

DORINGBERG GIPS (PTY) LTD



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PRIESKA GYPSUM MINE



DRAFT EMP

Submitted for a Mining Right Application



mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

Ref. No. NC30/5/1/1/2/00000MR

This report is undertaken in compliance with Section 22 (Application for a Mining Right) of the Mineral and Petroleum Resources Development Act, Act 28 of 2002 ; and Regulation 21 – 24 (Scoping and Environmental impact reporting) of the Environmental Impact Assessment Regulations, 2014 of the National Environmental Management Act, 107 of 1998.

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ABBREVIATIONS

DMR:	Department of Minerals Resources
EIA:	Environmental Impacts Assessment
EMP:	Environmental Management Programme
I&AP's:	Interested and Affected Parties ;
MPRDA:	Mineral and Petroleum Resources Development Act, 28 of 2002 and its Regulations. In this regard, the requirements of Regulation 50 and Regulation 51 of the MPRDA is applicable.
NEMA:	National Environmental Management Act, 107 of 1998 ()
NEM: AQUA:	National Environmental Management: Air Quality Act, Act No. 39 of 2004
NEM: WA	National Environmental Management: Waste Act, 59 of 2008
NHRA:	National Heritage Resources Act, 25 of 1999
NWA:	National Water Act, 36 of 1998
SANS:	South African National Standards
SANS 0228:	Assignment of a hazardous rating for hazardous substances
SANS 10229:	Transporting requirements of hazardous substances
SANS 10103:	The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication.
SANS 1929:	Ambient Air Quality – Limit for Common Pollutants
SAHRA	South African Heritage Resources Agency

1. INTRODUCTION

Doornberg Gips (Pty) Ltd has submitted a **Mining Right** application for the mining of Gypsum, Dolomite and Limestone on Portion 1 of the Farm Bitter Put 113 in the District of Prieska within the Siyathemba Local Municipality. The minerals to be mined are all found on the surface and only opencast open pit mining methods are to be deployed.

Doornberg Gips (Pty) Ltd has appointed **Algoa Consulting Mining Engineers (ACME)**, as independent consultants, to undertake the work necessary to apply for a Mining Right in terms of Section 22 of the Mineral and Petroleum Resources Development Act, 28 of 2002.

The purpose of this document is to consult with all Interested and Affected Parties (I&AP's) of the proposed project and to provide them with the opportunity to receive information, provide comments, and raise concerns in relation to the mining right application, as required in terms of the MPRDA.

2. NEED FOR THE PROJECT

The proposed minerals to be mined are Gypsum, Dolomite and Limestone for use the agriculture sector.

3. LOCATION OF THE ACTIVITY

3.1 Location of the activity

Prieska Gypsum mine is located on Portion 1 of the Farm Bitter Put 113 approximately 71km South West of Prieska in the Northern Cape Province, at latitude 30° 3' 22.43" S and longitude 22° 7'24.77" E. See Figure 1 for an indication of the location of the mine. The extent of the Mining Right area is 3406,1060 hectares.

The current land use is **Grazing**.

3.2 Physical address and farm name

Portion 1 of the Farm Bitter Put 113, Northern Cape. This property is privately owned by Mr Willem Petrus Smit.

3.3 Registered description of land

Title deed	Extent	Owner	Administrative district	Local authority
T21619/2005	3406,1060 ha	Willem Petrus Smit	Prieska	Siyathemba Local Municipality

4. DESCRIPTION OF THE PROPOSED ACTIVITY

The minerals that will be mined are all found on the surface and only open cast mining methods will be deployed, i.e. all minerals will be free dug by means of excavators and front end loaders. The minerals will then be placed onto dump trucks, transported to stockpiles, and transported to customers.

Although this Mining Right application covers an area of approximately 3406,1060 ha, the mining operation would limit itself to a an area of only 10 to 15 hectares in size, of which half of it would be in the process of rehabilitation and the remaining half the mining site. This localised area would be fenced off to prevent unauthorised entry into the mine workings. As the rehabilitation is completed, the fence would be removed to exclude the rehabilitated ground from the mine workings and likewise the fence would be newly erected onto new ground so as to include new development ground. These fences would display sign boards towards the outside of the quarry to warn any person of the prohibition of unauthorised entry.

The site would be accessed via existing unsurfaced roads. Existing unsurfaced access roads also traverse the site, presumably created by landowners

The mining methods do not utilise electricity, as all machinery is diesel driven self-propelled vehicles.

The only water required in the mining process is that to be used for dust suppression, and it is estimated that the water bowser would consume at most 10 kilolitres per day.

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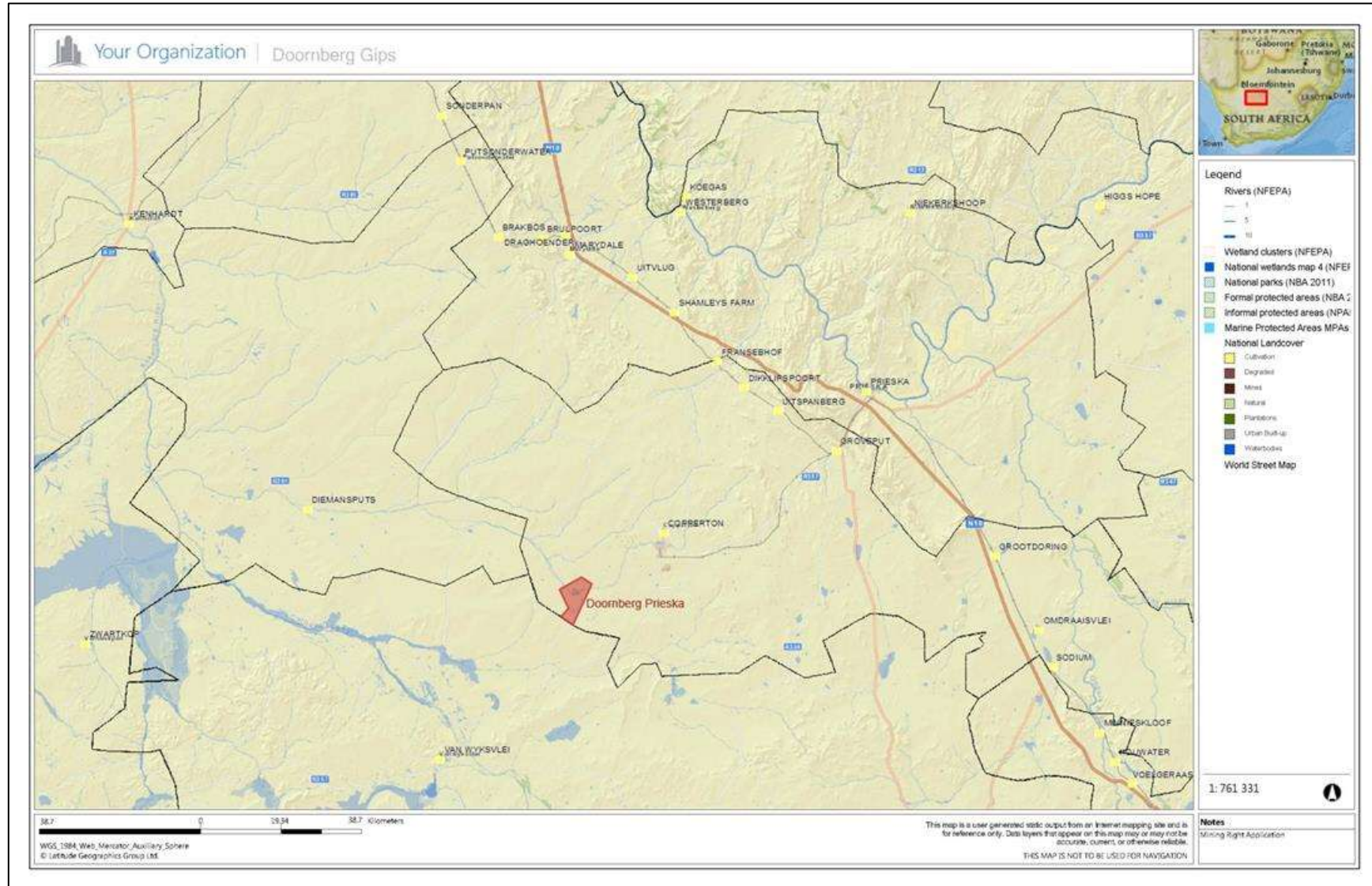


Figure 1. Locality of Prieska Gypsum Mine in relation to the broader area.

5. NEMA EIA 2014 LISTED ACTIVITIES

EIA listed activities promulgated under NEMA listed activities that may be triggered is listed below. It is important to note that the below table of potential triggered activities is based on the description of proposed mining activities only. Any change or alteration to the proposed project and associated activities will require a revision of the activities likely to be triggered.

Listing Notice 2 of No R. 984 (2014)	
17	Any activity including the operation of that activity which requires a mining right in terms of section 22 of the Mineral and Petroleum Resources Development Act , 2002 (Act No. 28 of 2002) , including associated infrastructure and structures and earthworks directly related to the extraction 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).

6. EXISTING STATUS OF THE ENVIRONMENT

6.1 Climate

Rainfall in the area occurs in late summer and early autumn with a mean annual rainfall ranging from about 100-200 mm. Mean maximum and minimum temperatures are -4.6°C and 39.5°C.

6.2 Topography

The area is characterised as a flat to gently sloping landscape with isolated hills and interspersed pans, and is approximately 1000 m.a.s.l.



Figure 2. Surrounding topography of the mine area.



Figure 3. Topography of the surrounding area as indicated on Google Earth image.

6.3 Soils

The soils in this area range from shallow to deep and are both apedal and freely drained. The soil forms present include both Glenrosa and Mispah soil with a high base status, usually <15% clay. The salt content is very high.

6.4 Geology

The 1: 250 000 geological maps 2922 Prieska and 3022 Britstown, published by the Council of Geoscience. The geological legend indicates that the site is overlain by Quaternary Sands of the Algoa Group. Below is an extract of the geological map. The Dwyka Group is depicted in a grey colour and denoted as “C-Pd” (Carboniferous – Permian Age) whilst the sediments of the Algoa Formations (Quaternary Age) are shown in light yellow colour. The brighter yellow colour denoted by “T-Qc” (Tertiary – Quaternary Age) indicate the locations of calcrete (limestone) deposits. The “Gy” denotes the find of Gypsum.

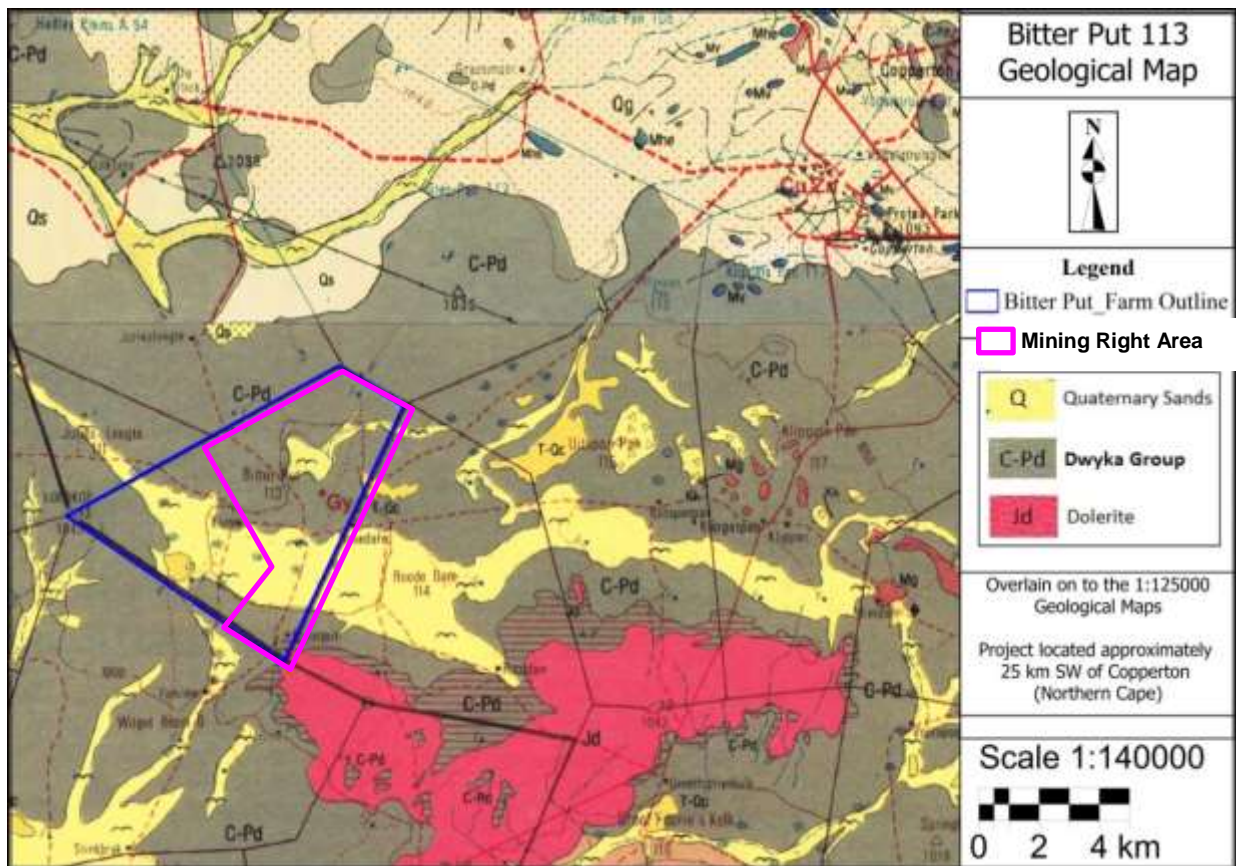


Figure 4. Extract of the 1 : 250 000 geological maps of 3022 Britstown and 2922 Prieska.

6.5 Flora

According to Mucina and Rutherford (2006) three vegetation units occur within the proposed project area, two within the Nama-Karoo Biome namely Bushmanland Basin Shrubland and Northern Upper Karoo, and one in Azonal Vegetation Biome, being Bushmanland Vloere.

The dominant unit, Bushmanland Basin Shrubland, has an altitude of approximately 800 – 1200 m.a.s.l and is consistent with irregular plains and grasses. The Bushmanland Vloere has

an altitude of 850 – 1450 m.a.s.l together with flat even surfaces with endorheic pans present. The smallest unit located within the project area is Northern Upper Karoo with an altitude of approximately 1000 – 1500 m.a.s.l.

- **Bushmanland Basin Shrubland**

The Bushmanland Basin Shrubland has slightly irregular plains with dwarf shrubland dominated by a mixture of low sturdy and spiny shrubs and white grasses. Important Taxa include Tall Shrubs (*Lycium cinereum*, *Rhigozum trichotomum*); Low Shrubs (*Aptosimum spinescens*, *Hermannia spinosa*, *Pentzia spinescens*, *Zygophyllum microphyllum*, *Aptosimum elongatum*); Succulent Shrubs (*Salsola tuberculata*, *Aridaria noctiflora* subsp. *Straminea*, *Ruschia intricate*); Shrubs (*Thesium hystrix*); Herbs (*Leysera tenella*, *Dicoma capensis*, *Monsonia umbellate*); Succulent Herbs (*M. stenandrum*, *Trianthema parvifolia*); Graminoids (*Aristida adscensionis*, *Aristida congesta*, *Tragus berteronianus*).

Endemic Taxa include Herbs (*Cromidon minutum*) and Geophytic Herbs (*Ornithogalum bicornutum*, *O. ovatum* subsp. *Oliverorum*).

Bushmanland Basin Shrubland is classified as **least threatened** and there are no signs of serious transformation of this vegetation unit.

- **The Bushmanland Vloere**

The Bushmanland Vloere consists of loosely patterned scrub dominated by *Rhigozum trichotomum* and various species of *Salsola* and *Lyccium* with a mixture of non-succulent dwarf scrubs of Nama- Karoo relationship. Loose thickets are also sporadically found. Important Taxa Include Tall Shrubs (*Parkinsonia Africana*, *Xerocladia viridiramis*); Low Shrubs (*Rhigozum trichotomum*, *Asparagus glaucus*, *Pegolettia retrofracta*); Succulent Shrubs (*Salsola aphylla*, *S. rabieana*, *Lycium pumilum*); Herbs (*Lotononis minima*, *Amaranthus dinteri*) and Graminoids (*Stipagrostis ciliate*, *S. obtuse*, *Sporobolus nervosus*).

Bushmanland Vloere is classified as **least threatened** with an estimated 2% of this unit having been transformed mainly through cultivation or the building of dams.

- **Northern Upper Karoo**

Northern Upper Karoo is shrubland which is dominated by dwarf karoo shrubs, grasses and *Acacia mellifera* subsp. *detinens* and other low trees. Important Taxa Include: Small Trees (*Acacia mellifera* subsp. *detinens*, *Boscia albitrunca*); Tall Shrubs (*Lycium cinereum*, *L.*

horridum, *L. oxycarpum*); Shrubs (*Pentzia calcarea*, *P. globosa*, *Rosenia humilis*); Succulent Scrub (*Hertia pallens*, *Salsola calluna*, *S. glabrescens*); Succulent Herb (*Psilocaulon coriarium*); Geophytic Herb (*Moraea pallida*) and Graminoids (*A. congesta*, *A. diffusa*, *E. obtuse*, *E. porosa*).

Biologically Important Taxa include: Herbs (*Convolvulus boedeckerianus*) and Tall Shrubs (*Gymnosporia szyszyłowiczii* subsp. *namibiensis*).

Endemic Taxa Include Succulent Shrubs (*Lithops hookeri*, *Stomatium pluridens*); Low Shrubs (*Atriplex spongiosa*, *Galenia exigua*) and Herbs (*Manulea deserticola*). Northern Upper Karoo is also classified as **least threatened** with approximately 4% of this unit has been transformed for cultivation purposes.

The mining area is not located within any National Environmental Management: Biodiversity Act, 10 of 2004, threatened or protected ecosystems.

6.6 Fauna

A desktop search for protected or threatened fauna species was conducted using the SANBI Database. No animal records were available for this area and as such there is no indication of any threatened or protected species occurring on the site. Consultation with the landowner indicated that a number of large mammals are common in the area, most notably kudu (*Tragelaphus strepsiceros*), caracal (*Caracal caracal*), and jackal (*Canis mesomelas*).

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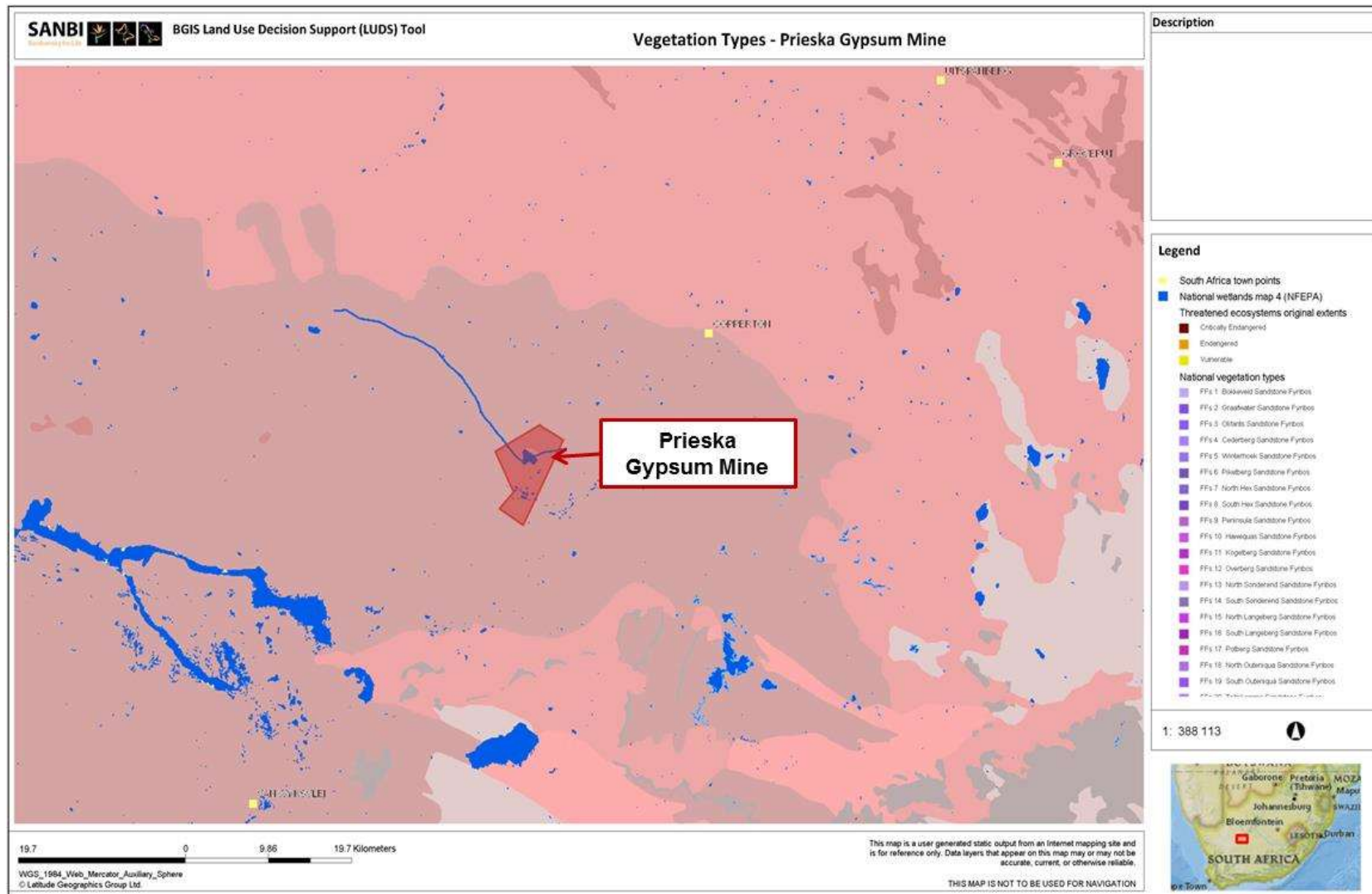


Figure 5. Vegetation Types of the area.

6.7 Hydrology

The mine area falls within the Lower Orange Quaternary Catchment D54D, which is considered to be of low / marginal ecological sensitivity. The river Hartogskloof is located within this catchment and has tributaries extending from it which flow into and through the farm Bitter Put 113.

Endorheic pans are common features in the area, although the majority of the wetland units are classified as 'artificial' in SANBI BGIS. These pans are predominantly found in arid and semi-arid areas of southern Africa and generally have a higher salinity than the surrounding land. When evaporation increases, salt accumulation increases on the bottom and surface of the water body.

Endorheic pans are not necessarily associated with signs of hydromorphic features, neither obligated or facultative hydrophytes, due to infrequent inundation cycles and limited periods of saturation. They do, however, form diagnostic landscape features that are recognisable based on vegetation cover patterns, while the inward draining depressions, even small depressions, form a unique terrain indicator. The separation of pans and their drainage in the Bushman land Vloere and Bushmanland Basin Shrubland vegetation units specifically is virtually impossible due to the closely related origin, geology and floristic composition of the vegetation that they support. These systems are vast and not readily identifiable on the ground. This is because they do not seem to be part of the underlying hydrology as there is virtually no change in topography which is generally used to identify pans at first glance. However, these endorheic systems are often filled by flash flood events of ancient river systems within the catchment. These pan systems are able to store water for long periods of time.

These endorheic pans are **considered of value to the surrounding ecosystem**, even though they are temporary and do not have typical watercourse features. These water courses are scattered thought the farm Bitter Put and are classed as National Freshwater Ecosystem Priority Areas (NFEPAs) **protected wetlands**.

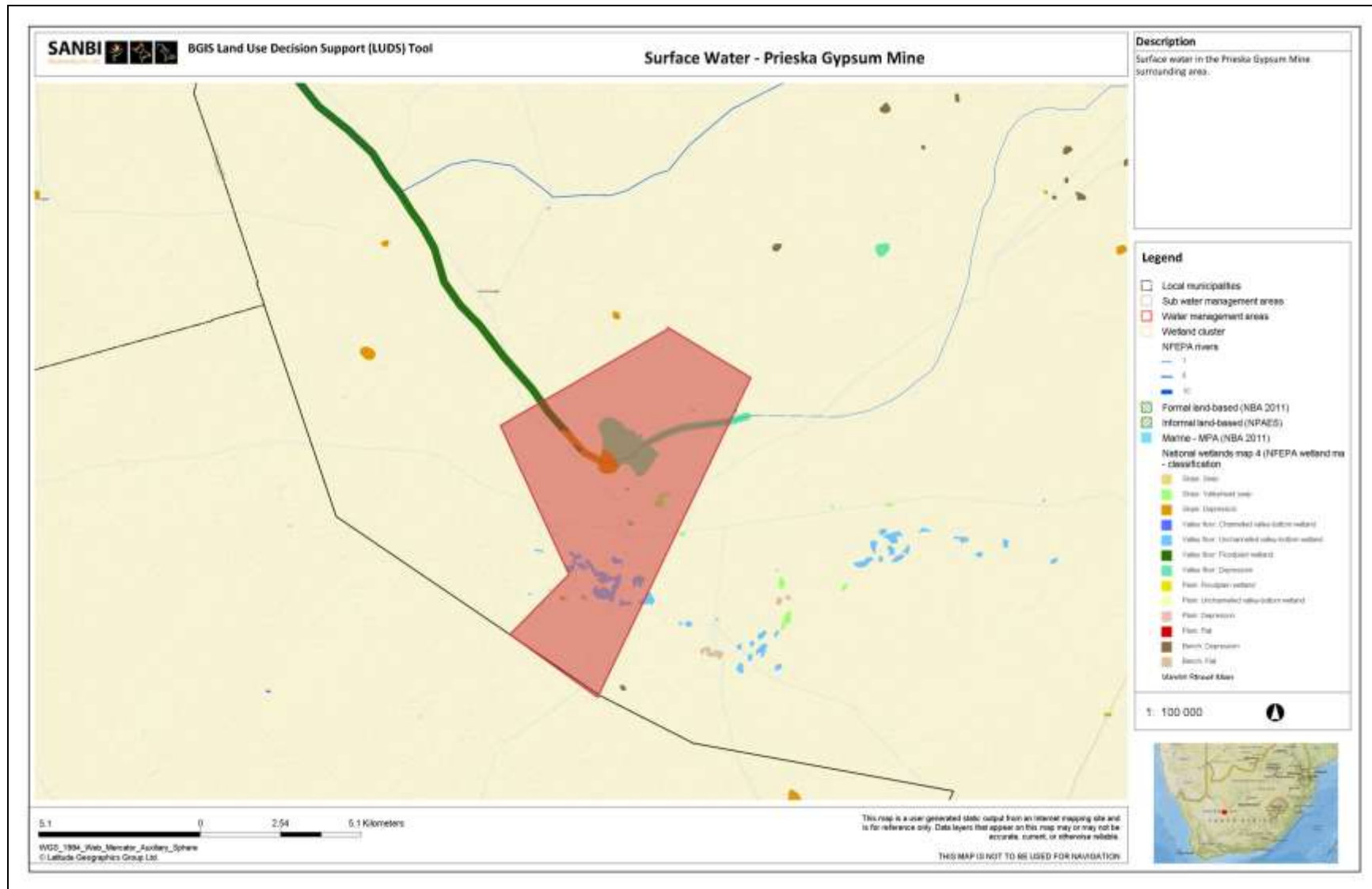


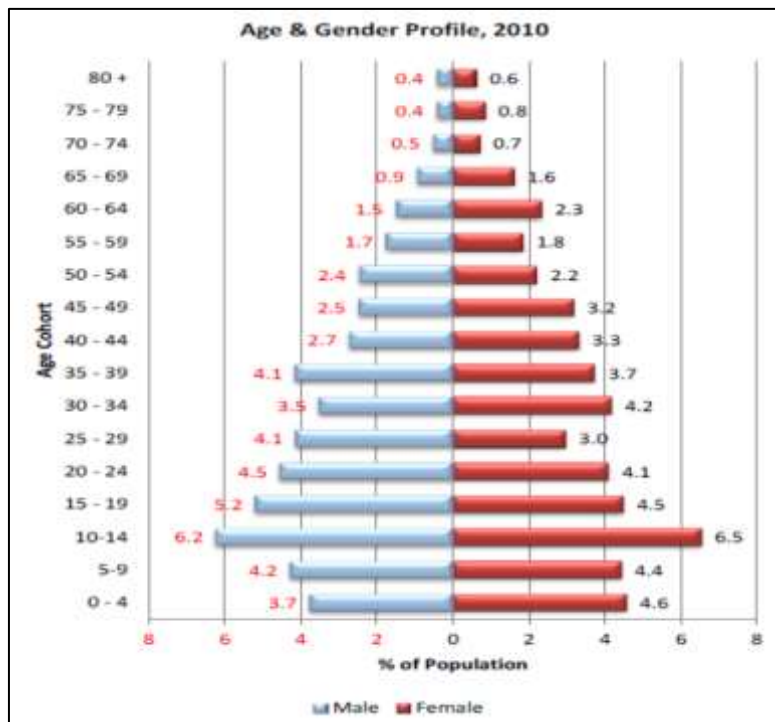
Figure 6. Surface water in the area.

6.8 Heritage

SAHRA would be consulted as an Interested and Affected Party and their comments and recommendations would be captured in the Final EMP.

6.9 Cultural environment

NOTE : The following information has been extrapolated from Integrated Development Plan for Siyathemba Municipality, dated 2013/14.



- There were slightly more females (51.4%) than males (48.6%) among the local population during 2010. It was, however, noted that the population became slightly less female dominant since 2000, when 52.4% of the population were female.
- The working age group (15 to 64) contributed 64.4% to the local population in 2010. This age group has increased proportionately (from 58.6% to 64.4%) in relation to the other age groups. Since 2000, this group increased by approximately 1,210 people.
- The working age population is slightly male dominant. Since 2000, male working age population increased by around 928 men in absolute terms while the number of women increased by about 282.
- Since 2000, the proportion of children under the age of 15 declined by 6.7%. This means that the age profile of the local population is becoming older. The number of children in the area also declined from around 14,700 during 2000 to just above 12,000 in 2010.

During 2010, the HIV/AIDS prevalence rate of the Siyathemba population was 6.0% compared to the District rate of 6.5%. These rates compared well to the Northern Cape (7.6%) and South African (12.6%) averages in the same year.

In the Siyathemba Municipal area, a total of 14% of the population had no schooling, while 34% had primary school education. Just 4% of the population has a degree or diploma.

6.10 Socio - economic environment

The Siyathemba Local Municipality falls within the Northern Cape Province. The area is approximately 195.52 km² and has a population of 14 246 people with an estimated 4 542 households.

Cultural environment

First languages (2011)	
Afrikaans	92.6%
Xhosa	4.4%
English	1.0%
Other	2.0%

Employment Profile

Employment by main Industries:

- Farming 1 974;
- Mining 29;
- Manufacturing 79;
- Utilities 26;
- Construction 313;
- Trade 423;
- Transport 169;
- Business Services 124;
- Social Services 827

Agriculture is mostly focused on sheep, wheat, maize, Lucerne, cotton, beans, vineyards and peanuts.

The Integrated Development Plan for Siyathemba Local Municipality, dated 2013/14 indicated that the Unemployment rate for Siyathemba Municipality during 2009 was 34.7%.

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Labour Indicators (2009)	Siyathemba Municipality (2009)
Labour Force ('000)	5
Unemployment rate (%)	34.7
Labour force participation rate (%)	57.4
Highly Skilled Workers (%)	10.4
Skilled Workers (%)	37.8
Semi – and unskilled workers (%)	51.8

Population Profile

The Population profile of Siyathemba Municipality can be seen in the table below.

Racial makeup (2011)	
Black African	23.6%
Coloured	67.4%
Indian/Asian	0.5%
White	8.0%
Other	0.4%

7. DESCRIPTION OF ENVIRONMENTAL OBJECTIVES

7.1 Mine Closure

The anticipated final closure of the operation based on known reserves and current production rates is over 30 years away. The current closure objective being considered for the mine area is to rehabilitate the land for future utilisation as grazing.

7.2 Management of Environmental Impacts

See Table 1. Management Measures for Environmental Impacts identified.

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Table 1. Management Measures for Environmental Impacts identified.

ACTIVITIES	PHASE OF OPERATION IN WHICH ACTIVITY WILL TAKE PLACE	SIZE AND SCALE OF DISTURBANCE <i>(volumes, tonnages and hectares or m²)</i>	TYPICAL MITIGATION MEASURES	COMPLIANCE WITH STANDARDS
SITE ESTABLISHMENT & ACCESS ROAD CONSTRUCTION				
Access & haul road construction	Pre-Construction	0 m ²	No new roads will be constructed.	Mine Plan indicates to use the existing roads used in previous activities.
Noise	Pre-Construction	N/A		National Environmental Management: Air Quality Act, 39 of 2004 - Section 34: Control of Noise
Dust	Pre-Construction	N/A	<ul style="list-style-type: none"> • Water spraying • Seize work during extremely windy conditions. • Installation of fallout dust buckets and quarterly monitoring. 	<ul style="list-style-type: none"> - National Environmental Management: Air Quality Act, 39 of 2004) - Section 32: Control of Dust - Government Notice 827 - National Dust Control Regulations
MINING				
Removal of geological resources	Operational	3406,1060 ha	<ul style="list-style-type: none"> • Optimise mineral extraction through effective mine planning , which results in the reduction of geological waste and the minimisation of the footprint of the mining area. 	Mine Plan
Change / interference with existing land uses.	Operational	3406,1060 ha	<ul style="list-style-type: none"> • Consultation with land owner. 	Rehabilitation Plan

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ACTIVITIES	PHASE OF OPERATION IN WHICH ACTIVITY WILL TAKE PLACE	SIZE AND SCALE OF DISTURBANCE <i>(volumes, tonnages and hectares or m²)</i>	TYPICAL MITIGATION MEASURES	COMPLIANCE WITH STANDARDS
Altered topography	Operational	3406,1060 ha	<ul style="list-style-type: none"> Mine planning in line with surrounding character of the area. 	Mine Plan
Disturbance of Topsoil	Operational	5 ha will be disturbed at any given time.	<ul style="list-style-type: none"> Topsoil should be removed to its full depth and stockpiled to preserve its functionality. 	Topsoil Management Plan
Impacts on fauna	Operational	3406,1060 ha	<ul style="list-style-type: none"> No hunting or collecting would be allowed. 	N/A
Loss of Natural Vegetation & Disturbance of faunal habitat	Operational	3406,1060 ha	<ul style="list-style-type: none"> Implement concurrent rehabilitation. Apply a buffer zone of 100m around wetlands. Removal of exotic vegetation. Disturbance should be limited to minimum mining footprint. 	<ul style="list-style-type: none"> Rehabilitation Plan Mine Plan
Surface water / wetlands.	Operational	337 ha	<ul style="list-style-type: none"> Wetlands are considered no-go area and a 100m buffer should be maintained. 	National Water Act, 36 of 1998
Heritage	Operational	0 ha	<ul style="list-style-type: none"> No Cultural - or Heritage Features have been identified. If any, known heritage resources would be demarcated and a 100m buffer zone around the areas implemented. 	National Heritage Resources Act, 25 of 1999.

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ACTIVITIES	PHASE OF OPERATION IN WHICH ACTIVITY WILL TAKE PLACE	SIZE AND SCALE OF DISTURBANCE <i>(volumes, tonnages and hectares or m²)</i>	TYPICAL MITIGATION MEASURES	COMPLIANCE WITH STANDARDS
Noise	Operational	N/A	<ul style="list-style-type: none"> Silencers on vehicles to be maintained and kept in good working condition. 	National Environmental Management: Air Quality Act, 39 of 2004 - Section 34: Control of Noise
TRANSPORT & HAULING				
Dust	Operational	3406,1060 ha	<ul style="list-style-type: none"> Water spraying Seize work during windy conditions. 	<ul style="list-style-type: none"> National Environmental Management: Air Quality Act, 39 of 2004 - Section 32: Control of Dust Government Notice 827 - National Dust Control Regulations
Noise Due to the remote location of the mine, it is not expected to impact on anyone.	Operational	N/A	<ul style="list-style-type: none"> Silencers on vehicles to be maintained and kept in good working condition. 	National Environmental Management: Air Quality Act, 39 of 2004 - Section 34: Control of Noise
Carbon dioxide emissions	Operational	On average two trucks per day	<ul style="list-style-type: none"> Proper maintenance of all vehicles. 	N/A
Fuel consumption	Operational	About 210 litres per day	<ul style="list-style-type: none"> Maintain all vehicles in good operating condition at all times. Implement speed limits. 	N/A
Oil spillages / leakages	Operational	N/A	<ul style="list-style-type: none"> Maintenance of vehicles Good housekeeping Suitable emergency spill kit will be 	World's Best Practices

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ACTIVITIES	PHASE OF OPERATION IN WHICH ACTIVITY WILL TAKE PLACE	SIZE AND SCALE OF DISTURBANCE <i>(volumes, tonnages and hectares or m²)</i>	TYPICAL MITIGATION MEASURES	COMPLIANCE WITH STANDARDS
			<ul style="list-style-type: none"> • available at all times to soak up spills. • Placement of plastic tarpaulins under breakdown vehicles. 	
REHABILITATION				
Concurrent Rehabilitation of Mined out areas	Rehabilitation	20 ha	<ul style="list-style-type: none"> • Monthly budget and rehabilitation activities to rehabilitate mined out areas. • Financial Provision submitted to DMR 	Rehabilitation plan in EMP
SUPPORT SERVICES				
Ablution	Operational	9 m ²	<ul style="list-style-type: none"> • Portable ablution facilities will be provided and maintained. • The contents will be discarded on a regular basis at the existing bio-digester septic tank and soak-away. 	<ul style="list-style-type: none"> – Mineral and Petroleum Resource Development Act, 28 of 2002 - GN R527 Regulation 63 : Principles of pollution control and waste management. – National Water Act, 1998 - Section 19: Protection of water resources. – DWA&F Minimum Requirements for the Handling and Storage and Disposal of Hazardous Waste.
Fuel storage	Operational	0 m ²	<ul style="list-style-type: none"> • No fuel will be stored on site. Good housekeeping. Suitable emergency spill kit will be available at all times to remedy spills during refuelling. 	N/A

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General Waste generation	Operational	9 m ²	<ul style="list-style-type: none"> • Good housekeeping • All general waste will be kept in rodent proof robust containers with attached lids. • Disposal at a registered waste disposal site. • No waste will be buried or burned on site. 	<p>National Environmental Management : Waste Act, 59 of 2008.</p> <p>No listed activities in terms of the National Environmental Management: Waste Act, 59 of 2008 are triggered.</p>
Hazardous Waste generation	Operational	15 m ²	<ul style="list-style-type: none"> • Good housekeeping • All hazardous waste will be kept in rodent proof robust containers with attached lids. • Disposal at a registered hazardous waste disposal site. 	Minimum Requirements for the Handling and Disposal of Hazardous Waste, 2nd Edition, 1998
Vehicle maintenance	Operational	0 m ²	<ul style="list-style-type: none"> • Vehicles will be serviced and maintained off-site. • Daily pre-use checks and lubrication would be performed. 	N/A

7.3 Specific environmental features that may require protection, remediation, management or avoidance

Specific environmental features identified on site which may require protection, remediation, management or avoidance includes the following identified sensitive receptors:

- Wetlands, specifically the endorheic pans; and
- Existing infrastructure such as the homestead, windmills, dams and concrete reservoirs.

Wetland systems are highly sensitive ecosystems. Each wetland system has a unique geomorphic and hydrological system. Both of which are easily affected by natural and anthropogenic influences. Wetlands also provide a unique habitat whereby large amounts of biodiversity are sustained either year round or seasonally depending if the wetland is permanent or temporary. Due to the intrusive nature of mining, a 100m buffer zone must be created around any water course, this includes the endorheic pans located on site as per the requirements of GN704 of the National Water Act, 36 of 1998.

7.4 Socio-Economic Conditions

Potential impacts on the existing socio-economic environment include:

- Interference with existing land uses such as sheep and cattle farming;
- Safety and security risks to landowners and lawful occupiers due to required access to properties by the applicant;
- Noise nuisance from mining techniques most notably digging, loading and hauling activities.
- Dust nuisance from mining techniques most notably loading and hauling; and
- Damage to existing infrastructure by the mining operation.

8. PLANNED MONITORING

The following impacts would require monitoring on a scheduled basis:

(a) Air quality monitoring (Dust fall-out)

Fallout dust buckets will be installed in the 4 directions away from the mine area, but within a 2km radius of the mining area, as soon as this mining right is granted. These buckets would be sampled on a quarterly basis by an independent consultant and the dust measured would

be analysed at an accredited laboratory. The results of the dust fall-out would be analysed against SANS 1929: 2005, and reported to the Mine Manager for management action.

(b) Noise monitoring

Ambient noise levels would be measured by an independent consultant before the mining operation commence to establish the base level conditions prior to the mining venture. These tests would be repeated on a quarterly basis and / or when complaints have been received. The results would be reported to the Mine Manager for management action.

(c) Water quality monitoring

Water monitoring will be implemented on any water body that the mine may impact on. The parameters to be monitored will be selected, based on the elements within the operation, and / or DWAF requirements. Samples for chemical analysis will be taken in clean bottles, and for biological analysis will be taken in sterile bottles, and sent to an accredited laboratory for analysis. The results thereof would be reported to the Mine Manager for management action.

(d) EMP Performance Assessments

This EMP would be assessed on an annual basis for compliance from date of issuing the mining right. The EMP performance assessment would include assessment of the scheduled monitoring results. A performance assessment to the EMP will be conducted by a suitably qualified independent party at least every two years. This performance assessment will be available to the DMR and other regulatory authorities for their inspection, as required. Should the quarry life be extended and the permit renewed, then additional performance assessments will be undertaken every two years.

9. FINANCIAL PROVISION

The financiers of the project is Chloorkop (Pty) Ltd and financial provision of **R 319 845.00** must be made by Chloorkop (Pty) Ltd for the rehabilitation of the Prieska Gypsum mine. The environment affected by the mining operations shall be rehabilitated by Doornberg Gips (Pty) Ltd, as far as is practicable, to its predetermined and agreed end use. This financial provision will be made in the form of a bank guarantee upon acceptance of this EMP and instruction from the DMR.

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Table 2. Financial Provision financial provision required to manage and rehabilitate Prieska Gypsum Mine (2015).

Financial provision for rehabilitation at PRIESKA GYPSUM MINE as at December 2015								
Item	Task	Units	Quantity	April 2004 Master Unit Rate	Present Master Unit Rate	Multiplication Factor	Weighting Factors	Amount
1	Dismantling of processing plant and related structures, including overland conveyors & power lines.	m ²	0	R 6.82	R 13.81	1.000	1.050	R 0.00
2(A)	Demolition of steel buildings and structures	m ²	0	R 95.00	R 192.40	1.000	1.050	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m ²	0	R 140.00	R 283.54	1.000	1.050	R 0.00
3	Rehabilitation of Access Roads	m ²	1200	R 17.00	R 34.43	1.000	1.050	R 43 381.32
4(A)	Demolition & rehabilitation of electrified railway lines	m ²	0	R 165.00	R 334.17	1.000	1.050	R 0.00
4(B)	Demolition & rehabilitation of non-electrified railway lines	m ²	0	R 90.00	R 182.27	1.000	1.050	R 0.00
5	Demolition of housing facilities	m ²	0	R 190.00	R 384.80	1.000	1.050	R 0.00
6	Opencast Rehabilitation including final voids & ramps	ha.	16.0	R 99 600.00	R 201 717.05	0.040	1.050	R 135 553.86
7	Sealing off of shafts, adits and inclines	m ²	0	R 51.00	R 103.29	1.000	1.050	R 0.00
8(A)	Rehabilitation of overburden & spoils	ha.	0	R 66 400.00	R 134 478.04	1.000	1.050	R 0.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha.	0.0	R 82 700.00	R 167 489.96	1.000	1.050	R 0.00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha.	0.0	R 240 200.00	R 486 470.25	0.510	1.050	R 0.00
9	Rehabilitation of Subsided areas	ha.	0.0	R 55 600.00	R 112 605.10	1.000	1.050	R 0.00
10	General surface rehabilitation, including grassing of all denuded areas	ha.	0.0	R 52 600.00	R 106 529.29	1.000	1.050	R 0.00
11	River Diversions	ha.	0.0	R 52 600.00	R 106 529.29	1.000	1.050	R 0.00
12	Fencing	m	200	R 60.00	R 121.52	1.000	1.050	R 25 518.42
13	Water Management	ha.	0.0	R 20 000.00	R 40 505.43	0.170	1.050	R 0.00
14	2 to 3 Years of maintenance & aftercare	ha.	1.0	R 7 000.00	R 14 176.90	1.000	1.050	R 14 885.75
15(A)	Specialist Studies for closure	Sum	0	R 40 000.00	R 81 010.87	1.000	1.050	R 0.00
15(B,C)	Specialist Studies for closure	Sum	1	R 5 000.00	R 10 126.36	1.000	1.050	R 10 632.68
SUB-TOTAL 1 FOR MINE CLOSURE								R 229 972.02
a	Preliminary & General							R 27 596.64
b	Contingencies							R 22 997.20
SUB-TOTAL 2 FOR MINE CLOSURE								R 280 565.86
c	14 % Value Added Tax							R 39 279.22
TOTAL FINANCIAL PROVISION FOR REHABILITATION								R 319 845.08

10. ENVIRONMENTAL AWARENESS PROGRAMME

It is important to make the employees at Prieska Gypsum Mine aware of the potential environmental impacts associated with their roles and how they can be mitigated or minimised through the implementation of the correct management procedures. This training, if effective, can drastically reduce the potential of occurrence of environmental negative incidents.

Responsibility: The Mine Manager is responsible for ensuring that the environmental awareness training is implemented by all employees and sub-contractors on the site.

Specific environmental awareness training needs should be identified before the project commences, based on the available and existing capacity of site and project personnel (including the applicant and Contractors) to undertake the required EMP management actions and monitoring activities. It is important that all personnel are adequately trained to perform their designated tasks to an acceptable standard. In addition to these parties, general environmental awareness must be fostered among the general workforce to encourage the implementation of environmentally sound practices. This ensures that environmental accidents are minimized and environmental compliance maximized. Environmental awareness could be fostered by an induction course for all employees on site, before commencing work on site, as well as during regular "toolbox talks". Employees should also be alerted to particular environmental concerns associated with their tasks for the area / environment in which they are working. Training must be given by competent personnel and in a language and medium understood by employees.

The environmental awareness training programme will include the following aspects :

- Vegetation : All employees will be informed on protected vegetation of the area, as well as exotic vegetation eradication.
- Fauna : All employees will be informed that poaching is illegal and taught to recognise snares which are to be removed if and when found.
- Hazardous Chemicals : All employees will be trained on the handling, use and disposal of the chemicals / hazardous substances used, and also the actions and reactions in the event of an accident.
- Soil contamination / pollution and remediation : All employees will be trained how to clean and dispose of accidental hydrocarbon spillages.

- Water management : All employees will be trained on the protection and management of the endorheic pans, as well as contamination / pollution prevention and remediation action in the case that an emergency incident occurs.
- Required monitoring to ensure compliance with legislation.
- Dust management and measures to prevent it.
- Noise management and mitigation measures.
- Good housekeeping requirements.

Each general topic can be discussed **once per annum**.

11. SPECIALIST REPORTS

Any findings and recommendations from specialist reports would be captured in the Final EMP.

DORINGBERG GIPS (PTY) LTD

12. UNDERTAKING

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

I, Mr Denzel Janse van Vuuren, ID 630416 5051 087, the undersigned and duly authorised thereto by DOORNBERG GIPS (PTY) LTD

Hereby undertake to implement all the aspects contained in the EMP and accept full responsibility therefore.

SIGNED at _____ this _____ day _____ 2015.



SIGNATURE

WITNESS

Official use

APPROVAL

Approved in terms of the provisions of the Minerals and Petroleum Resources Development Act, 2002, (Act 28 of 2002).

SIGNED at _____ this _____ day _____ 2015.

REGIONAL MANAGER
NORTHERN CAPE

13. ANNEXURE A: CURRICULUM VITAE OF ENVIRONMENTAL PRACTITIONER

<h1>CV</h1> <h2>VANESSA LESSING</h2>	
<hr/>	
PERSONAL INFORMATION	
Telephone	+27(0)783960800
Email address	vanessalessing@gmail.com
Residential address	17 Vista Ribeira Pier Street, South End Port Elizabeth, South Africa, 6001
ID Number	7807130020085
Date of birth	13/07/1978
Nationality	South African
Languages	English & Afrikaans
EDUCATION	
2007 – 2009	Stellenbosch University, South Africa Masters of Philosophy in Environmental Management
Subjects	Sustainable Development Environmental Law Environmental Issues Environmental Ethics Environmental Economics Environmental Governance Geographical Information Systems Research Application
2002	Vista University, South Africa Environmental Impact Studies, Cum Laude
2000	University of Port Elizabeth, South Africa B.Sc. Honours in Zoology Subjects Conservation Planning Conservation Biology Coastal Zone Resource Management Marine Mammal Ecology Oceanography Research Project Seminar and Presentation
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CV Vanessa Lessing	Page 1 of 6

1997 – 1999	University of Port Elizabeth, South Africa
Subjects	Bachelor of Science (B.Sc) Zoology Botany Geography Chemistry Physics Mathematics Geographical Information Systems Data Processing
1996	Afrikaans Hoër Meisieskool, Pretoria, South Africa
	Grade 12 English Afrikaans Biology Physical Science Mathematics Home Economics
COMPUTER SKILLS	Microsoft Word Microsoft Excel Microsoft PowerPoint Microsoft Outlook Adobe Achiever Internet Explorer
COURSES COMPLETED	
ISO 14001	
Moderator Assessment	
Transport of Dangerous Goods by Road	
Occupational Health and Safety	
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	
Dive Master Scuba Diver	
Class IV Scientific Diver	
WORK EXPERIENCE	
2012 – Present	Environmental Consulting
Position	Environmental Consultant
Outline of Responsibilities	
<ul style="list-style-type: none">• Prepare and submit Environmental Management Programmes / Plans (EMP) for various mines.	
CV Vanessa Lessing	Page 2 of 5

- Perform Environmental Performance Assessments.
- Community consultation.
- Compilation of Scoping Reports.
- Knowledge and experience in environmental legislation i.e. Mineral and Petroleum Resources Development Act, Act 28 of 2002.

2009 – 2012

Pretoria Portland Cement Company
Limited (PPC)

Position

Environment and Sustainability Specialist

Outline of Responsibilities

- Ensure compliance to environmental legislation, ISO14001 and company requirements.
- Facilitate the Implementation of Environmental Management Systems (EMS).
- Prepare and review environmental best practices, procedures and work Instructions, and monitor the implementation of these documents.
- Conduct site Inspections and prepare site Inspection reports for management.
- Coordinate environmental monitoring and analyse monitoring results against legal and other requirements.
- Knowledge and experience in environmental legislation i.e. National Water Act, Act 36 of 1998; National Environmental Management Act, Act 107 of 1998; Mineral and Petroleum Resources Development Act, Act 28 of 2002.
- Auditing of all systems, ISO, DEKRA as well as internal company audit protocols.
- Planning, coordinating and facilitating environmental community meetings.
- Liaison with stakeholders and authorities regarding environmental matters and environmental authorisations.
- Prepare and submit Air Emission License applications and Fugitive Dust Emission Plans to the relevant authorities.
- Prepare water use licence applications.
- Prepare and submit Environmental Management Programmes (EMPR) for the quarries.
- Capacitate employees with regard to environmental impacts and environmental awareness.

2008 – 2009

KV3 Engineers

Position

Environmentalist

Outline of Responsibilities

- Undertake Environmental Impact Assessments.
- Prepare the necessary documents for Environmental authorisation.

- Perform environmental site inspections and compliance audits for development projects for Coega IDZ.
- Compile and submit water use applications to the relevant authorities for authorisation.

2007 – 2008

Department of Economic Development and Environmental Affairs

Position

Environmental Officer: Environmental Impact Management

Outline of Responsibilities

- Advise and guide members of the public and private enterprise regarding the implementation of appropriate environmental techniques in order to comply with National and Provincial legislation and policies.
- Manage processes aimed at ensuring effective implementation of environmental management tools such as Environmental Impact Assessments and Environmental Management Systems.
- Perform site inspections and compile inspection reports and Environmental Authorisations in terms of the National Environmental Management Act, Act 107 of 1998.
- Liaise with National, Provincial and Local Authorities in terms of environmental legislation, policies and procedures.

2002 – 2007

Department of Economic Development and Environmental Affairs

Position

Environmental Officer: Biodiversity Conservation Management

Outline of Responsibilities

- Advise and guide members of the public regarding permit applications procedures in order to comply with National and Provincial legislation.
- Administration of permits relating to flora, fauna, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Certificate of Enclosure (CAE) and Hunting.
- Provide assistance in law enforcement operations in terms of the Environmental Conservation Act, Act 73 of 1989 (ECA).
- Guide and advise members of the public regarding problem animal control and provide assistance regarding control.
- Assist with community based environmental education.

2001 – 2001

SeaWorld Durban

Position

Aquarist

Outline of Responsibilities

- **Oversee all aspects of animal care and aquarium life while ensuring a high standard of animal care and displays presentation throughout all public and behind the scenes areas.**
- **Daily care of animal exhibits including diet preparation, feeding and general care and maintenance of aquatic exhibits in accordance with established protocols.**
- **Ensure the accurate maintenance of daily records for aquarium systems and exhibit specimens.**
- **Interaction and environmental education with guests.**