitation of the opencast pit.
		M	H	P	M	M	
		With Mitigation					
		M	M	P	L	L	
Opening of opencast pits during mining will result in the formation of voids, which will alter the topographical patterns within the immediate mining area.	Topography	Without Mitigation					Mining must be undertaken concurrently with rehabilitation. A maximum of three to four cuts must be operational at any time during mining.
		M	H	M	M	M	
		With Mitigation					
		M	M	M	L	L	
The stripping and stockpiling of topsoil during mining may result in the following:	Soils, Land Use and Capability	Without Mitigation					Implement a soil management strategy for the mining area. This will ensure that the soils at the mining area are protected during stripping and stockpiling of the encountered soils. Continuously monitor erosion on site Monitor compaction on site Assign proper storm water management plans Replacing of topsoil restore the suitable land capability.
		M	H	M	H	H	
		With Mitigation					
		M	M	M	M	M	

<table>
<tr>
<td>During this phase the mine develops and expands, daily activities is anticipated to further spread the alien invasive plants, as well as the deterioration of the habitats due to the increase of dust and edge effect impacts. Sensory impacts from blasting, light and noise will further disrupt lifecycles and ultimately continue to displace the faunal community.

The following potential impacts were identified:
• Continued fragmentation and degradation of habitats and ecosystems because of dust or polluted runoff beyond the mining area boundaries;
• Spread of alien and/or invasive species;
• Displacement of faunal community (including SCC) due to direct mortalities and disturbance (road collisions, noise, light, dust, vibration and poaching);
• Reduced dispersal/migration of fauna
• Environmental pollution due to water/ mine drainage runoff (AMD).</td>
<td>Terrestrial Ecology</td>
<td>Without Mitigation
M H M H M
With Mitigation
M L M L L</td>
<td>Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and dumps especially. This includes wetting of exposed soft soil surfaces and not conducting activities on windy days which will increase the likelihood of dust being generated;

Noise reduction measures must be installed for all machines, vehicles and equipment. Appropriate silencers to control potentially disrupting noises to be fitted. The noise impact assessment must advise;

Lighting should be kept to a minimum to avoid disturbing crepuscular and nocturnal species. Lighting fixtures should be fitted with baffles, hoods or louvers and directed downward, to minimize light pollution which could attract night-flying birds and night migrating species; and

Schedule activities and operations during least sensitive periods, to avoid migration, nesting and breeding seasons.</td>
</tr>
<tr>
<td>During the operational phase, storm water generated from the open pits and surrounding areas, which are considered as dirty, will be collected in the dirty water system. The water that would have contributed to the flow in the nearby streams will be lost to the catchment base flow.</td>
<td>Surface Water Quantity</td>
<td>Without Mitigation
M H M H M
With Mitigation</td>
<td>All clean storm water runoff during flood events will be diverted away from the opencast areas.

Rainfall water entering the opencast pits during flood events will be removed with the use of pumps with sufficient pumping capacity.</td>
</tr>
</table>

		M	M	M	L	L	The water will be pumped into the pollution control dam, which will be designed and constructed to be able to handle water from the 1:50 year flood event. The mine will develop an emergency procedure for evacuating employees in case the volumes of water captured in the pit are beyond the capacity of the pumping systems.
During the periods of higher than normal storm events, increased storm water will report into the river, which will results in the river flooding. If the position of the opencast pit is sited within the flood line, the mine may be flooded during the higher than normal storm events. This may result in the injury or loss of life to personnel working in the pits, damage to equipment and in the contamination of the clean storm water and nearby river.	Surface Water Quantity	Without Mitigation					The opencast pit must be designed and planned to be outside the 1:100 year flood line or 100 meters away from the affected streams and such that it can be maintained safe during high rainfall events.
		M	M	M	M	M	
		With Mitigation					
		M	L	M	L	L	
Some areas of the mine will be considered as dirty areas. These areas will include the opencast pits. Storm water and seepage generated from these areas will likely be contaminated and will have a detrimental effect on the water quality in the streams if released. The release of dirty water from the opencast pit may if not properly controlled, result in the downstream water users' water quality requirements being affected. These impacts will be most acute during the dry season when stream flows are low.	Surface Water Quality	Without Mitigation					Contaminated shallow seepage and storm water run-off must be collected and routed to a lined pollution control dam. The pollution control dam must be sized in accordance with Government Notice 704 of the South African National Water Act. The pollution control dam water levels must be constantly monitored. Steps and procedures must be put in place to manage situations where excess water builds up in the pollution control dam. The pollution control dam must be operated empty as far as practicable and cannot fulfil the same role as a water storage dam, unless specifically designed to fulfil both purposes. Water reuse from the pollution control dam must be maximised.
		M	H	M	H	H	
		With Mitigation					
		M	L	M	L	L	

Open casts pits are by nature surrounded by large tracks of bare soil that has been scraped clear of vegetation. As with crop agriculture these areas act as sources of potential sedimentation and if left to their own devises become erosive over time as infiltration decreases, flood peaks increase and preferential storm water paths develop.	Wetland Ecology	Without Mitigation M H M H H With Mitigation M L M L L	The following specific mitigation actions are recommended for the operational phase: Implement storm water management plan; Reduce the extent of bare surfaces wherever possible by rehabilitating and re-vegetating them; and Promote infiltration wherever possible (e.g. through the use of semipermeable paving bricks). Operate the mine to be within the approved buffer from the wetland areas.
During the operational phase, it is expected that the main impact on the groundwater quantity will be dewatering of the surrounding aquifer and loss of groundwater contribution to catchment base flow. The maximum drawdown for both the opencast area is in the order of 40 metres (central pit). No privately owned boreholes in the potential affected area exists hence no groundwater users will experience a decline in water levels of approximately 5 metres or more. Carbonaceous material remaining at the opencast pits from the removal of run of mine coal may cause acid mine drainage post mining of the mining area.	Groundwater	Without Mitigation M M M M M With Mitigation M L M L L	Surrounding boreholes i.e. monitoring and boreholes used by residents (if identified during mining) must be monitored on a quarterly basis to determine the extent of the dewatering cone from the mining workings. Mining must be undertaken concurrently with rehabilitation. Water seeping into the opencast pits must be removed to the pollution control dam as soon as possible. Reduce the exposure of the carbonaceous material to free oxygen. This will be achieved by placing the carbonaceous material at the bottom of the opencast pits and backfill as soon as possible thereby reducing the potential of exposure to free oxygen and hence reducing the possibility of acid mine drainage.
During mining dust may accumulate in the workings. This may have health impacts on the employees. Dust may further migrate away from the opencast area and	Air Quality	Without Mitigation M H M H H	Employees must be issued with dust masks and instructed to use them.

settle over the surrounding properties resulting in negative impact on the land owners or users.		With Mitigation M L M L L	Dust suppression must be undertaken daily. The suppression will be concentrated on the haul roads and access roads and any other arras generating significant dust.
Blasting of the overburden and coal seams will result in the generation of dust, which will migrate towards the prevailing wind direction. The dust will also settle on the surrounding vegetation cover. This dust cloud may impact negatively on the nearby residents and wetland areas	Air Quality	Without Mitigation M H M H H With Mitigation M L M L L	Minimum explosives will be used and the blasting holes will be stemmed. If the above is not sufficient, other effective methods will be investigated and implemented by the mine.
Spontaneous combustion of coal in exposed faces or in carbonaceous spoils may generate noxious gasses associated with burning coal.	Air Quality	Without Mitigation M M M M M With Mitigation M L M L L	Covering of burning areas in the high wall, with soil material. Rehabilitation of mined out areas as soon as possible to limit spoils areas from spontaneous combustion risk.
During the operation of the opencast mining areas, noise will be generated. Increased noise levels will hence be experienced in the nearby homestead during daylight hours due to operational related activities.	Noise	Without Mitigation M H M H H With Mitigation M L M L L	A berm as a barrier must be constructed between the source of noise and the receptors. If applicable haul roads to be used during the night-times should be routed as far as possible away from the receptors. No mining activity should take place 250 meters away from a receptor's property. If these cannot be attained, alternative way must be considered in consultation with the affected parties.

							Monitor noise levels to ensure that the required noise levels are maintained within the surrounding areas.
Blasting may also generate vibrations and fly rock. The fly rock may damage the vehicles travelling on the nearby roads and may cause injury and damage to nearby residents and their houses.	Blasting Aspects	Without Mitigation					The mine will undertake the blasting as per recommendation.
		M	H	M	H	H	
		With Mitigation					
		M	L	M	L	L	
Transportation of coal from the mining area to the coal stockpile area thereafter to the destined clients							
During the transportation of coal via coal trucks and dump trucks, spillages may occur. The spilled coal may land on surrounding properties resulting in the contamination of the natural vegetation and soils.	Natural Vegetation and Soils	Without Mitigation					All trucks used for the transportation of coal must be covered with tarpaulins during coal transportation. All spilled coal along the roads will be cleared within one day of spillage. Trucks will be required to obey certain road regulations when transporting coal at the mine. This will include speed limits etc.
		M	M	M	M	M	
		With Mitigation					
		M	L	M	L	L	
The operational phase of the impact of daily activities is anticipated to further spread the alien invasive plants, as well as the deterioration of the habitats due to the increase of dust and edge effect impacts. Dust reduces the ability of plants to photosynthesize and thus leads to degradation/retrogression of the veld. Moving vehicles don't only cause sensory disturbances to	Terrestrial Ecology	Without Mitigation					The following specific mitigation actions are recommended for the operational phase, all mitigation can be seen in the management plan: • Appropriate speed humps on light vehicle routes, enforcing of speed limits and mitre drains must be constructed along the access
		M	M	M	M	M	
		With Mitigation					

fauna, affecting their life cycles and movement, but will lead to direct mortalities due to collisions. The following potential impacts were identified: Continued fragmentation and degradation of habitats and ecosystems; Spread of alien and/or invasive species; Displacement and direct mortalities of faunal community (including SCC) due to disturbance (road collisions, noise, light, dust, vibration); Reduced dispersal/migration of fauna.		M	L	M	L	L	roads (every three metres of elevation) in order to slow the flow of water run-off from the road surface, if this does not already exist. Reducing the dust generated by the listed activities above, especially the earth moving machinery, through wetting the soil surface (with "dirty water") and putting up signs to enforce speed limit as well as speed bumps built to force slow speeds; • Compilation of and implementation of an alien vegetation management plan; and • Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and dumps especially. This includes wetting of exposed soft soil surfaces and not conducting activities on windy days which will increase the likelihood of dust being generated.
Haul roads and large access roads have the potential to increase erosion and sedimentation (possibly contaminated with carbonaceous and hydrocarbon) of wetlands and streams throughout life of mine if storm water is not properly incorporated into the design philosophy of the roads	Surface Water and Aquatic Ecology	Without Mitigation					The following specific mitigation actions are recommended for the operational phase: • Ensure storm water aspects are considered in the design and operation of the haul roads; and • Make sure that storm water drain outlets from the road are fitted with flow attenuation structures. • Ensure maintenance of mien vehicles adhered to.
		M	H	M	H	H	
		With Mitigation					
		M	L	M	L	L	
During the operation of the mining activities trucks will be used for the haulage of the coal from the mine site to the coal crushing and screening plant, which will generate noise that may affect the receptors along the haul roads. All receptors within the affected zone will be impacted by the noise generated from the roads.	Noise	Without Mitigation					Where possible berms as a barrier must be constructed between the source of noise and the receptors. If applicable haul roads to be used during the night-times should be routed as far away as possible from a receptor. If this cannot be achieved, the mine must refrain from using the haul roads during night time unless agreed to with the affected parties.
		M	M	M	M	M	
		With Mitigation					
		S	L	M	L	L	

Movement of mine vehicles over haul and access roads will result in the generation of dust. Generated dust will migrate towards the predominant wind direction and may settle on surrounding farm houses affecting the sensitive receptors.	Air Quality	Without Mitigation M H M H M With Mitigation S M L M L	Conduct dust suppression on haul and access roads on a regular basis. Monitor the dust fall out concentration and ensure that significant source of pollution are managed.
Stockpiling of coal and operation of crushing and screening mobile plant at the coal stockpiling area			
The stockpiling of the R.O.M coal will result in the formation of a topographical highpoint, which may change the topography of the area.	Topography	Without Mitigation M M M M M With Mitigation S L M L L	The height and tonnage of coal at the ROM stockpile will be kept within the approved mining plan.
The stockpiling of coal and operation of the ancillary infrastructure will impact the surrounding watercourses via direct runoff from hardened surfaces and materials from stockpiles and workshops. This runoff will likely contain contaminants and occur at elevated velocities. Impacts to be expected in this phase can largely be related to water quality and quantity impacts.	Aquatic Ecology	Without Mitigation S M M L L With Mitigation	The following mitigation is applicable to surface infrastructure during the operational phase: • The implementation and adherence to buffer zones depicted in the wetland delineations; • Clean and dirty surface water separation and storm water management plan must be put into place via standard best practice methods; • The revegetation of disturbed non active cleared areas must take place within 1 month of completing the construction phase; and • No discharge of domestic water must occur if possible. Domestic water must be reused for dust suppression. Should domestic water be required to be discharge, the domestic waste water discharge must be treated to a

		S	L	M	L	L	minimum standard of the wastewater limit values applicable to discharge of wastewater into a water resource as provided (RSA Government, 2013).
The stockpiling of coal may, if not properly managed, results in the spillage of coal beyond the coal stockpiling area, which will result in the contamination of the area beyond the stockpiling area. This may have an impact on the clean water environment and may affect the properties surrounding landowners. These include natural vegetation, animal life, cultivated lands, roads and any other infrastructures. Runoff water at the coal stockpiling area will come into contact with fine carbonaceous material, which will result in elevated SO4, Ca and Mg concentrations in surface water runoff. These may result in reduced pH levels, and thus elevated heavy metal toxicity in surface water quality within the natural water environment if allowed to escape.	Surface and Ground Water	Without Mitigation					Ensure that the coal stockpiles are maintained within the designed dimensions. Avoid generation of contaminated seepage from the facility, if note see below. Contaminated shallow seepage and storm water run-off must be collected and routed to a lined pollution control dam. The pollution control dam must be sized in accordance with Government Notice 704 of the South African National Water Act. The pollution control dam water levels must be constantly monitored. Steps and procedures must be put in place to manage situations where excess water builds up in the pollution control dam. The pollution control dam must be operated empty as far as practicable and cannot fulfil the same role as a water storage dam, unless specifically designed to fulfil both purposes. Water reuse from the pollution control dam must be maximised.
		M	H	M	H	H	
		With Mitigation					
		S	L	M	L	L	
During stockpiling of the coal (R.O.M and product coal), machinery and wind blowing over exposed surfaces will generate dust and diesel fumes. This dust will during windy days form dust clouds and migrate towards the wind direction, which will eventually settle on vegetation cover. This dust cloud may impact negatively on the nearby residents and on the natural vegetation cover.	Air Quality	Without Mitigation					Employees must be issued with dust masks and instructed to use them, Water captured in the pollution control dam will be used to suppress generated dust, Use of dusticites to ensure dust generation is minimised, Ensure that mine machinery are maintained in good working order; and Monitor dust within and around the affected areas
		M	H	M	H	H	
		With Mitigation					
		S	L	M	L	L	

Further to the above, the coal stockpiles may be visible from the nearby properties resulting in the visual impacts on the surrounding and owners and occupiers.	Visual Aspects	Without Mitigation	Where possible berms as a barrier must be constructed between the source of noise and the receptors. The dimensions of the barrier must be designed as recommended. If applicable haul roads to be used during the night-times should be routed as far away as possible from a receptor. If this cannot be achieved, the mine must refrain from using the haul roads during night time unless agreed to with the affected parties. Where possible berms as a barrier must be constructed between the source of visual impact and the receptors. The dimensions of the barrier must be designed and constructed to shield the coal stockpiling area.

Decommissioning and Closure Phases

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
DECOMMISSIONING AND CLOSURE PHASES							
Rehabilitation of Final Voids; Removing of mobile Crushing/Screening Plant and Related Structures; Demolition of Buildings and Structures; Rehabilitation of Access Roads; Rehabilitation of Overburden Stockpiling Facilities; Rehabilitation of Water Management Structures and Maintenance of Rehabilitated Areas.							
As large excavations are backfilled, there is a potential for the creation of dangerous excavations and steep embankments which will need to be backfilled and landscaped.	Topography	Without Mitigation					All backfilled areas must be levelled and levelled areas monitored for any settlement depressions, which must be rectified as soon as possible.
		M	M	M	H	H	
		With Mitigation					
		M	L	M	L	L	

The decommissioning phase for the proposed open cast mining areas will lead to compaction and erosion of soil resources predominantly due to increased traffic relating to backfilling activities, which could result in the loss of land capability.	Soil	Without Mitigation					After the completion of the project the area is to be cleared of all infrastructure; The foundations to be removed; Topsoil to be replaced for rehabilitation purposes; All rehabilitated areas should be assessed for signs of compaction, fertility and erosion.
		M	H	M	M	M	
		With Mitigation					
		S	L	M	L	L	
This phase is when the scaling down of activities ahead of temporary or permanent closure, cessation of mining or production is initiated. During this phase, the operational phase impacts will persist until of the activity reduces and the rehabilitation measures are implemented. • Continued fragmentation and degradation of habitats and ecosystems; • Spread of alien and/or invasive species; • Displacement of faunal community (including SCC) due to habitat loss, direct mortalities and disturbance (road collisions, noise, light, dust, vibration); and • Environmental pollution due to water/ mine drainage runoff (AMD).	Terrestrial Ecology	Without Mitigation					The following specific mitigation actions are recommended for the decommissioning phase, all mitigation can be seen in the management plan: • Implementation of a closure / rehabilitation plan from the onset of the mining operation. Rehabilitation must be conducted concurrent to mining. The rehabilitation must be reviewed every 3 years in relation to the mining operation, and amended accordingly; and • Ongoing implementation of an alien vegetation management plan as well as the monitoring of the plants.
		M	H	M	M	M	
		With Mitigation					
		S	L	M	L	L	

Similar impacts to the construction phase can be anticipated in the decommission phase of the surface infrastructure.	Aquatic Ecology	Without Mitigation					The following mitigation actions are applicable for the decommissioning phase. • The implementation and adherence to buffer zones depicted in the wetland delineations; • All dirty areas must be rehabilitated, with contaminated soils deposited in a suitable waste facility; and • The revegetation and alien invasive species clearing and monitoring must occur in line with the flora component of this assessment mitigation requirements.
		S	H	M	M	M	
		With Mitigation					
		S	L	M	L	L	
During the decommissioning of the mined-out voids, overburden and top soil will be re-introduced into the voids. Thereafter top soil will be rehabilitated via an appropriate rehabilitation strategy. Considering the extractive nature of the mining activities a final void is anticipated, this may either be a large open final void pit or a reduction in the surface topography (elevation).	Aquatic Ecology and Surface Water	Without Mitigation					Mitigation actions provided in the construction phase are applicable in this phase and include: Implementation of the approved rehabilitation strategy;
		M	M	M	M	M	
		With Mitigation					

		S	L	M	L	L	A buffer zone, a 100m horizontal distance from the delineated watercourse edge must be maintained all the time. Clean and dirty surface and ground water separation must be put into place via standard best practice methods; Aquatic biomonitoring, surface and groundwater monitoring; Implement alien vegetation removal and management plan; Removal and disposal of infrastructure materials and debris following the completion of the phase in a suitable area off-site.
During the decommissioning phase of the roadways and crossing points the disturbed areas will be rehabilitated. This will again involve the active disturbance of the stream habitats resulting in similar impacts as described in the construction phase.	Aquatic Ecology	Without Mitigation					The mitigation provided in the construction phase must be implanted during the decommissioning phase. Further recommendations include: • The rehabilitation of the disturbed footprint to an approved post mining land use; • The rehabilitation of the instream crossings to reconstitute bank structures and natural flow paths; and • A post rehabilitation monitoring programme to assess the condition of the crossing points.
		S	H	M	M	M	
		With Mitigation					
		S	L	M	L	L	
Noise will be generated during the hauling and loading of material by trucks on site. This noise may exceed	Noise	Without Mitigation					Provide employees with ear plugs and instructed them to use the ear plugs.

operational noise levels but will be short lived.			Where possible berms as a barrier must be constructed between the source of noise and the receptors.
		S H M M M	
		With Mitigation	
		S L M L L	
As this phase will involve additional traffic such as trucks removing materials, significant dust may be generated on the areas being worked.	Air Quality	Without Mitigation	Water captured in the pollution control dam will be used to suppress generated dust, Use of dusticites to ensure dust generation is minimised, Ensure that mine machinery are maintained in good working order; and Monitor dust within and around the affected areas
		S M M M M	
		With Mitigation	
		S L M L L	
<u>Groundwater Quantity</u> Following the closure of the colliery and the cessation of the dewatering it is assumed to lead to groundwater rebound. After rebound has reached equilibrium or water in the pit equal to surrounding host rock, decant has the potential to occur due to excessive rainfall and surface water run-off water entering the pit.	Groundwater	Without Mitigation	The numerical and geochemical model needs to be updated against monitored data during the post-closure phase. The post-closure groundwater management of the opencast should be done in two phases: • Phase 1: Immediately after closure

<u>Groundwater Quality</u> Groundwater within the mined areas is expected to deteriorate due to chemical interactions between the geological and the groundwater. The resulting groundwater pollution plume will commence with downstream movement.								The acid producing material should be placed as low in the pits as possible, followed by the non-acid generating material. Rapid flooding should be done by diverting storm water channels and pumping of available groundwater into the pit until the acid producing material is inundated by the water. • Phase 2: After Rapid Flooding The final backfilled opencast topography should be engineered such that runoff is directed away from the opencast areas. The final layer (just below the topsoil cover) should be as clayey as possible and compacted if feasible, to reduce recharge to the opencasts. Natural berms should then be constructed to allow free drainage of surface water around the rehabilitated pit. Should monitoring indicate the passive methods employed during the rehabilitation of the opencast are ineffective and the decant water quality is unacceptable for release the following can be implemented. Passive Method: Should low volumes of water be encountered (< 5 ℓ/s) an interception trench can be designed as follows. Active method: Should high volumes of water be encountered (> 5 ℓ/s), Treatment strategies may include a greater or lesser degree of water treatment in order to render the water suitable for reuse. If there is still a residual water management problem, then the operation could evaluate and negotiate options with DWA for the discharge of such water to the water resource.
		L	H	P	H	H		

		With Mitigation					
		S	M	P	L	L	
After the colliery is closed, contaminated water	Surface Water	Without Mitigation					Mitigation of the impacts should include the following:

<table>
<tr><td rowspan="5">management becomes passive. Groundwater inflows and recharge through the rehabilitated spoils may create decant from the opencast workings. This decant will be driven by rainfall recharge through the surface and groundwater inflows.</td><td rowspan="5"></td><td></td><td></td><td></td><td></td><td></td><td>• The rehabilitation work should strive to minimise and maximise run-off.
• A final void could be optimised to evaporate excess pit water.
• Where feasible, materials likely to produce the highest amounts of pollution should be replaced in sections of the pit where they will be permanently flooded, thus preventing oxidation of these materials.
• Should passive mitigation measures not be suitable, active alternatives can be considered such as some form of treatment, prior to release.</td></tr>
<tr><td>M</td><td>M</td><td>P</td><td>H</td><td>H</td><td></td></tr>
<tr><td colspan="5">With Mitigation</td><td></td></tr>
<tr><td>S</td><td>M</td><td>P</td><td>L</td><td>L</td><td rowspan="2"></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table>

j) Summary of specialist reports.

(This summary must be completed if any ` reports informed the impact assessment and final site layout process and must be in the following tabular form):-

Geohydrological study will be conducted for the application and the results of such study will be incorporated into the final BAR.

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.

Summary of specialist reports.

k) Environmental impact statement

This section of the report provide the description of the environmental impact assessment statement for the proposed Opencast Mining Project as contemplated in regulation 3(l) under Appendix 3 of the NEMA EIA Regulations, 2017.

Tunnel Vision Resources(Pty)Ltd is proposing to establish a strip mining operation for the extraction of coal from the B and C Seams within its mining permit area. Coal will only be processed on site using a mobile crushing and screening plant and sold to destined clients. Some of the coal will be sold as run of mine without sizing in the crushing and screening plant.

The project will begin with the construction of all necessary surface infrastructure, which include the water management facilities and structures i.e.: a pollution control dam and all storm water diversion structures.

Mine development will begin with the excavation of an initial box cut following by opening of subsequent cuts using truck and shovel opencast mining methods. Coal will be hauled from the pit to a coal stockpiling facility for processing with the mobile crushing and screening plant and then transported by road to destined clients.

(i) Summary of the key findings of the environmental impact assessment;

During the construction phase a considerable amount of impacts on the soils, natural vegetation, surface water, groundwater, sensitive landscapes, air quality, noise, visual aspects and socioeconomic status of the surrounding communities will be medium to very high without mitigation. Tunnel Vision Resources(Pty)Ltd will undertake measures to ensure that the identified impacts are minimised. Assessment of the impacts with the proposed mitigation measures has shown the significance of the impacts on all affected environmental aspects to be reduced from medium and high significance to medium/low significance.

Land use will change. Several uses, around the proposed project area may be affected, however measures will be put in place to minimise the impacts. Measures such as implementation of the rehabilitation plan, safety along the roads, safe blasting, noise control, dust suppression and ensuring that the affected parties are at all times consulted and will ensure that the impacts on the current uses are not detrimentally affected.

With differential stockpiling and careful handling of the soils removed from the proposed project infrastructure area, the impacts on soils will be low after mitigation.

Dirty storm water runoff from the dirty water areas will have a detrimental impact on the surrounding water environment should this water be released to the environment. In order to prevent the occurrence of the above-mentioned impacts, a storm water management system, which will ensure the diversion and collection of dirty storm water from the project area has been developed and will be implemented at the proposed project area. This system will further ensure that clean storm water from the project is diverted to the clean water environment, thereby preventing the contamination of clean storm water with the mineral residues from the proposed project area. The dirty storm water and seepage water from the project area will be stored in a pollution control dam. A system, which include diversion trenches and water pipelines will be used for the collection and reuse of water from the pollution control dam.

Sediments will be created from the site during the construction, operational and decommissioning phase, which may impact negatively on the surrounding water environment. Silt traps which will act as settling ponds will be used to manage the silts from this runoff water. Once the silt has been settled, the clean water will be released to the natural environment. Silt traps will be constructed around the construction site for the management of runoff water with high silt loads.

The mine will pose a risk to the groundwater environment in the form of drawdown and contaminated seepage which will have an elevated sulphate concentration which is likely to impact negatively on the aquifer and could potentially also affect the nearby streams. Water management measures will be provided that will ensure that the predicted impacts are managed and reduced. Should the measures be undertaken, the significance rating predicted impacts would reduce to low rating.

Dust and noise will have impacts on the surrounding communities. Measures will be put in place and implemented in order to maintain the impact significance rating as low.

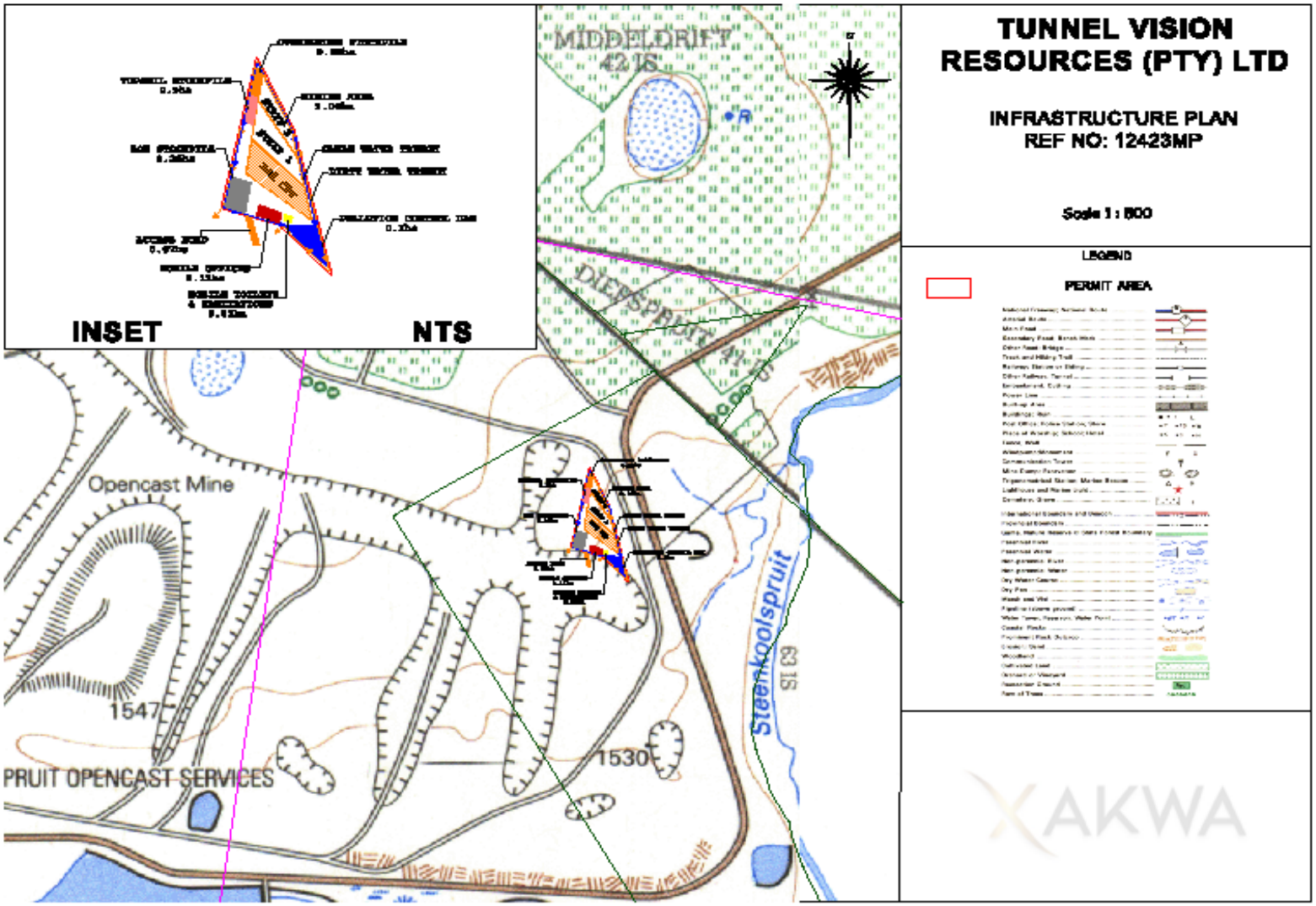
Commencement of the proposed Opencast Mining Project will ensure that employment opportunities both during the construction pages (temporary) and operational phase, are created. This will have a positive impact on the socio-economies of the surrounding towns.

All workers will be housed in surrounding towns and villages to minimise their potential impact on community security. The mining company will work with the local communities to promote security on an ongoing basis.

(ii) Final Site Map

Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers .

The final maps showing the layouts of the proposed project in relation to the proposed mining activities and associated surface infrastructure after the impact assessment exercise will be generated. All recommendations provided in the EMPr will be incorporated in the layout plan. The map will be developed to superimpose the proposed mining project and associated infrastructure over the environmental sensitivities within the preferred project site.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(iii) Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

- Increased ambient noise levels resulting from geophysical surveys site fly-overs and increased traffic movement during all phases as well as blasting activities.
- Potential water and soil contamination from hydrocarbon spills and soil erosion which may impact on the environmental resources utilized by communities, landowners and other stakeholders.
- Potential water and soil pollution impacts resulting from hydrocarbon spills and soil erosion which may impact on ecosystem functioning.
- Influx of persons (job seekers) to site as a result of increased activity and the possible resultant increase in opportunities of crime.
- Creation of employment opportunities.

l) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;

Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation.

Impact management objectives are described in terms of the Mitigation Hierarchy of the ERM Impact Assessment Standard. The mitigation hierarchy is as follows:

- **Avoid at Source:** Reduce at Source: avoiding or reducing at source through the design of the Project (e.g., avoiding by siting or re-routing activity away from sensitive areas or reducing by restricting the working area or changing the time of the activity).
- **Abate on Site:** add something to the design to abate the impact (e.g., pollution control equipment, traffic controls, perimeter screening and landscaping).

- **Abate at Receptor:** if an impact cannot be abated on-site then control measures can be implemented off-site (e.g., noise barriers to reduce noise impact at a nearby residence or fencing to prevent animals straying onto the site).
- **Repair or Remedy:** some impacts involve unavoidable damage to a resource (e.g. agricultural land and forestry due to creating access, work camps or materials storage areas) and these impacts can be addressed through repair, restoration or reinstatement measures.
- **Compensate in Kind; Compensate Through Other Means:** where other mitigation approaches are not possible or fully effective, then compensation for loss, damage and disturbance might be appropriate (e.g., planting to replace damaged vegetation, financial compensation for damaged crops or providing community facilities for loss of fisheries access, recreation and amenity space).

Impact management objectives:

- Provide sufficient information to strategically plan the mining activities as to avoid unnecessary social and environmental impacts
- Provide sufficient information and guidance to plan the mining activities in a manner that would reduce impacts (both social and Environmental) as far as practicable.
- Ensure an approach that will provide the necessary confidence in terms of environmental compliance.
- Provide a management plan that is effective and practical for implementation

Impact Management Outcome:

Through the implementation of the proposed mitigation measures, it is anticipated that the identified social and environmental impacts can be managed and mitigated effectively. Through the implementation of the mitigation and management measures it is expected that:

- Noise impacts can be managed through consultation and through the restriction of operating hours;
- The pollution of soil and water resources can be effectively managed through containment;
- Ecological impact can be managed through the implementation of pollution prevention measures, minimising land clearing, restricting working hours (faunal disturbances) and rehabilitation.
- Concerns regarding access control to the site can be managed through the development and ensuring compliance to an appropriate access control procedure.
- Risks associated with crime can be mitigated through avoiding recruitment activities on site as well as monitoring and reporting.
- Visual impacts can be minimized through giving consideration to infrastructure placement and materials used.
- Traffic impact can be minimized through widening the existing road accessing the site.

m) Aspects for inclusion as conditions of Authorisation.

In authorising the proposed Opencast Mining Project, the following conditions should form part of the environmental authorisation:

- The mining company may not alter the location of any of the project activities included in this environmental impact assessment without obtaining the required environmental authorisation to do so under NEMA.
- Tunnel Vision Resources(Pty)Ltd will not undertake any new activity that was not part of this environmental impact assessment and that will trigger a need for an environmental authorisation without proper authorisation.
- The EMPr must be implemented fully at all stages of the proposed Mining Project
- Tunnel Vision Resources(Pty)Ltd must consider the development of an environmental management system with applicable operational procedure to support the efforts of ensuring compliance with the EMPr commitments. These must be updated regularly. Frequency of updates must be informed by suitably qualified persons.
- An Environmental Control Officer must be appointed at the commencement of the proposed activity in order to conduct a monthly Environmental Audit and compliance monitoring in terms of regulation 34 of the NEMA EIA 2014 Regulations
- Mining operations, including site preparation, may not commence prior to the issuance of a water use licence in terms of the NWA to the applicant in respect of the water uses to be undertaken as part of the mining operations;

- The applicant must audit compliance with the conditions of the environmental authorisation including the approved EMPR annually in accordance with regulation 34 of the Environmental Impact Assessment Regulations, 2014.

n) Description of any assumptions, uncertainties and gaps in knowledge.
(Which relate to the assessment and mitigation measures proposed)

The EIA Regulations, 2014 outline specific requirements that a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures must be provided in the BAR.

The assessments undertaken are based on conservative methodologies and these methods attempts to determine potential negative impacts that could occur on the affected environmental aspects. These impacts may however be of smaller magnitude than predicted, while benefits could be of a larger extent than predicted.

This section outlines various limitations to the assessments that have been undertaken and indicates, where appropriate, the adequacy of predictive methods used for the assessment. This has been done to provide the authorities and interested and affected parties with an understanding of how much confidence can be placed in this impact assessment.

During the assessment of some of the prevailing environmental conditions (groundwater, air quality, noise aspects and visual aspects) at the proposed Opencast Mining Project area, several limitations were encountered. It is a well-known fact that coal mining has potential to impact on these environmental aspects. These impacts can be substantial during and after the mined area has been rehabilitated. Determination of the extent of the impact cannot be conducted due to the limited amount of data. Modelling (predictive methods) was therefore used to estimate the behaviour of the environment post closure. These estimations represent a limitation e.g., assuming that the environment will behave in certain manner, and can lead to errors. It is therefore important that the modelling exercise be repeated with a more extensive data acquisition phase in order to obtain improved estimates of the environment and thus narrowing the existing uncertainties.

It must however be stated that the above-mentioned predictive methods were used for reasons e.g., not enough data was available. However the adequacy of the methods has also been proven. The same methods were used for several years with good results. These estimations will however improve with acquisition of more data.

o) Reasoned opinion as to whether the proposed activity should or should not be authorised

i. Reasons why the activity should be authorized or not.

According to the impact assessment undertaken for the proposed project, the key impacts of the project are on sensitive landscapes through groundwater plume migration, contamination of surface water environment through discharge of mine affected water via leaking or bursting of pipelines. These impacts may be experienced throughout the life of the mine.

Other impacts from the proposed project include the socio-economic impact on the surrounding communities through unrealised expectations and disruption of normal daily routes. The surrounding community may also be impacted via air pollution, higher than normal noise levels and change in the aesthetics of the area which will have impacts on the sense of place. It must however be noted that the area is currently used for mining purposes, hence the communities surrounding the proposed project area are used to mine related operations.

The project will also have positive impacts due to the employment to be created although for a short term during the construction phase. The employment due to the ability of the mine to operate will have a positive impact. A number of community based projects will be implemented by the mine, which will have positive impacts on the surrounding community.

All comments received during Public Participation Process will be included in this BAR and EMPr. The management of the impacts identified in the BAR for all phases of the proposed project will be undertaken through a range of programmes and plans contained in the EMPr. In consideration of the programmes and plans contained within the EMPr as well as designs, layouts and method statements compiled for the project, which is assumed will be effectively implemented, there will be significant reduction in the significance of potential impacts.

Based on the above, it is therefore the opinion of the EAP that the activity should be authorised.

ii) Conditions that must be included in the authorisation

- The mining company may not alter the location of any of the project activities included in this environmental impact assessment without obtaining the required environmental authorisation to do so under NEMA.
- Tunnel Vision Resources(Pty)Ltd will not undertake any new activity that was not part of this environmental impact assessment and that will trigger a need for an environmental authorisation without proper authorisation.
- The EMPr must be implemented fully at all stages of the proposed Mining Project
- Tunnel Vision Resources(Pty)Ltd must consider the development of an environmental management system with applicable operational procedure to support the efforts of ensuring compliance with the EMPr commitments. These must be updated regularly. Frequency of updates must be informed by suitably qualified persons.
- An Environmental Control Officer must be appointed at the commencement of the proposed activity in order to conduct a monthly Environmental Audit and compliance monitoring in terms of regulation 34 of the NEMA EIA 2014 Regulations
- Mining operations, including site preparation, may not commence prior to the issuance of a water use licence in terms of the NWA to the applicant in respect of the water uses to be undertaken as part of the mining operations;
- The applicant must audit compliance with the conditions of the environmental authorisation including the approved EMPR annually in accordance with regulation 34 of the Environmental Impact Assessment Regulations, 2014.

q) Period for which the Environmental Authorisation is required.

The mining permit has been applied for a period of two years.

r) Confirm that the undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Basic assessment report and the Environmental Management Programme report.

The undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Basic assessment report and the Environmental Management Programme report

s) Financial Provision
State the amount that is required to both manage and rehabilitate the environment in respect of rehabilitation.

The site rehabilitation processes will require **R1 984 102.00.00**

i. **Explain how the aforesaid amount was derived.**

The aforesaid amount was derived using the department of mineral resource guideline document for the evaluation of the quantum of closure-related financial provision provided by a mine.

ii. **Confirm that this amount can be provided for from operating expenditure**. (Confirm that the amount, is anticipated to be an operating cost and is provided for as such in the Mining work programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be).

Should mining permit be granted, Tunnel Vision Resources(Pty)Ltd will make provision for the estimated closure cost by means of a Bank Guarantee or any other means available and accepted by the Competent Authority.of a Bank Guarantee or any other means available and accepted by the Competent Authority.

t) Specific Information required by the competent Authority

i. Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3) (a) and (7) of the National Environmental Management Act (Act 107 of 1998). the EIA report must include the:-

1. Impact on the socio-economic conditions of any directly affected person.

No specific report was generated for the purposes of the socio-economic conditions. All findings are presented hereafter:

- Potential water and soil pollution resulting from hydrocarbon spills and soil erosion;
- Noise due to the undertaking of the site fly-overs and drilling activities;
- Generation of waste that would be injected into the local waste stream;

- Poor access control resulting in impacts on cattle movement breeding and grazing practices;
- Influx of persons (job seekers) to site as a result of increased activity and the possible resultant increase in opportunistic crime; and Visual Impact

Impact Summary

Potential Impact	**Significance Pre-Mitigation**	**Significance Post-Mitigation**
Socio- Economic Environment and Livelihoods		
Creation of Employment opportunities	Minor (+)	Minor (+)
Loss of Productive land for Agricultural Purposes	Minor (-)	Insignificant (-)
Physical and Economic Impacts		
Water and Soil Pollution resulting from spillages of hydrocarbons	Moderate (-)	Minor (-)
Increased noise levels from the fly-overs planes and drilling activities	Major (-)	Moderate (-)
Generation of wastes that would be injected into local waste stream	Major (-)	Minor (-)
Legal and Legacy Issues		
Resentment and anger from unfulfilled expectations	Moderate (-)	Minor (-)
Influx of job seekers	Moderate (-)	Minor (-)
Criminal activities (Site Camp invasion)	Moderate (-)	Minor (-)

2. Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.

It is recommended that in an event where a heritage feature is identified at any stage of the proposed activity a Heritage Impact Assessment study must be conducted in terms of Section 25 of the heritage act

u) Other matters required in terms of sections 24(4)(a) and (b) of the Act.

(the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as **Appendix 4)**.

No alternatives of the site were considered based on the following:
The material that will be maned is fixed or is located within the preferred site.
There is sufficient open area with no settlements that could possibly create conflicts.
There are no historically or heritage resources known to be on site.

PART B
ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1) Environmental management programme.

a) **Details of the EAP,**

(Confirm that the requirement for the provision of the details and expertise of the EAP are already included in PART A, section 1(a) herein as required).

The requirement f or the provision of the details and expertise of the EAP are included in PART A, section 1(a).

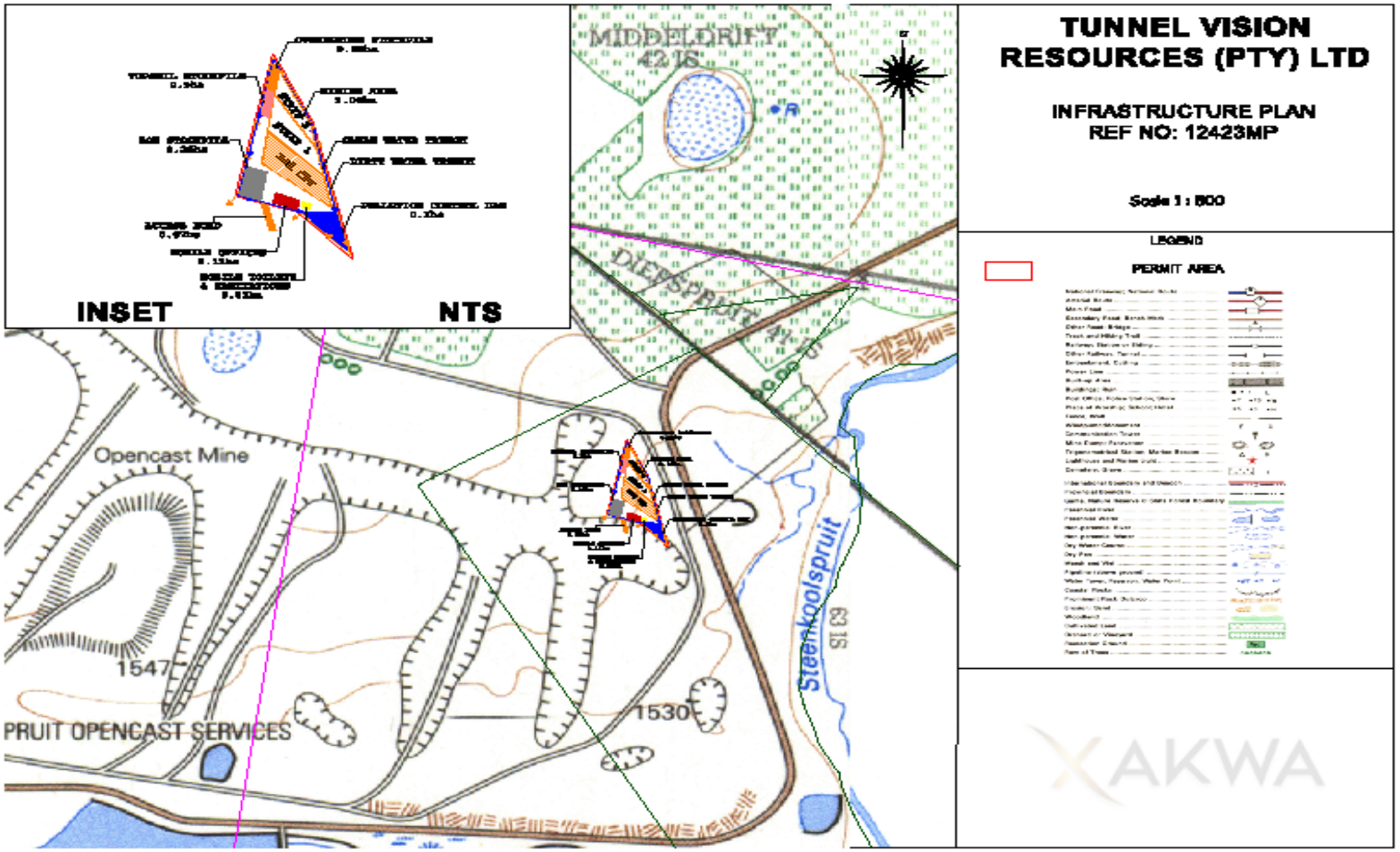
b) **Description of the Aspects of the Activity**

(Confirm that the requirement to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section (1) (h) herein as required).

The requirement to describe the aspects of the activity that are covered by the environmental management programme is already included in PART A, section (1) (h).

c) **Composite Map**

(Provide a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers)


INSET
NTS
MIDDELDRIFT
421IS
DIESSPRUIT
Opencast Mine
1547
PRUIT OPENCAST SERVICES
1530
Steenkoolspruit
631S
TUNNEL VISION
RESOURCES (PTY) LTD
INFRASTRUCTURE PLAN
REF NO: 12423MP
Scale 1 : 500
LEGEND
PERMIT AREA
AKWA

d) **Description of Impact management objectives including management statements**

i) **Determination of closure objectives.** (ensure that the closure objectives are informed by the type of environment described)

GENERAL MINE CLOSURE PRINCIPLES AND OBJECTIVES

The following are the closure objectives, general principles and objectives guiding closure of mining areas for the proposed mining closure planning:

- Rehabilitation of areas disturbed as a consequence of mining to a land capability that will support and sustain a predetermined mix of post-closure land uses;
- Removal of all infrastructure that cannot be beneficially re-used, as per agreements established, and returning the associated disturbed land to the planned final land use;
- Removal of existing contaminated material from mine-affected areas;
- Reinstatement of self-sustaining ecosystems over the rehabilitated infrastructure and mining affected areas, requiring minimum on-going maintenance to facilitate a walk away situation;
- Establishment of final landforms that are stable and safe in the long run;
- Establishment and implementation of measures that meet specific closure related performance objectives;
- Management of mine-affected water to prevent long-term risk of contamination of surface and underground water sources;
- Treatment of mine-affected water to ensure compliance with all relevant standards and supply for beneficial use where feasible;
- Prevention of acid mine drainage;
- Minimisation of decant from all open water bodies;
- Addressing surface subsidence and all other related surface disturbance, to ensure that these are free draining to local watercourses without compromising ecological and hydrological functionality;
- Limitation of recharge of rainfall to the mine workings to reduce the amount of water to be abstracted; and treatment to prevent surface and/or near surface contaminated excess mine water decant; and
- Monitoring and maintenance of rehabilitated areas and water treatment processes forming part of mine closure to ensure the long-term effectiveness and sustainability of measures implemented.

MANAGEMENT OF ENVIRONMENTAL DAMAGE, ENVIRONMENTAL POLLUTION AND ECOLOGICAL DEGRADATION CAUSED BY OPENCAST MINING PROJECT ACTIVITIES

The following actions will be undertaken by Tunnel Vision Resources(Pty)Ltd to ensure that the closure objectives are attained.

1. Infrastructure Areas

Policy

- Whenever possible, buildings and their infrastructure will not be demolished but left for post closure use. It is intended that ownership will be transferred to a third party. Should this not be possible, all buildings will be demolished and the area rehabilitated.
- All concrete, steel works and structures will be removed so that the land can be returned to as near as practically possible to its original state. Concrete work that extends below ground level will be removed to a metre below the surface. Steel will be sold as scrap metal.
- All rehabilitated areas will be shaped to be free draining without concentrating flow such that erosion occurs, fertilised and a mixture of indigenous and pasture grasses will be planted. Following this rehabilitation the infrastructure areas will have a capability similar to the premining environment.
- All rehabilitated areas will be maintained for a period of 3 years, where after the frequency will be reassessed. Vegetation cover will be maintained by annual application of fertiliser combined with biennial cutting or burning for the first three years. After this period, fertilizer will be applied as and when required. This will be determined by monitoring the basal cover and fertilizer levels.
- Maintenance with respect to erosion will be conducted on a minimum three monthly basis if and where required. This frequency will be reassessed after a 3-year period. The final rehabilitated surface will be stable, self-sustaining and erosion-free.
- All roads not required for residential or farming purposes, and overland conveyors will be removed and the ground restored as above.

2. Roads

The law pertaining to rehabilitation requires all infrastructure associated with the mining operation to be removed and the surface on which it was situated to be returned, as close as is practically possible, to the original land use.

- Access roads to the Opencast Mining Project will be rehabilitated. All gravel roads will be graded to remove carbonaceous material. The roads will be cross-ripped to 300 mm at right angles to the natural slope, fertiliser added as per soil requirements and vegetated with a seed mix of indigenous and pasture grasses. Maintenance will be conducted on the rehabilitated areas as indicated in the Policy statement.

3. Buildings (Offices, Workshops and Stores)

The bulk of the activity in removing the workshops, stores and administration buildings will be the demolition and disposal of concrete structures. Metal will be removed and sold. Rubble will either be removed to the final voids or waste disposal site and all scrap metal will be cleared from the area and sold.
If any soils are contaminated with hydrocarbons, they will be bio-remediated.

4. Geomorphology

The topography and soil profile is an important component of the geomorphology and determine amongst others how water and nutrients will flow through the system.

Topography
Following final rehabilitation, the area must be shaped so that the topography of the area emulates the pre-mining topography. The geomorphology of the catchment will thus be re-instated.

Soil profile

The placement of the different soil forms of the sub-soil layer covered by the different soil forms of the top-soil layer must emulate the pre-mining soil profile and will result in the re-instatement of the geomorphology. Surface runoff water will thus not move vertically underneath the compacted layer. The compacted layer will assist in the lateral movement of water down-slope area and eventually to the stream or lowest area.

5. Hydrology

The topography is an important component of the hydrology and determine amongst others in which direction the surface runoff water is flowing over the area.

Topography

All infrastructure, buildings and voids in the opencast mining operation and associated infrastructure area that hindered and altered the flow of water down to the stream area must be dismantled, demolished, removed and backfilled. Following final rehabilitation, the area must be shaped so that the topography of the area emulates the pre-mining topography. The stream area will receive once more most of the surface runoff water that it received prior to the commencement of the project. The
hydrology of the disturbed part of the catchment area will thus be reinstated.

Water quality

Surface water: Since the mine and associated infrastructure area will be covered with uncontaminated top-soil, surface water running over the area will not carry pollutants. Sub-surface water moving laterally through the sub-soil will also not carry pollutants since the compacted sub-soil layer will keep it above the potentially contaminated material.

Groundwater: Following mine closure and rehabilitation of the pit, the backfill may form an artificial aquifer which may decant. Should seepage or decant occur, the water should be redirected via trenching to a pollution control dam that is sanitarily lined with secondary containment. Treatment of the decant may be viable, however all passive methods should be investigated first during the operational phase of the mine.

6. Vegetation

Vegetation is an important component in order to curb the speed with which surface runoff water flows down a slope. Excessive flow can cause erosion and diminish infiltration. Vegetation is also imperative for the trapping of silt, pollutants and toxins.

Vegetation

During the placement of the top-soil layer, contour berms must be formed in order to aid in reducing the speed of runoff water. The rehabilitated terrestrial area will be seeded with the recommended terrestrial seed mixture and where wetlands are rehabilitated re-vegetation with seed collected from the hydromorphic grass species in the area will be conducted. Once the vegetation is established, it will re-instate the natural services of flood attenuation, stream flow regulation and sediment/pollutant/ toxin trapping. The vegetation will also re-instate the habitat for smaller animals and invertebrates.

ii) **Volumes and rate of water use required for the operation.**

A water balance is one of the most important and fundamental water management tools available to the mines, which can assist the mines in their water management. Water balance can be used by the mines in identifying and quantifying points of water consumption, as well as pollution sources. This information is key in assisting the mine in their water management designs.

In view of the above and since the mine will be required to submit a Water Use License Application to the Department of Water and Sanitation (DWS) for any new water uses and since the water balance will forms part of the supporting documentation for the Water Use License Application, a water balance will be developed for the mine. The water balance will give details of the volumes and rate of water that will be used and will be required by the proposed Opencast Mining Project. A copy of the water balance for will be available on request.

iii) **Has a water use licence has been applied for?**

During the operation of the proposed Opencast Mining Project, a number of activities that have been declared as water uses in terms of the National Water Act, 1998 (Act 36 of 1998) will be undertaken. In terms of section 22(1)(b), a person may use water if the water use is authorised by a licence under the National Water Act, 1998 (Act 36 of 1998). According to section 40 of the National Water Act, 1998 (Act 36 of 1998), the water use activities to be undertaken at the proposed Opencast Mining Project must be authorised by the Department of Water and Sanitation, whose authorisation must be in the form of an integrated water use licence. In view of the above, Tunnel Vision Resources(Pty)Ltd will have to compile and submit an application for an integrated water use licence to the Department of Water and Sanitation (Mpumalanga Regional office) for consideration.

e) Impacts to be mitigated in their respective phases

Measures to rehabilitate the environment affected by the undertaking of any listed activity

Impact Activity Reference	Environmental Attribute	Impact Management Objectives	Targets (Impact Management Outcomes)	Management Actions And Interventions	Responsibility For Actions/Intervention	Monitoring Action	Responsibility and Frequency For Monitoring	Time period for Management Action
PRE-CONSTRUCTION AND CONSTRUCTION PHASE								
Excavation of the Initial Box cut. Construction of Mine Office/Workshop Complex (Office, workshop, ablution facility etc.) and Coal Stockpiling Facility (Run of mine, and crushing/screening plant) and Mine Water Management Facilities (Storm water management system and pollution control dam)								
Disturbance of the geological profile	Geology	To ensure that the construction of the initial box cut does not have detrimental impacts on the geology	Replacement of the opencast voids with removed overburden material	Use removed material to backfill the opencast voids. All remaining carbonaceous material will be placed at the bottom of the mining pits and should be covered with the rest of the remaining overburden material. This will reduce the exposure of the carbonaceous material to free oxygen, hence limiting the formation of acid mine generation.	ECO and Mining Contractor	Measuring volumes of overburden removed and replaced. Check the volumes against volumetric assessment done by mine surveyor.	Surveyor and Monthly	Throughout Construction Phase
topographical voids	Topography	To ensure that the construction of the initial box cut does not have detrimental impacts on the local topographic patterns	The initial box cut will be excavated to comply with the safety standards set in the Mine Health and Safety Act, 1996 (Act 26 of 1996), the mine's	Use material from the successive cuts to backfill the voids created by the construction of the initial box cut. Note that since concurrent rehabilitation will be used at the mine, only three to four cuts will	ECO and Mining Contractor	Measuring volumes of overburden removed and replaced. Check the volumes	Surveyor and Monthly	Throughout Construction Phase

			health and safety policies, relevant operational procedures	at all times be open at the opencast mining area.		against volumetric assessment done by mine surveyor.		
Degradation of topsoil	Soils	To ensure that the construction activities does not have detrimental impacts on the soils	Ensure that the stripping and stockpiling of the soils are undertaken in accordance with the applicable rehabilitation guidelines.	Stripping of topsoil Stockpile the stripped soils in designated stockpile areas Vegetate these stockpiles according to the rehabilitation plan	ECO and Mining Contractor	Monitor for compaction and Erosion	Every three months by ECO	During the first month During and after the soil stripping process. During and after the completion of the stockpiles.
Removal of natural vegetation due to the stripping of topsoil and disturbance of faunal	Terrestrial Ecology	Ensure that the activity does not impacts detrimentally on the terrestrial ecological features at the study area	The management of the impact will comply with the mine's biodiversity management plan and closure plan for the mine.	Implementation of a rehabilitation plan, concurrent to the mining operation; All High sensitivity areas must be avoided and declared "No-go" areas. The areas to be developed/mined must be specifically demarcated to prevent movement into high sensitive surrounding environments. Areas of indigenous vegetation, even	ECO, Mining Contractor and relevant environmental specialist	Biodiversity monitoring.	Once during the construction phase by a suitably qualified environmental specialist.	Throughout Construction Phase

				secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be minimized and avoided where possible; The areas to be developed must be specifically demarcated to prevent movement of workers into, especially high sensitive areas and the surrounding Protec6ted plant species will not be removed unless permitted by relevant competent authority.				
Erosion and sedimentation in watercourse and alteration of hydrological patterns	Aquatic Ecology	Ensure that the activity does not impacts detrimentally on the aquatic ecological features of the streams around the study area	Ensure that the aquatic ecology is manage in line with requirements set in the aquatic ecological assessment	Conduct a modelling exercise to determine the loss of groundwater and surface water inputs to local watercourses and its subsequent impacts to local water balances. Should the water loss be significant, ecological flow releases of treated water are must be undertaken. The implementation of a buffer zone, a 100m horizontal distance from the delineated watercourse edge;	ECO, Mining Contractor and relevant environmentalist	Bio-Monitoring.	Once during the construction phase by a suitably qualified environmental specialist.	Throughout Construction Phase

				Clean and dirty surface and ground water separation must be put into place via standard best practice methods; Mitigation actions recommended in the hydrogeological report must be implemented; Berms must be vegetated and alien invasive species must be controlled on established berms; Aquatic biomonitoring, surface and groundwater monitoring; Implement dust suppression from water sourced inside the pit areas and avoid the abstraction of water from clean sources as is the current practice.				
Deterioration of water quality	Surface Water	To ensure that the runoff water from the mine access and haul roads during construction does not adversely affect clean water environment.	Management of the storm water will comply with the requirements of the regulations under the GN704 and as far as possible with the requirements of the relevant DWS Best Practice Guidelines	Areas that are stripped should be optimised to limit unnecessary stripping. Storm water from upslope of the stripped areas should be diverted around these areas to limit the amount of storm water flowing over from these areas. The timing of the topsoil stripping should be optimised to	ECO and Mining Contractor	Surface Water Monitoring	Monthly by an independent environmental specialist.	Throughout Construction Phase

				limit the time between stripping and construction. Where practical constraints exist and areas need to be left stripped for long periods, contour ploughing, or ripping could reduce run-off and hence reduce erosion. Dry season construction is preferable where practical. Hydro seeding of the topsoil stockpile is recommended to speed up vegetation cover.				
Deterioration of groundwater quality	Groundwater.	Ensure that the groundwater regime is not detrimentally affected by the carbonaceous material excavated from the project site.	Groundwater quality in the vicinity of the site will not deteriorate beyond groundwater water quality targets set by the authorities.	Pollution prevention consideration. Deterioration of water quality must be prevented wherever possible and minimised where complete prevention is not possible. Conservation consideration. Losses of water and consumptive use of water must be minimised. Water users within the mine must be provided with water of a quality as poor as possible but good enough quality that it does not cause significant user, water quality, product quality or	ECO, Mining Contractor and relevant environmental specialist	Groundwater quality and quantity monitoring.	Quarterly by an environmental specialist	Throughout Construction Phase

				process related problems (scaling etc.). The plan must be sustainable over the life cycle of the mine and over different hydrological cycles.				
Air pollution through air pollutants' emissions, from the construction site.	Air quality.	Ensure that all operations during the pre-construction and construction phase of the mining project do not result in detrimental air quality impacts.	The project will be constructed such that the ambient air quality does not exceed the National Air Quality Standards.	Conduct dust suppression daily using water from the pollution control dam. If the use of the water from the pollution control dam does not field satisfactory results chemicals will be used for the suppression of dust from the roads and other dust generation areas. Enforce appropriate speed limits for the mine vehicles. Implement a dust and noxious gas minimisation strategy where necessary	Appointed contractor and ECO	Visual inspections of areas with possible dust emissions such as unpaved roads and transfer points will be conducted on a monthly basis. Ambient dust fall and PM monitoring will be conducted. Meetings with farmers will be arranged.	ECO weekly and site manager daily. Environmental specialist monthly	Throughout the construction phase.
Increased ground vibration and air blasts.	Ground vibration and air blast.	Ensure that the ground vibration levels and air blasts do not have detrimental effects on surrounding structures.	The ground vibration and air blast from the development of the pit will not exceed the	Best practises must be used during blasting to ensure that the ground vibration and air blast pressure is within acceptable limits. Undertake a full risk assessment in order to address the aspects and to put proper controls in place.	Appointed blasting contractor and/or mine blaster	Blasting holes will be inspected before any blasting is conducted.	Mine blaster will undertake the inspection before and after every blast.	When lasting during the construction phase of the operation.

			United States Bureau of Mines (USBM) criteria for safe blasting for ground vibration and recommendations on air blast.	Proper stemming and use of stemming material. Blasts can be delayed when prevailing wind is blowing towards the area of concern and not leaving blasts standing for long periods of time.		Seismic monitoring will be conducted during and after every blast.		
Increased noise levels.	Noise aspects.	Ensure that the noise levels emanating from the project construction site will not have detrimental effects on the mine employees and surrounding communities.	The noise levels from the project site will be managed and measures will be taken to ensure that noise levels are below the National Noise Control Regulations, SANS10103:2008 guidelines and the International Finance Corporation (World Bank) guidelines.	Ensure routeing has less impacts on sensitive receptors. Limit vehicle speed within the mining permit areas; Ensuring all equipment in use is maintained and equipped with the OEM's required muffler/exhaust/silencer; Consider the acoustic rating of equipment when selecting equipment; Minimise site activities after hours;	Appointed contractor and ECO.	Undertake ambient noise monitoring programme. Speed checking will be conducted.	Environmental specialist twice a year. Safety Officer will conduct speed checking as regularly as possible.	Throughout the construction phase.
Visual impacts on the surrounding communities and road users from the mine construction site.	Visual aspects.	Ensure that all operations during the pre-construction and construction phase of the proposed project do not result in	Measures will be undertaken by the mine to ensure that the visual aspects from the site are complying with the relevant visual	Use the perimeter berms and topsoil as a visual screen from the surrounding communities. Ensure that the initial box cut, successive cuts and the associated stockpiles and	Mine engineer and the ECO.	The constructed perimeter berms will be inspected for compliance with the design specifications.	Mine Engineer and ECO on a monthly basis.	Throughout the construction phase.

		detrimental visual impacts on surrounding properties, communities and road users.	standards and objectives.	surface infrastructure are removed or rehabilitated during the decommissioning phase of the mine. Where possible areas disturbed by construction activity, must be suitably topsoiled and vegetated as soon as is possible. The progressive rehabilitation measures will allow for the maximum growth period before the completion of the project. Limit areas of disturbance to areas where infrastructure or facilities will be constructed or placed. Where possible, the existing vegetation will be supplemented with indigenous plant species to increase the effectiveness of the visual buffer. Dust suppression will be undertaken at all areas that will be affected by construction activities and where dust will be generated. Existing large trees that fall outside the earthworks area must be retained. Note that the alien eradication program, if		The slopes will be inspected for compliance with the construction method statement and designs. Areas of disturbance will be inspected to determine areas that need rehabilitation. Areas of disturbance inspected against the approved design specifications of the project. See monitoring under air quality. Inspection of the site will be conducted.		

				any, will supersede this condition. Avoid upwards lighting of structures but rather direct the light downwards to focus on the object to be illuminated. Light spill, particularly upwards, must be minimised by implementing the following: Not allowing external light fittings to shine upwards, all security and road lighting shall have "blinkers" or be specifically designed to ensure light is directed downwards to reduce light spill beyond the property boundary.		Lighting installation and effects of the lighting to community will be monitored. Night time inspection of the site will be undertaken.		
Damage or destruction of sites with archaeological and cultural significance.	Sites of archaeological and cultural importance.	Ensure that the development of the project does not have etrimental impacts on heritage sites.	The construction will be undertaken in compliance with the requirements of the National Heritage Resources Act, 1999 (Act 25 of 1999)	Controls and monitoring should be aimed at the possible unearthing of such features. If any of these are discovered, a qualified archaeologist be called in to investigate the occurrence.	ECO, mining contractor and heritage specialist.	Inspection by mining contractor and ECO.	Weekly by both ECO and mining contractor.	Throughout the pre-construction an construction phase.
Impact on employment	Socio-economic aspects.	Ensure that the positive impacts on employment are sustained.	Employment at the proposed site will be conducted in compliance with mine recruitment policies.	Local labour and contractors will be appointed. This will ensure that economic spin-offs that result due to employment, benefit the local community.	Community Liaison Officer.	Records of recruitment will be kept for audit purposes.	Human Resources Manager will keep records after recruitment.	Throughout the pre-construction an construction phase.

Impact from the influx of job seekers.	Socio-economic aspects.	Ensure that measures are taken to discourage influx of job seekers.	Measures taken to control influx of job seekers will be in line with the mine's safety and security standards.	The mine will ensure that the creation of unrealistic expectations are prevented by communicating the period of the construction phase to the local communities and the communities will be informed that few new positions will be created. Local councillors will be involved in the above communication.	Community Liaison Officer.	Number of job seekers will be monitored and meetings held by, and with the communities, will where possible, be attended by the mine.	Community Liaison Officer and Safety officer will monitor the number of job seekers weekly and will attend meetings as and when these are held.	Throughout the pre-construction an construction phase.
Impacts on the local economy during the construction phase.	Socio-economic aspects.	Ensure that the positive impacts on local economic aspects are sustained.	The mine will ensure that the implementation of the measures are in line with the mine's targets committed to in the mine's local economic development plan or procurement strategy.	The mine will adhere to its procurement strategy, which aims to increase local content of the project to its maximum. As much of the construction material and service requirements as possible will be sourced from suitably qualified supplies and contractors in Carolina and the surrounds. The mine must comply with the requirements as guided by the Mining Charter with regards to SMME development and the mine's procurement policy.	Community Liaison Officer. Appointed contractor. Procurement Officer	The procurements will be monitored against the mine's procurement strategy. Providers for services, capital goods and consumables will be checked against the procurement targets.	Procurement Officer will monitor the procurement regularly. Procurement Officer will check how the mine performs against the targets monthly. Procurement Officer will	Throughout the pre-construction an construction phase. When procuring services and goods during the pre-construction and construction phase.

						Audits against the requirements of the Mining Charter will be conducted.	undertake the audits quarterly.	Throughout the pre-constructio n and constructio n phase
Disruption in daily living and movement patterns.	Socio-econo	Ensure that the disruption in daily living and movements is not detrimental to the local communities.	The mine will ensure that all mine safety standards are met.	Announce road closures and other disruptions; Erect signboards (if required) indicating access restrictions to the construction site; Non compliances will be managed according to the mine's complaints procedure Limit all activities to the development footprint of the proposed construction site; Fence off the development footprint of the proposed construction site prior to the commencement of site-clearing and construction activities; Keep communication with neighbouring land owners, land occupiers and the public (interested and affected parties) open during the construction phase of the project.	Safety Officer. Safety Officer. Safety Officer. Safety Officer. Appointed contractor. Environme ntal Officer and Community Liaison Officer.	Keep records of the number of announcement s made to this effect. Inspections conducted at the site. Records of non-compliances and redress measures taken recorded and filed for audit purposes. Inspection of the construction activities against the management action will be undertaken monthly.	Safety Officer will populate records monthly. Safety Officer will conduct inspections monthly. Safety Officer will keep all information on non-compliance and measures taken to redress the situation. ECO will	As and when Necessary Throughout the pre-constructio n an constructio n phase. As and when noncomplia nces are identified. During the Constructio n phase of the project. Before the Commence ment of the Constructio n activities.

						Inspection of the construction activities against the management action will be undertaken. Minutes of any meeting held with landowners will be recorded and minutes filed for audit purposes.	undertake the inspections monthly. ECO will conduct the inspections monthly. ECO will keep the minutes as and when meetings are held.	Throughout the pre-construction an construction phase.
Increase in already high criminal activities due to the construction activities.	Socio-economic aspects.	Ensure that security measures are taken by the mine for protection of mine employees.	Mine's safety and security standards will be adhered to at all times during the construction phase.	Keep local SAPS informed of the construction and its progress. Use local labour with no criminal records. Limit access to the construction area to employees and visitors with access permits.	Safety Officer. Protection Officer Human Resource Officer. Safety Officer. Safety Officer.	Communication with SAPS recorded and filed. Recruitment records kept for audit purposes. Register all employees reporting for duty and visitors reporting to the project area.	Community Liaison Officer will communicate with the SAPS regularly. Human Resource Manager will keep records after recruitment.	Throughout the pre-construction an construction phase. When recruiting employees.

						Measures taken will be recorded and filed.	Human Resource Manager will ensure that records of reporting for duty and visitors are kept and updated Monthly. Safety Officer will keep records.	During the preconstruction an Construction phase. During the Construction phase.
Construction of Access and Haul Roads								
Degradation of topsoil	Soils	To ensure that the construction of the access and haul roads does not have detrimental impacts on the geology	Ensure that the stripping and stockpiling of the soils are undertaken in accordance with the relevant rehabilitation guidelines.	All removed topsoil must be stockpiled along the roads as perimeter berms. The berms will not be more than one meter high; hence will not have leaching effects on the soils. This will also assist in maintaining the seed bank of the removed vegetation in the soils. Excess soils will then be stockpiled at the topsoil stockpiling area, which will not be more than four meters high.	ECO and Mining Contractor	Measuring volumes of topsoil removed and stockpiled. Check the volumes against volumetric assessment done by mine surveyor. Inspect topsoil berms/stockpiles.	Surveyor and Monthly ECO weekly.	Throughout Construction Phase

				The soils stockpiled or used as berms must be used to rehabilitate that area after mining have been completed and once the roads rehabilitated.				
Removal of natural vegetation due to the stripping of topsoil and disturbance of faunal habitat	Terrestrial Ecology	To ensure that the construction of the access and haul roads does not have detrimental impacts on the local topographic patterns	The construction of the access and haul roads to comply with the safety standards set in the Mine Health and Safety Act, 1996 (Act 26 of 1996), the mine's health and safety policies, relevant operational Procedures	Implementation of a rehabilitation plan; Prioritise and incorporate existing roads and routes before new roads are constructed; Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion during flood events. This will also reduce the likelihood of encroachment by alien invasive plant species.	ECO and Mining Contractor	Inspection over the affected areas.	ECO weekly.	Throughout Construction Phase
Erosion and sedimentation in watercourse and alteration of hydrology	Aquatic Ecology	Ensure that the activity does not impacts detrimentally on the aquatic ecological features of the streams in the study area	Ensure that the aquatic ecology is manage in line with requirements set in the aquatic ecological assessment.	Construction must be conducted under an approved method statement, which must address issues relating to access routes, demarcation of construction activities including no go areas, streams flow maintenance, adherence to approved design specifications, migrations of aquatic fauna, sedimentation/erosion protection, construction monitoring and storm water management.	ECO and Mining Contractor	Monitor compliance with the mitigation measures.	Every three months by ECO	Throughout Construction Phase

Deterioration of water quality	Surface Water	To ensure that the runoff water from the mine access and haul roads during construction does not adversely affect clean water environment.	Management of the storm water will comply with the requirements of the regulations under the GN704 and as far as possible with the requirements of the relevant DWS Best Practice Guidelines.	The roads must be constructed to have berms that will be used as diversion structures. The berms must be constructed such that any exit point for the water will have silt trap that will settle the silt from the roads before reporting to the clean water environment. No mining activities will be allowed within the 1:100 year flood lines. Ensure that no equipment is washed in any water course. All washing must be undertaken at the mine's workshop area. No abstraction of water from any water course or should be allowed unless authorized in the IWULA. In order to reduce the potential impacts associated with the introduction of contaminants dissolved or suspended in the runoff from construction sites, where practically possible, no runoff will be introduced into the water course directly. Introduction into dry land areas will be preferred as the vegetation, soils will	ECO and Mining Contractor	Surface Water Monitoring	Monthly by an independent environmental specialist.	Throughout Construction Phase

				provide an opportunity to limit the movement of contaminants, and the environment is conducive for natural degradation. All construction must be undertaken in line with the approved method statement and civil design reports and drawings.				
Air pollution through air pollutants' emissions, from the construction site.	Air Quality	Ensure that all operations during the pre-construction and construction phase of the mining project do not result in detrimental air quality impacts.	The proposed project will be constructed such that the ambient air quality does not exceed the National Air Quality Standards.	Dust suppression must be conducted during the construction of the road. Water carts will be used for the suppression of the dust on the roads.	Appointed contractor and ECO.	Visual inspections of areas with possible dust emissions will be conducted. Ambient dust fall and PM monitoring will be conducted.	ECO weekly and site manager daily. Environmental specialist monthly	Throughout the Construction phase.
Increased noise levels.	Noise	Ensure that the noise levels emanating from the proposed project construction site will not have detrimental effects on the mine employees and surrounding communities.	The noise levels from the proposed project site will be managed and measures will be taken to ensure that noise levels are below the National Noise Control Regulations, SANS10103:2008 guidelines and the International Finance	The mine vehicles used during the construction must be well maintained and measures should be implemented by the mine to ensure that the noise generated from the mine machinery is lowered.	Appointed contractor and ECO.	Undertake ambient noise monitoring programme. Speed checking will be conducted.	Environmental specialist twice a year. Safety Officer will conduct speed checking as regularly as possible.	Throughout the Construction phase

			Corporation (World Bank) guidelines.					
Topographic pattern alteration	Topography	To ensure that the preparation and formation of the overburden stockpiles do not have detrimental impacts on the topographic pattern	Ensure that the preparation and formation of the overburden stockpiles are undertaken in accordance with the relevant rehabilitation guidelines.	The mine must ensure that as little space as possible is used for the stockpiling of the overburden material. All overburden material must be utilised for the rehabilitation of the disturbed areas, which will ensure their remove and elimination of the impacts.	ECO and Mining Contractor	Measuring volumes of material removed and stockpiled. Check the volumes against volumetric assessment done by mine surveyor. Inspect overburden material stockpiles.	Surveyor and Monthly ECO weekly.	Throughout Construction Phase
Degradation of topsoil	Soils	To ensure that the construction of the access and haul roads does not have detrimental impacts on soil.	The construction of the access and haul roads to comply with the safety standards set in the Mine Health and Safety Act, 1996 (Act 26 of 1996), the mine's health and safety policies, relevant operational procedures	Stockpile removed topsoil on a topsoil stockpile area separate from other overburden materials.	ECO and Mining Contractor	Measuring volumes of material removed and stockpiled. Check the volumes against volumetric assessment done by mine surveyor.	Surveyor and Monthly ECO weekly.	Throughout Construction Phase

						Inspect topsoil stockpiles.		
Removal of natural vegetation due to the stripping of topsoil and disturbance of faunal habitat	Terrestrial Ecology	Ensure that the activity does not impacts detrimentally on the aquatic ecological features of the streams in the study area	Ensure that the aquatic ecology is manage in line with requirements set in the aquatic ecological assessment.	Implementation of a rehabilitation plan, concurrent to the mining operation; All High sensitivity areas must be avoided and declared "No-go" areas. The areas to be developed/mined must be specifically demarcated to prevent movement into high sensitive surrounding environments. Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. Clearing of vegetation should be minimized and avoided where possible; The areas to be developed must be specifically demarcated to prevent movement of workers into, especially high sensitive areas and the surrounding environments. Signs must be put up to enforce this.	ECO and Mining Contractor	Monitor compliance with the mitigation measures.	Every three months by ECO	Throughout Constructio n Phase

Deterioration of water quality	Surface and Groundwater	To ensure that the runoff water from the mine access and haul roads during construction does not adversely affect clean water environment.	Management of the storm water will comply with the requirements of the regulations under the GN704 and as far as possible with the requirements of the relevant DWS Best Practice Guidelines.	Construct berms along the stockpiles and disturbed areas to reduce the levels of silt that may report to the nearby stream. Remove used oil after vehicle servicing, supply absorbent fibre at site, store all potential sources in secure facilities, waste, e.g., sewage must either be treated at site according to accepted standards or removed by credible contractors	ECO and Mining Contractor	Surface Water Monitoring.	Monthly by an independent environmental specialist. ECO weekly.	Throughout Construction Phase
Air pollution through air pollutants' emissions, from the construction site.	Air Quality	Ensure that all operations during the pre-construction and construction phase of the mining project do not result in detrimental air quality impacts.	The proposed project will be constructed such that the ambient air quality does not exceed the National Air Quality Standards.	Conduct dust suppression on haul and access roads on a regular basis. Monitor the dust fall out concentration and ensure that significant source of pollution are managed.	Appointed contractor and ECO.	Visual inspections of areas with possible dust emissions will be conducted. Ambient dust fall and PM monitoring will be conducted.	ECO weekly and site manager daily. Environmental specialist monthly	Throughout the Construction phase.
OPERATIONAL PHASE								
Systematic removal of the target coal seam by opencast mining methods								
Disruption of geological profile	Geology	Ensure that the disruption of the geological profile do not results detrimental effects to the environment.	Undertake the mining and rehabilitation in line with the relevant mining and rehabilitation guidelines	Use removed overburden to replace the overburden material in the mined out opencast pits during rehabilitation of the opencast pit.	ECO and Mining Contractor	Measuring volumes of overburden removed and replaced. Check the volumes	Surveyor and Monthly	Throughout Operational Phase

						against volumetric assessment done by mine surveyor.		
Formation of topographical voids	Topography	To ensure that the systematic removal of the target coal seams do not have detrimental impacts on the local topographic patterns	The opencast workings will be operated to comply with the safety standards set in the Mine Health and Safety Act, 1996 (Act 26 of 1996), the mine's health and safety policies, relevant operational procedures	Use material from the successive cuts to backfill the voids created by the construction of the initial box cut. Note that since concurrent rehabilitation will be used at the mine, only three to four cuts will at all times be open at the opencast mining area.	ECO and Mining Contractor	Measuring volumes of overburden removed and replaced. Check the volumes against volumetric assessment done by mine surveyor.	Surveyor and Monthly	Throughout Operational Phase
Degradation of topsoil and loss of land capability	Soils, Land Use and Capability	To ensure that the systematic removal of the target coal seams does not have detrimental impacts on the soils	Ensure that the stripping and stockpiling of the soils are undertaken in accordance with the applicable rehabilitation guidelines.	Implement a soil management strategy for the mining area. This will ensure that the soils at the mining area are protected during stripping and stockpiling of the encountered soils. Assign proper storm water management plans. Replacing of topsoil restore the suitable land capability.	ECO and Mining Contractor	Monitor for compaction and erosion. Monitor progress of rehabilitation at the opencast workings.	Every three months by ECO Weekly by ECO	Throughout Operational Phase
Removal of natural vegetation due to the stripping of topsoil and disturbance of faunal habitat	Terrestrial Ecology	Ensure that the activity does not impacts detrimentally on the terrestrial ecological features ate the study area	The management of the impact will comply with the mine's biodiversity management plan and closure plan for the mine.	Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and dumps especially. This includes wetting of exposed soft soil surfaces and not conducting activities on windy days	ECO, Mining Contractor and relevant environmental specialist	Biodiversity monitoring. Air quality monitoring Ambient monitoring	Annually by suitably qualified environmental specialist. Monthly by	Throughout Operational Phase

				which will increase the likelihood of dust being generated; Noise reduction measures must be installed for all machines, vehicles and equipment. Appropriate silencers to control potentially disrupting noises to be fitted. Lighting should be kept to a minimum to avoid disturbing crepuscular and nocturnal species. Lighting fixtures should be fitted with baffles, hoods or louvres and directed downward, to minimize light pollution which could attract night-flying birds and night migrating species; and Schedule activities and operations during least sensitive periods, to avoid migration, nesting and breeding seasons.		Environmental Inspections	suitably qualified environmental specialist. Annually by suitably qualified environmental specialist. Weekly by the ECO	
Erosion and sedimentation in watercourse and alteration of hydrological patterns	Aquatic Ecology	Ensure that the activity does not impacts detrimentally on the aquatic ecological features of the	Ensure that the aquatic ecology is manage in line with requirements set in the aquatic ecological assessment.	Conduct a modelling exercise to determine the loss of groundwater and surface water inputs to local watercourses and its subsequent impacts to local water balances. Should the water loss be significant, ecological flow releases of	ECO, Mining Contractor and relevant environmental	Aquatic bio monitoring Surface water monitoring Groundwater monitoring;	Twice annually by suitably qualified environmental specialist.	Throughout Operational Phase

		streams in the study area		treated water area must be undertaken. The implementation of a buffer zone, a 100m horizontal distance from the delineated watercourse edge; Clean and dirty surface and ground water separation must be put into place via standard best practice methods; Mitigation actions recommended in the hydrogeological must be implemented; Berms must be vegetated and alien invasive species must be controlled on established berms; Implement dust suppression from water sourced inside the pit areas and avoid the abstraction of water from clean sources as is the current practice.			Monthly by suitably qualified environmental specialist. Quarterly by suitably qualified environmental specialist.	
Reduction in the catchment yield	Surface Water Quantity	Ensure that the loss in the catchment yield is kept minimal	As much of storm water runoff to report to the nearby stream as possible.	All clean storm water runoff during flood events will be diverted away from the opencast areas. Rainfall water entering the opencast pits during flood events will be removed with the	ECO and the appointed contractor	Mine water balance will be updated to determine the catchment yield during the operational phase.	Environmental specialist on an annual basis	Throughout Operational Phase

				use of pumps with sufficient pumping capacity. The water will be pumped into the pollution control dam, which will be designed and constructed to be able to handle water from the 1:50 year flood event. The opencast pit must be designed and planned to be outside the 1:100 year flood line or 100 meters away from the affected streams and such that it can be maintained safe during high rainfall events. The mine will develop an emergency procedure for evacuating employees in case the volumes of water captured in the pit are beyond the capacity of the pumping systems.				
Deterioration of water quality	Surface Water Quality	To ensure that the water from the opencast workings does not adversely affect clean water environment.	Management of the storm water will comply with the requirements of the regulations under the GN704 and as far as possible with the requirements of the relevant DWS Best Practice Guidelines.	Contaminated shallow seepage and storm water run-off must be collected and routed to a lined pollution control dam. The pollution control dam must be sized in accordance with Government Notice 704 of the South African National Water Act.	ECO and Mining Contractor	Surface Water Monitoring	Monthly by an independent environmental specialist.	Throughout Operational Phase

				The pollution control dam water levels must be constantly monitored. Steps and procedures must be put in place to manage situations where excess water builds up in the pollution control dam. The pollution control dam must be operated empty as far as practicable and cannot fulfil the same role as a water storage dam, unless specifically designed to fulfil both purposes. Water reuse from the pollution control dam must be maximised.				
Deterioration of groundwater.	Groundwater	Ensure that systematic removal of the target coal seams do not result in the contamination of the groundwater.	The quality of the groundwater around the mine will comply with the target as set in the water use licence or the catchment water quality objectives.	Surrounding boreholes i.e. monitoring and boreholes used by residents (if identified during mining) must be monitored on a quarterly basis to determine the extent of the dewatering cone from the mining workings. Mining must be undertaken concurrently with rehabilitation. Water seeping into the opencast pits must be removed to the pollution control dam as soon as possible. Reduce the exposure of the carbonaceous material to free	ECO and mining contractor.	Groundwater monitoring. Environmental inspections	Quarterly by an independent environmental specialist. ECO weekly.	During the operational phase of the project.

				oxygen. This will be achieved by placing the carbonaceous material at the bottom of the opencast pits and backfill as soon as possible thereby reducing the potential of exposure to free oxygen and hence reducing the possibility of acid mine drainage.				
Air pollution through air pollutants' emissions and spontaneous combustion from the mining site.	Air quality.	Ensure that all operations do not result in detrimental air quality impacts.	The systematic removal of the target coal seams will be conducted such that the ambient air quality does not exceed the National Air Quality Standards.	Wet suppression using water carts will be conducted at areas with excessive dust emissions, which will include used open spaces and unpaved roads and any other areas with potential to generate excessive dust. Chemical surfactants will be considered should water suppression not yield satisfactory results. Traffic will be restricted to demarcated areas and traffic volumes and speeds within the active site will be controlled. Employees must be issued with dust masks and instructed to use them. Covering of burning areas in the high wall, with soil material to prevent spontaneous combustion.	Appointed contractor, ECO and Safety Officer.	Visual inspections of areas with possible dust emissions such as unpaved roads and transfer points will be conducted on a monthly basis. Ambient dust fall and PM monitoring (including recommended additional monitoring points) will be conducted as part of the existing monitoring programme. Meetings with farmers will be	ECO/safety officer weekly and site manager daily. Monthly by an independent environmental specialist.	During the operational phase of the project.

				Rehabilitation of mined out areas as soon as possible to limit spoils areas from spontaneous combustion risk.		arranged.		
Increased ground vibration and air blasts.	Ground vibration and air blast.	Ensure that the ground vibration levels and air blasts do not have detrimental effects on surrounding structures.	The ground vibration and air blast from the development of the pit will not exceed the United States Bureau of Mines (USBM) criteria for safe blasting for ground vibration and recommendations on air blast.	Minimum explosives will be used and the blasting holes will be stemmed. This will be done in order to ensure that levels of ground vibration and air blast are within acceptable limits, hence not induce damage to nearby property. Reduced charge mass per delay limit as specified by a suitably qualified blaster, will be used. A log of blasting must be maintained and the following will be complied with i.e.: Blasting may only take place between 06h00 and 18h00. Notify people within 1 km radius 1hr prior to blasting. Monitor and review noise levels – amend where necessary. Address all complaints logged. Undertake a risk assessment. A blast design by a blasting expert, which	Appointed blasting contractor and mine blaster or geologist.	Mine engineer will check that the log is maintained.	Mine Engineer will undertake the inspection before and after every blast.	Mine Engineer will undertake the inspection before and after every blast.

				must include closing of private roads at a safe point and preferably where traffic can access an alternative route, will be implemented by the mine when blasting is undertaken.				
Increased noise levels.	Noise aspects.	Ensure that the noise levels emanating from the site will not have detrimental effects on the mine employees and surrounding communities.	The noise levels from the site will be managed and measures will be taken to ensure that noise levels are below the National Noise Control Regulations, SANS10103:2008 guidelines and the International Finance Corporation World Bank) guidelines.	Limit the maximum speed on the haul roads to 60 km/h or less, subject to risk assessment. Ensure that the mine employees are issued with earplugs and that they are instructed to use them. Educate employees on the dangers of hearing loss due to mine machinery noise. Any deviation detected by the noise monitoring results must be addressed.	Appointed contractor, ECO and safety Officer	Undertake ambient noise monitoring programme. Speed checking will be conducted. Use of earplugs will be checked and reported.	Environmental specialist will undertake the monitoring annually. Safety Officer will conduct speed checking as regularly as possible. Safety Officer will; check the use of the earplugs as regularly as possible.	Throughout the operational phase.
Impact on employment.	Socio-economic aspects.	Ensure that the positive impacts	Employment at the proposed site will	Local labour and contractors will be appointed. This will ensure that economic spin-offs that	Community Liaison Officer.	Records of recruitment will be	Human Resources	Throughout the operational

		on employment are sustained.	be conducted in compliance with mine recruitment policies.	result due to employment, benefit the local community.		kept for audit purposes.	Manager will keep records after recruitment .	phase.
Impact from the influx of job seekers.	Socio-economic aspects.	Ensure that measures are taken to discourage influx of job seekers.	Measures taken to control influx of job seekers will be in line with the mine's safety and security standards.	The mine will ensure that the creation of unrealistic expectations are prevented by communicating the period of the construction phase to the local communities and the communities will be informed that few new positions will be created. Local councillors will be involved in the above communication.	Community Liaison Officer.	Number of job seekers will be monitored and meetings held by, and with the communities, will where possible, be attended by the mine.	Community Liaison Officer and Safety officer will monitor the number of job seekers weekly and will attend meetings as and when these are held.	Throughout the operational phase.
Impacts on the local economy during the construction phase.	Socio-economic aspects.	Ensure that the positive impacts on local economic aspects are sustained.	The mine will ensure that the implementation of the measures are in line with the mine's targets committed to in the mine's local economic development plan or procurement strategy.	The mine will adhere to its procurement strategy, which aims to increase local content of the project to its maximum. As much of the construction material and service requirements as possible will be sourced from suitably qualified supplies and contractors in Carolina and the surrounds.	Community Liaison Officer. Appointed contractor.	The procurements will be monitored against the mine's procurement strategy. Providers for services, capital	Procurement Officer will monitor the procurement regularly. Procurement Officer will check how the mine performs	Throughout the operational

				The mine must comply with the requirements as guided by the Mining Charter with regards to SMME development and the mine's procurement policy.	Procurement Officer	goods and consumables will be checked against the procurement targets. Audits against the requirements of the Mining Charter will be conducted.	against the targets monthly. Procurement Officer will undertake the audits quarterly.	
Disruption in daily living and movement patterns.	Socio-economic	Ensure that the disruption in daily living and movements is not detrimental to the local communities.	The mine will ensure that all mine safety standards are met.	Announce road closures and other disruptions; Erect signboards (if required) indicating access restrictions to the construction site; Non compliances will be managed according to the mine's complaints procedure Limit all activities to the development footprint of the proposed construction site; Maintain fence used to fence off the development footprint;	Safety Officer. Safety Officer. Safety Officer. Safety Officer.	Keep records of the number of announcements made to this effect. Inspections conducted at the site. Records of non-compliances and redress measures taken recorded and filed for audit purposes.	Safety Officer will populate records monthly. Safety Officer will conduct inspections monthly. Safety Officer will keep all information on non-compliance and measures	As and when necessary Throughout the operational phase.

				Keep communication with neighbouring land owners, land occupiers and the public (interested and affected parties) open during the construction phase of the project.	Appointed contractor Environmental Officer and Community Liaison officer.	Inspection of the construction activities against the management action will be undertaken monthly. Inspection will be undertaken.	taken to redress the situation. ECO will undertake the inspections monthly. ECO will conduct the inspections monthly. ECO will keep the minutes as and when meetings are held.	
Increase in already high criminal activities due to the construction activities.	Ensure that security measures are taken by the mine for protection of mine employees.	Mine's safety and security standards will be adhered to at all times during the construction phase.	Mine's safety and security standards will be adhered to at all times during the construction phase.	Keep local SAPS informed of the construction and its progress. Use local labour with no criminal records. Limit access to the site to employees and visitors with access permits. Safety and security measures will be	Safety Officer. Protection Officer Human Resource Officer. Safety Officer. Safety Officer.	Communication with SAPS recorded and filed. Recruitment records kept for audit purposes. Register all employees reporting for duty and visitors	Community Liaison Officer will communicate with the SAPS regularly. Human Resource Manager will keep records after	Throughout the operational phase. When recruiting employees. During the preoperational phase.

				undertaken to comply with the current mine safety standards. These will include fencing, installation of CCTV cameras, 24-hour security guards, random security checks and access control.		reporting to the project area. Measures taken will be recorded and filed.	recruitment . Human Resource Manager will ensure that records of employees reporting for duty and visitors are kept and updated monthly. Safety Officer will keep records.	During the operational phase.
Transportation of coal from the mining area to the coal stockpile area thereafter to the destined clients								
Habitat degradation and contamination of soils	Natural Vegetation and Soils	Ensure that the use of transportation routes do not result in the contamination of the soils and surrounding environment.	The route will be operated such that all environmental parameters are within relevant targets.	All trucks used for the transportation of coal must be covered with tarpaulins during coal transportation. All spilled coal along the roads will be cleared within one day of spillage. Trucks will be required to obey certain road regulations when transporting coal at the mine.	ECO and mining contractor	Environmental inspections	ECO weekly	Throughout the operational phase.

				This will include speed limits etc.				
Removal of natural vegetation due to the stripping of topsoil and disturbance of faunal habitat	Terrestrial Ecology	Ensure that the activity does not impacts detrimentally on the terrestrial ecological features ate the study area	The management of the impact will comply with the mine's biodiversity management plan and closure plan for the mine.	Appropriate speed humps on light vehicle routes, enforcing of speed limits and mitre drains must be constructed along the access roads (every three metres of elevation) in order to slow the flow of water run-off from the road surface, if this does not already exist. Reducing the dust generated by the listed activities above, especially the earth moving machinery, through wetting the soil surface (with "dirty water") and putting up signs to enforce speed limit as well as speed bumps built to force slow speeds; Compilation of and implementation of an alien vegetation management plan; and Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and dumps especially. This includes wetting of exposed soft soil surfaces and not conducting activities on windy days	ECO, Mining Contractor and relevant environmental specialist	Biodiversity monitoring. Air quality monitoring Ambient monitoring Environmental Inspections	Annually by suitably qualified environmental specialist. Monthly by suitably qualified environmental specialist. Annually by suitably qualified environmental specialist. Weekly by the ECO	Throughout Operational Phase

				which will increase the likelihood of dust being generated.				
Deterioration of water quality and degradation of the aquatic ecology	Surface Water and Aquatic Ecology	To ensure that the water from the opencast workings does not adversely affect clean water environment.	Management of the storm water will comply with the requirements of the regulations under the GN704 and as far as possible with the requirements of the relevant DWS Best Practice Guidelines.	Ensure storm water aspects are considered in the design and operation of the haul roads; Make sure that storm water drain outlets from the road are fitted with flow attenuation structures, and Ensure maintenance of mien vehicles adhered to.	ECO and Mining Contractor	Surface Water Monitoring Bio-monitoring	Monthly by an independent environmental specialist. Twice annually by an independent environmental specialist.	Throughout Operational Phase
Increased noise levels.	Noise aspects.	Ensure that the noise levels emanating from the site will not have detrimental effects on the mine employees and surrounding communities.	The noise levels from the site will be managed and measures will be taken to ensure that noise levels are below the National Noise Control Regulations, SANS10103:2008 guidelines and the International Finance Corporation (World Bank) guidelines.	Where possible berms as a barrier must be constructed between the source of noise and the receptors. If applicable haul roads to be used during the night-times should be routed as far away as possible from a receptor. If this cannot be achieved, the mine must refrain from using the haul roads during night time unless agreed to with the affected parties.	Appointed contractor, ECO and safety Officer	Undertake ambient noise monitoring programme.	Environmental specialist will undertake the monitoring annually.	Throughout the operational phase.

Air pollution through air pollutants' emissions and spontaneous combustion from the mining site.	Air quality.	Ensure that all operations do not result in detrimental air quality impacts.	The use of the transportation routes will be conducted such that the ambient air quality does not exceed the National Air Quality Standards.	Wet suppression using water carts will be conducted at areas with excessive dust emissions, which will include used open spaces and unpaved roads and any other areas with potential to generate excessive dust. Chemical surfactants will be considered should water suppression not yield satisfactory results.	Appointed contractor, ECO and Safety Officer.	Visual inspections of areas with possible dust emissions such as unpaved roads and transfer points will be conducted on a monthly basis. Ambient dust fall and PM monitoring (including recommended additional monitoring points) will be conducted as part of the existing monitoring programme. Meetings with farmers will be arranged.	ECO/safety officer weekly and site manager daily. Monthly by an independent environmental specialist.	During the operational phase of the project.
Stockpiling of coal and operation of mobile crushing and screening plant at the coal stockpiling area								
Formation of topographical voids	Topography	To ensure that the	The stockpiling of coal and operation of	The height and tonnage of coal at the ROM stockpile will be kept within the approved mining plan.	ECO and Mining Contractor	Measuring volumes of overburden removed and	Surveyor and Monthly	Throughout Operational Phase

		stockpiling of coal and operation of crushing and screening plant do not have detrimental impacts on the local topographic patterns	crushing and screening plant will be undertaken to comply with the safety standards set in the Mine Health and Safety Act, 1996 (Act 26 of 1996), the mine's health and safety policies, relevant operational procedures			replaced. Check the volumes against volumetric assessment done by mine surveyor.		
Erosion and sedimentation in watercourse and alteration of hydrological patterns	Aquatic Ecology	Ensure that the stockpiling of coal and operation of crushing and screening plant does not impacts detrimentally on the aquatic ecological features of the streams in the study area	Ensure that the aquatic ecology is manage in line with requirements set in the aquatic ecological assessment.	Clean and dirty surface water separation and storm water management plan must be put into place via standard best practice methods; The revegetation of disturbed non active cleared areas must take place within 1 month of completing the construction phase; and No discharge of domestic water must occur if possible. Domestic water must be reused for dust suppression. Should domestic water be required to be discharge, the domestic waste water discharge must be treated to a	ECO, Mining Contractor and relevant environmental	Surface water monitoring Groundwater monitoring;	Twice annually by suitably qualified environmental specialist. Monthly by suitably qualified environmental specialist.	Throughout Operational Phase

				minimum standard of the wastewater limit values applicable to discharge of wastewater into a water resource as provided (RSA Government, 2013).				
Deterioration of water quality	Surface and Groundwater	To ensure that the runoff water from the coal stockpiling facility during does not adversely affect clean water environment.	Management of the storm water will comply with the requirements of the regulations under the GN704 and as far as possible with the requirements of the relevant DWS Best Practice Guidelines.	Ensure that the coal stockpiles are maintained within the designed dimensions. Avoid generation of contaminated seepage from the facility. Contaminated shallow seepage and stormwater run-off must be collected and routed to a lined pollution control dam. The pollution control dam must be sized in accordance with Government Notice 704 of the South African National Water Act. The pollution control dam water levels must be constantly monitored. Steps and procedures must be put in place to manage situations where excess water builds up in the pollution control dam.	ECO and Mining Contractor	Surface Water Monitoring. Environmental inspection over the mine.	Monthly by an independent environmental specialist. Weekly during construction of the stream crossing. ECO weekly.	Throughout Operational Phase

				The pollution control dam must be operated empty as far as practicable and cannot fulfil the same role as a water storage dam, unless specifically designed to fulfil both purposes. Water reuse from the pollution control dam must be maximised.				
Air pollution through air pollutants' emissions and spontaneous combustion from the mining site.	Air quality.	Ensure that stockpiling of coal and operation of crushing and screening plant do not result in detrimental air quality impacts.	The stockpiling of coal and operation of crushing and screening plant will be conducted such that the ambient air quality does not exceed the National Air Quality Standards.	Employees must be issued with dust masks and instructed to use them, Water captured in the pollution control dam will be used to suppress generated dust, Use of dusticites to ensure dust generation is minimised, Ensure that mine machinery are maintained in good working order; and Monitor dust within and around the affected areas	Appointed contractor, ECO and Safety Officer.	Visual inspections of areas with possible dust emissions. Ambient dust fall and PM monitoring (including recommended additional monitoring points) will be conducted as part of the existing monitoring programme.	ECO/safety officer weekly and site manager daily. Monthly by an independent environmental specialist.	During the operational phase of the project.
Visual impacts on the surrounding communities and road users	Visual aspects.	Ensure that stockpiling of coal and operation of crushing and screening	Measures will be undertaken by the mine to ensure that the visual aspects from the site are complying	Where possible berms as a barrier must be constructed between the source of noise and the receptors.	Mine engineer and the ECO.	The constructed perimeter berms will be inspected for	Mine Engineer and ECO on a monthly basis.	Throughout the operational phase.

from the mining site.		plant do not result in detrimental visual impacts on surrounding properties, communities and road users.	with the relevant visual standards and guidelines.	If applicable haul roads to be used during the night-times should be routed as far away as possible from a receptor. If this cannot be achieved, the mine must refrain from using the haul roads during night time unless agreed to with the affected parties. Where possible berms as a barrier must be constructed between the source of visual impact and the receptors. The dimensions of the barrier must be designed and constructed to shield the coal stockpiling area.		compliance with the design specifications. Areas of disturbance will be inspected to determine areas that need rehabilitation. Lighting installation and effects of the lighting to community will be monitored. Night time inspection of the site will be undertaken.		
DECOMMISSIONING AND CLOSURE PHASE								
Rehabilitation of Final Voids; Removal of mobile Crushing/Screening Plant; Demolition of Buildings and Structures; Rehabilitation of Access Roads; Rehabilitation of Overburden Stockpiling Facilities; Rehabilitation of Water Management Structures and Maintenance of Rehabilitated Areas								
Formation of topographical voids and highpoints	Topography	To ensure that the decommissioning of the mine does not have	The decommissioning will be conducted to comply with the safety	All backfilled areas must be levelled and levelled areas monitored for any settlement depressions, which must be rectified as soon as possible.	ECO and Mining Contractor	Measuring volumes of overburden removed and	Surveyor and Monthly	During Decommissioning and Closure Phases..

		detrimental impacts on the local topographic patterns	standards set in the Mine Health and Safety Act, 1996 (Act 26 of 1996), the mine's health and safety policies, relevant operational procedures			replaced. Check the volumes against volumetric assessment done by mine surveyor.		
Degradation of topsoil	Soils	To ensure that the decommissioning of the mine do not have detrimental impacts on soils	Ensure that the decommissioning of the mine is undertaken in accordance with the applicable rehabilitation guidelines.	After the completion of the project the area is to be cleared of all infrastructure; The foundations to be removed; Topsoil to be replaced for rehabilitation purposes; All rehabilitated areas should be assessed for signs of compaction, fertility and erosion.	ECO and Mining Contractor	Monitor for compaction and Erosion	Every three months by ECO	During Decommissioning and Closure Phases.
Removal of natural vegetation due to the stripping of topsoil and disturbance of faunal habitat	Terrestrial Ecology	Ensure that the decommissioning of the mine do not impacts detrimentally on the terrestrial ecological features at the study area	The management of the impact will comply with the mine's biodiversity management plan and closure plan for the mine.	Implementation of a closure / rehabilitation plan from the onset of the mining operation. Rehabilitation must be conducted concurrent to mining. The rehabilitation must be reviewed every 3 years in relation to the mining operation, and amended accordingly; and Ongoing implementation of an alien	ECO, Mining Contractor and relevant environmental specialist	Biodiversity monitoring. Monitor the	Twice every year by a suitably qualified environmental specialist.	During Decommissioning and Closure Phases.

				vegetation management plan as well as the monitoring of the plants.				
Erosion and sedimentation in watercourse and alteration of hydrological patterns	Aquatic Ecology	Ensure that the decommissioning of the mine do not impacts detrimentally on the aquatic ecological features of the streams in the study area	Ensure that the aquatic ecology is managed in line with requirements	<u>Surface Infrastructure</u> The implementation and adherence to buffer zones depicted in the wetland delineations; All dirty areas must be rehabilitated, with contaminated soils deposited in a suitable waste facility; and The revegetation and alien invasive species clearing and monitoring must occur in line with the flora component of this assessment mitigation requirements. <u>Mined-out Opencast Pits</u> Mitigation actions provided in the construction phase are applicable in this phase and include: Implementation of the approved rehabilitation strategy; A buffer zone, a 100m horizontal distance	ECO, Mining Contractor and relevant environmental	Bio-Monitoring.	Twice every year by a suitably qualified environmental specialist.	During Decommissioning and Closure Phases.

				from the delineated watercourse edge must be maintained all the time; Clean and dirty surface and ground water separation must be put into place via standard best practice methods; Aquatic biomonitoring, surface and groundwater monitoring; Implement alien vegetation removal and management plan; and Removal and disposal of infrastructure materials and debris following the completion of the phase in a suitable area off-site. <u>Roadways</u> The rehabilitation of the disturbed footprint to an approved post mining land use; A post rehabilitation monitoring programme to assess the condition of the crossing points.				
Deterioration of water quality	Surface Water	To ensure that the runoff water from the	Management of the storm water will comply with the	Rehabilitation areas should be optimised to limit unnecessary stripping.	ECO and Mining Contractor	Surface Water Monitoring	Monthly by an	During

		decommissioning site does not adversely affect clean water environment.	requirements of the regulations under the GN704 and as far as possible with the requirements of the relevant DWS Best Practice Guidelines.	Storm water from upslope of the stripped areas should be diverted around these areas to limit the amount of storm water flowing over from these areas.			independent environmental specialist.	Decommissioning and Closure Phases.
Deterioration of groundwater quality	Groundwater.	Ensure that the groundwater regime is not detrimentally affected by the decommissioning of the site.	Groundwater quality in the vicinity of the decommissioning site will not deteriorate beyond groundwater water quality targets set by the relevant authorities.	Deterioration of water quality must be prevented wherever possible and minimised where complete prevention is not possible. Conservation consideration. Losses of water and consumptive use of water must be minimised.	ECO, Mining Contractor and relevant environmental specialist	Groundwater quality and quantity monitoring.	Quarterly by an environmental specialist	During Decommissioning and Closure Phases.
Air pollution through air pollutants' emissions, from the mining site.	Air quality.	Ensure that all operations during the decommissioning of the mining site do not result in detrimental air quality impacts.	The proposed project will be decommissioned such that the ambient air quality does not exceed the National Air Quality Standards.	Water captured in the pollution control dam will be used to suppress generated dust, Use of dusticites to ensure dust generation isminimised, Ensure that mine machinery are maintained in good working order; and Monitor dust within and around the affected areas	Appointed contractor and ECO.	Visual inspections of areas with possible dust emissions such as unpaved roads and transfer points will be conducted on a monthly basis. Ambient dust fall and PM monitoring will be conducted.	ECO weekly and site manager daily. Environmental specialist monthly	During Decommissioning and Closure Phases.

						Meetings		
Increased noise levels.	Noise aspects.	Ensure that the noise levels emanating from the mining project decommissioning site will not have detrimental effects on the mine employees and surrounding communities.	The noise levels from the mine project site will be managed and measures will be taken to ensure that noise levels are below the National Noise Control Regulations, SANS10103:2008 guidelines and the International Finance Corporation (World Bank) guidelines.	Provide employees with ear plugs and instructed them to use the ear plugs; Where possible berms as a barrier must be constructed between the source of noise and the receptors.	Appointed contractor and ECO.	Undertake ambient noise monitoring programme. Speed checking will be conducted.	Environmental specialist twice a year. Safety Officer will conduct speed checking as regularly as possible.	During Decommissioning and Closure Phases.
Visual impacts on the surrounding communities and road users from the proposed mining site.	Visual aspects.	Ensure that the decommissioning of the mine do not result in detrimental visual impacts on surrounding properties, communities and road users.	Measures will be undertaken by the mine to ensure that the visual aspects from the site are complying with the relevant visual standards and objectives.	Use the perimeter berms and topsoil as a visual screen from the surrounding communities. Ensure that the initial box cut, successive cuts and the associated stockpiles and surface infrastructure are removed or rehabilitated during the decommissioning phase of the mine.	Mine engineer and the ECO.	The constructed perimeter berms will be inspected for compliance with the design specifications. The slopes will be inspected for compliance with the method statement and designs.	Mine Engineer and ECO on a monthly basis.	During Decommissioning and Closure Phases.

				Where possible areas disturbed by construction activity, must be suitably topsoiled and vegetated as soon as is possible. The progressive rehabilitation measures will allow for the maximum growth period before the completion of the project. Limit areas of disturbance to areas where infrastructure or facilities will be constructed or placed. Where possible, the existing vegetation will be supplemented with indigenous plant species to increase the effectiveness of the visual buffer. Dust suppression will be undertaken at all areas that will be affected by construction activities and where dust will be enerated. Existing large trees that fall outside the earthworks area must be retained. Note that the alien eradication program, if any, will supersede this condition.		Areas of disturbance will be inspected to determine areas that need rehabilitation. Inspection of the site will be conducted. Night time inspection of the site will be undertaken.	Safety Officer monthly	

				Avoid upwards lighting of structures but rather direct the light downwards to focus on the object to be illuminated. Light spill, particularly upwards, must be minimised by implementing the following: Not allowing external light fittings to shine upwards, all security and road lighting shall have "blinkers" or be specifically designed to ensure light is directed downwards to reduce light spill beyond the property boundary.				
Impacts on employment.	Socio-economic aspects.	Ensure that cessation of the operation does not have detrimental impacts on the employees and surrounding communities.	Manage the loss of employment and support to the community in accordance with the approved Social and labour plan of the mine.	Transfer and redeploy employees and contractors wherever possible. Implement non-mining related skills development programmes for employees and family members throughout the life of mine to enable retrenched employees to seek alternative employment or start income-generating businesses.	Community Liaison Officer.	Monitor the employee transfer process. Monitor the progress of the mine's employee skills development programme.	Human Resources Manager will monitor the transfer. Community Liaison Officer.	During Decommissioning and Closure Phases.
AFTER CLOSURE PHASE								

Residual impacts of the mined out areas on groundwater.	Surface and Groundwater.	Ensure that the decommissioned opencast workings do not result in detrimental surface and groundwater impacts.	The groundwater around the decommissioned opencast workings will comply with the water quality standards to be provided by the DWS on closure.	The numerical and geochemical model needs to be updated against monitored data during the post-closure phase. The post-closure groundwater management of the opencast should be done in two phases: • Phase 1: Immediately after closure The acid producing material should be placed as low in the pits as possible, followed by the non-acid generating material. Rapid flooding should be done by diverting storm water channels and pumping of available groundwater into the pit until the acid producing material is inundated by the water. • Phase 2: After Rapid Flooding The final backfilled opencast topography should be engineered such that runoff is directed away from the opencast areas. The final layer (just below the topsoil cover) should be as	Mine Environmental Co-ordinator.	Groundwater quality will be monitored around the rehabilitated proposed Opencast Mining Project Area.	Mine Environmental Co-ordinator.	Throughout the closure phase until it can be proven that the water quality has stabilised and will not cause significant impacts on the surrounding environment and water users.

				clayey as possible and compacted if feasible, to reduce recharge to the opencasts. Natural berms should then be constructed to allow free drainage of surface water around the rehabilitated pit. Should monitoring indicate the passive methods employed during the rehabilitation of the opencast are ineffective and the decant water quality is unacceptable for release the following can be implemented. Passive Method: Should low volumes of water be encountered (< 5 ℓ/s) an interception trench can be designed as follows. Active method: Should high volumes of water be encountered (> 5 ℓ/s), Treatment strategies may include a greater or lesser degree of water treatment in order to render the water suitable for reuse. If there is still a residual water management problem, then the operation could evaluate and negotiate options with DWA for the				

				discharge of such water to the water resource.				

i. Financial Provision

1. Determination of the amount of Financial Provision.

Section 24 P (1) of NEMA requires an applicant for an environmental authorisation related to relating to prospecting, exploration, mining or production to comply with the prescribed financial provision for the rehabilitation, closure and ongoing post decommissioning management of negative environmental impacts before the Minister responsible for mineral resources issues the environmental authorisation. The above-mentioned financial provision may be in the form of an insurance, bank guarantee, trust fund or cash.

To this effect regulations pertaining to the above-mentioned financial provision for prospecting, exploration, mining or production operations (GNR 1147) were promulgated on the 20th of November 2015, which to date is unclear if they are in force. Further to the above, in terms of Regulation 23(3) and 23(4), a Basic Assessment report (BAR) and EMPr must, where an application is for an environmental authorisation for activities directly related prospecting, exploration, extraction and primary processing of a mineral or petroleum resource, must address the requirements as determined in the regulations pertaining to the financial provision for the rehabilitation, closure and post closure of prospecting, mining or production operations, made in terms of the National Environmental Act, 1998 (Act 107 of 1998) as amended. In the face of the uncertainty of the enforcement of the above regulations, the MPRDA Regulations pertaining to financial provision, were used for the determination of the financial provision for the proposed project.

In view of the above, Tunnel Vision Resources (Pty) Limited will undertake the financial provision determination for the proposed Opencast Mining Project in terms of the above-mentioned Regulations. In support of the above legal requirement and in view of the fact that no new guideline for determination of financial provision has yet been promulgated under NEMA, the guideline document for the evaluation of the quantum of closure-related financial provision provided by a mine developed by the DMR under the MPRDA and its regulations will used. This guideline was developed to comply with regulations under the MPRDA. Updated master rates, published by the DMR in 2018 for the determination of the quantum of closure related financial provision for mines, will be used in this financial provision determination.

a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.

The goals and objectives for closure were determined based on the baseline environment and the land uses that will be established post mining. The overall closure objectives include:

- To return land, mined by opencast methods, to a land capability similar to that which existed prior to mining and that the management level required to utilise the rehabilitated land be within the means of the farmer who uses it;
- Reshape the land disturbed by mining so that it is stable, adequately drained and suitable for the desired long-term land use;

- To ensure that as little water as possible seeps out of the various sections of the mine and where this is unavoidable, to ensure that the water is contained, if the volume is significant and if it does not meet the statutory water quality requirements;
- To clean up all coal stockpiles, loading areas and spillages within the opencast areas and to rehabilitate these to at least a grazing land capability.
- Make all areas safe for both humans and animals;
- Make all areas stable and sustainable;
- Rehabilitate areas as soon as possible (during operational phase if possible);
- Return rehabilitated land to the pre-mining environment where possible;
- Minimise the impact on the local community;
- Each area will be maintained and monitored for a period of three to five years following re- vegetation and, if this monitoring shows that the objectives have been met, an application for closure will be made;

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

The Public Participation Process (PPP) is a requirement of several pieces of the South African legislation and aims to ensure that all relevant Interested and Affected Parties (I&APs) are consulted, involved and their opinions are taken into account and a record included in the reports submitted to Authorities. The process ensures that all stakeholders are provided this opportunity as part of a transparent process which allows for a robust and comprehensive environmental study.

The PPP which forms part of the Mining Permit application needs to be managed sensitively and according to best practises in order to ensure and promote:

- Compliance with national legislation.
- Establish and manage relationships with key stakeholder groups.
- Encourage involvement and participation in the environmental study and authorisation/approval process.

As such, the purpose of the PPP and stakeholder engagement process is to:

- Introduce the proposed project.
- Explain the environmental authorisations required.
- Explain the environmental studies already completed and yet to be undertaken (where applicable).
- Determine and record issues, concerns, suggestions and objections to the project.
- Provide opportunity for input and gathering of local knowledge.
- Establish and formalise lines of communication between the I&APs and the project team.
- Identify all significant issues for the project.
- Identify possible mitigation measures or environmental management plans to minimise and/or prevent negative environmental impacts and maximise and/or promote positive environmental impacts associated with the project.

Landowners and I&APs were consulted and provided an opportunity to comment on the draft Basic Assessment Report, EMPR including all decommissioning, closure and rehabilitation plans. Their comments will be included in this final BAR and EMPR for consideration by the DMR as part of their decision-making.

b) **Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main mining activities, including the anticipated mining area at the time of closure**

1. REHABILITATION PLAN FOR THE PROPOSED PROJECT

In terms of Regulation 23 of NEMA EIA Regulations, 2014, an EMPr must address the requirements as determined in the regulations, pertaining to the financial provision for the rehabilitation, closure and post closure of mining operations. In view of the above, a rehabilitation plan must be provided to the DMR in support of the financial provision determined for mining operations. This sections details the rehabilitation plan for the proposed opencast Mining Project.
The mine will develop and implement a detailed Integrated Rehabilitation and Closure Plan. The rehabilitation plan will be based on the following objectives and principles:

- Determine the end land use with the relevant authorities;
- Remove all surface infrastructure, including buildings, plants, stockpiles etc. on closure;
- Clear all coal and carbonaceous material from the site;
- Remove all waste from site;
- Ensure adequate topsoil placement on rehabilitated areas;
- Ensure the rehabilitated areas are free draining and even with no ponding;
- Eroded areas and areas showing sparse vegetation will be repaired to ensure that they are free draining and properly re-vegetated.
- Re-vegetate all rehabilitated areas as soon as possible, with area specific vegetation.

1.1. Rehabilitation of Infrastructure Areas

All concrete, steel works and structures will be removed so that the land can be returned to as near as practically possible to its original state. Concrete work that extends below ground level will be removed to a metre below the surface. Concrete, brick and mortar will be used as backfilling material in the pit areas. Steel will be sold as scrap metal. All rehabilitated areas will be shaped to be free draining without concentrating flow such that erosion occurs, fertilised and a mixture of indigenous and pasture grasses will be planted. Following this rehabilitation the infrastructure areas will have a capability similar to the pre-mining environment. All rehabilitated areas will be maintained for a period of 3 years, where after the frequency will be reassessed. Vegetation cover will be maintained by annual application of fertiliser combined with biennial cutting or burning for the first three years. After this period, fertilizer will be applied as and when required. This will be determined
by monitoring the basal cover and fertilizer levels against mine standards.

Maintenance with respect to erosion will be conducted on a minimum three monthly basis if and where required. This frequency will be reassessed after a 3-year period. The final rehabilitated surface will be stable, self-sustaining and

erosion-free. All roads not required for residential or farming purposes, and overland conveyors will be removed and the ground restored as above.

1.2. Rehabilitation of Roads

Access roads to the proposed opencast Mining Project will be rehabilitated. All gravel roads will be graded to remove carbonaceous material. The roads will be cross-ripped to 300 mm at right angles to the natural slope, fertiliser added as per soil requirements and vegetated with a seed mix of indigenous and pasture grasses. Maintenance will be conducted on the rehabilitated areas.

1.3. Rehabilitation of Areas with Buildings (Offices, Workshops and Stores)

The bulk of the activity in removing the workshops, stores and administration buildings will be the demolition and disposal of concrete structures. Metal will be removed and sold. Rubble will either be removed or used as pit backfill and all scrap metal will be cleared from the area and sold.

The actions as stipulated above will apply to all workshop and store areas.
If any soils are contaminated with hydrocarbons, they will be bio-remediated.

1.4. Rehabilitation of the Pollution control dam.

The PCD will remain on site to monitor for any potential residual impacts and will only be rehabilitated once runoff and seepage water quality is of adequate quality to be released into the catchment. Relevant permits will be obtained from DWS prior to release of water and rehabilitation of PCDs. When these are decommissioned, all equipment such as pumps and pipelines will be removed and either reused at other operations, sold as second-hand equipment or sold as scrap to recyclers. The entire area will be ripped and disked and profiled to the surrounding topography of the area. Topsoil will be applied and the area vegetated with local indigenous species. The timeframe for rehabilitation of the PCDs will be conducted five years after rehabilitation of the mine.

1.5. General Overall Rehabilitation Procedures

The above areas will all be rehabilitated according to the following principals.

All areas will be cleared of potentially contaminating material which will be disposed of at the bottom of the opencast workings or other appropriate waste facility.

All areas will be ripped and scarified to a depth of 150mm (save for the haul / access roads which will be ripped down to 1m) prior to any top soiling. Only after the levelled areas have been inspected and approved by the Mine Environmental Co-ordinator will topsoil be placed to an appropriate depth.

Areas will be filled to attain adequate topographical levels similar to that of pre-mining. The areas will be contoured to ensure adequate drainage and prevent pooling or ponding of water.

Where this occurs, the areas will be revisited and graded and filled as necessary.

Where possible, pre-stripped material or clay cover will be placed over levelled areas before soil is replaced. If this is done, this will be recorded. No area will be allowed to have ponding thereby minimising the ingress of rainfall and reducing the potential for decant.

Soils that were removed and stockpiled need to be re-assessed prior to and during rehabilitation. This is necessary to ensure nutrients are adequate.

The rehabilitated areas will be sampled and the necessary lime and fertiliser requirements applied prior to re-vegetation. Any area profiled and capped will be vegetated within the same growing season. These areas will be vegetated with the prescribed seed mix which will reflect the original biome type. The seed mixture should as a minimum. Rehabilitation should be done as soon as possible to reduce risk of soil erosion and to increase habitat availability for fauna as soon as possible.

Once areas have been rehabilitated and seeded, access to these areas should be restricted.

Rehabilitated areas will be monitored for vegetation cover and alien invasive encroachment on a 6 monthly basis. Areas of failed growth will be fertilised (if necessary) and re-seeded. All exotic and invasive vegetation should be removed.

Erosion and pooling of water / impaired surface water flow will be monitored on a monthly basis during the rainy season and/or after each heavy rainfall event, any areas of concern will be addressed immediately. Where erosion gullies are noted, hale bales, gabion baskets or stick energy dissipaters are to be installed, and storm water control structures will be reviewed.

The status of biodiversity and land management will be monitored on an annual basis.

Groundwater and surface water monitoring will continue during the decommissioning, closure and post-closure phases. Maintenance and monitoring will continue for a period of at least 3 years following closure.

a) **Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives.**

The objectives for rehabilitation and closure have been provided in section 1.a above. The rehabilitation plan is based on good industry practise and is based on the described objectives for rehabilitation and closure which in turn are based on the end land use objectives defined during the original EIA studies in consultation with landowners and key stakeholders. Further to this, the ongoing stakeholder engagement as per the ESMS will allow for continued consultation landowners with regards to the reinstatement of preferred land uses post mining.

e) Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline.

CALCULATION OF THE QUANTUM (REAL RATES)

Applicant: **TUNNEL VISION RESOURCES (PTY) LTD** **Ref No.:** **12423MP**
Evaluators: **Date:** **Jun-21**

No.	Description	Unit	A Quantity	B Master Rate	C Multiplication factor	D Weighting factor 1	E=A*B*C*D Amount (Rands)
1	Dismantling of processing plant and related structures (including overland conveyors and powerlines)	m3	0	16.59	1	1	0
2 (A)	Demolition of steel buildings and structures	m2	0	231.09	1	1	0
2(B)	Demolition of reinforced concrete buildings and struct	m2	0	340.55	1	1	0
3	**Rehabilitation of access roads**	m2	**700**	**41.35**	**1**	**1**	**28945**
4 (A)	Demolition and rehabilitation of electrified railway lines	m	0	401.36	1	1	0
4 (A)	Demolition and rehabilitation of non-electrified railway	m	0	218.92	1	1	0
5	Demolition of housing and/or administration facilities	m2	0	462.17	1	1	0
6	**Opencast rehabilitation including final voids and r**	ha	**2.06**	**235222**	**1**	**1**	**484556.9698**
7	Sealing of shafts adits and inclines	m3	0	124.06	1	1	0
8 (A)	**Rehabilitation of overburden and spoils**	ha	**0.08**	**161517**	**1**	**1**	**12921.3896**
8 (B)	Rehabilitation of processing waste deposits and evap ponds (non-polluting potential)	ha	0	201117	1	1	0
8 (C)	**Rehabilitation of processing waste deposits and e ponds (polluting potential)**	ha	**0.3**	**584284**	**1**	**1**	175285.263
9	Rehabilitation of subsided areas	ha	0	135246	1	1	0
10	**General surface rehabilitation**	ha	**5**	**127949**	**1**	**1**	**639745**
11	River diversions	ha	0	127949	1	1	0
12	Fencing	m	0	145.95	1	1	0
13	Water management	ha	0	48649.8	1	1	0
14	**2 to 3 years of maintenance and aftercare**	ha	**5**	**17027.4**	**1**	**1**	**85137.15**
15 (A)	Specialist study	Sum	0	0	1	1	0
15 (B)	Specialist study	Sum	0	0	1	1	0
					Sub Total 1		**1426590.772**

1	Preliminary and General	171190.8927	weighting factor 2 1	**171190.8927**
2	Contingencies	142659.0772		**142659.0772**
			Subtotal 2	**1740440.74**
			VAT (15%)	**243661.70**
			Grand Total	**1984102**

c) Confirm that the financial provision will be provided as determined.

The financial provision will be provided as determined.

Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including

d) Monitoring of Impact Management Actions

Monitoring of the impact management actions will be done by the Environmental Control officer and the project manager

e) Monitoring and reporting frequency

Monitoring will be done on a monthly basis during the operational phase of the proposed activity and depending on the aspect to be monitored the reporting to the competent authority will be done annually or when required by the competent authority.

f) Responsible persons

The responsible persons will be the environmental control officer, and the mining manager.

g) Time period for implementing impact management actions

The impact management actions must be implemented immediately or within a day of being approved.

h) Mechanism for monitoring compliance

Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting

During the impact assessment, potential impacts on the environment were identified. Mitigation measures were also specified for prevention and management of the impact so as to minimise their effect on the environment. This section will describe how the mine intends to ensure that the mitigation measures are being undertaken and that their effectiveness is proven. A monitoring programme has been developed for the identified impacts and their mitigation measures.

This monitoring programme will be undertaken and results thereof used to determine the effectiveness of the mitigation measures. The ECO will have an overall responsibility for ensuring that all monitoring is conducted according to the approved EMPr. Below is the explanation of how each environmental aspects to be affected by the mine will be monitored, which include all aspects of the environment affected by the proposed opencast Mining Project.

1. Soil

The soil profile will be disturbed during the construction and operational phases of the proposed project. As a mitigation measure, the stripping, stockpiling and replacement of the soil layers must be conducted such that all topsoil removed are replaced during the rehabilitation of the disturbed areas.

During the construction phase, the stockpiled soils will be monitored to determine the quality of the soils. The results of the analysis will be useful in determining the amount and type of fertilizers required for the soils during the decommissioning phase. The soils will also be monitored once used during the rehabilitation of the disturbed areas.

Competent and accredited laboratories will be used for the analysis of the soils. Records of soil placement and package thickness will be kept during mining the decommissioning phase.

2. Topography

The establishment of the proposed opencast Mining Project will result in creation of a topographical highpoint, which will alter the topographical patterns of the local surroundings. In view of the above, it will be necessary that all voids and topographic highs created be surveyed regularly by a mine surveyor. The surveyed data must be compared and aligned to the approved design parameters of the structures resulting in topographical impacts. The mine surveyor will also survey all rehabilitated areas including the backfilled voids. The regular surveying of the topography will be in essence the monitoring of the topography.

3. Natural Vegetation, Land Use and Capability

The ability of land (soils) to enable establishment and maintenance of good vegetation cover over an area can be used to describe the land capability of an area. During mining at proposed opencast Mining Project area, the land use and capability over the areas where the project area will be impacted upon. As a mitigation measure, the disturbed areas will be rehabilitated and made comparable to the post closure land use. For the purpose of monitoring of the effectiveness of the mitigation measure on land use and capability, the establishment and ability to maintain a good vegetation cover together with monitoring described under soils will be conducted. Distribution of plant species suitable for the after land use will be monitored during the closure phase of the project, which will be suitable for determining the effectiveness of the mitigation measures.

4. Surface and Groundwater

4.1. Water Monitoring

A water quality monitoring program will be developed and implemented, until it can be shown that water quality (surface and groundwater) is both stable and within acceptable guidelines and limits, as determined by the relevant State Departments. Frequency of monitoring will be monthly for the surface water monitoring points and quarterly for groundwater monitoring points until three years after closure. Thereafter, the frequency for surface water monitoring points will decrease to quarterly and the groundwater monitoring points to be twice a year. This will again be reviewed after a further 2 years.

4.2. Bio – monitoring

Vegetation and SASS 5 monitoring surveys will continue through the decommissioning phase. The vegetation surveys will be expanded to include all rehabilitated areas to ensure that the vegetation composition and cover is adequate.
Note that the frequency of the bio-monitoring surveys will be decreased during the decommissioning phase to annually. The bio-monitoring and vegetation surveys will continue for a minimum of 3 years after closure.

5. Noise

Environmental Noise Monitoring can be divided into two distinct categories, namely:

- Passive monitoring – the registering of any complaints (reasonable and valid) regarding noise; and

- Active monitoring – the measurement of noise levels at identified locations.

Active environmental noise monitoring is recommended due to the medium (after the implementation of appropriate mitigation measures) significance for a noise impact to develop. In addition, should a valid complaint be registered, the mine must investigate this complaint as per the following sections. It is recommended that the noise investigation be done by an independent acoustic consultant.
Annual noise measurements will be conducted annually. Noise measurements should continue during the construction and operational phase (annual) for the first two years of operation when the noise monitoring plan can be reviewed (measurements increased, continued, reduced or stopped). Noise measurements must be conducted as required by the National Noise Control Regulations (GNR154 of 1992) and SANS 10103:2008.

6. Air Quality

During mining the movement of machines and blowing winds will generate dust. Impacts resulting from the generated dust will be low. Despite this, the fact that cumulative impacts may result from other sources, the mine will developed a dust-monitoring programme. Services of an independent service provider will be used to monitor the overall dust generated at the mine.

7. Fieldwork

The field work that will be conducted annually and will include surveying the area to determine if there is a change in the vegetation composition. Animal species will be verified and if any water is available, bio-monitoring will be conducted. Soil investigation will be conducted only on areas being rehabilitated.
The survey will also include the observation of any erosion features as well as the detection of any declared invader plant species or plant species that must be protected.

8. Interested and Affected Parties

A list of all identified interested and affected parties is given in the BAR. Any additional or new parties that would like to be included in this list will be included in the list. The mine will have regular meetings with the interested and affected parties and will continue having these meetings. These meetings will be held with interested and affected parties on an annual basis. Issues raised in these meetings will be recorded and addressed as far as possible. The mine will also use an open door approach with the surrounding inhabitants and landowners. This allows the mine to pro-actively react to any perceived complaint from its neighbours thus ensuring that the situation is resolved timeously.

i) **Indicate the frequency of the submission of the performance assessment/environmental audit report.**

The performance assessment report will be submitted to the competent authority annually.

j) Environmental Awareness Plan

No Training and environmental awareness is an integral part of a complete EMPR. The overall aim of the training will be to ensure that all site staff is informed of their relevant requirements and obligations pertaining to the relevant authorisations, licences, permits and the approved EMPR and protection of the environment.

The applicant and contractor must ensure that all relevant employees are trained and capable of carrying out their duties in an environmentally responsible and compliant manner, and are capable of complying with the relevant environmental requirements. To obtain buy-in from staff, individual employees need to be involved in:

- Identifying the relevant risks.
- Understanding the nature of risks.
- Devising risk controls.
- Given incentive to implement the controls in terms of legal obligations.

The applicant shall ensure that adequate environmental training takes place. All employees shall have been given an induction presentation on environmental awareness. Where possible, the presentation needs to be conducted in the language of the employees. All training must be formally recorded and attendance registers retained. The environmental training should, as a minimum, include the following:

- General background and definition to the environment.
- The environmental impacts, actual or potential, of their work activities.
- Compliance with mitigation measures proposed for sensitive areas.
- The environmental benefits of improved personal performance.
- Their roles and responsibilities in achieving compliance with the environmental policy and procedures and with the requirement of the applicant's environmental management systems, including emergency preparedness and response requirements.
- The potential consequences (legal and/or other) of departure from specified operating procedures.
- The mitigation measures required to be implemented when carrying out their work activities.
- All operational risks must be identified and processes established to mitigate such risk, proactively. Thus, the applicant needs to inform the employees of any environmental risks that may result from their work, and how these risks must be dealt with in order to avoid pollution and/or degradation of the environment.
- In the case of new staff (including contract labour) the contractor / applicant shall keep a record of adequate environmental induction training, the importance of compliance with all environmental policies.

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

An Environmental Awareness and Risk Assessment Schedule have been developed and is outlined below. The purpose of this schedule is to ensure that employees are not only trained but that the principles are continuously re-enforced.

Frequency	Time Allocation	Objective

Induction (all staff and workers)	1 hour training on environmental awareness training as part of site induction	• Develop an understanding of what is meant by the natural environmental and social environment and establish a common language as it relates to environmental, health, safety and community aspects. • Establish a basic knowledge of the environmental legal framework and consequences of non-compliance. • Clarify the content and required actions for the implementation of the Environmental Management Plan. • Confirm the spatial extent of areas regarded as sensitive and clarify restrict ions. • Provide a detailed understanding of the definition, the method for identification and required response to emergency incidents.
Monthly Awareness Talks (all staff and workers)	30 minute awareness talks	Based on actual identified risks and incidents (if occurred) reinforce legal requirements, appropriate responses and measures for the adaptation of mitigation and/or management practices.
Risk Assessments (supervisor and workers involved in task)	Daily task based risk assessment	Establish an understanding of the risks associated with a specific task and the required mitigation and management measures on a daily basis as part of daily tool box talks.

Environmental Awareness and Risk Assessment

(2) Manner in which risks will be dealt with in order to avoid pollution or the degradation of the environment.

The broad measures to control or remedy any causes of pollution or environmental degradation as a result of the proposed mining activities taking place are provided below:

- Contain potential pollutants and contaminants (where possible) at source.
- Handling of potential pollutants and contaminants (where possible) must be conducted in bunded areas and on impermeable substrates.
- Ensure the timeous clean-up of any spills.
- Implement a waste management system for all waste present on site.
- Investigate any I&AP claims of pollution or contamination as a result of mining activities.
- Implement the impact management objectives, outcomes and actions.

It is of critical importance that the broad measures to control or remedy any causes of pollution or environmental degradation are applied during onsite mining activities.

- **Environmental Awareness Training Content – Induction Training**

The following environmental awareness training will be provided to all staff and workers who will be involved in mining activities.

- ✓ Description of the approved mining activities and content of the mining permit;
- ✓ An overview of the applicable legislation and regulations as it relates to environmental, health, safety and community including (but not limited to):
  - ❖ General Environmental Legal Principles and Requirements
  - ❖ Air Quality Management
  - ❖ Water and Wastewater Management
  - ❖ Hazardous Substances
  - ❖ Non-Mining-Related Waste Management
  - ❖ The Appropriate Remediation Strategies & Deteriorated Water Resources
  - ❖ Biodiversity
  - ❖ Weeds and Invader Plants
  - ❖ Rehabilitation
  - ❖ Contractors and Tenants
  - ❖ Energy & Conservation
  - ❖ Heritage Resources
  - ❖ General Health and Safety Matters
  - ❖ Basic Conditions of Employment
  - ❖ Compensation for Occupational Injuries and Diseases
  - ❖ General Mine Health and Safety Matters
  - ❖ Smoking in the Workplace
  - ❖ Noise & Hearing Conservation
  - ❖ Handling, Storage and use of Hazardous Substances
  - ❖ Weapons and Firearms

- ✓ Content and implementation of the approved Environmental Management Plan
  - ❖ Al located responsibilities and functions
  - ❖ Management and Mitigation Measures
  - ❖ Identification of risks and requirements adaptation
- ✓ Sensitive environments and features
  - ❖ Description of environmentally sensitive areas and features
  - ❖ Prohibitions as it relates to activities in or in proximity to such areas
- ✓ Emergency Situations and Remediation
  - ❖ Methodology to the identify areas where accidents and emergency situations may occur, communities and individuals that may be impacted
  - ❖ An over view of the response procedures,
  - ❖ Equipment and resources
  - ❖ Designate of responsibilities
  - ❖ Communication, including communication with potentially Affected Communities

- ❖ Training schedule to ensure effective response.

✓ Environmental Related Emergencies and Remediation

The Company will operate on the principle that "prevention is better than cure" and so will institute procedures to reduce the risk of emergencies taking place. These will include ensuring that all contracts specify that the contractor is required to comply with all the environmental measures specified in this EMP, environmental awareness training, on-going risk assessment and emergency preparedness.

Emergency telephone numbers

All employees shall have the telephone numbers of emergency services, including the local ambulance and fire fighting service. All employees must be made aware of procedures to be followed during the environmental awareness training course.

Fire

The Company shall ensure that there is basic fire fighting equipment available on Site at all times. This shall include at least two rubber beaters and at least one fire extinguisher. The Company shall advise the relevant authority of a fire as soon as one starts and shall not wait until the fire is out of control.

Hydrocarbon spills

The Company shall ensure that all employees are aware of the procedures to be followed for dealing with hydrocarbon spills. The Company shall ensure that the necessary materials and equipment for dealing with hydrocarbon spills and leaks is available on Site at all times. The Company shall ensure that there is always a supply of absorbent material readily available to absorb/ breakdown and where possible is designed to encapsulate minor hydrocarbon spillage. The quantity of such materials shall be able to handle a minimum of 200 l of hydrocarbon liquid spill. There are a number of different products on the market, which can be used as absorbents and encapsulators of hydrocarbons. The following are examples of these products:

- Spill-Sorb
- Drizzit
- Enretech
- Peat Moss

In the event of a significant hydrocarbon spill, the following procedure is required:

- The source of the spillage shall be isolated
- The spillage must be contained using sand berms, sandbags, pre-made booms, sawdust or absorbent materials.
- The area shall be cordoned off, secured and made safe.
- If a serious spill has occurred in a sensitive environment, then the Department of Environmental Affairs and Development Planning: Directorate Pollution & Waste Management must be notified.

Treatment and remediation of spill areas shall be undertaken to the satisfaction of the Project Manager. Remediation may include in-situ bioremediation using appropriate products (e.g. Enretech-1 and / or the removal of the spillage together with the contaminated soil and the disposal at a recognised facility

- **Development of procedures and checklists**

  The following procedures will be developed and all staff and workers will be adequately trained on the content and implementation thereof.

- **Emergency Preparedness and Response**

  The procedure will be developed to specifically include risk identification, preparedness, response measures and reporting. The procedure will specifically include spill and fire risk, preparedness and response measures. The appropriate emergency control canters (fire department, hospitals) will be identified and the contact numbers obtained and made available on site. The procedure must be developed in consultation with all potentially affected landowners.

  In the event that risks are identified which may affected adjacent landowners (or other persons), the procedure will include the appropriate communication strategy to inform such persons and provide response measures to minimize the impact.

- **Incident Reporting Procedure**

  Incident reporting will be undertaken in accordance with an established incident reporting procedure to (including but not limited to):

  - ✓ Provide details of the responsible person including any person who: (i) is responsible for the incident; (ii) owns any hazardous substance involved in the incident; or (iii) was in control when the incident occurred;
  - ✓ Provide details of the incident (time, date, location);
  - ✓ The details of the cause of the incident;
  - ✓ Identify the aspects of the environment impacted;
  - ✓ The details corrective action taken, and
  - ✓ The identification of any potential residual or secondary risks that must be monitored and corrected or managed.

- **Environmental and Social Audit Checklist**

  An environmental audit checklist will be established to include the environmental and social mitigation and management measures as developed and approved as part of the Environmental Management Plan. Non- conformances will be identified and corrective action taken where required.

k) Specific information required by the Competent Authority

(Among others, confirm that the financial provision will be reviewed annually).

No specific information was required by the Competent Authority.

I) Environmental monitoring

1. Functional Requirements of Monitoring Programmes

The purpose of monitoring is not merely to collect data, but to provide information necessary to make informed decisions on managing and mitigating potential impacts. Monitoring therefore serves the following functions:

- Serve as early warning system to detect any potential negative impacts.
- To provide information to feedback into management controls to avoid, prevent or minimise potential negative impacts.
- Provide quantitative data that can serve as evidence for the presence of negative impacts or the lack thereof.
- Allows for trending, modelling and prediction of future conditions or potential impacts.

Based on the above, the small-scale mine must ensure that monitoring programmes comprise of the following (at a minimum) in order to obtain valuable environmental data:

- Environmental aspect monitoring must be a formalised procedure.
- All equipment used in monitoring must be correctly calibrated and serviced regularly.
- Samples required for analysis will be sent to an independent and accredited laboratory.
- Monitoring data must be stored.
- Data must be checked and interpreted and tending undertaken on a quarterly basis.
- Both the date and reports on environmental monitoring must be kept on record for the life of mine and where relevant provided to I&APs.
- The general and site specific parameters to be monitored must be identified by an independent specialist, the authorities and where relevant I&APs.

2. List of Aspects that Require Monitoring Plans

The list of aspects that require on-going environmental monitoring includes the following:

- Air quality.
- Blasting and vibration.
- Surface water.
- Groundwater.
- Noise.
- Traffic.
- Rehabilitation.

As mines/pits and the environment are both dynamic it is likely that future scenarios may require the monitoring of additional or unforeseen impacts. As such, the list provided is by no means conclusive and must instead be used as a guideline for the impacts that require monitoring.

3. Monitoring Plans for Environmental Aspects

The monitoring of various environmental aspects and the impact on them as a result of the proposed project shall take place by means of both quantitative and qualitative techniques in order to determine whether or not the requirements

of the Environmental Management Programme are being complied with. The importance and value of detailed environmental monitoring networks cannot be overstated.

Environmental monitoring serves as a tool to track compliance, assist with potential liability identification, and mitigation throughout the life of the proposed project. This is achieved through the provision of actual evidence based monitoring and reporting thereof. In essence, monitoring is a continuous data-gathering, data interpreting, and control procedure that ranges from visual inspection to in-depth investigative monitoring and reporting. These monitoring plans need to be drawn into standalone plans that can be updated and amended as per authority requirements and additional data requirements identified during the mining activities. These plans need to include the site specific roles and responsibilities for actions.

m) Specific information required by the Competent Authority
(Among others, confirm that the financial provision will be reviewed annually).

No specific information was required by the Competent Authority.

2) UNDERTAKING

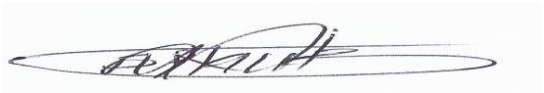
The EAP herewith confirms

a) the correctness of the information provided in the reports

b) the inclusion of comments and inputs from stakeholders and I&APs ;

c) the inclusion of inputs and recommendations from the specialist reports where relevant; and

d) that the information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein.



Signature of the environmental assessment practitioner:

Mukhadakhomu Environmental Services

Name of company:

Date: