Naudesbank Prospecting Project

Vuna Mining Resources (Pty) Limited

Basic Assessment Report (BAR) and Environmental Management Programme (EMPr)

Compiled in terms of Appendix 1, Appendix 4 of the Environmental Impact Assessment Regulations, 2014 (Government Notice No. R 982) (EIA Regulations, 2014) and Submitted as contemplated in Regulation 19 of Chapter 4 of the EIA Regulations, 2014

For

The application for an Environmental Authorization in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), Environmental Impact Assessment Regulations 2014, Government Notice R983 - Government Notice R984 - Listing Notice 2 of 2014

DMR Reference No.: MP 30/5/1/1/3/2/1 (14178) EM

APRIL 2016

Basic Assessment Report (BAR) and Environmental Management Programme (EMPr)

Vuna Mining Resources (Pty) Limited:

Naudesbank Prospecting Project

BAR AND EMPr FOR THE NAUDESBANK PROSPECTING PROJECT

April 2016

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EXECUTIVE SUMMARY

Vuna Mining Resources (Pty) Limited, is a coal mining company operating in the Mpumalanga province. Vuna Mining Resources (Pty) Limited proposes to undertake a coal prospecting project over portion 4 and 16 of the Naudesbank 172 IS, namely Naudesbank Prospecting Project. Vuna Mining Resources (Pty) Limited submitted an application in terms of the Mineral and Petroleum Resources Development Act, 2004 (Act 28 of 2004). See Plan 1 for the Regulation 2(2) plan for the prospecting right application.

Naudesbank Prospecting project will be undertaken in different phases i.e. literature review (data gathering, data interpretation and deciding whether to commence with drilling), establishment of access to the site, establishment of a campsite, site surveying (may include geophysical survey), pegging of drilling sites, diamond core drilling with excavation of drilling sumps, logging and sampling of borehole cores and rehabilitation of the drilling site.

The commencement of the proposed Naudesbank Prospecting project will results in the undertaking of activities that are considered as listed activities in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) as amended (NEMA). In terms of the above-mentioned legislation, an application for an environmental authorisation must be submitted to the competent authority which application must be granted before the commencement of the proposed listed activities. In addition to the above, an environmental impact assessment must be undertaken in support of the environmental authorisation application for the proposed listed activities. In view of the above, Vuna Mining Resources (Pty) Limited appointed Geovicon Environmental (Pty) Limited, an independent environmental consulting company, to undertake and manage the environmental authorisation application and the environmental impact assessment for the proposed Naudesbank Prospecting project. An application for an environmental authorisation for the proposed Naudesbank Prospecting project was submitted to the Department of Mineral Resources, Mpumalanga Regional Office (Competent Authority) for their consideration. The application has ever since been acknowledged and a Basic Assessment Report (BAR) together with an EMPr must be compiled and submitted in terms of the requirements of the EIA Regulations, 2014.

This document (BAR and EMPr), which concerns assessment of environmental impacts and a programme for management of the impacts for the proposed activities at the Naudesbank Prospecting project, was compiled in terms of the EIA Regulations, 2014 for review by interested and affected parties including the competent authority.

Environmental baseline data used in this report has been obtained through desktops assessments for surface water quantities and qualities, geohydrological data, topographical analyses, soil surveys, vegetation surveys, wetland surveys and geological conditions and the socio-economic aspects. Weather data was acquired from the South African Weather Service. Historic land use was determined through available data and by visual observations made during a field assessment. The data accumulated and analysed is therefore deemed sufficient to gain a baseline indication of the present state of the environment. The use of this baseline data for impact assessments is thus justified, and reliable conclusions could be made. The impacts that could arise during and after the proposed activities at the Naudesbank Prospecting project were determined and ranked according to their significance. Based on the impact assessment, recommendations were made for the mitigation of significant negative environmental impacts that will result from the proposed project.

PART A

SECTION ONE

Introduction

1. INTRODUCTION

1.1 WHO IS DEVELOPING THE BAR AND EMPR?

1.1.1 Name and contact details of the EAP who prepared the BAR and EMPr

EAP: Mr. Ornassis Tshepo Shakwane

IAIA Membership No.: 3847

Company: Geovicon Environmental (Pty) Limited

Postal Address:

P.O. Box 4050

MIDDELBURG, 1050

Tel: (013) 243 5842

Fax: (086) 632 4936

Cell No.: 0824981847

1.1.2 Expertise of the EAP who prepared the BAR and EMPr

Geovicon Environmental (Pty) Limited is a geological and environmental consulting company. The company was formed during 1996, and currently has nineteen years' experience in the geological and environmental consulting field. Geovicon Environmental (Pty) Limited has successfully completed consulting projects in the Mining sector (coal, gold, base metal and diamond), Quarrying sector (sand, aggregate and dimension stone), Industrial sector and housing sector. Geovicon Environmental (Pty) Limited has undertaken contracts within all the provinces of South Africa, Swaziland, Botswana and Zambia. During 2001 Geovicon Environmental (Pty) Limited entered the field of mine environmental management and water monitoring.

Geovicon Environmental (Pty) Limited is a Black Economically Empowered Company with the BEE component owning 60% of the company. Geovicon Environmental (Pty) Limited has three members i.e. O.T Shakwane, J.M. Bate and T.G Tefu.

Mr. O.T Shakwane obtained his BSc (Microbiology and Biochemistry) from the University of Durban Westville in 1994, and completed his honours degree in Microbiology in 1995. Mr O.T Shakwane has also completed short courses on environmental law and environmental impact assessment with the University of North West's Centre for Environmental Management. He has worked with the three state departments tasked with mining and environmental management i.e. Department of Water and Sanitation (Gauteng and Mpumalanga Region), Department of Mineral Resources (Mpumalanga Region) and Department of Agriculture, Conservation and Environment (Gauteng Region). Mr. Shakwane has been in the consulting field since 2004 and has completed various projects similar to the proposed Naudesbank Prospecting project as an environmental assessment practitioner. Mr Shakwane is the environmental assessment practitioner for the environmental impact assessment for the proposed Naudesbank Prospecting project .

Mr. T.G. Tefu is geologist. He obtained his BSc. in geology at the University of Witwatersrand. He worked with several mining companies and was also employed by the then Department of Mineral Resources' Environmental Management directorate.

Mrs R. Bate obtained her BSc Degree in 1982 and BSc (Honns) (Entomology) in 1983 from the University of Pretoria. She obtained her MSc Degree from the University of Stellenbosch in 1986. She worked for the Agricultural Research Council, Grain Crops Institute as a Researcher for fourteen years, where she deliveredpapers at different congresses of the Entomological Society as well as the Crop Production Society.She is the author of five scientific papers as well.

Mr. Bate, founder of Geovicon Environmental (Pty) Limited, is used by the company on an ad hoc (consultancy) basis. He is also a qualified geologist. Mr. Bate is appointed as the chairman for the board of the company. He is a qualified geologist.

He obtained his BSc (geology) from the Potchefstroom University for CHE in 1993, and completed his honours degree (cum Laude) in geology in 1994. He obtained his MSc (cum Laude) in 1995.

Over the past years Geovicon Environmental (Pty) Limited has formalised working relationships with companies that offer expertise in the following fields i.e. Geohydrology, Civil and Geotechnical Engineering, Geotechnical Consultancy, Survey and Mine Planning and Soil & Land Use Consultancy. Geovicon Environmental (Pty) Limited is an independent consulting company, which has no interest in the outcome of the decision regarding the Naudesbank Prospecting Project's basic assessment process.

1.2 WHO WILL EVALUATE AND APPROVE THE BAR AND EMPR?

Before the proposed project can proceed, an Environmental Assessment Practitioner (EAP) must compile an application for an environmental authorisation for the proposed project. An impact assessment (basic assessment process) must be undertaken in support of the application for an environmental authorisation. The basic assessment process will determine the potential environmental impacts that may result from the proposed project and an environmental management programme will be compiled to provide measures for mitigation against the identified impacts. The above-mentioned application must be made to the competent authority and in terms of section 24D (1) of NEMA, the Minister responsible for mineral resources is the responsible competent authority for this application. In view of the above, the application for the environmental authorisation for the proposed project was submitted to the Department of Mineral Resources (DMR), eMalahleni Regional Office for their consideration and decision making.

In the spirit of co-operative governance and in compliance with the requirements of NEMA and the MPRDA, the competent authority may, during the processing for the environmental authorisation application, consult with other organs of state that administers laws that relate to matters affecting the environment relevant to this application. Note that during the public participation process for the proposed project, the EAP will also consult with the below listed state authorities.

The organs of state that are to be consulted may include the following:

Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (MDARDLEA), Mpumalanga Tourism and Parks Agency (MTPA), Department of Water and Sanitation (DWS) and National Department of Agriculture, Forestry and Fisheries (NDA)

Note however that this list is not exhaustive as more organs of state may be identified by the competent authority and EAP during the public participation process.

1.3 DETAILS OF THE APPLICANT

1.3.1 Name of the Applicant

Vuna Mining Resources (Pty) Limited

1.3.2 Name of the Project

Naudesbank Prospecting Project

1.3.3 Postal Address of Applicant

Vuna Mining Resources (Pty) Limited

P. O. Box 3665

Middelburg

MPUMALANGA

Tel: 082 466 8310

Fax: 086 632 4936

1.3.4 Responsible Person

Mr. Mavhungu Crause Mabudafhasi

1.3.5 Contact Person

Mr. Ben Nolan

Email: ben@vcmining.co.za

1.4 DESCRIPTION OF THE PROPERTY (LOCATION OF THE PROJECT)

1.4.1 Regional Setting

Refer to Figure 1 for the regional setting for the Naudesbank Prospecting Project.

1.4.2 Physical Address and Farm Name of the Prospecting Area

Vuna Mining Resources (Pty) Limited, Naudesbank Prospecting Area

Portion 4 of the farm Naudesbank 172 IS

1.4.3 Magisterial District & Regional Services Council

Carolina, Mpumalanga

District Municipality: Nkangala District Municipality

Local Municipality: Chief Albert Luthuli Local Municipality

1.4.4 Direction and Distance to Nearest Towns

Table 1: Direction and Distance to Nearest Towns.

TOWN	DIRECTION	DISTANCE (KM)
Carolina	East	14 km
Hendrina	West	27 km
Breyten	South	22 km
Belfast	North	46 km

1.4.5 Land Tenure and Use of Immediate and Adjacent Land

Land tenure for the properties within and immediately around the proposed Naudesbank prospecting project is indicated on Figure 2 and described in Table 2. The land on which the proposed project will be undertaken is owned by Moeder Natuur se Produkte (Pty) Limited (portion 4) and Gideon Albertus Gebhart (portion 16). Land use within the proposed project areas and immediately adjacent to the proposed project areas include agricultural activities (crop cultivation and grazing), residential (existing farmsteads), roads (R38 National Road, secondary and private gravel roads and vacant land with no specific land use.

Table 2: Schedule of properties listing surface ownership within Naudesbank Prospecting Right Project Area

FARM NAME AND NUMBER	21 DIGIT SURVEYOR GENERAL CODE	DESCRIPTION OF SUB-DIVISION	SURFACE OWNER
NAUDESBANK 172 IS	T0IS0000000001720002	1) Portion 2	Theodor Trust
NAUDESBANK 172 IS	T0IS0000000001720004	2) Portion 4*	Moeder Natuur se Produkte (Pty) Limited
NAUDESBANK 172 IS	T0IS0000000001720007	3) Portion 7	Gideon Albertus Gebhart
NAUDESBANK 172 IS	T0IS0000000001720013	4) Portion 13	Gideon Albertus Gebhart
NAUDESBANK 172 IS	T0IS0000000001720016	5) Portion 16*	Gideon Albertus Gebhart
NAUDESBANK 172 IS	T0IS 0000000001720018	6) Portion 18	Theodor Trust
VAALBULT 3 IT	T0IT 0000000000030001	1) Portion 1	Jan Hendrik Combrink
VAALBULT 3 IT	T0IT 0000000000030009	2) Portion 9	Vaalbult Mining Company (Pty) Limited
JUGLUST 47 IT	T0IS 0000000000470002	1) Portion 2	Juanco Trust

*****portions on which the prospecting right is applied for.

1.4.6 Locality Plan

Refer to Figure 3 for the locality plan of the Naudesbank Prospecting Project area.

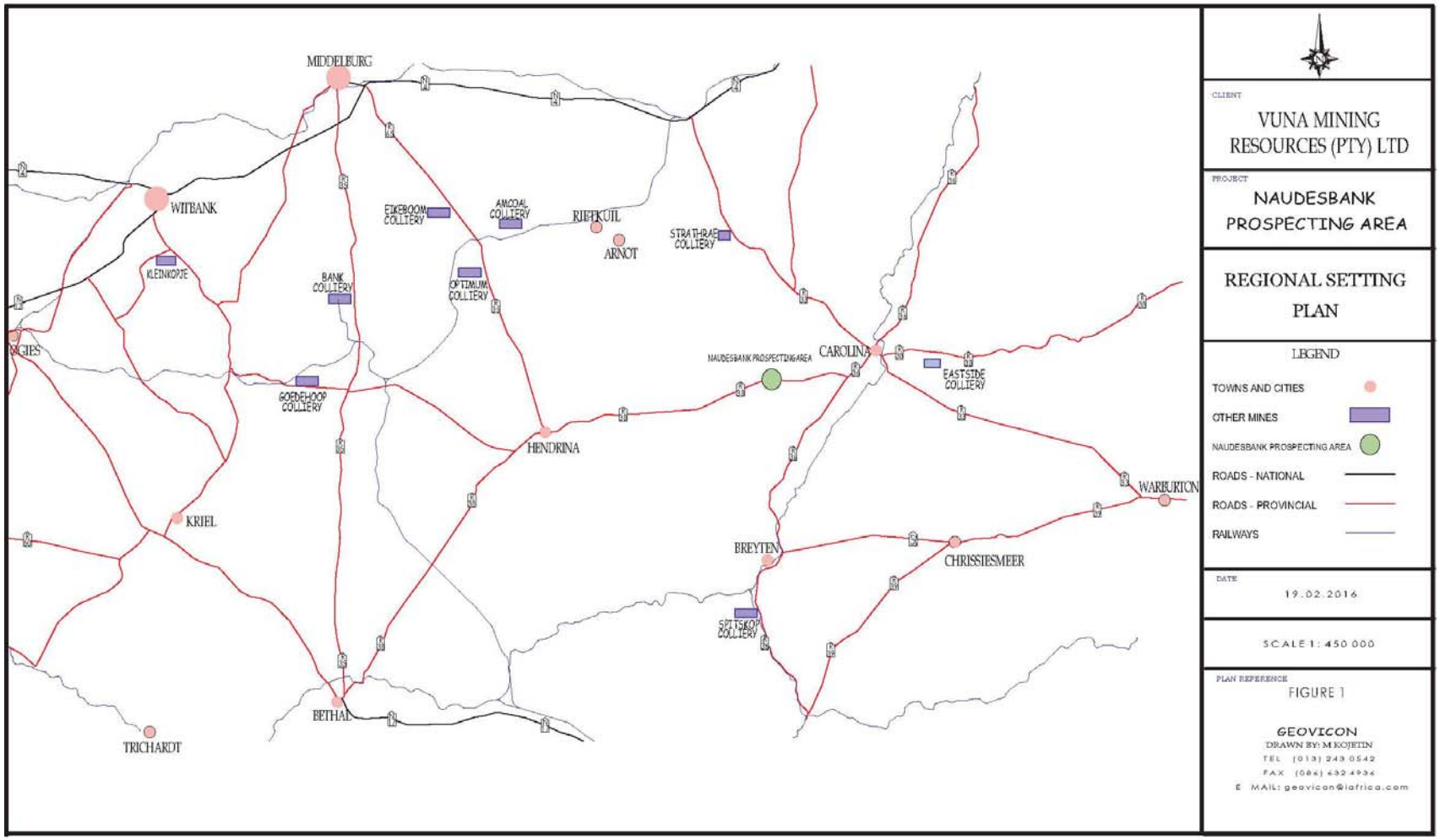

Figure 1: Regional Setting for Naudesbank Prospecting Project

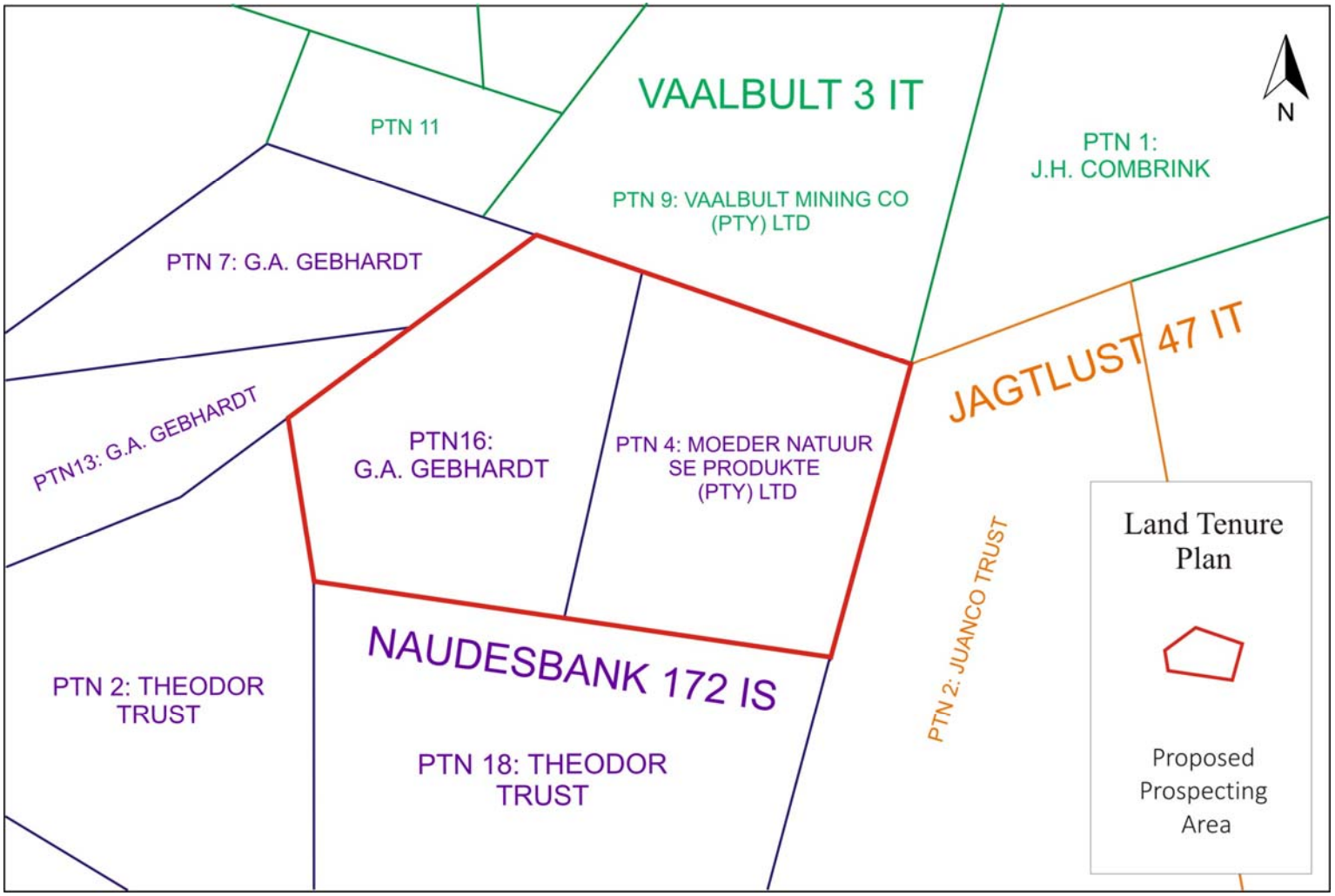

Figure 2: Land Tenure Plan for the Naudesbank Prospecting project area

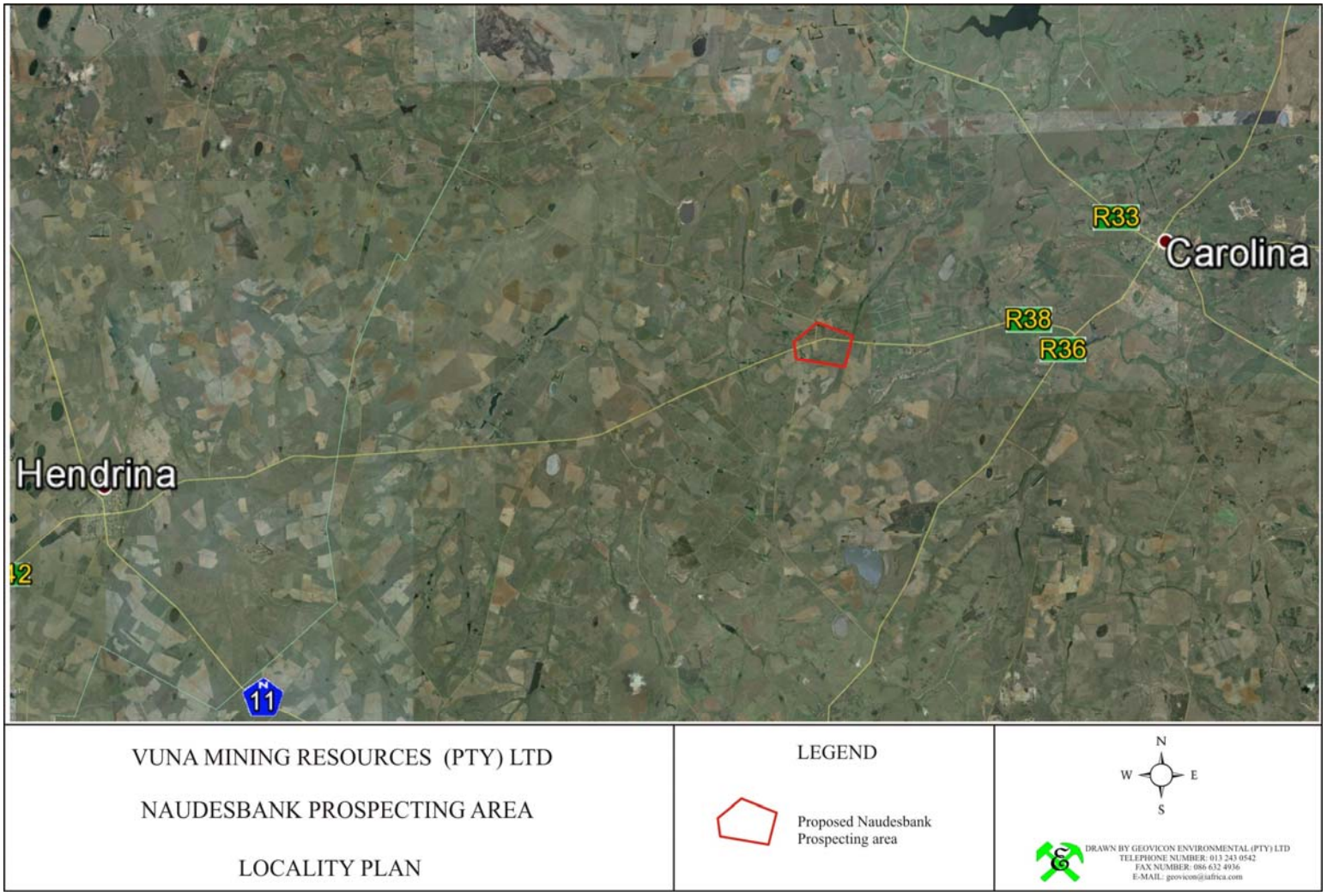

Figure 3: Locality Plan

SECTION TWO

Description of the Scope of the proposed Project

2 DESCRIPTION OF THE SCOPE OF THE PROPOSED PROJECT

2.1 LISTED ACTIVITIES AND SPECIFIED ACTIVITIES

Vuna Mining Resources (Pty) Limited proposes to undertake coal prospecting activities over the Naudesbank Prospecting Area, which occurs of portions 4 and 16 of the farm Naudesbank 172 IS within the Carolina magisterial district, namely the Naudesbank Prospecting Project. The proposed project entails prospecting for coal using diamond core drilling. Access to the prospecting area will be via existing roads.

Before the proposed Naudesbank Prospecting Project can be commenced with, an environmental authorisation must be obtained by Vuna Mining Resources (Pty) Limited. In view the above, Vuna Mining Resources (Pty) Limited has applied for an environmental authorisation for listed activities within the proposed project area. The above-mentioned environmental authorisation application was acknowledgement by the Department on the 16th of March 2016. This section will indicate the activities that were included in this environmental authorisation application. Table 3 is compiled as prescribed by the DMR BAR and EMPr template and reflect all Naudesbank Prospecting project activities applied for.

2.2 DESCRIPTION OF THE PROPOSED NAUDESBANK PROSPECTING PROJECT

Vuna Mining Resources (Pty) Limited proposes to prospect for coal at the Naudesbank Prospecting Project area. These activities will be undertaken on portions 4 and 16 of the farm Naudesbank 172 IS. The proposed project entails exploration for coal via the diamond core drilling methods.

Table 3: Proposed Naudesbank Prospecting project listed Activities

NAME OF ACTIVITY	AERIAL EXTENT OF THE ACTIVITY	LISTED ACTIVITY	APPLICABLE LISTING NOTICE
PROPOSED NAUDESBANK PROSPECTING PROJECT LISTED AND SPECIFIC ACTIVITIES			
NATIONAL ENVIRONMENTAL MANAGEMENT ACT			
Conducting prospecting activities within the Naudesbank Prospecting Right area for the exploration of coal using a diamond core drilling prospecting methods together with all associated infrastructure and activities. These include site establishment (access to site and a campsite), pegging of drilling sites, drilling of exploration boreholes with associated sumps, logging and sampling of drilled cores and site rehabilitation.	288.7 hectares (prospecting right area)	Activity 20 of Listing Notice 1: Any activity including the operation of that activity which requires a prospecting right in terms of section 16 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource, including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).	GNR 983

2.2.1 Target Mineral

Bituminous coal found within the Witbank Coal field.

2.2.2 Prospecting Method Used at the Naudesbank Prospecting Project Area

The proposed Naudesbank Prospecting Project area will be explored in three phases i.e. literature review phase, field mapping phase and drilling phase. Only the field mapping and drilling phases have potential for environmental impacts, hence will be described in this section of the report.

The field mapping will include the establishment of access to the site, establishment of a campsite, field surveying (to determine sensitive areas), geophysical surveys (if necessary) and pegging of the drilling sites.

Drilling phase will involve the drilling of the sited drilling boreholes using a diamond core drilling technique. A sump will be constructed in each drilling borehole for the collection of water from the drilling operation. The sump will be constructed to be one square meter in size and have a maximum depth of one metre. Any soils removed from the sump (approximately one cubic meters) will be placed adjacent the drilling site and used for rehabilitation of the site.

Boreholes will be drilled at pre-planned sites. The boreholes will be drilled to intersect all the expected coal seams and will be logged by the geologist. The coal samples will be sent to the laboratory for quality and washability determination. This data will form the basis for the geological modelling and financial evaluation.

2.2.2.1 Planned Life of Project

The current estimated life of the proposed Naudesbank Prospecting Project is three years.

2.3 NAUDESBANK PROSPECTING PROJECT SURFACE INFRASTRUCTURE DESCRIPTION

2.3.1 Access Roads

There are various main & minor roads passing over the proposed project area. Some of these roads will be used to access the proposed Naudesbank Prospecting project area. Existing roads to be used for the proposed project include the R38 national Road, a secondary road and a number of private farm roads. Where no roads exist, tracks will be used to access the drilling sites.

2.3.2 Power line Infrastructure

Diesel powered vehicles and machinery will be used for the proposed project.

2.3.3 Water Supply Infrastructure

Water will be supplied from Vaalbult Colliery or from the landowner's borehole. Water from the mine will be trucked with a water cart.

Water will be required at the proposed project area for the purpose of supplying service water, potable water and fire protection water. Service water will be required for the operation of machinery and dust suppression. Potable water supply will be required for domestic water use within the campsite and drilling sites. Fire water will be required for fire fighting purposes.

A water tank will be used for the storage of water at the proposed project area.

2.3.4 Workshops and Buildings

No workshops and office buildings will be required for this project. All machinery will be maintained at an offsite workshop. Should emergency repairs be required the repairs will be conducted on site on areas covered with tarpaulins.

2.3.5 Waste Management

2.3.5.1 Waste Identification and Management

Hazardous Waste

Hazardous waste to be generated includes mineral residue, hydrocarbon wastes (oil and liquid fuel wastes) and sewage waste.

Mineral residue will include cores, muds and drilling chips generated during the drilling of the exploration boreholes.

Oil waste and liquid fuels waste include used oils from mine machinery and vehicles and diesel/petrol waste. .

Sewage waste will be generated from the campsite and drilling sites.

General Waste

General waste to be generated from the proposed project area include domestic waste.

Domestic waste will include old food, polystyrene, old stationary, discarded PPE and old clothing generated from the drilling and campsites.

2.3.5.2 Waste Management Facilities

Hazardous Waste

Mineral residue will be removed from the site and disposed off in a registered waste disposal site.

Hydrocarbon waste will be collected in 210 litre drums for storage. The removal of the drums or any other appropriate receptacle will be undertaken by a waste disposal company, for disposal at a registered licensed waste disposal site. The drums will be placed on protected ground.

Chemical toilets will be used for the management of sewage waste generated on site.

General Waste

The general waste that will be generated is domestic waste. This waste will be collected in 210 litre drums and disposed of at a registered domestic waste disposal site (Carolina or Hendrina).

2.4 NAUDESBANK PROSPECTING PROJECT METHOD STATEMENT

In terms of DMR EIR and EMPr template, Vuna Mining Resources (Pty) Limited must describe the methods and technology to be employed for the proposed project. In view of the above, a method statement for each phase of the proposed project has been provided. This identifies all actions, activities or processes associated with the proposed prospecting operation.

2.4.1 Offsite Prospecting Activities (Literature Survey)

2.4.1.1 Data gathering

Relevant information regarding the potential of the identified prospecting area will be sourced from institutions like the Council for Geoscience through the interpretation of the available geological and Aeromagnetic maps.

2.4.1.2 Data interpretation

The interpretation of the said data will result in compiling a preliminary potential project report. The said report will give indication as to what processes (in order of priority) to follow to complete the prospecting activities.

2.4.1.3 Decision to commence with prospecting activities

Once all factors are gathered, physical inspection of the terrain will be conducted to verify certain aspects, such as, type of the terrain involved, type of methods to be used, etc. The important point to note is that a decision on whether or not to proceed with prospecting depends not only on the scientific and reliability of the methods under consideration, but also upon many less tangible factors, such as restrictions that might be imposed by the relevant Department when granting a prospecting right.

2.4.2 Construction Phase

2.4.2.1 Establishment of access

The R38 National Road bisects the proposed project area. A secondary road and a number of private farm roads and tracks lie in close proximity to the proposed prospecting area, hence access to the site will be through these roads. Where necessity arise for access to the drilling sites, tracks will be established as access to the drilling site. This tracks will be established to be more than hundred meters away from any sensitive landscapes. The tracks will also be sited away from protected areas. Vegetation clearance will be avoided during the establishment of the access tracks.

2.4.2.2 Establishment of campsite

The campsite will be established as close as possible to existing dwelling places with proper infrastructure. Where such structures are not available, a proper campsite will be established, depending on the company, tents and/or caravans will be provided for employees. Clearing of vegetation will be avoided during the establishment of the campsite.

2.4.2.3 Detailed site survey and investigation

Demarcation of sensitive and protected areas will be conducted by physical survey of the proposed area by a suitability qualified person. This should be done before establishment of access to the site, campsites and drilling of exploration boreholes.

2.4.2.4 Geophysical surveys and data interpretation

A Handheld proton Magnetometer will be used to perform the magnetic survey over the proposed prospecting site.

2.4.2.5 Pegging of drill sites

All exploration borehole sites will be staked by a suitably qualified person. The sites will thereafter be plotted on a plan drawn to an appropriate scale.

2.4.3 Operational Phase

2.4.3.1 Diamond drilling for boreholes and sump Construction

Geological boreholes will be drilled on a predetermined grid. During drilling of each borehole, a sump of approximately 1,0 x 1,0 x 1.0 m will be excavated for collecting of excess muds (water) from the drilling operation.

2.4.3.2 Topsoil storage site

The tops and sub soils removed from the sump and drilling boreholes will be stockpiled in close proximity to the sump. The sumps will be backfilled manually by spade, once drilling and sampling of boreholes is completed.

2.4.3.3 Logging and sampling of the Core

This involves the physical description of the rocks intersected by the drilling process. The interpretation of these rock descriptions will assist in establishing the general stratigraphy of the area. Sampling will be taken at the desired horizons and sent to the laboratory for analyses.

2.4.3.4 Site Rehabilitation

Concurrent rehabilitation (Plugging and reseeding) of disturbed areas will be undertaken as drilling continues.

2.4.4 Decommissioning phase

2.4.4.1 Final Rehabilitation

Except for farm roads, no tracks and infrastructure related to the prospecting operation will remain in place after the decommissioning phase. Where tracks have resulted in more damage, such tracks will be ripped at 90° to the inherent slope, and seeded with the recommended seed mix. The sumps will be rehabilitated in such a manner to return the area to as close as possible to its pre-drilling environment.

Post closure, the prospecting area will consist of re-vegetated areas with vegetation cover comparable to the surrounding areas. This will be unaffected by the prospecting activities. No prospecting related infrastructure will remain on the prospecting site. The area will conform to the pre-prospecting topography. The areas affected by prospecting will be stable and erosion free.

2.4.4.2 Pre-feasibility study

This involve the compilation of a final geological report, reserve determination and pre-feasibility studies.

2.4.4.3 Mining feasibility study

This involve the conducting of a mining feasibility study, market research, sales agreements etc.

2.4.5 After Closure Phase

The rehabilitated area will be monitored until closure of the site. After the decommissioning of the site and if it can be determined that the site is stable, an environmental authorisation for the decommissioning of the site and a closure certificate will be applied for in terms of the relevant laws.

Please note that the borehole layout can only be determined once the Prospecting Right is granted, thereafter it will be sent in to the Department of Mineral Resources.

SECTION THREE

Policy and legislative context

3 POLICY AND LEGISLATIVE CONTEXT

3.1 CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA (ACT NO. 108 OF 1996)

Section 24 of the Constitution of the Republic of South Africa (Act No.108 of 1996) states that everyone has the right:

a) to an environment that is not harmful to their health or well-being; and

b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that;

(i) prevent pollution and ecological degradation;

(ii) promote conservation; and

(iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

In terms of Section 24 of the Constitution of the Republic of South Africa (Act No.108 of 1996), everyone has the right to an environment that is not harmful to their health or well-being. In addition, people have the right to have the environment protected, for the benefit of present and future generations, through applicable legislations and other measures that prevent pollution, ecological degradation and promote conservation and secure ecological sustainable development through the use of natural resources while prompting justifiable economic and social development. The needs of the environment, as well as affected parties, should thus be integrated into the overall project in order to fulfil the requirements of Section 24 of the Constitution. In view of the above, a number of laws pertaining to environmental management were promulgated to give guidance on how the principles set out in section 24 of the Constitution of the Republic of South Africa (Act No.108 of 1996) would be met. Below are laws applicable to the proposed project that were promulgated to ensure that section 24 of the Constitution of the Republic of South Africa (Act No.108 of 1996) is complied with.

3.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT

Section 24(1) of the NEMA states:

“In order to give effect to the general objectives of integrated environmental management laid down in this Chapter [Chapter 5], the potential consequences for or impacts on the environment of listed activities or specified activities must be considered, investigated, assessed and reported on to the competent authority or the Minister of the Department of Mineral Resources, as the case may be, except in respect of those activities that may commence without having to obtain an environmental authorisation in terms of this Act.”

In order to regulate the procedure and criteria as contemplated in Chapter 5 of NEMA relating to the preparation, evaluation, submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities, subjected to environmental impact assessment, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts, and for matters pertaining thereto, Regulations (EIA Regulations, 2014) were promulgated. These Regulations took effect from the 4th of December 2014.

In addition to the above, Section 28 of the NEMA includes a general “Duty of Care” whereby care must be taken to prevent, control and remedy the effect of significant pollution and environmental degradation. This section stipulates the importance to protect the environment from degradation and pollution irrespective of the operations taking places or activities triggered / not triggered under GN983, GN984 and GN985.

In view of the above, an environmental impact assessment is being undertaken to comply with the requirements of the NEMA and the NEMA EIA Regulations, 2014. The NEMA EIA Regulations of December 2014 determines requirements to be met in order to obtain an environmental authorisation. This report has therefore been compiled in compliance with the above regulations.

3.3 NATIONAL ENVIRONMENTAL MANAGEMENT AIR QUALITY ACT

The National Environmental Management: Air Quality Act (Act No.39 of 2004) (NEM:AQA) focuses on reforming the law regulating air quality in South Africa in order to protect the environment through the provision of reasonable measures protecting the environment against air pollution and ecological degradation and securing ecological sustainable development while promoting justifiable economic and social developments. This Act provides national norms and standards regulating air quality management and control by all spheres of government. These include the National Ambient Air Quality Standards (NAAQS) and the National Dust Control Regulations (NDCR). The standards are defined for different air pollutants with different limits based on the toxicity of the pollutants to the environment and humans, number of allowable exceedances and the date of compliance of the specific standard.

On 22 November 2013 the list of activities which result in atmospheric emissions which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage was published under GN R893 in Governmental Gazette No 37054, in terms of Section 21(1)(b) of the NEM:AQA.

The proposed will not trigger any of the activities listed under the above-mentioned Regulations, however Vuna Mining Resources (Pty) Limited must ensure that emissions from their activities complies with the standards as set in the above-mentioned regulations.

3.4 THE NATIONAL HERITAGE RESOURCES ACT

The National Heritage Resources Act (Act No. 25 of 1999) (NHRA) focuses on the protection and management of South Africa’s heritage resources. The governing authority for this act is the South African Heritage Resources Agency (SAHRA). In terms of the NHRA, historically important features such as graves, trees, archaeology and fossil beds are protected as well as culturally significant symbols, spaces and landscapes. Section 38 of the NHRA stipulates the requirements a developer must undertake prior to development. In terms of Section 38 of the NHRA, SAHRA can call for a Heritage Impact Assessment (HIA) where certain categories of development are proposed.

A Heritage Impact Assessment (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.

The Act also makes provision for the assessment of heritage impacts as part of an EIA process and indicates that if such an assessment is deemed adequate, a separate HIA is not required. An assessment of the proposed area will be done during the drilling programme to determine if there are

nay sites that require protection. Any sites identified will be marked and no drilling will be undertaken in close proximity of such a site.

3.5 NATIONAL ENVIRONMENTAL MANAGEMENT BIODIVERSITY ACT (ACT 10 OF 2004) (NEMBA)

The National Environmental Management: Biodiversity Act (Act No. 10 of 2004) (NEMBA) provides for the management and protection of South Africa's biodiversity within the framework established by NEMA. The Act aims to legally provide for biodiversity conservation, sustainable, equitable access and benefit sharing and provides for the management and control of alien and invasive species to prevent or minimize harm to the environment and indigenous biodiversity. The Act imposes obligations on landowners (state or private) governing alien invasive species as well as regulates the introduction of genetically modified organisms. The Act encourages the eradication of alien species that may harm indigenous ecosystems or habitats. The NEMBA ensures that provision is made by the site developer to remove any aliens which have been introduced to the site or are present on the site.

The NEMBA also provides for listing of threatened or protected ecosystems, in one of four categories: critically endangered, endangered, vulnerable or protected. The purpose of listing protected ecosystems is primarily to conserve sites of exceptionally high conservation value.

The Act supports South Africa's obligations under sanctioned international agreements regulating international trade in specimens of endangered species, and ensures that the utilization of biodiversity is managed in an ecological sustainable way.

The BAR and EMPr has been complied to ensure that all applicable requirements prescribed in the NEMBA are complied with.

3.6 MPUMALANGA NATURE CONSERVATION ACT (ACT 10 OF 1998)

The Mpumalanga Nature Conservation Act, No. 10 of 1998, aims to consolidate and amend the laws relating to nature conservation within the Province and to provide for matters connected therewith. Provincial legislation relevant to biodiversity conservation comprises of two Provincial Acts, the Mpumalanga Nature Conservation Act (Act 10 of 1998) and the Mpumalanga Tourism and Parks Agency Act (Act 5 of 2005). In relation to nature conservation, the Province has developed the Mpumalanga Biodiversity Sector Plan (MBSP). This plan has been jointly developed by the Mpumalanga Tourism and Parks Agency (MTPA) and the Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA). The MBSP takes its mandate from the South African Constitution, the National Biodiversity Act (10 of 2004) and the Mpumalanga Nature Conservation Act 10 of 1998. Areas identified under the MBSP as sensitive were identified and where applicable measures will be proposed for ensuring that the areas are not degrade by the proposed project activities.

3.7 MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT (MPRDA)

The Department of Mineral Resources (DMR) is responsible for regulating the mining and minerals industry to achieve equitable access to the country's resources and contribute to sustainable development. The Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002) (MPRDA) requires that an EIA be conducted and that the EMP be drafted for the mitigation of impacts identified during the environmental impact assessment for a mining project. During December 2014,

the “One Environmental System” was implemented by Government which initiated the streamlining of the licensing processes for mining, environmental authorisations and water use. Under the One Environmental System, The Minister of Mineral Resources, will issue environmental authorisations and waste management licences in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), and the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)(NEMWA), respectively, for mining and related activities. The Minister of Environmental Affairs will be the appeal authority for these authorisations. In view of the above the application for the environmental authorisation for the proposed project was submitted to the Department of Mineral Resources as the competent authority.

3.8 NATIONAL WATER ACT (NWA)

The National Water Act (Act No. 36 of 1998) (NWA) is the primary regulatory legislation, controlling and managing the use of water resources as well as the pollution thereof in South Africa. The NWA recognises that the ultimate aim of water resource management is to achieve sustainable use of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure sustainability of the nation’s water resources in the interests of all water users. The NWA presents strategies to facilitate sound management of water resources, provides for the protection of water resources, and regulates use of water by means of Catchment Management Agencies, Water User Associations, Advisory Committees and International Water Management. The National Government has overall responsibility for and authority over water resource management, including the equitable allocation and beneficial use of water in the public interest. Further, an industry can only be entitled to use water if the use is permissible under the NWA. The enforcing authority on water users is the Department of Water and Sanitation (DWS).

Further, Regulation 704 of the NWA deals with the control and use of water for mining and related activities aimed at the protection of water resources.

No water use licence application will be submitted to the Department of Water and Sanitation for their consideration. However measures will be undertaken to ensure that requirements in terms of the NWA and the GN 704 are complied with where necessary.

3.9 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT (ACT NO. 59 OF 2008)

The National Environmental Management: Waste Act (NEMWA) requires that all waste management activities must be licensed. According to Section 44 of the NEMWA, the licensing procedure must be integrated with an EIA process in terms of the NEMA.

The objectives of NEMWA involve the protection of health, wellbeing and the environment. The NEMWA provides measures for the minimisation of natural resource consumption, avoiding and minimising the generation of waste, reducing, recycling and recovering waste, and treating and safely disposing of waste.

No waste management activities are triggered by the proposed project, hence no application in terms of the NEMWA was submitted to the Department of Mineral Resources.

3.10 EIA GUIDELINES

A number of national and provincial EIA guidelines were published by different departments. These guidelines are mainly aimed at assisting relevant stakeholders by providing information and guidance

and giving recommendations on a number of aspects relating to the environmental impact assessment process. The guidelines can be used by the competent authority, applicant and the EAP during the EIA process. It is therefore important that the EAP and the person compiling a specialist report must have relevant expertise when conducting the environmental impact assessments.

A number of guidelines were consulted during the compilation of this report and these include amongst them the following i.e. Guidelines on the Need and Desirability, Department of Environmental Affairs and Tourism Integrated Environmental Management Guidelines, Department of Water and Sanitation's Best Practice Guidelines and the Western Cape Provincial Department of Environmental Affairs and Development Planning Guidelines on Public Participation.

SECTION FOUR

Need and desirability of the proposed activities

4 NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES

In terms of the EIA Regulations the need and desirability of any development must be considered by the relevant competent authority when reviewing an application. The need and desirability must be included in the reports to be submitted during the environmental authorisation application processes.

This section of the BAR and EMPr will indicate the need and desirability for the proposed Naudesbank Prospecting Project.

Assessment of the geological information available has determined that the area in question may have coal reserves. In order to ascertain the above and determine the nature, location and extent of the coal reserves within the proposed prospecting area, it will be necessary that prospecting be undertaken. The prospecting will also determine if there are any features that may have an impact on the economic extraction of the coal.

The information that will be obtained from the prospecting to be done will be necessary to determine, should coal be found, how and where the coal will be extracted and how much economically viable coal reserves are available within the proposed prospecting area.

Should coal be found in the project area, Vuna Mining Resources (Pty) Limited will be able to use the available reserves to extend the Vaalbult Colliery (owned by a sister company) life of mine. This will ensure that the current labour force has continued employment for a certain period and the support to local businesses is continued.

Vuna Mining Resources (Pty) Limited expects that substantial benefits from the project (should coal be found) will accrue to the immediate project area, the sub-region and the province of Mpumalanga. These benefits must be offset against the costs of the project, including the impacts to land owners.

Further to the above, it has been determined that the prospecting project activities will not have a conflict with the spatial development plans for the Chief Albert Luthuli Local Municipality, the integrated Development Plans for the Chief Albert Luthuli Local Municipality, the environmental management framework for the Local Municipality, existing industrial and commercial development of the Local Municipality.

A process that ensure consultation with interested and affected parties for the project is being undertaken. The process is conducted to provide all interested and affected parties with an opportunity to comment on the project. A platforms that allows public commenting opportunities are offered to the interested and affected parties. The applicant further commits to ensure their contribution to environmental education and to their employees during the project life. The employees will be made aware of work that may be harmful to their health and the environment and of any work posing danger. This is undertaken in terms of the Mine Health and Safety Act, 1999 (Act 25 of 1999) and their regulations, which gives the employees the right to refuse work that is dangerous. The applicant will respect decisions of employees regarding the above and is committed to the protection of employees against any dangerous working environment.

All issues raised by the interested and affected parties will be recorded and addressed in the BAR and EMPr.

SECTION FIVE

Motivation for the preferred development footprint

5 MOTIVATION FOR THE PREFERRED DEVELOPMENT FOOTPRINT

5.1 CONSIDERATION OF ALTERNATIVES

The National Environmental Management Act 107 of 1998, Environmental Impact Assessment Regulations, 2014 requires an EIR and EMPr to identify alternatives for projects applied for. In terms of the above-mentioned regulations an alternative in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to the (a) the property on which or location where it is proposed to undertake the activity; (b) the type of activity to be undertaken; (c) the design or layout of the activity;(d) the technology to be used in the activity;(e) the operational aspects of the activity; and (f) the option of not implementing the activity.

Vuna Mining Resources (Pty) Limited proposes to undertake exploration for coal to determine whether or not the project area consist of coal and if coal is available whether the coal reserves are found quantities that have economic value. The proposed activity will include the drilling of exploration boreholes. The associated activities/infrastructure will include, an access to the site and a campsite.

5.1.1 Location Alternatives

The location alternative considered for the proposed project include the prospecting sites and associated campsite location and access routes. The location alternatives were 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 of the project to the required infrastructure.

5.1.1.1 Prospecting Sites and Access Routes

No alternatives were considered for prospecting sites and their access routes since the areas where prospecting will be conducted has to be determined by the Department of Mineral Resources.

5.1.1.2 Campsite Location

Regarding the location of the campsite, three alternatives were considered. These locations included a static location closer to the main access point i.e. R38 National Road, static location the closer to the farm homesteads, a mobile campsite and an offsite campsite.

Since the site closer to the farm home steads may result in undesirable impacts on the residents of the farm steads and the offsite alternative may results in unforeseen impacts due to the unavailability of other necessary services that comes with having a local campsite these two alternatives were discarded.

Regarding the other alternatives, it was decide that the remaining two alternatives would be suitable for the project. However the static campsite would be used during the construction (site establishment) phase of the project and the mobile alternative would be used during the operational phase of the project. Note that the mobile alternatives will move with the drilling team from site to site during the execution of the drilling programme.

5.1.2 Design/Layout Alternatives

Since no complicated surface infrastructure will be required for this project no design and layout alternatives for the proposed project were determined.

5.1.3 Technology Alternatives

Based on the policies of the Department of Water and Sanitation, the local municipalities and the mine itself, it was determined that the only feasible technological way of undertaking the proposed activities would be to use energy currently available to the applicant (diesel and petrol), water from the landowner or nearby mine and existing waste management facilities from the nearby mine for the operation of the proposed project. In view of the above, no technology alternatives were considered for this project.

5.1.4 Input Material Alternatives

As mentioned above, current water sources used by the mine and currently available energy will be used for the operation of the proposed project. In view of the above, no in-put material alternatives were considered for this project. Note that no new building facilities will be constructed at the project site since existing or movable facilities will be used for the proposed project.

5.1.5 Operational Alternatives

5.1.5.1 Exploration Drilling Methods

Drilling of coal is used to determine the depth, thickness and quality of the coal at any point across a prospecting area. Drilling is also used to determine the strata with which the coal is associated. Drilling can either be done by non-core drilling or core drilling techniques.

Non-Core Drilling Methods

Non-core drilling techniques mostly uses the rotary drilling methods. In this technique, a string of metal rods is rotated axially and a bit at the base of the string is forced downward, under controlled pressure, breaking up the ground and advancing the depth of the hole. Cuttings are swept away from the bit and lifted to the surface either by means of pumped circulating water or by jets of compressed air.

Logging of the hole drilled by non-core drilling methods is mainly based on the cuttings obtained as the drill progresses. In view fo the difficulty and error bound logging, this method of drilling was discarded and may be used only for infill drilling wherever necessary.

Core-Drilling Methods

Core drilling techniques uses diamond drilling methods. In this technique, a hollow cylindrical drill bit impregnated with industrial diamonds is attached to a series of metal drill rods and rotated under controlled downward pressure. A circle of rock is ground away, the cutting removed by water flushing and a cylindrical core remains in the hollow centre of the drill string.

Core drilling is the only satisfactory means of obtaining representative samples of seams at depth for quality determination. In view of the above and the fact that geophysical surveys will not be done, the preferred drilling methods is the core drilling technique using the diamond drill.

5.1.5.2 Transportation

See access route alternatives.

5.1.6 No Go Option

Vuna Mining Resources (Pty) Limited intends on exploring the proposed area in order to determine availability of coal. If it can be determined that the area has coal of economic value and since Vuna Mining Resources (Pty) Limited owns a mining right adjacent to the proposed prospecting area, there would be a possibility for the extension of the current mining operation, which will increase the tonnage at the mining area. The current tonnage profile at Vaalbult Colliery indicates that coal reserves will facilitate economic coal mining for a number of years. The proposed prospecting area is the most viable extension project to extend to life of mine of Vaalbult Colliery. Should coal be found at the prospecting area, the proposed Naudesbank Prospecting Right area will therefore achieve Vuna Mining Resources (Pty) Limited's Life of Mine objective of continued employment and support of the current labour force and that local businesses, respectively. In addition to the above, the proposed prospecting project will on its own result in the creation of employment opportunities and will also result in the support of local businesses.

If Vuna Mining Resources (Pty) Limited cannot continue with the proposed Naudesbank Prospecting Project, Vaalbult Colliery will come to a premature closure once available coal reserves are mined out, which will affect the labour force employed at Vaalbult Colliery and local businesses supported by the mine.

Vuna Mining Resources (Pty) Limited due to the prospecting right application they hold over the proposed prospecting area, is the only company that can explore the coal reserve. The presence and intended use of the existing mine for the efficient operation of the proposed extension project, should coal be found, will also result in the eminent extension project having the least environmental damage.

Accordingly, the consequences of not proceeding with the proposed project will have a detrimental impact on the potential positive impact this project may have on the current and future labour force and the labour to be used for the prospecting project.

5.2 Details Of The Public Participation Process Followed and Results Thereof

Public participation is the cornerstone of any EIA process. The principles of the NEMA govern many aspects of EIA's, including public participation. The general objectives of integrated environmental management laid down in the NEMA include to "ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment". The National Environmental Management Principles include the principle that "The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary to achieve equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured", which basically means that the person responsible for the application (EAP) must ensure that provision of sufficient and transparent information on an ongoing basis to stakeholders are made to allow them to comment, and to ensure that the participation of previously disadvantaged people like women and the youth are undertaken.

In terms of the EIA Regulations, 2014, when applying for environmental authorisation, the Environmental Assessment Practitioner managing the application must conduct at least a public participation process where all potential or registered interested and affected parties, including the competent authority, are given a period of at least 30 days to submit comments on each of the basic assessment reports, EMPr, scoping report and environmental impact assessment report, and where applicable the closure plan. In this case a Basic Assessment Report (BAR) is considered.

This section of the BAR and EMPr will give an explanation of the public participation process to be taken in order to comply with the above-mentioned requirements. A number of public participation guidelines were published in a bid to assist persons responsible for the environmental authorisation applications. As much of the available guidelines were used in determining the public participation process, in guiding the public participation process of the proposed project.

Vuna Mining Resources (Pty) Limited is applying for an environmental authorisation for the proposed Naudesbank Prospecting project. The application for the environmental authorisation is undertaken in terms of the process as laid out in part 2 of Chapter 4 under the NEMA EIA Regulations, 2014. The abovementioned regulations requires that an applicant for an environmental authorisation submit a BAR and EMPr to the competent authority after having subjected the reports to a public participation process.

In view of the above, a public participation process was initiated for the proposed Naudesbank Prospecting project. The public participation process for the proposed project 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 make suggestions for enhanced benefits;
- contribute local knowledge and experience;
- verify that their issues have been captured;
- verify that their issues have been considered in the technical investigations; and
- comment on the findings of the EIA.

The following are and will be conducted in undertaking of the public participation process for the proposed project.

5.2.1 Registration and BAR Phase

The public participation process will commence by providing potential Interested and affected parties (I&AP's) 30 days to register as interested and affected parties and to comment on the draft BAR and EMPr. The registration and commenting process will start on the 07th of April 2016 and ended on the 10th of May 2016. Note that all parties will be provide enough time (at least 30 days) to comment on the reports.

5.2.1.1 Notification of potential interested and affected parties

The following methods of notification are used to notify the potential interested and affected parties of the opportunity to register during the public participation process for the proposed project:

- On the 07th of April 2016, notices were fixed at three sites i.e. 1) boundary fence of one of the properties affected by the project. The notices were compiled in compliance with the requirements of Regulation 41(3) of the EIA Regulations, 2014.
- Written notices were sent to all surface owners and lawful occupiers of the land on which the proposed project will be undertaken, owners/lawful occupiers of land immediately adjacent to the proposed project area, the municipal councillors of the ward in which the proposed project is situated, representatives of the municipalities which has jurisdiction over the proposed project area (Albert Luthuli Local Municipality and Govan Mbeki District Municipality) and representatives of authorities responsible for power lines (Eskom), roads (SANRAL), telephone lines (Telkom), environment (Mpumalanga Department of Agriculture, Rural Development. Land and Environmental Affairs), water (Department of Water and Sanitation), minerals (Department of Mineral Resources), agriculture (National Department of Agriculture, Forestry and Fisheries), heritage (South African Heritage Resources Agency) and parks (Tourism and Parks Agency). The written notices were compiled to comply with the requirements of Regulation 41(3) of the EIA Regulations, 2014. Note that landowners (including lawful occupiers) within the proposed project area and all authorities are automatically registered as interested and affected parties.
- Notices inviting the public to register as interested and affected parties and comment on the draft BAR and EMPr were placed in one of the local newspapers (Highvelder) on the 7th of April 2016. The newspaper notices were published in both English and Afrikaans. The notices were also compiled to comply with the requirements of Regulation 41(3) of the EIA Regulations, 2014.

5.2.1.2 Registered Interested and Affected Parties

The following are currently registered as interested and affected parties for the Naudesbank Prospecting project:

- Department of Mineral Resources, Mpumalanga Regional Office (Competent Authority),
- Department of Water and Sanitation, Mpumalanga Regional Office (Commenting Authority)
- Department of Agriculture, Rural Development, Land and Environmental Affairs, Mpumalanga Provincial Office (Commenting Authority)
- National Department of Agriculture, Forestry and Fisheries, Mpumalanga Regional Office (Commenting Authority)
- Mpumalanga Tourism and Parks Agency (Commenting Authority)
- South African Heritage Resources Agency (Commenting Authority)
- SANRAL
- Eskom Holdings Limited
- Albert Luthuli Local Municipality
- Ward 4 and 6 Ward Councillor (Albert Luthuli Local Municipality)
- Naudesbank Prospecting Project area land owners and lawful occupiers

5.2.1.3 Proof of Consultation

Proof of the above-mentioned consultation is available on request.

5.2.1.4 Finalisation of Interested and Affected Party Database

On expiry of registration period, the database of interested and affected parties will be finalised. All parties who indicated the interest of being registered as interested and affected parties were added to the list of interested and affected parties.

Note: All organs of state, which have jurisdiction in respect of any aspect of the proposed project and the competent authority are automatically registered interested and affected parties.

5.2.2 Draft Basic Assessment Report

The draft BAR and EMPr is made available for comment to all relevant stakeholders during the above-mentioned registration phase of the proposed project public participation process.

5.2.2.1 Notification of potential and registered interested and affected parties

The following methods of notification were used to notify the potential and registered interested and affected parties of the opportunity to comment on the draft BAR and EMPr during the public participation process for the proposed project:

- All fixed notices as described under the registration phase of this public participation were used to invite comments from the potential interested and affected parties on the draft BAR and EMPr.
- Written notices sent during the registration phase of this public participation process to all registered and potential interested and affected parties (land owners, lawful occupiers, municipal councillors, local and district municipalities, authorities responsible for power lines, roads, telephone lines, environment, water, minerals, agriculture, heritage and parks were used to invite comments on the draft BAR and EMPr from the potential and registered interested and affected parties.
- The notices for inviting the public to register as interested and affected parties were also used to invite comments on the BAR and EMPr from the public.
- The draft BAR and EMPr was submitted to all the commenting authorities for their comments.
- A copy of the draft BAR and EMPr was placed in the local library (Carolina public Library) and at the Vaalbult Colliery environmental offices.
- No public meetings were held during the registration and BAR phases of the public participation process. Despite the above, meetings were held with the landowners in a bid to introduce the Naudesbank Prospecting Project. During the proceedings of the above-mentioned meetings, the attendants were encouraged to comment on the draft BAR and EMPr to be submitted. Methods of commenting on the draft BAR and EMPr were explained to the attendants during these meetings.

5.2.2.2 Proof of Consultation

Proof of all the above-mentioned consultation and results thereof will be provided once the consultation process is complete.

5.2.2.3 Comments, Issues and Responses on the Draft Scoping Report

On lapsing of the commenting period, all comments and issues received from the interested and affected parties will be recorded and responses to the comments made. All reactions to the responses to the comments and issues raised will also be recorded.

The comments and issues raised by the interested and affected parties, their responses and reaction to the response will be presented in the final BAR and EMPr.

5.3 ENVIRONMENTAL ATTRIBUTES (BASELINE INFORMATION)

5.3.1 Geology

5.3.1.1 Regional Geology

The Naudesbank Prospecting project falls within the Ermelo Coalfield of the well-known Middle Ecca stage Coal Province. The prospecting area is situated within the eastern portion of the Ermelo Coalfield, see Figure 4. Several coalmines have been, or are operating within this coalfield.

Ermelo Coalfield

The Ermelo coalfield extends from Carolina in the north to Dirkiesdorp in the south and includes the districts of Hendrina, Breyten, Davel, Ermelo, and Morgenzon encompassing a surface area of approximately 11 250 km^2. The Ermelo Coalfield has a somewhat arbitrary boundary with the Witbank and Highveld coalfields to the west, and the Klipriver and Utrecht coalfields to the south, whilst the eastern and northern boundaries are delineated by pre-Karoo basement outcrop.

The coal seams present within the Carolina – Breyten sector are alphabetically numbered from the top as follows; A, B, C, D and E seams. The A and D seams are generally too thin (< 0,6 meters) to be of economical importance. The B seam generally attains a thickness of between 2,0 – 3.7 m and consists of alternating layers of poor and good quality coal with generally high ash content. The C seam can attain a thickness of between 0,6 and 2,0 meters and is generally the target seam within the Ermelo area. The E seam is generally well developed in the Carolina – Breyten sector of the Coal Province and may attain a thickness of 3 meters.

Description and distribution of the coal seams within the Carolina – Breyten sector.

There are two major factors, which control the aerial distribution of the coal seams within the Carolina – Breyten sector of the Ermelo Coalfield. The first is the topography of the pre-Karoo basement, which affects the distribution of the lower seams, whilst the present day erosional surface has affected the distribution of the upper seams, and occasionally the entire coal measure package.

The influence of pre-Karoo ridges may also propagate their effects upwards due to differential compaction of the sediments within the valleys and ridge areas resulting in a thinning or non-deposition of the coal seams.

On a local scale, fluvial channels have given rise to erosion (during sediment formation), non-deposition, and thinning of the coal seam.

The host rocks of the coal seams vary from fine-grained laminated and micaceous to coarse and gritty sandstones with alternating zones of shale and shaly sandstone. The total thickness of the Middle Ecca is up to 170 meters and the main coal zone within it, up to 85 meters. The thickness of the partings between seams A and B, B and C, and C and D are 30 – 60 meters, 6 – 9 meters, and about 12 meters respectively.

The A seam

The A seam occurs in isolated outliers in the sector. Although of moderate quality, it has no reported economic importance. It occurs usually as an interbanded shaley coal seam with a thickness of 1 meter.

The B seam

The B seam may be split into in seam bands and occurs as three discrete leaves. These are designated as the BX, B and B1 seams (also locally known as the B upper, B, and B1 seams).

The BX seam (B Upper) attains a thickness of approximately 1 meter and is separated from the B seam by a thin shale or sandstone (~ 0,4 m) parting. This seam consists of dull coal with occasional bright bands.

The B seam varies in thickness from 1 – 2,7 meters. This seam consists of a bright banded coal of good quality and low ash content within the Carolina area.

The C seam

The C seam is a complex seam, consisting of several plies separated by partings of variable thickness. Traditionally the C seam group is subdivided into the C Upper and C Lower seams. The C Upper seam may be split into two seams.

The C Upper seam

This seam is well developed over the sector. However, it is usually a complex seam of two or three plies, split by in seam sandstones, siltstones or mudstones of variable extent and thickness.

In the Carolina – Breyten sector, the seam is more complex, due to the proximity of large channel fill sandstones. A further complication is the occurrence of a thin, although laterally persistent seam (locally known as the B1). This thin seam may either be separated from the C Upper by a thin parting, or may gradually migrate up the sequence to the base of the B seam.

The upper portion of the C Upper seam is typically of poor quality and may be torbanitic over large areas. The lower portion of the seam is of good quality coal and consists of vitrain and durain bands.

The C Lower seam

The C Lower seam is usually thin and seldom greater than 0.6 m in thickness. The floor of the seam is usually sandstone or interbedded sandstone and shale, whilst the roof is generally interbedded carbonaceous shale.

The upper portion of the seam is generally of good quality, with interbanded vitrain and durain bands. The lower portion of the seam normally becomes more torbanitic towards the base.

D seam

The D seam seldom attains a thickness greater than 0.6 m and thus is usually to thin to be of economic importance. The overlying and underlying sediments are predominantly sandstones with minor siltstone intercalations. The coal is vitrainitic with occasional durain bands.

E seam

The E seam is well developed and is of economic significance. It attains a thickness of over three meters (although thinning to a maximum thickness of 1.2 meters within the Carolina area). The roof and floor of the seam are generally composed of competent sandstone. The seam consists of predominantly bright banded (vitrainitic) coal.

Coalfields of South Africa

Figure 4: Coalfields of South Africa

5.3.2 Climate

5.3.2.1 Regional Climate

Naudesbank Prospecting project falls within the summer rainfall region of South Africa, in which more than 80% of the annual rainfall occurs from October to March. Eighty five percent of the rain falls during summer thunderstorms occurring every 3 - 4 days in summer. They occur in the form of conventional thunderstorms, are usually of short duration and high intensity and accompanied by lightning, strong winds, and sometimes hail. The gross annual “A” pan evaporation for the region, measured at Carolina, is 1725,9 mm.

Temperatures in this climatic zone are generally mild, although low minima can be experienced during the winter months due to clear night skies. Temperatures can vary between 32,5°C (maximum) to 1,7°C (minimum) in summer and 21,9°C (maximum) to –6°C (minimum) in winter.

Frost characteristically occurs in the winter months.

The annual prevailing wind direction, during the day, summer and winter months, is north-westerly, while during the equinoctial period (March to May) and during night time, the prevailing winds are from the east.

Climatic data were obtained from the South African Weather Bureau weather recording stations (Carolina). All precipitation, evaporation and temperature data is presented in Table 4.

Table 4: Climatic conditions in the vicinity of Naudesbank Prospecting Project – Carolina

Month	Rainfall (mm)	Temperature (˚C)			A-pan Evaporation (mm)
		Mean	mean max	Mean min	
January	153,0	18,9	24,5	13,4	188,0
February	86,0	18,4	23,8	12,9	160,5
March	64,0	17,6	23,2	12,0	155,1
April	51,0	15,0	21,0	9,0	122,8
May	12,0	12,1	19,0	5,2	113,0
June	6,0	9,0	16,2	1,8	95,5
July	4,0	9,7	17,1	2,4	106,6
August	11,0	11,9	19,4	4,5	144,5
September	30,0	14,8	22,2	7,5	179,6
October	80,0	16,3	22,8	9,6	190,4
November	140,0	17,3	23,1	11,4	174,8
December	119,0	18,4	24,1	12,8	195,1
Total	**756,0**				**1725,9**
Average	**63,0**	**15,0**	**21,4**	**8,5**	**143,83**

5.3.3 Topography

Naudesbank Prospecting project is situated in the Eastern Highveld region of Mpumalanga, which is characterised by a gentle undulating plateau with fairly broad to narrowly incised valleys. The gentle undulating topography of the study area supports grazing and agricultural lands.

The ground level for the proposed project area ranges from 1640 to approximately 1676mamsl at the West Block mining area, 1638 to 1660 mamsl with the highest point recorded at 1700 mamsl. The prospecting right area has its local topography generally sloping in a westerly and northerly directions following the drainage of tributaries of the Komati River. Komati River is situated approximately seven kilometres from the prospecting right area.

5.3.4 Soils

The Naudesbank Prospecting project consists of both cultivated and grazing land with some areas used for residential purposes.

According to the Mucina et al., (2006) the area consist of red to yellow sandy soils of the Ba and Bb land types found on shales and sandstones of the Madzaringwe Formation (Karoo Supergroup).

5.3.5 Land Use

5.3.5.1 Current Land Use

The land over the proposed project area and its surrounds is mainly used for agricultural purposes (cultivation, grazing and pasture) with the remaining areas being areas with wilderness land uses (pans, streams, rivers and wetland areas) and areas used by the mine and land owners for infrastructure such as roads (including farmers and provincial roads), farmers workshop complexes, farm laborers' residences and other mining associated infrastructure.

See Figure 17 for the depiction of the current land use over the proposed project area.

5.3.6 Natural Vegetation/Plant Life

Mucina et al., (2006) which is the most recent vegetation map for South Africa, Lesotho and Swaziland (Mucina & Rutherford, 2006), describes the study area as 'Eastern Highveld Grassland'. This vegetation type is endemic to Mpumalanga, where it occurs on slightly to moderately undulating plains with some low hills and pan depressions. The climate is temperate with strongly seasonal summer rainfall and very dry, cold winters.

According to Mucina et. Al., (2006), the proposed project area falls within the Gm12 of the eastern Highveld Grassland. Within the Gm 12 the vegetation is short dense grassland dominated by the usual Highveld grasses that include *Aristida*, *Digitaria*, *Eragrostis*, *Themeda*, *Tristachya* and others with small, scattered rocky outcrops with wiry, sour grasses and some woody species such as *Acacia caffra*, *Celtis Africana*, *Diospyros lycioides*, *Pirinari capensis*, *Protea caffra*, *P. welwitschii* and *Rhus megalismontanum*.

5.3.6.1 Habitat/Vegetation Types

Assessment of the project area has delineated a number of habitats for the project area. Topographic features were the primary consideration for the delineation of the various units. The above mentioned features have an effect on the habitat type in isolation and in conjunction with each other.

Secondly, anthropogenic activities were also considered to assist with the delineation of vegetative and/or habitat types. Owing to the presence of maize farming activities within the area together with exotic tree areas and homesteads the landscape has been altered to such an extent that obvious divisions are noticeable. As is the case with natural factors, anthropogenic factors could have an effect in isolation or in conjunction with other factors.

Below is the summary of the types of habitat encountered at the study area:

5.3.6.1.1.1 Primary Grassland

This habitat type exhibited the least effected biota with regards to anthropogenic activities and was found to be the natural vegetation type from which the remaining habitat types were formed. Impacts such as fencing accompanied by grazing, unplanned burning and agriculture were responsible for the formation of secondary grasslands, alien trees and human induced habitats. The remaining natural areas within this habitat type were providing refuge to plant species.

5.3.6.1.1.2 Secondary Grassland

The secondary grasslands are the areas where the impacts on the natural grasslands can be seen. These areas are currently being utilised for agricultural activities, predominantly grazing and maize plantations. These areas still have remnants of natural grassland that make up their composition; these areas must be conserved and rehabilitated.

5.3.6.1.5 Alien trees/plantations

Alien trees that were encountered during the field survey were found in a variety of habitat types, however the extent of the infestation allows for a separate habitat type to be addressed. The alien trees were found in the secondary grassland areas.

5.3.6.1.6 Human-induced habitats

The human induced habitats were areas where natural habitat was removed to accommodate buildings and infrastructure, a process which opens up areas for alien vegetation infestation. These areas are of no value from a biodiversity aspect.

5.3.7 Animal Life

The fauna of the region are typical of the Highveld in its currently developed state, in that there are regionally limited species and numbers.

5.3.8 Surface Water

The proposed Naudesbank Prospecting project falls within the upper parts of the Komati River Catchment. For the purpose of the National Water Resource Strategy, a requirement of the National Water Act (Act 36 of 1998), Department of Water Affairs and Forestry has delineated the entire country into representative water management areas with respective drainage regions i.e. primary, secondary, tertiary and quaternary drainage regions. The proposed project area falls within the number 5 water management area, X primary drainage region, X 11 and X11B tertiary and quaternary drainage regions respectively. This forms the upper headwaters of the Inkomati Water Management Area (Komati Wet River Catchment). The proposed project area in relation to the above-mentioned description is shown on Figure 3.

Two farm dams were identified within the proposed prospecting area. These dams are most probably used for livestock watering. No streams and rivers were identified within the prospecting area.

5.3.8.1 Regional Geohydrology

The proposed prospecting right area is situated in the Inkomati Water Management area. On regional scale the hydrogeology consist of weathered and fractured aquifers of the Bushveld Igneous Complex, the Transvaal Supergroup and locally the Karoo Supergroup as well as Jurassic dolerite intrusions. Blow yields of 0.5 – 2 l/s can be expected regionally.

The aquifer represents an important source for base flow into the streams draining the area. The hydrogeology of the area can be described in terms of the saturated and unsaturated zones:

Saturated Zone

In the saturated zone, at least four aquifer types may be inferred from knowledge of the geology of the area:

- A shallow aquifer formed in the weathered zone, perched on the fresh bedrock.
- An intermediate aquifer formed by fracturing of the Karoo sediments.
- Aquifers formed within the more permeable coal seams and sandstone layers.
- Aquifers associated with the contact zones of the dolerite intrusives.

Although these aquifers vary considerably regarding geohydrological characteristics, they are seldom observed as isolated units. Usually they would be highly interconnected by means of fractures and intrusions. Groundwater will thus flow through the system by means of the path of least resistance in a complicated manner that might include any of these components.

Shallow perched aquifer

A near surface weathered zone is comprised of transported colluvium and in-situ weathered sediments and is underlain by consolidated sedimentary rocks (sandstone, shale and coal). Groundwater flow patterns usually follow the topography, often coming very close to surface in topographic lows, sometimes even forming natural springs. Experience of Karoo geohydrology indicates that recharge to the perched groundwater aquifer is relatively high, up to 3% of the Mean Annual Precipitation (MAP).

Fractured Karoo rock aquifers

The host geology of the area consists of consolidated sediments of the Karoo Supergroup and consists mainly of sandstone, shale and coal beds of the Vryheid Formation of the Ecca Group. Most of the groundwater flow will be along the fracture zones that occur in the relatively competent host rock. The geology map does not indicate any major fractures zones in this area, but from experience it can be assumed that numerous major and minor fractures do exist in the host rock. These conductive zones effectively interconnect the strata of the Karoo sediments, both vertically and horizontally into a single, but highly heterogeneous and anisotropic unit

Aquifers associated with coal seams

The coal seam forms a layered sequence within the hard rock sedimentary units. The margins of coal seams or plastic partings within coal seams are often associated with groundwater. The coal itself tends to act as an aquitard allowing the flow of groundwater at the margins.

Aquifers associated with dolerite intrusives

Dolerite intrusions in the form of dykes and sills are common in the Karoo Supergroup, and are often encountered in this area. These intrusions can serve both as aquifers and aquifuges. Thick, unbroken dykes inhibit the flow of water, while the baked and cracked contact zones can be highly conductive. These conductive zones effectively interconnect the strata of the Ecca sediments both vertically and horizontally into a single, but highly heterogeneous and anisotropic unit on the scale of mining. These structures thus tend to dominate the flow of groundwater. Unfortunately, their location and properties are rather unpredictable. Their influence on the flow of groundwater is incorporated by using higher than usual flow parameters for the sedimentary rocks of the aquifer.

Unsaturated Zone

Although a detailed characterization of the unsaturated zone is beyond the scope of this study, a brief description thereof is supplied.

The unsaturated zone in the proposed mining area is in the order of between 0 and 26metres thick (based on static groundwater levels measured in the existing boreholes) and consists of colluvial

sediments at the top, underlain by residual sandstone/siltstone/mudstone of the Ecca Group that becomes less weathered with depth.be of hydro chemical type B, with dominant cations Ca2+ and Mg2+ and dominant anions Cl- and $SO_4$2-.

5.3.9 Sensitive Landscapes

Vuna Mining Resources (Pty) Limited recognises that all streams and wetlands should be treated as sensitive landscapes. To this extent, Geovicon Environmental (Pty) Limited, an independent consultant, undertook a desktop study over the prospecting right area to determine the presence of any wetland areas. According to the study three sites that resembles sensitive landscapes were identified within the site. These include two farm dams and a drainage line that have plant resembling wetland conditions. In view of the above, the three areas were delineated as sensitive areas. No prospecting activities will be undertaken within one hundred meters from these areas.

5.3.10 Air Quality

Potentially air pollution from human activities may arise as a result of particulates entering the atmosphere. The sources of air pollution from human activities comprise of three broad categories i.e. stationary sources (agriculture, mining, quarrying, manufacturing, mineral products, industries and power generation), community sources (homes or buildings, municipal waste and sewage sludge incinerators, fireplaces, cooking facilities, laundry services and cleaning plants) and mobile sources combustion-engine vehicles and fugitive emissions from vehicle traffic). Air pollutants are generally classified into suspended particulate matter (dust, fumes, mists and smokes), gaseous pollutants (gases and vapours) and odours.

Assessment of the proposed prospecting right area has determined that all three categories of air pollution sources are found at the proposed project area.

5.3.11 Noise

The proposed project area is predominantly a farming area. Noise from the area is mainly from farming activities with use of associated infrastructure and land use activities. Potential noise sources from the area may therefore be emanating from the following sources i.e.: roads and surrounding land uses.

5.3.12 Socio-Economic Status

The proposed Naudesbank Prospecting Project is situated in the Chief Albert Luthuli Local Municipality part of the Gert Sibande District Municipality, which is one of the three districts in Mpumalanga province.

5.3.12.1 Population density, growth and location

Compared to the neighbouring economic hubs and regional service centres such as Witbank / Middelburg and Mbombela, as well as the dense rural settlements in the Nkangala District to the north, the Chief Albert Luthuli Local Municipality is relatively sparsely populated. The total population of the Gert Sibande District is 890 699, close to 24% of Mpumalanga's total population (Stats SA, 2007). Chief Albert Luthuli Local Municipality, with an estimated population of 194 082 (Stats SA, 2007), is home to around 22% of this District population, but this only constitutes around 0.5% of the provincial population. Close to 10% (approximately 19 000) of the Chief Albert Luthuli Local Municipality population live in the Carolina centres.

The population of Chief Albert Luthuli Local Municipality was 187,936 in 2001, and it increased to 194,082 in 2007. The population increased by 3.3 % between 2001 and 2007.

The Chief Albert Luthuli Local Municipality is a mainly rural municipality, with a number of service centres and settlements distributed throughout the area. The main service town within the Chief Albert Luthuli Local Municipality area is Carolina, followed by Elukwatini and Badplaas. The nearest populated area within the proposed mining project area is Carolina, which occurs east west of the proposed colliery.

Population growth is limited to low due to the lack of industrial growth in the area. No population increase is predicted at the proposed mining area. This is mainly due to the fact that no significant development is expected in the area.

5.3.12.2 Major economic activities and sources of employment

There is no other economic development in the study area other than farming. However the nearest service centre, which is Carolina has a number of economic developments and mining, agriculture, government, forestation, tourism etc. Agriculture, mining, trade/ retail/ commercial activities and tourism are the key economic activities within the Chief Albert Luthuli municipal area.

6 ENVIRONMENTAL IMPACT ASSESSMENT

6.1 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS FOLLOWED

6.1.1 Approach to Environmental Impact Assessment

The term 'environment' is used in the broadest sense in an EIA. It covers the physical, biological, social, economic, cultural, historical, institutional and political environments.

An Environmental Impact Assessment is a good planning tool. It identifies the environmental consequences of a proposed project from the beginning and helps to ensure that the project, over its life cycle, will be environmentally acceptable and integrated into the surrounding environment in a sustainable way.

6.1.2 Environmental Impact Assessment Process Followed

Under Section 24 of the National Environmental Management Act (NEMA), the Minister promulgated the regulations pertaining to environmental impact assessments (EIA Regulations, 2014) under Government Notice R982 in Government Gazette 38282 of 4 December 2014. These EIA regulations repealed the 2010 EIA regulations and therefore any process relating to environmental authorisations must be undertaken under the EIA Regulations, 2014.

Chapter 4 of the EIA Regulations, 2014 deals with the provisions for application for environmental authorisation. In view of the above, Vuna Mining Resources (Pty) Limited is obliged to comply with provisions of Chapter 4 for the intended environmental authorisation application for the activities (listed activities) within the proposed project.

Part 2 of chapter 4 of the EIA Regulations, 2014 contemplate process to be undertaken for the application for environmental authorisation for the proposed project, which is the BAR process. The process to be followed is describe below.

6.1.2.1 Pre-application consultation with the Competent Authority

In terms of section 24D (1) of the National Environmental Management Act, 1998 (Act 107 of 1998), the Minister responsible for mineral resources is the competent authority for environmental matters relating to mining and associated activities. In view of the above, the application for the environmental authorisation for the proposed project was submitted to the Department of Mineral Resources (DMR), eMalahleni Regional Office for their consideration and decision making. The application for the environmental authorisation was acknowledged by the competent authority on the 16th of March 2016.

6.1.3 Public Participation Process

Public participation is the cornerstone of the EIA process. The principles of the NEMA govern many aspects of EIA's, including public participation. These include provision of sufficient and transparent information on an ongoing basis to stakeholders to allow them to comment. Comments received from the public participation process will be included in the impact assessment and measures will be determined on how the comments will be addressed during the life of the proposed project.

The following steps will be taken during the public participation process:

- Providing an opportunity for potential interested and affected parties to register.
- Making reports compiled within the environmental impact assessment available to register and potential interested and affected parties for their comments.
- Further to the above, interested and affected parties and the public will be informed of the decision taken by the responsible authorities on the submitted application.

The above process will ensure that the BAR and EMPr is subjected to a public participation process, which ensures that the proposed project is brought to the attention of interested and affected parties, the public and relevant organs of state including the competent authority.

6.1.3.1 BAR Phase

In compliance with Regulation 19 of the EIA Regulations, 2014, the BAR and EMPr will be submitted to the competent authority within 90 days after the acknowledgement of the environmental authorisation application.

As part of the public participation, the draft BAR and EMPr is made available to the competent authority, potential and registered interested and affected parties for their comment for a period of 30 days during the EIA phase.

6.1.3.2 Information Gathering

Environmental baseline data has been obtained, pertaining to surface water, geohydrological data, topographical analyses, soil surveys, vegetation surveys, wetland surveys and geological conditions. Weather data was acquired from the South African Weather Service. Historic land use was determined through available data and by visual observations made during various field studies. The data accumulated and analysed is sufficient to gain a baseline indication of the present state of the environment. The use of this baseline study for impact assessments is thus justified and reliable conclusions could be made.

6.1.3.3 Decision on the S&EIR application

In compliance with Regulation 20 of the EIA Regulations, 2014, the competent authority will within 107 days of receipt of the BAR and EMPr grant or refuse the environmental authorisation.

6.2 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

The following prediction and evaluation of impacts is based on the proposed Naudesbank Prospecting project and associated activities.

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

- Health & Safety;
- Protection of Environmentally Sensitive Areas;
- Land use; and
- 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	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)	**Definition**
Small	0 – 40 ha
Medium	40 – 200 ha
Large	200 + ha
Duration	**Definition**
Short	0 – 5 years
Medium	5 – 50 years
Long	51 – 200 years
Permanent	200 + years
Intensity	**Definition**
Low	Does not contravene any laws. Is within environmental standards or objectives. Will not constitute a precedent for future actions. Is reversible. 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 standards or objectives. Is not irreversible. 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 standards or objectives. Is irreversible. Will have a significant impact on the health and welfare of humans or the environment.

Significance and Risk Category	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

6.3 RESULTS OF THE ENVIRONMENTAL IMPACT ASSESSMENT

6.3.1 Assessment of the Naudesbank Prospecting Project impacts/risks

6.3.1.1 Construction Phase

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
CONSTRUCTION PHASES							
Site Establishment: Establishment of the access (tracks) to the prospecting site, Establishment of the campsite, Site physical surveying and Pegging of drilling sites							
The establishment of access, campsite and the surveying with pegging of the drilling sites may result in the stripping of soils if the site establishment of not properly conducted. This may results in the loss of soils and erosion that may render the area unusable. During site establishment, machinery and vehicles used for the prospecting operation may result in hydrocarbon leakages, which may result in the contamination of the soils within the access tracks, campsite and drilling sites.	Soil/Land capability	Without mitigation					Establishment of the site will be undertaken according to the prospecting method statement. No soil stripping will be allowed during site establishment. Ensure minimal disturbance of soil when conducting geophysical surveys and geological mapping (if necessary). Any area that may result into the disturbance of the soils must be rehabilitated immediately on discovery. Machinery to be used for the operation will be of good working conditions. Any hydrocarbon spill from the site establishment will be remediated as soon as possible.
		S	L	S	M	M	
		With mitigation					
		S	L	S	L	L	

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
CONSTRUCTION PHASES							
Current land use over the area to be used for site establishment will cease completely. This may have an impact on the land owners' livelihood should they not be able to use the land.	Land capability	Without mitigation					Use sites that are unused and that are in the degraded state for the proposed development. This will done in agreement with the land owner. The sitting of the boreholes will be conducted to ensure that rocky ridges, sensitive grass lands, indigenous trees and shrubs, sites of geological importance and farmlands actively used for crop farming are avoided.
		S	M	S	M	M	
		With mitigation					
		S	L	S	L	L	
The establishment of the site (access, campsite and drilling sites) may result in the removal of vegetation cover if the establishment is not done correctly. This may render the land unusable to the land owners after completion of the project.	Natural vegetation	Without mitigation					Use sites with most disturbed vegetation cover for the development. No strip of topsoil and vegetation will be allowed during site establishment. Ensure minimal disturbance of vegetation when conducting geophysical surveys and geological mapping. Any area that may result into the disturbance of the vegetation cover must be rehabilitated immediately on discovery.
		S	L	S	L	L	
		With mitigation					
		S	L	S	L	N	
Animal burrows and habitats remaining within the proposed development site may be destroyed during construction. This may result in the migration of remaining animal life away from the affected areas.	Animal Life	Without mitigation					Establishment of the site will be undertaken according to the prospecting method statement. No soil stripping will be allowed during site establishment. Any area that may result into the disturbance of the soils must be
		S	L	S	L	L	
		With mitigation					

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
CONSTRUCTION PHASES							
Poaching of wild animals and livestock by the labourers will result in the loss of wild live and loss of livestock to the land owner.		S	L	S	L	N	rehabilitated immediately on discovery. Use sites with most degraded environment for the site development. Poaching will be prohibited at the prospecting site.
Exposure of soils during construction by the stripping of vegetation and soils may cause erosion, which may lead to increased silt loads in surface water runoff. This may result in the contamination of the clean water environment. Waste generated from the site may result in the contamination of surface and ground water should not management of such waste be undertaken.	Surface and Ground Water	Without mitigation					Site establishment will not be undertaken within sensitive landscapes. These areas will be avoided. A distance of 32 meters will be created between the sites and the sensitive landscapes. Avoid stripping of areas within the construction sites. Rehabilitate areas that may have been mistakenly stripped. Storm water upslope of the campsite and drill sites should be diverted around these areas. Proper waste management facilities will be put in place at the campsite and drilling site. Any hydrocarbon spill from the site establishment will be remediated as soon as possible.
		S	L	S	M	M	
		With mitigation					
		S	L	S	L	L	
Construction activities during the establishment of the site	Air Quality	Without mitigation					Ensure that source specific management measures for

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
CONSTRUCTION PHASES							
will include material loading and hauling. These activities will result in the mobilisation of particulates that will migrate away from the site to the nearby local residents. This will be a nuisance to the communities and will result in aesthetic impacts associated with fugitive dust emissions. On-site dust fall may have health and nuisance implications to employees at the existing offices.		S	L	S	L	L	Naudesbank Prospecting project are complied with.
		With mitigation					
		S	L	S	L	N	
The noise level generated from the construction activities may exceed the SANS 10103 Levels for Residential areas and may exceed the maximum rating levels for ambient noise indoors. This may have an impact in the surrounding residents and employees using/delivering the machinery.	Noise	Without mitigation					Ensure that proper management measures as well as technical changes are undertaken to reduce the impacts on surrounding residents and employees. This include ensuring that less noisy equipment are use, that equipment is kept in good working order and that the equipment must be fitted with correct and appropriate noise abatement measures and where possible use white-noise generators instead of tonal reverse alarms on heavy vehicles operating on roads.
		S	L	S	L	L	
		Without mitigation					
		S	L	S	L	N	
The activities undertaken during the construction of the shaft and associated infrastructure will be visible from the nearby roads and properties. However, due to the undulating topography, visibility for the most part will most	Visual Aspects	Without mitigation					Inform the land owner on the type of machinery and equipment to be used at the prospecting site. Ensure that lighting is conducted in manner that will reduce the impacts on visual aspects at night times.
		S	L	S	L	L	
		With mitigation					

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
CONSTRUCTION PHASES							
probably be restricted to short distances.		S	L	S	L	N	
The site may be located in close proximity to a heritage site and may result in the destruction of the identified heritage site.	Sites of Archaeological and Cultural Importance	Without mitigation					The establishment of the shaft complex will be such that the development is always away from the any heritage sites. A buffer of more than fifty meters will be created between the grave yards and the proposed site development. A management plan will be drafted for the sustainable preservation of the grave yard should graveyards be identified on site. Any grave site must have access for descendants.
		S	M	S	H	H	
		With mitigation					
		S	L	S	L	L	
The commencement of the proposed project may result in an influx of 'outsiders' seeking jobs, which may be caused by increase in local unemployment levels. This may result in the have potential increase in crime. It must however be noted that prospecting activities would unlikely attract job seeker due to its small nature of its scale.	Socio economic aspects	Without mitigation					Recruitment will not be undertaken on site. Farm labourers will not employed unless agreed to with the farm owners.
		S	L	S	L	L	
		With mitigation					
		S	L	S	L	N	

6.3.1.2 Operational Phase

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
Drilling and rehabilitation of the exploration boreholes							
Topsoil removal, storage and replacement during the excavation of the sumps will result. This will result in the disruption of the soils profile.	Soils	Without mitigation					Ensure that topsoil is properly stored, away from the streams and drainage areas. The soils must be used for the backfilling and rehabilitation of the sumps. The rehabilitated sump must be seeded with recommended seed mix.
		S	M	S	L	L	
		With mitigation					
		S	L	S	L	N	
The use of vehicles during the siting, pegging and drilling of the exploration boreholes may result in the spillages of hydrocarbon liquids from the vehicles and machinery. This will result in the contamination of the vegetation cover and soils. The material removed from the drilling exercises will contain carbonaceous material, which has a potential for pollution should it be allowed stay for a prolonged period at the drilling site. The above material, if not properly managed, may result in the	Natural Vegetation and Soils	Without mitigation					Ensure that the drilling of the exploration boreholes are done in such a manner that the environment is protected from probable spillages and contamination by carbonaceous material. All boreholes and sumps will be rehabilitated to pre-drilling conditions. Tarpaulins will be placed on the ground to prevent oil, grease, hydraulic fluid and diesel spills during emergency repairs. All oil spills will be remedied using approved methodologies. The contaminated soils will be removed and
		S	M	S	M	M	
		With mitigation					
		S	L	S	L	L	

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
contamination of the surrounding soils and vegetation cover, which may render the land not usable after the backfilling operation.							disposed of at a licensed waste disposal facility. All waste generated from the drilling sires and the campsite will be collected in proper receptacles and removed top registered disposal facilities e.g., sewage treatment plant, sold waste disposal site or hydrocarbon recycling or treatment facilities.
Animal burrows and habitats will be destroyed by the preparation of the backfilling sites. This will further result in the migration of animals away from these areas of disturbance. It must however be noted that no significant amount of animal life exist due to the agricultural activities currently undertaken at the proposed prospecting sites.	Animal Life	Without mitigation					The rehabilitation of the disturbed areas must be conducted such that the rehabilitated areas will encourage the migration of animals back into the rehabilitated areas. Poaching of wild animals and livestock will e prohibited.
		S	L	S	L	L	
		Without mitigation					
		S	L	S	L	N	
The drilling operations may result in the generation of surface water runoff contaminated with drilling muds and cuttings should spillages occur. The sedimentation and possible contamination with carbonaceous material will have negative impacts on the surrounding clean water environment. These will cause an increase in the turbidity and will decrease acidity of the water in the streams, which	Surface Water	Without mitigation					No prospecting operations will be undertaken within 100 metres from the nearby steams and 32 meters from the nearby wetland areas. The sumps will be excavated for the collection mud and excess water from the drilling sites. The sump will be sized such that it will be able to contain the water and mud that will be generated during the prospecting operation.
		S	L	S	M	L	
		With mitigation					
		S	L	S	L	L	

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
will affect the aquatic habitat of the wetland, hence important habitats may be lost.							Storm water generated around the drilling site will be diverted away to the clean water environment. No concrete mixing and vehicle maintenance will be allowed on site. All hydrocarbons will be stored on protected storage areas away from the streams.
The prospecting operations will require the drilling of boreholes. The boreholes may result in the drawdown, which may affect the yield to the surrounding groundwater users. Material used for backfilling may leach pollutants that will result in the pollution of the surrounding groundwater regime. This may even spread beyond the backfilling site via plume migration.	Groundwater	Without mitigation					Ensure that the land owners' borehole yield are observed during the drilling operation. Should it be proven that the operation is indeed affecting the quantity and quality of groundwater available to users and surrounding water resources, the affected parties must be compensated.
		S	L	S	L	L	
		With mitigation					
		S	L	S	L	N	
The prospecting operation will require vehicular movement. This will result in the generation of dust by movement of vehicles and due to blowing winds. Vehicles and machinery will also generated diesel or petrol fumes. Generated dust will migrate towards the predominant wind direction and may settle on	Air Quality	Without mitigation					Dust suppression must be conducted during the operational phase of the project. Correct speed will be maintained at the proposed project site. Vehicle maintenance must be conducted regularly to avoid excessive diesel fumes.
		S	L	S	L	L	
		With mitigation					
		S	L	S	L	N	

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
surrounding properties including nearby vegetation.							
Noise generated from prospecting operations activities may add to the current noise levels. This may have impacts on surrounding property owners and occupiers.	Noise	Without mitigation					Ensure that proper management measures as well as technical changes are undertaken to reduce the impacts on surrounding residents and employees. This include ensuring that less noisy equipment are use, that equipment is kept in good working order and that the equipment must be fitted with correct and appropriate noise abatement measures and where possible use white-noise generators instead of tonal reverse alarms on heavy vehicles operating on roads. Correct speed will be maintained at the proposed project site. Limit operation of machinery and vehicle movement between sunrise and sunset.
		S	L	S	M	L	
		With mitigation					
		S	L	S	L	L	
The drill rigs and towers used during the drilling operations will be visible from the nearby residents and properties.	Visual Aspects	Without mitigation					Ensure that the period used for the drill rigs is optimised toe ensure that the drill rigs are moved from one site to another over short periods.
		S	L	S	L	L	
		With mitigation					
		S	L	S	L	N	

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
OPERATIONAL PHASE							
Operation may affect the day to day operation of the land owners hence result in direct impact on their livelihood.	Socio economic aspects	Without Mitigation					Ensure that all safety measures (EMPr) are implemented to prevent the impacts on the property owners. Ensure that negotiations on compensation are undertaken before the drilling programme can commence. This will include any other conditions that the landowner may deem necessary for the prospecting operation.
		S	L	S	L	L	
		With Mitigation					
		S	L	S	L	N	
Operation will result in the employment of locals and support on local businesses.	Socio economic aspects	Positive					The applicant will ensure that as far as possible locals will be used during the operation of the prospecting project.
The drilling operation may result in the destruction of graves and any other heritage sites during operational phase of the project.	Sites of archaeological and cultural importance	Without Mitigation					Locate exploration borehole more than one hundred meters from the identified heritage sites.
		S	M	S	H	H	
		With Mitigation					
		S	S	S	L	L	

6.3.1.3 Decommissioning and Closure Phases

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
DECOMMISSIONING AND CLOSURE PHASES							
Decommissioning of prospecting site (Site Rehabilitation)							
The removal of the campsite equipment and the rehabilitation of the drilling sites and associated access infrastructure will result in the affected soil and land use being restored. This will also result in the resumption of the use of the land since the infrastructure would have been removed.	Soils, Land Capability and Land Use	Positive impact					Ensure that rehabilitation is conducted in accordance with a rehabilitation method statements approved by the mine management. See description of the rehabilitation plan and management actions in the EMPr. Ensure that contamination of the rehabilitate area by carbonaceous material and hydrocarbon liquids are prevented.
Positive impacts will result due to the reduction in areas of disturbance and the return of land use of the affected areas and making available an area that was covered by the campsite and drilling sites.	Land Use	Positive impact					

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
DECOMMISSIONING AND CLOSURE PHASES							
The use of vehicles/machinery during the rehabilitation of the exploration sites may result compaction of soils and in the spillages of hydrocarbon liquids from the vehicles and machinery. This will result in the contamination and destruction of the vegetation cover and soils.	Soils and Natural Vegetation	Without mitigation					Ensure that the rehabilitation work is done in such a manner that the environment is protected from probable spillages and contamination by carbonaceous material. All boreholes and sumps will be rehabilitated to pre-drilling conditions. Tarpaulins will be placed on the ground to prevent oil, grease, hydraulic fluid and diesel spills during emergency repairs. All oil spills will be remedied using approved methodologies. The contaminated soils will be removed and disposed of at a licensed waste disposal facility. All waste generated from the rehabilitation sites will be collected in proper receptacles and removed to registered disposal facilities e.g., sewage treatment plant, sold waste disposal site or hydrocarbon recycling or treatment facilities.
		S	M	S	M	M	
		With mitigation					
		S	L	S	L	L	
During the decommissioning and closure phases equipment will be removed, stockpiled soils will be used for rehabilitation, remaining sumps will be backfilled, levelled, topsoiled and the area re-seeded. During the process of rehabilitation surface	Surface Water	Without mitigation					Ensure that water leaving the site do not have elevated silt load. Ensure that the rehabilitated areas are free draining and that water from these areas is clean.
		S	L	S	L	L	
		With mitigation					
		S	L	S	L	N	

NATURE OF THE IMPACT	ENVIRONMENTAL ASPECT	IMPACT ASSESSMENT					MITIGATION MEASURES
		E	P	D	I	S	
DECOMMISSIONING AND CLOSURE PHASES							
water runoff from the rehabilitation site may have elevated silt load, which may cause pollution of the nearby water environment.							
Rehabilitation and removal of the prospecting sites and equipment ill require vehicular movement. This will result in the generation of dust by movement of vehicles and due to blowing winds. Vehicles and machinery will also generated diesel or petrol fumes. Generated dust will migrate towards the predominant wind direction and may settle on surrounding properties including nearby vegetation.	Air Quality	Without mitigation					Dust suppression must be conducted during the decommissioning phase of the project whenever excessive dust is generated. Correct speed will be maintained at the proposed project rehabilitation sites. Vehicle maintenance must be conducted regularly to avoid excessive diesel fumes.
		S	L	S	L	L	
		With mitigation					
		S	L	S	L	N	
Noise will be generated during the removal of equipment and rehabilitation of the sites. This noise is not expected to exceed occupational noise limits and will be short lived.	Noise	Without mitigation					Where necessary, provide employees with ear plugs and employees must be instructed to use the ear plugs. Ensure that equipment is well maintained and fitted with the correct and appropriate noise abatement measures.
		S	L	S	L	L	
		With mitigation					
		S	L	S	L	N	

6.4 SUMMARY OF SPECIALIST REPORTS

Since desktop information was used, no specialist studies were conducted for the proposed project.

6.5 ENVIRONMENTAL IMPACT STATEMENT

Vuna Mining Resources (Pty) Limited has applied for a prospecting right over the Naudesbank Prospecting project area. The prospecting operation will involve the exploration for coal within the prospecting right area. Diamond core drilling will be used or the exploration and a campsite will be established on site. Each drilling site will have an access route in the form of a track and a sump for the collection of waste water generated during the drilling operation.

6.5.1 Description of affected environment

The proposed project is situated within the Ermelo Coalfield. The proposed project is situated in area characterised by a gentle undulating plateau with fairly broad to narrowly incised valleys such as the Komati River valley, which are associated with surface water features such as rivers, streams and pans. These includes the Vaalwater Spruit and its tributaries. A variety of soil types were identified within the project area, which include recharge, interflow and responsive soils. The land uses over the project area correspond to the soils found in the area and include mainly agriculture (crop cultivation and grazing) and wilderness with limited industrial and residential stands. Due to the above land uses significant change has occurred on the natural vegetation, with most of the area being cultivated lands. With the exception of two farm dams that are not in-stream, there were no sensitive landscapes identified within the proposed prospecting right area. The proposed project is situated within the Chief Albert Luthuli Local Municipality.

6.5.2 Summary of key findings of the environmental impact assessment

During the proposed prospecting operation impacts may only occur on soils, natural vegetation, surface water, groundwater, sensitive landscapes, air quality, noise, visual aspects, sites of archaeological and cultural importance should the prospecting method statement not be adhered to. Alternatives considered for the location campsite and drilling sites has shown that the selected locations would be the most favourable. Vuna Mining Resources (Pty) Limited 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 to low and negligible significance.

Land use will not change. Several landowners and land occupiers within the proposed project area may be affected although on a temporary basis due to the need to access the sites and establishment and use of the campsite. Measures such as safety along the roads and dust suppression will be undertaken to ensure that the impacts on the land owners and land occupiers are minimised.

Assessment of the vegetation within the footprint of the development area has shown limited presence of natural vegetation.

Storm water runoff from the dirty water areas of the drilling sites, its associated surface infrastructure (campsite) may 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, dirty water collection sump will be used to collect all dirty water from the drilling site. The water collected from the sump will re-used, evaporated and the sump will be rehabilitated once the drilling is finished. Sediments will be created from the site during the construction, operational and

decommissioning phase, which may impact negatively on the surrounding water environment, will be treated should they contain hydrocarbon waste.

All workers will be housed in the campsite to be established on site. The employees will be given stick instruction not to undertaken activities that will affect the environment and that may have an impact on the landowner. Waste generated from the site will be collected in proper receptacle and disposed off in registered waste disposal sites.

6.5.3 Final Master Layout Plan

The final maps showing the layouts of the proposed project is will be submitted to the DMR on granting of the prospecting right. The map will be developed to superimpose the proposed prospecting project together and associated infrastructure with the environmental sensitivities within the proposed project site.

6.6 Aspects for Inclusion as conditions of the Environmental Authorisation

In authorising the proposed Naudesbank Prospecting project, the following conditions should form part of the environmental authorisation:

- Vuna Mining Resources (Pty) Limited 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.
- Vuna Mining Resources (Pty) Limited 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.
- Vuna Mining Resources (Pty) Limited must, where necessary, undertake specialists studies, management procedures and method statement should the need arise.
- The EMPr must be implemented fully at all stages of the proposed project
- Vuna Mining Resources (Pty) Limited must limit night-time operations. This would be relevant for all work taking place at night within 150m from the closest receptors in this community. If night work is conducted, such must be conducted in agreement with the land owners and affected parties (lawful land occupier and labours).

6.7 Description of Assumptions, Uncertainties and Gaps in Knowledge

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 EIR.

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 specialist studies 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.

The EIA has investigated the potential impact on key environmental media relating to the specific environmental setting for the site. A number of desktop assessment were undertaken and result thereof and are presented in this report.

The information provided in this BAR and EMpr is therefore considered sufficient for decision-making purposes.

6.8 Reasoned Opinion as to Whether the Proposed Project should or should not Continue

6.8.1 Reason why the activity should be authorised or not

According to the impact assessment undertaken for the proposed project, the key impacts of the project are on soils, natural vegetation and land owners/occupiers.

The project will also have positive impacts due to the employment to be created although for a short term.

The public will also be requested for their comments. All comments to be received during Public Participation Process will be included in this BAR and EMPr. These comments will be addressed the as far as possible to the satisfaction of the interested and affected parties.

The management of the impacts identified in the impact assessment 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, 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.

6.8.2 Conditions that must be included in the authorisation

See section 6.6 of the EIR.

6.9 Period for which the Environmental Authorisation

Based on the prospecting method statement, the environmental authorisation should be given for three years.

6.10 Undertaking

The signed undertaking will be presented to the DMR on execution of the prospecting right.

6.11 Financial Provision

According to Appendix 3 of the EIA Regulations, 2014, where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts must be provide in the EIR and EMPr. In order to avoid duplication the financial provision for the proposed project has only been provided under the relevant section of the EMPr.

6.12 DEVIATION FROM APPROVED SCOPING REPORT

No deviation from the approved Scoping Report.

6.13 OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

Aside from the BAR and EMPr no other information has been requested by the competent authority

6.14 OTHER MATTERS REQUIRED IN TERMS OF SECTION 24 (4)(A) AND (B) OF THE ACT

Any matter required in terms of the above section of the Act will be complied with by Vuna Mining Resources (Pty) Limited

PART B

Environmental Management Programme

1. DETAILS OF THE EAP

The details of the EAP are provided in section 1.1 of part A of this document

2. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY

The requirements to describe the aspects of the activity are covered by the environmental management programme and are included in PART A of the document under section 1. The reader is therefore referred to section 1 of PART A of this document.

3. COMPOSITE MAP

The map superimposing the proposed project, its associated structures and infrastructure on the environmental sensitivities of the preferred site will be provided on approval of the EMPr. Note that all areas that must be avoided due to their environmental sensitivity will be indicated in the map.

4. DESCRIPTION OF THE MANAGEMENT OBJECTIVES INCLUDING MANAGEMENT STATEMENTS

4.1 GENERAL CLOSURE PRINCIPLES AND OBJECTIVES

The following are the closure objectives, general principles and objectives guiding closure of the Naudesbank Prospecting areas closure planning:

- Rehabilitation of areas disturbed as a consequence of prospecting to a land capability that will support and sustain a predetermined post-closure land uses;
- Removal of all infrastructure/equipment 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 affected areas;
- 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;
- Treatment of mine-affected water to ensure compliance with all relevant standards and supply
- Monitoring and maintenance of rehabilitated areas forming part of site closure to ensure the long-term effectiveness and sustainability of measures implemented.

4.2 MANAGEMENT OF ENVIRONMENTAL DAMAGE, ENVIRONMENTAL POLLUTION AND ECOLOGICAL DEGRADATION CAUSED BY THE NAUDESBANK PROSPECTING PROJECT ACTIVITIES

The following actions will be undertaken by Vuna Mining Resources (Pty) Limited to ensure that the closure objectives are attained.

4.2.1 Infrastructure Areas

- All infrastructure and equipment used during the prospecting operation will be removed from the site.
- All tracks that were used for access the drilling sites will be allowed to re-establish to its pre-prospecting condition. Should unsatisfactory results be noted, the area will be physically rehabilitated.
- All rehabilitated areas will be maintained for a period of 2 years, where after the frequency will be reassessed. Where necessary, vegetation cover will be maintained by annual application of fertiliser.
- Maintenance with respect to erosion will be conducted on a minimum three monthly basis if and where required.

4.2.2.1 Buildings (Offices, Workshops and Stores)

Mobile structures will be used and such structures will be removed form the sites during decommissioning of the site.

4.3 POTENTIAL RISK OF ACID MINE DRAINAGE

No potential risk of acid mine drainage.

4.4 STEPS TAKEN TO INVESTIGATE, ASSESS AND EVALUATE THE IMPACTS OF THE ACID MINE DRAINAGE

Since there is no risk of acid mine drainage, there will be no need for steps to be taken to investigate, assess and evaluate the impacts of acid mine drainage.

4.5 ENGINEERING AND DESIGNS SOLUTIONS TO BE IMPLEMENTED TO AVOID OR REMEDY ACID MINE DRAINAGE

Since there is no risk of acid mine drainage, there will be no need for engineering and designs solutions to be implemented to avoid or remedy acid mine drainage.

4.6 MEASURES TO REMEDY RESIDUAL OR CUMULATIVE IMPACTS FROM ACID MINE DRAINAGE

Since there is no risk of acid mine drainage, there will be no need for measures to remedy residual or cumulative impacts from acid mine drainage.

4.7 VOLUMES AND RATES OF WATER USE REQUIRED FOR THE PROPOSED PROJECT

Since there is no risk of acid mine drainage, this section will not applicable.

4.8 WATER USE LICENCE APPLICATION

No water use activities will be undertaken during the proposed prospecting operation, hence no water use licence will be applied for.

5. ENVIRONMENTAL MANAGEMENT PROGRAMME

Table 5: Environmental Management Programme for the proposed Naudesbank Prospecting project.

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
CONSTRUCTION PHASE								
Establishment of access, to prospecting sites, establishment of the campsite, physical surveying of the site and pegging of drilling boreholes								
Loss of soils, erosion of the soils and impacts on land owner's livelihood.	Soils, Land Use and Land Capability.	To ensure that the activities in the development of the prospecting sites and associated infrastructure do not have detrimental impacts on the soils, land use and land capability.	Ensure that the establishment of the prospecting sites is undertaken in accordance with the approved EMPr.	Establishment of the site will be undertaken according to the prospecting method statement. No soil stripping will be allowed during site establishment. Should it be necessary to conduct geophysical surveys and geological mapping, ensure minimal disturbance of soil. Any area that may result into the disturbance of the soils must be rehabilitated immediately on discovery. Machinery to be used for the operation will be of good working conditions. Any hydrocarbon spill from the site establishment will be remediated as soon as possible. Use sites that are unused and that are in the degraded state for the proposed development. This must be done in agreement with the land owner. The sitting of the boreholes must be conducted such that ensure that rocky ridges, sensitive grass lands, indigenous trees and shrubs, sites of geological importance and farmlands actively used for crop farming are avoided.	Appointed contractor and site manager. Appointed contractor. Appointed contractor. Appointed contractor and the applicant site manager. Appointed contractor. Appointed contractor.	Visual monitoring through inspections. Visual monitoring and inspections Visual monitoring and inspections. Visual monitoring and inspections. Visual monitoring and inspections Undertake regular inspections.	Environmental Control Officer (ECO) during construction. ECO monthly. ECO monthly. ECO monthly. ECO monthly. ECO monthly.	During construction phase. During construction phase. During construction phase. During construction phase. During construction phase. During construction phase.

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
Loss of natural vegetation in the affected areas.	Flora.	To ensure that the establishment of the prospecting site and associated infrastructure/equipment do not have detrimental impact on the area's flora.	The management of the impact will comply with the company's biodiversity management plan.	Use sites with most disturbed vegetation cover for the development.	Appointed contractor and site manager.	Visual monitoring and inspections.	ECO monthly.	During construction phase.
				No strip of topsoil and vegetation will be allowed during site establishment.	Appointed contractor and site manager.			
				Ensure minimal disturbance of vegetation when conducting geophysical surveys and geological mapping.	Appointed contractor and site manager.	Visual monitoring and inspections.	ECO monthly.	During construction phase.
				Any area that may result into the disturbance of the vegetation cover must be rehabilitated immediately on discovery.	Appointed contractor and site manager.	Visual monitoring and inspections.	ECO monthly.	During construction phase.
Migration of animal life due to disturbance caused proposed project	Animal Life	Ensure that the animal life within in the project is not affected by the proposed project	Maintenance of the current status on animal life within the project area	Establishment of the site will be undertaken according to the prospecting method statement.	Appointed contractor and site manager.	Visual monitoring and inspections.	ECO monthly.	During construction phase.
				No soil stripping will be allowed during site establishment. Any area that may result into the disturbance of the soils must be rehabilitated immediately on discovery.	Appointed contractor and site manager.	Visual monitoring and inspections.	ECO monthly.	During construction phase.
				Use sites with most degraded environment for the site development.	Appointed contractor and site manager.	Visual monitoring and inspections.	ECO monthly.	During construction phase.
				Poaching will be prohibited at the prospecting site.	Appointed contractor and site manager.	Visual monitoring and inspections.	ECO monthly.	During construction phase.
Deterioration of water quality in in the nearby steams and within the groundwater regime.	Surface and Ground Water.	Ensure that the establishment of the project and its associated infrastructure does not have detrimental impact on nearby stream and the groundwater regime.	The quality of streams and groundwater within the site will comply with the target DWS target water quality objectives. Construction will be in compliance with the regulations under the GN704.	Site establishment will not be undertaken within sensitive landscapes. These areas will be avoided. A distance of 32 meters will be created between the sites and the sensitive landscapes.	Appointed contractor and site manager.	Regular inspections	ECO monthly.	During construction phase.
				Avoid stripping of areas within the construction sites.	Appointed contractor and site manager.	Regular inspections	ECO monthly.	During construction phase
				Rehabilitate areas that may have been mistakenly stripped.	Appointed contractor and site manager.	Regular inspections	ECO monthly.	During construction phase
				Storm water upslope of the campsite and drill sites should be diverted around these areas.	Appointed contractor and site manager.	Regular inspections	ECO monthly.	During construction phase
								During construction

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
				Proper waste management facilities will be put in place at the campsite and drilling site. Any hydrocarbon spill from the site establishment will be remediated as soon as possible.	Appointed contractor and site manager.	Regular inspections	ECO monthly.	phase.
Wetland destruction and loss of habitat.	Sensitive Landscapes.	Ensure that the construction activities do not have detrimental impacts on the sensitive landscapes.	Maintain the current state of the sensitive landscapes within the project area (farm dams and seepage zone).	Construction activities will be limited to be more than hundred meters from the edge of the dams and seepage zone.	Appointed contractor and site manager.	Inspection to ensure compliance with the action plan will be conducted at the construction site.	ECO will conduct the inspections monthly.	Whenever construction is undertaken near the sensitive landscapes.
Air pollution through air pollutants' emissions, from the construction site.	Air quality.	Ensure that all operations during the construction phase do not result in detrimental air quality impacts.	The construction will be undertaken such that the ambient air quality does not exceed the National Air Quality Standards.	Wet suppression using will be conducted at areas with excessive dust emissions. Traffic will be restricted to demarcated areas and traffic volumes and speeds within the construction site will be controlled.	Appointed contractor and site manager. Appointed contractor and site manager.	Visual inspections of areas with possible dust emissions. Regular inspections.	ECO monthly. ECO monthly.	Throughout the construction phase. Throughout the construction phase..
Increased noise levels.	Noise aspects.	Ensure that the noise levels emanating from the construction sites will not have detrimental effects on the mine employees and surrounding communities/land owners.	The noise levels from the construction sites will be managed and measures will be taken to ensure that noise levels are below the National Noise Control Regulations, SANS10103:2008 guidelines.	Limit the maximum speed to 60 km/h or less, subject to risk assessment. Less noisy equipment will be used, the equipment will be kept in good working order and the equipment will be fitted with correct and appropriate noise abatement measures. Ensure that the 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.	Appointed contractor and site manager. Site manager. Site manager.	Undertake site checks on speeds used. Speed checking will be conducted. Use of earplugs will be checked and reported.	Site manager. Site manager checking as regularly as possible. Site manager will check the use of the earplugs as regularly as possible.	Throughout the construction phase. Throughout the duration of the construction phase Throughout the duration of the construction phase.
Visual impacts on the surrounding communities and road users from the construction.	Visual aspects.	Ensure that all operations during the construction phase do not result in detrimental visual impacts on surrounding properties, communities and road	Measures will be undertaken by the mine to ensure that the visual aspects from the site are complying with the relevant visual	The land owner will be informed on the type of machinery and equipment to be used at the prospecting sites. Lighting will be conducted in manner that	Applicant and site manager. Appointed contractor.	The constructed perimeter berms will be inspected for compliance with the design specifications.	Mine Engineer on a monthly basis. The site manager once	Throughout the construction phase. During construction

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
		users.	standards and objectives.	will reduce the impacts on visual aspects at night times.		Night time inspection of the site will be undertaken.		phase.
Damage or destruction of sites with archaeological and cultural significance.	Sites of archaeological and cultural importance.	Ensure that the construction activities does not have detrimental impacts on the heritage sites.	The construction will be undertaken in compliance with the requirements of the National Heritage Resources Act, 1999 (Act 25 of 1999) and recommendations from the specialist.	The establishment of the sites will be away from any identified grave site or heritage sites. A buffer of hundred meters will be created between the sites and the proposed camp and drilling sites.	Appointed contractor and site manager.	The site will be monitored for any damages on a regular basis.	ECO monthly	Throughout the construction phase when activities are in close proximity to the heritage sites.
Impact from the influx of job seekers and employment of farm labourers.	Socio-economic aspects.	Ensure that measures are taken to discourage influx of job seekers and employment of farm labourers.	Measures taken will be in line with the company's recruitment policies.	Recruitment will not be undertaken on site. Farm labourers will not employed unless agreed to with the farm owners.	Appointed contractor and site manager.	Visual monitoring.	Site manager	Throughout the pre-construction an construction phase.
OPERATIONAL PHASE								
Diamond Core drilling of the exploration boreholes, use of campsite and rehabilitation of the drilling sites								
Soil profile disruption, contamination of soils, destruction of natural vegetation and loss of land use.	Soils, Natural Vegetation, Land Use and Land Capability.	Ensure that the operation of the drilling sites and use of campsite and rehabilitation of drilling site do not have detrimental impacts on the soils, natural vegetation and current land use.	The land use and capability of the sites where the operations will be undertaken will continue after the proposed project.	Ensure that the drilling of the exploration boreholes are done in such a manner that the environment is protected from probable spillages and contamination by carbonaceous material.	Appointed contractor and site manager.	Regular inspections	ECO monthly.	During the operational phase of the project.
				All boreholes and sumps will be rehabilitated to pre-drilling conditions.	Appointed contractor.	Regular inspections	ECO monthly.	During the operational phase of the project.
				Tarpaulins will be placed on the ground to prevent oil, grease, hydraulic fluid and diesel spills during emergency repairs. All oil spills will be remedied using approved methodologies. The contaminated soils will be removed and disposed of at a licensed waste disposal facility.	Appointed contractor.	Regular inspections.	ECO monthly.	During the operational phase of the project.
				All waste generated from the drilling sires and the campsite will be collected in proper receptacles and removed top registered	Appointed contractor	Inspection of the site will be conducted.	ECO monthly.	During the operational phase of the project.

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
				disposal facilities e.g., sewage treatment plant, sold waste disposal site or hydrocarbon recycling or treatment facilities.				
Migration of animal life due to disturbance caused proposed project	Animal Life	Ensure that the animal life within in the project is not affected by the proposed project	Maintenance of the current status on animal life within the project area	Sites will be operated according to the prospecting method statement.	Appointed contractor and site manager.	Visual monitoring and inspections.	ECO monthly.	During operational phase.
				As much as possible sites with degraded environment will be used or the drilling purposes.	Appointed contractor and site manager.	Visual monitoring and inspections.	ECO monthly.	During operational phase.
				Poaching will be prohibited at the prospecting site.	Appointed contractor and site manager.	Visual monitoring and inspections.	ECO monthly.	During operational phase.
The drilling operation and use of campsite may result in the generation of surface water runoff contaminated with silt (sedimentation) and possibly hydrocarbon fluids should spillages occur.	Surface and Ground Water.	Ensure that the drilling operation does not have detrimental impacts on the surface and ground water environment.	Clean surface and ground water environment/regime will not be affected.	No prospecting operations will be undertaken within 100 metres from the nearby steams and 32 meters from the nearby wetland areas.	Appointed contractor and site manager.	Visual monitoring and inspections.	ECO monthly.	During operational phase.
				The sumps will be excavated for the collection mud and excess water from the drilling sites. The sump will be sized such that it will be able to contain the water and mud that will be generated during the prospecting operation.	Appointed contractor and site manager.	Visual monitoring and inspections.	ECO monthly.	During operational phase.
				Storm water generated around the drilling site will be diverted away to the clean water environment. No concrete mixing and vehicle maintenance will be allowed on site. All hydrocarbons will be stored on protected storage areas away from the streams.	Appointed contractor and site manager.	Visual monitoring and inspections.	ECO monthly.	During operational phase.
				Ensure that the land owners' borehole yield are observed during the drilling operation. Should it be proven that the operation is indeed affecting the quantity and quality of groundwater available to users and surrounding water resources, the affected parties must be compensated.	Appointed contractor and site manager.	Regular meetings with landowners	Site manager	During operational phase.
Generation of dust and fuel fumes by vehicular movement.	Air quality.	Ensure that the air quality in the vicinity of the prospecting sites and sites'	The air quality in the vicinity of the drilling sites and sites' access	Dust suppression must be conducted during the operational phase of the project.	Appointed contractor and site manager.	Visual inspections of areas with possible dust emissions.	ECO monthly.	Throughout the operational phase.

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
		access routes are not detrimentally altered.	routes will be maintained to stay within the national air quality standards.	Correct speed will be maintained at the proposed project site. Vehicle maintenance must be conducted regularly to avoid excessive diesel fumes.	Appointed contractor and site manager. Appointed contractor and site manager.	Regular speed checks. Regular inspections.	Site manager monthly. ECO monthly.	Throughout the operational phase. During operational phase.
Wetland destruction and loss of habitat.	Sensitive Landscapes.	Ensure that the drilling operation does not have detrimental impacts on the farms dams and identified seepage zone.	Maintain the current state of the wetlands within the project area (farm dams and seepage zone).	Operation of the drilling site will be limited to be more than hundred meters from the edge of the dams and seepage zone.	Appointed contractor.	Inspection to ensure compliance with the action plan.	ECO monthly.	During operational phase.
Increased noise levels.	Noise aspects.	Ensure that the noise levels emanating from the operational sites will not have detrimental effects on the mine employees and surrounding communities/land owners.	The noise levels from the sites will be managed and measures will be taken to ensure that noise levels are below the National Noise Control Regulations, SANS10103:2008 guidelines.	Limit the maximum speed to 60 km/h or less, subject to risk assessment. Less noisy equipment will be used, the equipment will be kept in good working order and the equipment will be fitted with correct and appropriate noise abatement measures. Ensure that the 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.	Appointed contractor and site manager. Site manager. Appointed contractor.	Site checks regularly. Regular monitoring and site check. Use of earplugs will be checked and reported.	Site manager. Site manager. Site manager.	During operational phase. During operational phase. During operational phase.
Visual impacts on the surrounding communities and road users from the construction.	Visual aspects.	Ensure that the drilling operations 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.	The land owner will be informed on the type of machinery and equipment to be used at the prospecting sites. Lighting will be conducted in manner that will reduce the impacts on visual aspects at night times.	Applicant and site manager. Appointed contractor.	The constructed perimeter berms will be inspected for compliance with the design specifications. Night time inspection of the site will be undertaken.	Mine Engineer on a monthly basis. The site manager once	During operational phase. During operational phase.
Damage or destruction of sites with archaeological and cultural significance.	Sites of archaeological and cultural importance.	Ensure that the operational activities does not have detrimental impacts on the heritage sites.	The drilling operations will be undertaken in compliance with the requirements of the National Heritage Resources Act, 1999 (Act 25 of 1999) and	The drilling sites will be away from any identified grave site or heritage sites. A hundred meter buffer will be created between the sites and the proposed camp and drilling sites.	Appointed contractor.	The site will be monitored for any prospecting related damages on a regular basis.	ECO monthly.	Throughout the operational phase.

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
			recommendations from the specialist.					
Safety, intrusion and livelihood impacts on the landowners and occupiers.	Socio-economic aspects.	Ensure that the drilling operation does not significantly disrupt the daily living and movements of the land owners and occupiers.	The mine will ensure that all safety standards are met and that access to landowners and occupiers are not detrimentally affected.	Announce any road closures and other disruptions and maintain roads used for the operation in good order. Keep communication with land owners and land occupiers open during the operational phase of the project. Ensure that negotiations on compensation are undertaken before the drilling programme can commence. This will include any other conditions that the landowner may deem necessary for the prospecting operation. Ensure that safety measures are implemented to prevent impacts on land owners and occupiers.	Appointed contractor and site manager. Applicant and site manager. Site manager.	Liaison with affected parties. Meetings with the landowners. Minutes of any meeting held with landowners and agreements will be recorded and filed. Regular checks and inspections.	Site manager as and when necessary. Site manager as and when meetings are held. Site manager.	Throughout the operational phase. Throughout the operational phase. Throughout the operational phase..
DECOMMISSIONING AND CLOSURE PHASE								
Removal of infrastructure and final rehabilitation of disturbed areas								
Compaction and contamination of soils within the rehabilitation site.	Soils.	Ensure that the soils in the vicinity of the rehabilitation site is not detrimentally impacted.	Rehabilitated areas will be maintained to comply with the closure objectives.	All vehicles and machinery used at the rehabilitation site will be kept in good working order. No repairs of vehicles or machinery will be conducted at the rehabilitation site unless it is emergency repairs, which will be conducted on protected ground. Movement of mine vehicles and machinery will be limited to demarcated routes, which will be rehabilitated when no longer in use.	Appointed contractor. Appointed contractor. Appointed contractor.	Vehicles and machinery will be inspected regularly and any oil incidences will be reported. All incidents of emergency repairs will be inspected and occurrence recorded. Rehabilitation site will be inspected to monitor areas with compaction or hydrocarbon contamination.	Site manager will conduct the inspections monthly. Site manager. ECO will conduct the inspections monthly.	Throughout the decommissioning and closure phases. Throughout the decommissioning and closure phases. Throughout the decommissioning and closure phases.
Re-instatement of soil productivity, land	Soils, Land Capability, Land	Ensure that the rehabilitation of the sites re-	Rehabilitated areas will be maintained to	All infrastructure will be removed from the site in accordance to the rehabilitation plan.	Appointed contractor.	Removal of the infrastructure will be	Site manager will conduct the	During decommissioning

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
capability, land use and topographical patterns.	Use and Topography.	instate the soil productivity, land capability, land use and topographical patterns	comply with the closure objectives.			inspected.	inspections.	phase.
Pollution of surface water environment.	Surface Water.	Ensure that the rehabilitation of the site does not have detrimental impacts on the surface water environment.	The surface water leaving the rehabilitation site will comply with the DWS target water quality parameters.	The site area will be rehabilitated to be free draining. Erosion protection measures such as the use of contour berms and repair of gullies will be undertaken until such time that the rehabilitated surfaces can be shown to be sustainable. Existing roads should be used where possible and new disturbed areas should be minimised.	Appointed contractor. Appointed contractor. Rehabilitation officer.	Progress of rehabilitation will be monitored. Areas where grass has not yet been established will be monitored for excessive erosion. Rehabilitation site will be inspected for misuse.	ECO will conduct monitoring of the rehabilitation annually.	Throughout the decommissioning and closure phases.
Air pollution from rehabilitation site.	Air quality.	Ensure that rehabilitation do not have detrimental impacts on air quality.	Decommissioning and rehabilitation of the site will be conducted in such a manner that the ambient air quality does not exceed the air quality standards.	Where necessary, wet suppression will be conducted at areas with excessive dust emissions. Vehicles and machinery will be well maintained. The traffic volumes and speed within the rehabilitation site will be controlled.	Appointed contractor. Site manager and appointed contractor.	Visual inspections of areas with possible dust emissions will be conducted Site inspections will be conducted.	ECO will conduct inspections monthly. Site manager will conduct inspections monthly.	Throughout the decommissioning phase. Throughout the decommissioning phase.
Generated noise from the rehabilitation site.	Noise.	Ensure that the rehabilitation activities does not have detrimental impacts on people.	Ensure that the noise from the rehabilitation activities do not exceed the SANS 10103 Rating Level.	Smaller or less noisy equipment should where possible be used when working near receptors. Equipment will be well maintained and fitted with the correct and appropriate noise abatement measures.	Appointed contractor and site manager. Site manager and appointed contractor.	Regular site check. Regular site check.	Site manager. Site manager.	Throughout the decommissioning phase.
Damage or destruction of sites with archaeological and cultural significance.	Sites of archaeological and cultural importance.	Ensure that the rehabilitation does not have detrimental impacts on heritage sites.	Should heritage sites be identified, rehabilitation in close proximity to the sites will not be damaged or destroyed by the rehabilitation activities.	A hundred meter buffer will be maintained between any site and the rehabilitation site.	Appointed contractor and the site manager.	The sites will be monitored for any rehabilitation related damages.	ECO will monitor the site monthly.	Throughout the decommissioning phase.

6. FINANCIAL PROVISION

Section 24 P of NEMA requires an applicant applying for an environmental authorisation related to mining 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.

Regulations pertaining to the pertaining to the financial provision for prospecting, exploration, mining or production operations (GNR 1147) were promulgated on the 20th of November 2015. Vuna Mining Resources (Pty) Limited has undertaken the financial provision determination in line with the requirements of section 11 of the Regulations pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations (GNR 1147). The financial provision determination for the proposed project is submitted to the Department of Mineral Resources for their consideration.

6.1 DESCRIPTION OF CLOSURE OBJECTIVES AND EXTENT TO WHICH THEY HAVE BEEN ALIGNED TO THE DESCRIBED BASELINE ENVIRONMENT

The closure objectives for the proposed project as detailed under section 4.1 of the EMPr, were determined in consideration of physical (infrastructure), biophysical (environmental) and socio-economic measures as well as alignment to the closure components provided by the Department of Mineral Resources (DMR). See section 4.1 for the closure objectives..

6.2 CONFIRMATION THAT THE ENVIRONMENTAL OBJECTIVES IN RELATION TO CLOSURE HAVE BEEN CONSULTED WITH LANDOWNERS AND INTERESTED AND AFFECTED PARTIES

The draft BAR and EMPr will be made available to the interested and affected parties during the public participation process for the proposed project. Note that the consultation of interested and affected parties included the owners of the properties directly affected by the proposed project and owners of land immediately adjacent the proposed project area.

The above confirms that the land owners and interested and affected parties were consulted regarding the environmental objectives in relation to the closure of the proposed project.

6.3 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 the proposed operations. In view of the above, a rehabilitation plan must be provided to the DMR in support of the financial provision determined for the proposed operations. Since no disturbance has results on site due to the proposed project no annual rehabilitation plan was compiled.

6.4 COMPATIBILITY OF THE REHABILITATION PLAN WITH THE CLOSURE OBJECTIVES

The rehabilitation plan has been drafted to be compatible with the closure objectives.

6.5 DETERMINATION OF THE QUANTUM OF THE FINANCIAL PROVISION REQUIRED TO MANAGE AND REHABILITATE THE ENVIRONMENT

The proposed project is a coal prospecting project. The closure components were determined based on the submitted BAR and EMPr and the generally accepted closure methods. Areas and distances were determined with the aid of visual observations and the proposed surface layout plans.

The latest Master rates for the different components were obtained from the DMR.

Weighting factors were applied based on the nature of the terrain (undulating) and the proximity to urban areas (remote).

The determination of the financial provision for the proposed project is expanded in Table 6 below.

Based on the calculations indicated in Table 6, the quantum of pecuniary provision required for the proposed Naudesbank Prospecting project is **R R24,331.59** (twenty four thousand, three hundred and thirty one rands and fifty nine cents).

6.6 METHOD OF PROVIDING FOR THE FINANCIAL PROVISION

According to Regulation 8 of the Regulations pertaining to the pertaining to the financial provision for prospecting, exploration, mining or production operations (GNR 1147), an applicant or holder of a right or permit must make financial provision by one or a combination of the following:

- financial guarantee from a bank registered in terms of the Banks Act, 1990 (Act No. 94 of 1990) or from a financial institution registered by the Financial Services Board as an insurer or underwriter;
- deposit into an account administered by the Minister responsible for mineral resources; *or*;
- contribution to a trust fund established in terms of applicable legislation.

Vuna Mining Resources (Pty) Limited has opted to use a financial guarantee to provide for the determined quantum for financial provision.

Table 6: Assessment of the quantum for financial provision for Naudesbank Prospecting project, 2016

Action	Volume/Area	Rate	Cost	Sub-Total	Total
1. Rehabilitation of site office/campsite area Rotovation of hardened surface(Rip to 100mm) Seeding	 1.5 ha 1.5 ha	 R 1000/ha R 1500/ha	 R 1,500.00 R 2,250.00		
Subtotal 1				**R 3,750.00**	
2. Rehabilitation of Prospecting boreholes Placement of 1.0x1.0x0.5 m concrete plugs and replacement of soil over plug + seeding Rehabilitate the borehole sumps + seeding	 10 10	 R100.00 R150.00	 R1000.00 R1500.00		
Subtotal 2				**R2500.00**	
Total Rehabilitation Cost					**R6,250.00**
Management Costs Administration, Supervision and Development of Closure plan					**R 15,000.00**
Maintenance Erosion Control, follow-up seeding	15% of total Rehabilitation Cost				**R 937.50**
Total estimated Pecuniary Provision(to the nearest thousand rand) inclusive of 14% VAT					**R24,331.59**

Total VAT included: **R2,988.09**

7. MECHANISM FOR MONITORING COMPLIANCE WITH AND PERFOMAMCE ASSESSMENT AGAINST THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND REPORTING THEREOF

7.1 INSPECTIONS AND MONITORING

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.

7.2 MONITORING COMPLIANCE WITH AND PERFORMANCE ASSESSMENT AGAINST THE ENVIRONMENTAL MANAGEMENT PROGRAMME AND REPORTING THEREOF

As part of the general terms and conditions for an environmental authorisation and in order to ensure compliance with the EMPr and to assess the continued appropriateness and adequacy of the EMPr, Vuna Mining Resources (Pty) Limited will:

- Conduct monitoring on a continuous basis (see EMPr).
- Conduct performance assessments of the environmental management programme once in every two years.
- Compile and submit a performance assessment report to the minister in which compliance with the approved Environmental Management Programme is demonstrated.

The performance assessment report will as a minimum contain the following:

- Information regarding the period applicable to the performance assessment
- The scope of the assessment.
- The procedure used for the assessment.
- The interpreted information gained from monitoring the approved environmental management programme.
- The evaluation criteria used during the assessment.
- The results of the assessment.

- Recommendations on how and when non-compliance and deficiencies will be rectified.

7.3 ENVIRONMENTAL AWARENESS PLAN

Vuna Mining Resources (Pty) Limited will use an environmental awareness plan and an emergency procedure to inform its employees of any environmental risks that may results from their work and the manner in which the risk will be dealt with in order to prevent pollution nor degradation of the environment.

7.4 UNDERTAKING TO COMPLY

The signed undertaking will be presented to DMR on approval of the EIR and EMPr.

7.5 STATUTORY REQUIREMENTS

Since no water use activities will be undertaken at the proposed site, no water use licence application will be submitted to the Department of Water and Sanitation.