mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

NAME OF APPLICANT: THATHONG DEVELOPMENT CONSULTING cc

REFERENCE NUMBER: NW 30/5/1/1/2/10560 PR

ENVIRONMENTAL MANAGEMENT PLAN

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

STANDARD DIRECTIVE

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

Table of Contents

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

ITEM	COMPANY CONTACT DETAILS
Name	Thathong Development Consulting cc
Tel no	011 312 9765
Fax no:	011 312 9768
Cellular no	081 346 4198
E-mail address	mashudu@thathong.co.za
Postal address	P. O. Box 4077, Halfway house, 1685

ITEM	CONSULTANT CONTACT DETAILS (If applicable)
Name	Kimopax (Pty) Ltd
Tel no	011 312 9765
Fax no:	011 312 9768
Cellular no	072 575 5458
E-mail address	tovhi@kimopax.com
Postal address	P.O. Box 4077, Halfway House, 1685

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

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

Flora and Fauna

The area falls within the Grassland Biome, which contains a wide variety of grasses typical of arid areas. Shrubs are also scattered on the site and none of vegetation identified is protected vegetation specie. During the site visit there was no wild animals were noticed on the farm, but wild animals such as springboks, wild rabbits, lizards and snakes can be found on site.

Geology

According to B. de Villiers, the North West Province has an interesting and ancient geological heritage, rich in minerals and paleontological artefacts. The area is largely dominated by igneous rock formations, as a result of the intrusion of the Bushveld Complex.

Climate

The climate of the North West Province varies considerably between the west and east, whilst the eastern section also displays three distinct zones. In south east of the province, the climate is typical of the South African Highveld. The average annual rainfall is in excess of 550mm, increasing from the west to the east. The average in the east is between 600mm- 650mm. Relative humidity for the area has a

daily average of between 71%-72% in summer, and 36%-37% in winter (Source: South African Weather Bureau).

Soil

Due to the low rainfall generally experienced in the area, the soils tend to be only leached. With high evaporation rates, there is predominance of upward movement of moisture in the soils. This often leads to high concentrations of salts such as calcium and silica in soils, which sometimes have resulted in the formation of hard pans or surface duricusts

Terrain/Topography

The area has a uniform terrain, with an altitude ranging from 920-1782 metres above sea level. Its characterised by flat or gently undulating plains.

Surface Water

The area does not have any inland dams and the small tributaries that pass through the farm are seasonal.

Current Land use

The current land use is farming; comprising of cattle rearing and growing crops which is being done on a very small scale.

Wetlands

None

Historical and Archaeological Sites

None was identified, but if it happens that unmarked graves or artefacts of historical or archaeological significance are unearthed or discovered, work will cease and a buffer of 30m put up until

representatives from South African Heritage Resource Agency (SAHRA) complete their investigations.

Environmental Sensitive Areas

None was identified on site or the surrounding areas

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

Soil

Caution should be taken to prevent oil leakages and spillages which will cause soil contamination which will in turn result in the death of organisms that live in the soil. Preventive measures that should be taken include;

- The use of oil drip trays on leaking vehicles and equipment
- No major vehicle repairs should be done on site
- Oils and fuel should be stored on bunded areas to avoid spillages
- An emergency plan for spillages should be available on site.

Flora and Fauna

Only areas demarcated for drilling should be cleared of vegetation, firewood harvesting and animal hunting should not be allowed to be done on site.

Surface Water

Where the drilling will take place close to a river or dam, a buffer zone of 30 metres should be left protected to avoid contamination of surface water. If there is any need to extract water for use during the drilling, permission should be granted by the relevant people.

Topography

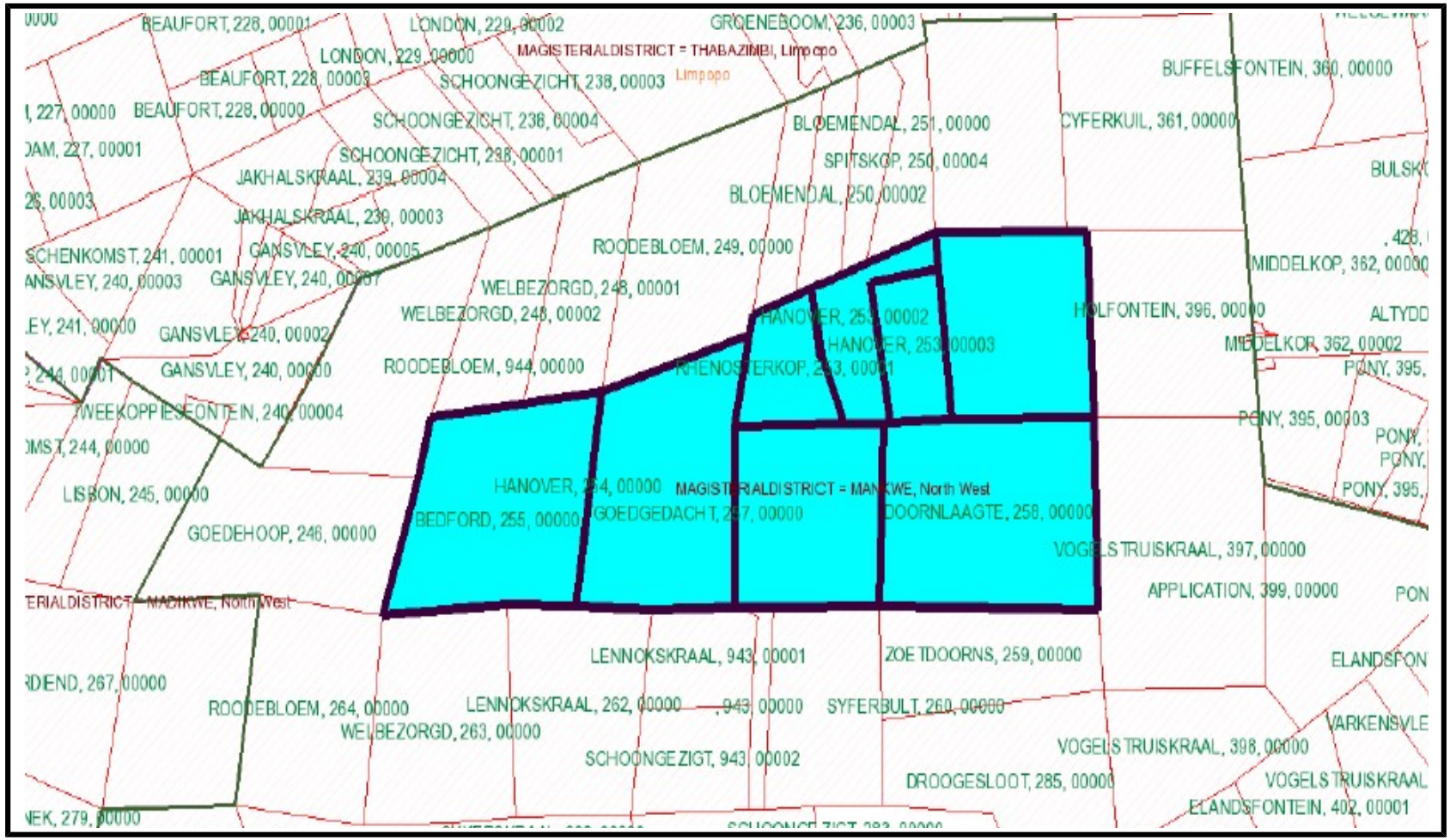
It is anticipated that there will not be any detrimental effects to the topography of the area

Air Quality

Dust suppression techniques will need to be implemented to avoid the dispersion of dust particles into the air. The following techniques will be used:

- The use of water to keep the soil wet
- Vegetation clearing should only be limited to the demarcated areas for drilling.
- Soil stockpiles should be kept at a height of less than 1.5metres

1.2 Map showing the spatial locality of all environmental, cultural/heritage and current land use features identified on site.


BEAUFORT, 228, 00001
LONDON, 229, 00002
GROENEBOOM, 236, 00003
MAGISTERIALDISTRICT = THABAZIMBI, Limpopo
LONDON, 229, 00000
BEAUFORT, 228, 00003
SCHOONGEZICHT, 238, 00003
Limpopo
BUFFELSFONTEIN, 360, 00000
BEAUFORT, 228, 00000
SCHOONGEZICHT, 238, 00004
BLOEMENDAL, 251, 00000
CYFERKUIL, 361, 00000
SCHOONGEZICHT, 238, 00001
SPITSKOP, 250, 00004
JAKHALSKRAAL, 239, 00004
BLOEMENDAL, 250, 00002
JAKHALSKRAAL, 239, 00003
GANSVLEY, 240, 00005
ROODEBLOEM, 249, 00000
SCHENKOMST, 241, 00001
GANSVLEY, 240, 00007
MIDDELKOP, 362, 00000
WELBEZORGD, 248, 00001
WELBEZORGD, 248, 00002
HANOVER, 253, 00002
HOLFONTEIN, 396, 00000
GANSVLEY, 240, 00002
HANOVER, 253, 00003
MIDDELKOP, 362, 00002
GANSVLEY, 240, 00000
ROODEBLOEM, 944, 00000
RHENOSTERKOP, 253, 00001
PONY, 395,
WEEKOPPIESFONTEIN, 240, 00004
PONY, 395, 00003
HANOVER, 254, 00000
MAGISTERIALDISTRICT = MAHIKWE, North West
LISBON, 245, 00000
BEDFORD, 255, 00000
GOEDGEDACHT, 257, 00000
DOORNLAAGTE, 258, 00000
PONY, 395,
GOEDEHOOP, 246, 00000
VOGELSTRUISKRAAL, 397, 00000
APPLICATION, 399, 00000
LENNOKSKRAAL, 943, 00001
ZOETDOORNS, 259, 00000
ELANDSFON
ROODEBLOEM, 264, 00000
LENNOKSKRAAL, 262, 00000
SYFERBULT, 260, 00000
WELBEZORGD, 263, 00000
VARKENSVLE
VOGELSTRUISKRAAL, 398, 00000
SCHOONGEZIGT, 943, 00002
DROOGESLOOT, 285, 00000
VOGELSTRUISKRAAL
ELANDSFONTEIN, 402, 00001


Mokgalaneng
N
© 2012 AfriGIS (Pty) Ltd.
Image © 2012 CDNGI
Image © 2012 DigitalGlobe
Image © 2012 GeoEye
Google earth
Imagery Date: 8/14/2010
lat -24.881317° lon 26.914551° elev 1192 m
Eye alt 29.53 km

The study area is a green field with few water features, comprising of non-perennial streams in the far southern portion. The current agricultural use of area is that of grazing for cattle on the veld and planted pasture. In some area there are planted crops.

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

Discussions have been held with the community, land owners, interested and affected parties in one on one methodology and also telephonically, in some instances followed by post. The land owners and interested and affected parties either expressed their support or non-support for the process. Most required in depth discussions in the event that a prospecting right is issued. Any possible concerns raised in terms of the environment will be addressed in the EMP as land is mostly used for agricultural purposes.

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

2.1 Description of the proposed prospecting or mining operation.

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

Desktop studies

- Acquisition of all geological information available from previous studies in the area.
- Geological mapping
- Satellite and air photo, magnetic interpretation.
- Down hole geophysical survey.

The above activities do not have any environmental impact.

Opening of new roads

The existing roads will be used but if the drilling site is far away from the existing roads, new roads will need to be opened. The will be minimum damage to the environment.

2.2 Plan of the main activities with dimensions

The main activities during prospecting will be core drilling; the equipment will mainly be the drill rig, water tank, and two vehicles. The disturbance on the environment will be a drill hole and a sump**.** The amount of holes to be drilled would be (20). The total area to be disturbed during drilling process is calculated as follows:

Length of area = 10 metres

Width of area = 8 metres

Total area in squire metres = length × width

= 10m × 8m

= 80$m2$

Therefore the total area to be disturbed during drilling will be: 80$m2$ × 20 (number of holes) = 1600$m2$.

2.3 Description of construction, operational, and decommissioning phases.

The construction phase

During construction phase, there will be site clearance for road construction, where construction equipment will be placed; there will be some vegetation cover that will be removed. This is a preparation stage of the site before actual drilling takes place.

The operational phase

a) This will include setting up chemical toilets which will be rented and they will be emptied. These toilets will be located very close to the existing structures and therefore existing roads will be used to access them.

b) Geophysical survey.

Technical team will walk with the geophysical instrument and because they will be walking the impact on vegetation is insignificant.

c) The drill rig will be supported by a water cart, service bakkie. Drilling will be access through the existing roads with extensions to reach the drilling point. All effort will be made to minimize the number of new roads and the optimise the use of old roads. The drilling foot print will be 80$m2$ per hole

The decommission phase

This will involve the rehabilitation of area which was drilled, as well as removal of all equipment which was sent to site.

Rehabilitation will involve:

- **Revegetating the roads**

The roads will be ploughed with indigenous grasses and vegetation occurring in the area and watered to encourage gross of the grass. This will be monitored and the growth or re-growth of invasive vegetation will be managed for a period of at least two years after completion of drilling. The area will be monitored at least twice per year for the next two years after construction.

- **Closing holes with concrete blocks**

Holes will be closed for safety, stability, as non-erodible structure of the environment. Concrete blocks will be used to make a stronger seal, and may not significantly penetrate seams

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

Activity

19. Any activity which requires a prospecting right or renewal thereof in terms of section 16 and 18 respectively of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002).

3 Identification of potential impacts

The various environmental impacts and benefits of this project are discussed in terms of impact status, extent, duration, probability and intensity. Impact significances is regarded as the sum of the impact extent, duration, probability and intensity and a numerical rating system has been applied to evaluate impact significance; therefore an impact magnitude and significance rating is applied to rate each identified impact in terms of its overall magnitude and significance.

In order to adequately assess and evaluate the impacts and benefits associated with the project, it was necessary to develop a methodology that would scientifically achieve this and to reduce the subjectivity involved in making such evaluations. To enable informed decision-making, it is necessary to assess all legal requirements and clearly defined criteria in order to accurately determine the significance of the predicted impact or benefit on the surrounding natural and social environment.

a) Impact status

The nature or status of the impact is determined by the conditions of the environment prior to construction and operation. A discussion on the nature of the impact will include a description of what causes the effect, what will be affected and how it will be affected. The nature of the impact can be described as negative, positive and neutral.

Rating	Description	Quantitative
Positive	A benefit to the receiving environment	+
Neutral	No cost or benefit to the receiving environment	N
Negative	A cost to the receiving environment	-

Table 1: indicate impact status

b) Impact Extent

The extent of an impact is considered as to whether impacts are either limited in extent of it, it affects a wide area or group of people. Impact extent can be site specific (within the boundaries of the development area); local, regional or national and international

Rating	Description	Quantitative Rating
Low	Site specific; occurs within the site boundary	1
Medium	Local; Extends beyond the site boundary;	2

	Affects the immediate surrounding environment(i.e. up to 5km from the project site	
High	Regional; Extends far beyond the site boundary; widespread effect i.e. 5km and more from the site	3
Very high	National and/ or international: Extends far beyond the site boundary; widespread effects	4

Table 2: Impact Extent

c) Impact Duration

The duration of the impact refers to the time scale of the impact or benefit.

Rating	Description	Quantitative rating
Low	Short term; Quickly reversible; Less than the project Lifespan;0-5yrs	1
Medium	Medium term; Reversible over time; Approximate lifespan of the project; 5-30yrs	2
High	Long term; Permanent; Extends beyond the decommissioning phase; >30 years	3

Table 3: Impact Duration

d) Impact Probability

The probability of the impact describes the likelihood of the impact actually occurring.

Rating	Description	Quantitative Rating
Improbable	Possibility of the impact materialising is negligible; chance of occurrence< 10%	1
Probable	Possibility that the impact will materialise is likely; chance of occurrence 10-49.9%	2
Highly Probable	It is expected that the impact will occur, chance of occurrence 50-90%	3
Definite	Impact will occur regardless of any prevention measures; chance of occurrence>90%	4

Table 4: Impact Probability

e) Impact Intensity

The intensity of the impact is determined to quantify the magnitude of the impacts and benefits associated with the project.

Rating	Description	Quantitative Rating
Maximum Benefit	Where natural, cultural and / or social functions or processes are positively affected resulting in the maximum possible and permanent benefit	+5
Significant Benefit	Where natural, cultural and / or social functions or processes are altered to the extent that it will result in temporary but significant benefit	+4
Beneficial	Where the affected environment is altered but natural, cultural and / or social functions or processes continue, albeit in a modified, beneficial way	+3
Minor Benefit	Where the impact affects the environment in such a way that natural, cultural and / or social functions are only marginally benefited.	+2
Negligible Benefit	Where the impact affects the environment in such a way that natural, cultural and / or social functions or processes are negligibly benefited.	+1
Neutral	Where the impact affects the environment in such a way that natural, cultural and / or social functions or processes are not affected.	0

Negligible	Where the impact affects the environment in such a way that natural, cultural and / or social functions or processes are negligibly affected.	-1
Minor	Where the impact affects the environment in such a way that natural, cultural and / or social functions or processes are only marginally affected.	-2
Average	Where the affected environment is alerted but natural, cultural and / or social functions or processes continue, albeit in a modified way	-3
Severe	Where natural, cultural and / or social functions or processes are altered to the extent that it will temporarily cease	-4
Very Severe	Where natural, cultural and / or social functions or processes are altered to the extent that it will permanently cease.	-5

Table 5: Indicate impact intensity

f) Impact Significance

The impact magnitude and significance rating is utilized to rate each identified impact in terms of its overall magnitude and significance

Impact	Rating	Description	Quantitative Rating
Positive	High	Of the highest positive order possible within the bounds of impacts that could occur.	+12 to +16
	Medium	Impact is real, but not substantial in relation to other impacts that might take effect within the bounds of those that could occur. Other means of achieving this benefit are	+6 to +11

		approximately equal in time, cost and effort	
	Low	Impacts is of a low order and therefore likely to have a limited effect. Alternative means of achieving this benefit are likely to be easier, cheaper, more effective and less time-consuming	+1 to +5
No impact	No impact	Zero impact	0
Negative	Low	Impact is of a low order and therefore likely to have little real effect. In the case of adverse impacts, mitigation is either easily achieved or little will be required, or both social, cultural, and economic activities of communities can continue unchanged	-1 to -5
	Medium	Impact is real, but not substantial in relation to other impacts that might take effect within the bounds of those that could occur. In the case of adverse impacts, mitigation is both feasible and fairly possible. Social cultural and economic activities of communities are changed but can be continued (albeit in a different form). Modification of the project design or alternative action may be required.	-6 to -11
	High	Of the highest order possible within the bounds of impacts that could occur. In the case of adverse impacts, there is	

		no possible mitigation that could offset the impact, or mitigation is difficult, expensive, time consuming or a combination of these. Social, cultural and economic activities of communities are disrupted to such an extent that these come to a halt.	-12 to -16

Table 6: Impact Significance

KEY:

E : Extent

D : Duration

P : Probability

I : Intensity

S : Significance

Issue	General impact	Specific impact	Cause/ Aspect	Status	Impact significance prior to mitigation					Mitigation measures	Impact significance post mitigation				
					E	D	P	I	S		E	D	P	I	S
Climate	Contribution to climate change	Carbon and other greenhouse gasses into atmosphere	Construction activities	Negative(-)	4	-2	-3	-1	-7	• Ensure vehicle exhaust systems function correctly • Ensure regular maintenance and monitoring of exhaust equipment is undertaken • Ensure energy reduction practices are developed and implemented	1	+1	+3	+1	+6
			Land-based vehicle activities	(-)	2	-1	-3	-1	-8		+2	+3	+2	-1	-7
			Use of backup diesel generators during construction activities	(-)	2	-1	-2	-1	-3		+1	+1	+1	+1	+2
Geology	Destruction of geology	Establishing the box cut	Removal of overburden layer for mine infrastructure development	(-)	1	-3	-4	-1	-7	• Limit impacts • Limit footprint size	1	-2	-3	-1	-6
Soils	Disturbances of topsoil.	Soil disturbances, loss of nutrients, loss of topsoil cover, loss of in situ structure and chemical / physical	Clearing of vegetation for infrastructure development	(-)	1	-1	-2	-1	-7	• Strip and stockpile topsoil and subsoil appropriately. • Commence rehabilitation of	1	+1	-1	-1	+2
			Clearing of vegetation for mining	(-)	1	-3	-4	-4	-7		1	-1	-2	-3	-6

		properties	preparation							affected areas timeously. • Application of soil handling and removal practices • Application of soil placement and storage practices • Fertilisation as needed. • Re-use topsoil and subsoil during ongoing rehabilitation • Erosion control and • prevention • Implementation of good house-keeping practices • Rapid spillage cleans up (i.e. hydrocarbon, oil, water, etc).					
			Removal of topsoil for infrastructure development	(-)	1	-2	-3	-3	-8		1	-1	-1	-1	-6
			Removal of topsoil for mining development	(-)	2	-3	-3	-4	-7		1	-1	-2	-3	-5
			Infrastructure construction footprint	(-)	2	-1	-2	-4	-7		1	-1	-1	-2	-6
			Establishment of plant foundations	(-)	1	-1	-2	-2	-4		1	-1	-1	-1	-3
			Construction of surface water management system	(-)	1	-1	-1	-2	-3		1	-1	-1	-1	-2
			Stockpiling of soils	(-)	1	-4	-3	-5	-8		1	-2	-1	-3	-5
			spillages	(-)	1	-3	-3	-3	-8		1	-1	-1	-1	-6
Land capability and land use	Change of land capability and land use	Land capability will be reduced to mining land status	Disruption of ecosystem due to mining related	(-)	2	-2	-3	-5	-10	• Effective soil handling and removal	1	-1	-1	-5	-7

			activities and infrastructure							practices. • Effective soil placement and storage practices. • Fertilization as needed. • Soil amelioration					
Natural vegetation/ plant life	Destruction of local ecological integrity, decimation of vegetation on site, peripheral impacts relating to human presence and mining related activities	Potential loss/ degradation of local pristine vegetation/ habitat	Land transformation through mine related and associated infrastructure development	Negative (-)	2	-3	-4	-4	-12	• Limit mining infrastructure and operational footprint size • Use existing roads where possible • Clear minimum vegetation • Maximise site vegetation retention areas • Erection of fences • Preservation of vegetation • Fire prevention • Ongoing rehabilitation	1	+1	+3	-4	-9
		Alteration of natural ecological processes/ ecosystem functioning	Creation of a typical/ non-natural habitat, presence of humans for prolonged periods	(-)	2	-3	-4	-4	-12		1	+2	-3	-4	-11
		Changes in vegetation dynamics	Fires , water, vegetation transformation	(-)	2	-3	-4	-4	-12		1	-3	-3	-4	-11
		Impacts on sensitive environment (i.e. receiving water	Direct/ indirect impacts, physical or cumulative, plant collection												

		body/ wetlands													
Animal life	Destruction of local integrity, decimation of faunal habitat on site, peripheral impacts relating to human presence and mining related activities	Potential loss/degradation of local pristine faunal habitat and / or communities	Land transformation through mine related and associated infrastructure development	(-)	2	-3	-4	-5	-10	• Ensure pockets of vegetation remain in order to ensure a measure of ecological connectivity • Limit impacts to the mining right area	1	-3	-4	-4	-13
		Road deaths of animals on access roads	Reckless driving and night-time driving on access roads	(-)	3	-2	-2	-3	-9	• Vehicles to maintain speed limits to avoid collision with animals. • Vehicles are to yield to animals.	1	-2	-2	-3	-8

		Alteration of natural ecosystem functioning	Land transformation through mine and related infrastructure development.	(-)	3	-3	-3	-2	-10	• Limit night driving, except in case of emergencies. • Ensure pockets of vegetation remain in order to ensure a measure of ecological connectivity. • Limit faunal impacts to the mining right areas	2	-3	-2	-2	-5
Surface water	Impact on surface water quality	Increased (Total Dissolved Solids) TDS, possible erosion (wind and water)	Stripping of vegetation as part of construction activities	Negative (-)	4	-1	-4	-3	-11	• Limit areas to be stripped for construction purposes. • Minimize wind and water erosion • Implement slope stabilization • Implementation of surface water management structures.	2	-1	-3	-3	-10

Ground water	Depletion of aquifer	Lowering of groundwater level	Dewatering of the aquifer to ensure dry mining conditions and pit slope stability	(-)	3	-3	-4	-3	-11	• Minimise abstraction activities to only those that are required for safe establishment of the mining operation. • Monitor groundwater abstraction levels.	1	-2	-4	-3	-10
			Groundwater abstraction for potable and process water demand	(-)	3	-2	-4	-3	-10		1	-2	-3	-3	-9
	Pollution	Groundwater quality deterioration	Biological contamination of localised aquifer due to domestic and hydrocarbon contamination	(-)	3	-2	-2	-3	-8	• Implement recommended waste management procedures and establish required system. • Manage potential pollutants on surface to prevent groundwater pollution.	2	-2	-1	-3	-7
	Fugitive dust and particulate matter	Reduction in ambient air quality	Construction and grading of haul	(-)	2	-1	-3	-2	-8	• Reduce extent	1	-1	-2	-2	-7

Air quality		from fugitive dust emissions	roads							of construction operation taking place by undertaking activities in phases. • Use of windbreaks, chemical and water dust suppression • No topsoil stripping in high wind conditions • Rock cladding of stockpiles/ dumps on prevailing wind facing slopes • Re-vegetation of areas as soon as possible • Reduction of drop height as					
			Civil site preparation	(-)	1	-1	-2	-2	-7		1	-1	-1	-2	-6
			Construction of mining operations	(-)	3	-1	-3	-2	-8		1	-1	-2	-2	-7
			Pre-stripping of topsoil	(-)	1	-2	-4	-2	-10		1	-1	-3	-2	-8
			Overburden and waste rock dumping	(-)	1	-2	-4	-2	-10		1	-2	-3	-2	-9
			Construction of plant and other infrastructure	(-)	2	-1	-4	-2	-9		2	-1	-2	-2	-7
			Material transfer operations	(-)	2	-2	-4	-2	-10		-2	-1	-2	-2	-7
			Wind erosion from exposed storage piles	(-)	1	-2	-4	-2	-10		1	-1	-2	-2	-7
			Vehicles entrained dust from unpaved road surfaces	(-)	2	-1	-4	-2	-9		1	-1	-2	-2	-7
			Remediation and rehabilitation activities	(+)	2	-1	-2	-2	-7		2	-1	-1	-2	-6

										far as is practicable • Reduction of speed of vehicles to limit dust generation.					
		Dust emissions resulting in respiratory and cardiovascular ailments	Undertaking activities in high dust areas.	(-)	1	-2	-2	-3	-9	• Ensure adequate personal protective equipment is worn by individuals in high dust generation areas • Conduct health checks prior to initiating work and at regular intervals thereafter.	2	-1	-1	-3	-7
		Reduced visibility, soiling of buildings materials and environment	Undertaking activities in high dust areas.	(-)	2	-1	-2	-2	-7	• Implement dust control via suppression methods • Minimize travel in high wind	2	-1	-1	-2	-6

										situations • Establish wind breaks around infrastructure to minimise soiling.					
Noise and vibration	Noise pollution • Increased ambient noise level		Construction activities (mine and other infrastructure).	(-)	2	-1	-3	-2	-8	• All machinery used during construction will be maintained in sound mechanical condition. • PPE will be worn by all personnel operating in high noise areas (i.e. ear plugs) • On-site generators should be clad in suitable material or housed in structure that would reduce their noise impacts. • Generators will	1	-1	-2	-2	-6
			Use of diesel generators	(-)	2	-1	-3	-2	-8		1	-1	-2	-2	-6
			Increase traffic flow (on-site)	(-)	1	-1	-3	-2	-7		1	-1	-2	-2	-6
			Periodic blasting as part of topsoil and overburden stripping activities.	(-)	2	-1	-3	-2	-8		1	-1	-3	-1	-7

										be fitted with appropriate sound suppression devices or silencers • Keep within the applicable speed limits					
	Vibration	Nuisance disruption to sensitive fauna, employees and communities	Blasting of waste material	(-)	1	-1	-4	-2	-9	• Complaints by any interested and affected parties must be recorded in an issues and complain register throughout the duration of the mining operations • Blasting activities will be designed by a suitably qualified engineer	1	-1	-2	-2	-6

Archaeology and heritage	Impact of the mining development on graves, farmsteads and heritage resources	Impact of mining development on the graves, farmsteads and heritage resources	Construction and establishment of mine and infrastructure	neutral	0	0	0	0	0	No mitigation required, however if archaeological artifacts are discovered work shall cease and SAHRA notified	0	0	0	0	0
Waste	Contamination of soil, surface water and ground water, health risks as a result of exposure to hazardous substances	Contamination of surface water and ground water	Leaching of hazardous substances from construction equipment and storage areas	(-)	3	-3	-4	-4	-10	• Equipment must be regularly inspected for leaks • Storage areas must be lined and / or secured by an adequate bund wall	2	-3	-2	-4	-8
		Contamination of soil	Temporary storage of hazardous waste on unlined and unbundled areas; hazardous waste spills	(-)	1	-2	-3	-3	-7	• Storage of hazardous wastes in purpose built stores • Labeling of waste containers • Waste removal to a licensed waste site	1	-1	-1	-1	-4

		Litter (aesthetic impacts), ingestion by animals	Waste not placed in designated waste bins containers.	(-)	1	-1	-2	-2	-6	• Provision of waste bins (colour coded for different waste types). • Management and education of people	1	-1	-1	-1	-4
		Infections from waste handling	Unsuitable handling and disposal of wastes	(-)	1	-1	-1	-2	-9	• Contractor control to ensure correct disposal procedures are followed. • Disposal to authorized sites only	1	-1	-1	-1	-5
Visual	Visual impact	Change in land use and current views	Construction vehicle movement	(-)	1	-1	-2	-1	-6	• Fleet design and optimization • All buildings and structures must be in a colour in shades of green, brown, grey with a maximum reflectance value of 37%	1	-1	-1	-1	-4
			Temporary structures and contractors camp	(-)	1	-1	-2	-1	-5		1	-1	-1	-1	-4

		Change in land use and current views	Entrances, signs and boundary treatment	(-)	1	-2	-3	-1	-7	• Limit signage (number and size) • Restriction of the height of mineralogical waste structures • Ongoing rehabilitation and re-vegetation of mineralogical waste structures	2	-2	-2	-1	-5
			Material storage (topsoil stockpiles and material stockpiles)	(-)	1	-1	-2	-1	-6		1	-1	-1	-1	-4
Social	Employment (mine specific)	Creation of mine specific employment opportunities	Drilling at the site	Positive (+)	3	3	4	3	12	• Site-specific construction employing unskilled, semi-skilled, skilled labour within the project area	3	3	4	5	14
	Employment(directly affected area)	Creation of employment opportunities not directly related to the mine itself	Drilling at the site	(+)	3	1	4	3	11	• Focus on short term employment opportunities near communities, preceded by extensive community liaison	3	1	4	5	13

										to support employment across community members.					
	HIV and AIDS(mine specific)	Increased infection rate	Drilling on site (Permanent employees)	(-)	1	-2	-4	-5	-12	• Implement an HIV/AIDS plan action • Implement condom programming, information and attitudinal change, gender relations and power over sexual decision-making, life skills education, testing, Anti-Retroviral (ARV) education and recreational activities for on-site employees. • Conduct education within	1	-2	-4	-1	-8

										the context of a broader wellness programme.					
Economic	Level of economic activity	Increase in Gross Geographic Product (GGP)	Increase in business activity/ sales and demand for consumer services	(+)	4	2	4	5	13	• Encourage procurement of domestic upstream and downstream services to the value chain, where possible.	3	2	4	5	13
	Employment	Employment opportunities	Reduction in unemployment	(+)	3	2	4	4	13	• Encourage employment practices beneficial to local, domestic labour, as far as possible. • Encourage business networking/ sourcing from local/ domestic service providers, as far as possible.	3	2	4	4	13

	Living conditions	Poverty alleviation	Increase in spending power	(+)	3	2	4	4	13	• Maximise on multiplier effect • Develop and implement community trust initiatives.	3	2	4	5	14
	Skills	Improvement of skill levels	Provision of training programmes related to work	(+)	4	3	3	2	+12	• Procure training service providers to skill/ re-skill local labourers. • Rotation of labour to facilitate multi-skilling, if and where possible.	4	3	3	3	13
	Health(Regional)	Impact of AIDS/ HIV on the health care system	Transitory work force and sex trade	(-)	-2	-2	-2	-3	-11	• Implement the social and labour Plan (SLP)	-1	-1	-1	-2	-6

3.1 Potential impacts per activity and listed activities.

- Air pollution

Air pollution will be caused by drilling machinery that will be used onsite, this includes the dust that accumulates when access road are being constructed and during operational phase.

- Soil pollution

When drilling machinery and vehicles have oil leakage they spill into the soil and contaminate the soil.

- Noise pollution

During drilling and movement of vehicles and drilling machinery, noise pollution occur which cause disturbance for land owners as well as neighbouring landowners

1.1.1 Potential cumulative impacts.

- Air quality

Cumulative air quality impacts may result from increased dust generation and emissions from the drilling operations in the site.

- Noise and vibration

Noise and vibration will occur during drilling operations. Cumulatively, the impact from noise and vibration during the drilling period can create a nuisance disturbance for land owners as well as neighbouring landowners.

- Job Creations

When drilling activities are underway including access roads constructions this creates job creations thus will lead to employees relocating to the site. Men will leave their wives at home and get new wives at the drilling site, this will create trust problems and would also lead to HIV/AIDS and thus the virus will spread not only locally but nationally thus leads to accumulative impacts.

1.1.2 Potential impact on heritage resources

None

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

There are no impacts on communities, individuals or competing land uses in close proximity to the prospecting areas, due to the limited impact of the drilling machines at any specific point in time.

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

Security, safety, privacy and compensation issues by the land owner were discussed and a mutual agreement was reached. The land owners, interested and affected parties are happy with the consultation but require depth discussions in the event that a prospecting right is issued.

1.1.5 Confirmation of specialist report appended.

No specialist studies were required.

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

2.1 Assessment of the significance of the potential impacts

The assessment of the significance of the potential impacts is included the table above for construction and operational impacts

2.1.1 Criteria of assigning significance to potential impacts

Impact	Rating	Description	Quantitative Rating
Positive	High	Of the highest positive order possible within the bounds of impacts that could occur.	+12 to +16
	Medium	Impact is real, but not substantial in relation to other impacts that might take effect within the bounds of those	+6 to +11

		that could occur. Other means of achieving this benefit are approximately equal in time, cost and effort	
	Low	Impacts is of a low order and therefore likely to have a limited effect. Alternative means of achieving this benefit are likely to be easier, cheaper, more effective and less time-consuming	+1 to +5
No impact	No impact	Zero impact	0
Negative	Low	Impact is of a low order and therefore likely to have little real effect. In the case of adverse impacts, mitigation is either easily achieved or little will be required, or both social, cultural, and economic activities of communities can continue unchanged	-1 to -5
	Medium	Impact is real, but not substantial in relation to other impacts that might take effect within the bounds of those that could occur. In the case of adverse impacts, mitigation is both feasible and fairly possible. Social cultural and economic activities of communities are changed but can be continued (albeit in a different form). Modification of the project design or alternative action may be required.	-6 to -11
	High	Of the highest order possible within the bounds of impacts	

		that could occur. In the case of adverse impacts, there is no possible mitigation that could offset the impact, or mitigation is difficult, expensive, time consuming or a combination of these. Social, cultural and economic activities of communities are disrupted to such an extent that these come to a halt.	-12 to -16

2.1.2 Assessment of potential cumulative impacts.

Continuous Monitoring

2.2 Proposed mitigation measures to minimise adverse impacts.

ADVERSE IMPACT	MITIGATION
Contribution to climate change	• Ensure vehicle exhaust systems function correctly • Ensure regular maintenance and monitoring of exhaust equipment is undertaken • Ensure energy reduction practices are developed and implemented
Destruction of geology	• Limit impacts • Limit footprint size
Disturbances of topsoil.	• Strip and stockpile topsoil and subsoil appropriately. • Commence rehabilitation of affected areas timeously. • Application of soil handling and removal practices • Application of soil placement and storage

	practices • Fertilisation as needed. • Re-use topsoil and subsoil during ongoing rehabilitation • Erosion control and • prevention • Implementation of good house-keeping practices • Rapid spillage cleans up (i.e. hydrocarbon, oil, water, etc).
Change of land capability and land use	• Effective soil handling and removal practices. • Effective soil placement and storage practices. • Fertilization as needed. • Soil amelioration
Destruction of local ecological integrity, decimation of vegetation on site, peripheral impacts relating to human presence and mining related activities	• Limit mining infrastructure and operational footprint size • Use existing roads where possible • Clear minimum vegetation • Maximise site vegetation retention areas • Erection of fences • Preservation of vegetation • Fire prevention • Ongoing rehabilitation
Impact on surface water quality	• Limit areas to be stripped for construction purposes.

	• Minimize wind and water erosion • Implement slope stabilization • Implementation of surface water management structures.
Depletion of aquifer	• Minimise abstraction activities to only those that are required for safe establishment of the mining operation. • Monitor groundwater abstraction levels.
Pollution	• Implement recommended waste management procedures and establish required system. • Manage potential pollutants on surface to prevent groundwater pollution
Fugitive dust and particulate matter	• Reduce extent of construction operation taking place by undertaking activities in phases. • Use of windbreaks, chemical and water dust suppression • No topsoil stripping in high wind conditions • Rock cladding of stockpiles/ dumps on prevailing wind facing slopes • Re-vegetation of areas as soon as possible • Reduction of drop height as far as is practicable • Reduction of speed of vehicles to limit dust generation
Increased ambient noise	• All machinery used during construction will be

levels	maintained in sound mechanical condition. • PPE will be worn by all personnel operating in high noise areas (i.e. ear plugs) • On-site generators should be clad in suitable material or housed in structure that would reduce their noise impacts. • Generators will be fitted with appropriate sound suppression devices or silencers • Keep within the applicable speed limits
Vibration	• Complaints by any interested and affected parties must be recorded in an issues and complain register throughout the duration of the mining operations • Blasting activities will be designed by a suitably qualified engineer
Impact of the mining development on graves, farmsteads and heritage resources	No mitigation required, however if archaeological artifacts are discovered work shall cease and SAHRA notified
Contamination of soil, surface water and ground water, health risks as a result of exposure to hazardous substances	• Equipment must be regularly inspected for leaks • Storage areas must be lined and / or secured by an adequate bund wall
Visual Impact	• Fleet design and optimization • All buildings and structures must be in a colour in shades of green, brown, grey with a

	maximum reflectance value of 37%
HIV and AIDS(mine specific)	• Implement an HIV/AIDS plan action • Implement condom programming, information and attitudinal change, gender relations and power over sexual decision-making, life skills education, testing, Anti-Retroviral (ARV) education and recreational activities for on-site employees. • Conduct education within the context of a broader wellness programme.

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

ACTIVITY	REQUIRED MITIGATION
Drilling	• Drilling will only be taking place during working hours. • No drilling will take place during the night. • If there is need for blasting, • Spray water during drilling to avoid the dispersion of dust particles.
Stockpiling of top soil	• Stockpiles should be maintained and kept well below the height of 1.5m
Vegetation clearance	• Limit mining infrastructure and operational footprint size • Use existing roads where

	possible • Clear minimum vegetation • Maximise site vegetation retention areas • Erection of fences • Preservation of vegetation
Vehicle movement	❖ Maximum speed limits of 20km/hr should be enforced to protect pedestrians and wild animals.
Setting up of a site camp	❖ Site setting should avoid sensitive areas.

3.2.2 Concomitant list of appropriate technical or management options

List of options chosen to modify, remedy, control or stop any action, activity, or process which will cause significant impacts on the environment, socioeconomic conditions and historical and cultural aspects have been identified.

❖ Operate during the day to minimise noise

❖ Avoid vegetated area as well as crops to minimise loss

❖ Spray water during for dust suppressing

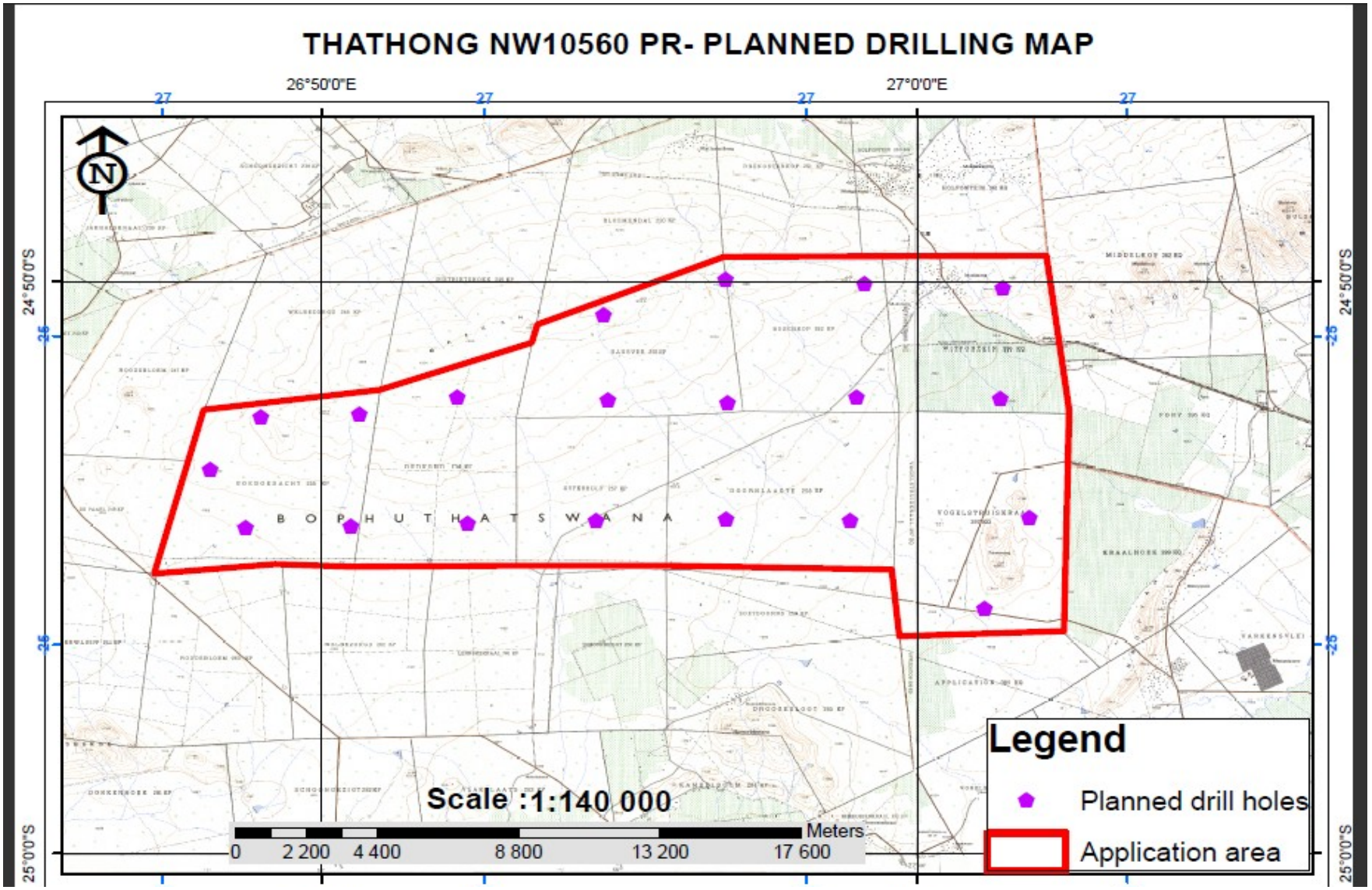
❖ Contain water being used and control water spillage

3.2.3 Review the significance of the identified impacts

After consideration of mitigation measures, impacts will be less or minimal

4 **REGULATION 52 (2) (d): Financial provision.** The applicant is required to-

4.2 Plans for quantum calculation purposes.


THATHONG NW10560 PR- PLANNED DRILLING MAP
26°50'0"E
27°0'0"E
24°50'0"S
25°0'0"S
B O P H U T H A T S W A N A
Scale :1:140 000
Meters
0
2 200
4 400
8 800
13 200
17 600
Legend
Planned drill holes
Application area

4.3 **Alignment of rehabilitation with the closure objectives**

All the holes will be closed and access road be rehabilitated in such a manner that the land will be continued to be used for the same land use post exploration. This will be achieved through sealing of exploration drill holes and ploughing the extended access roads to encourage natural growth of vegetation.

4.4 Quantum calculations.

See attached report

4.5 **Undertaking to provide financial provision**

The amount will be available should the right be granted, though a final amount cannot be committed for such a project, there is a provisional budget set aside

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

5.2 List of identified impacts requiring monitoring programmes.

- Dust
- Soil pollution
- Surface water Pollution
- Ground Water
- Vibration
- Noise
- Vegetation clearing
- Solid Waste

5.3 Functional requirements for monitoring programmes.

Monitor pollution every Friday of the week for the duration of the project.

5.4 Roles and responsibilities for the execution of monitoring programmes.

IMPACT	MONITORED BY:	MONITORING FREQUENCY
Dust	Site Manager	Weekly.
Soil Contamination	Site Manager	Weekly
Surface water pollution	Site Manager	Weekly
Groundwater pollution	Site Manager	Weekly
Solid Waste	Site Manager	Weekly
Vibration	Site Manager	Weekly
Noise	Site Manager	Weekly
Vegetation clearing	Site Manager	Weekly

5.5 Committed time frames for monitoring and reporting.

As shown in the table on 5.4 monitoring will be done weekly.

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

6.2 Rehabilitation plan

The area to be prospected is not easy to show before desktop studies, but all means and efforts will make sure to demarcate the possible area to be drilled and prospected, to be as far away from people as possible including water, river and animals as well as vegetation.

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

To leave the land as it was found or even better than it was before prospecting.

6.4 Confirmation of consultation

To be finalized on the final meeting with the landowner as negotiations and talks are still in progress at the present moment.

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

7.2 Identification of interested and affected parties.

See the attachments on consultations proof appendices

7.3 The details of the engagement process.

7.3.3 Description of the information provided to the community, landowners, and interested and affected parties.

Consultation was done by an Environmental Assessment Practitioner through sending registered letters that pertain all information regarding prospecting as well as the company thats making an application and what is being expected from all interested and affected parties. We have further provided information on what prospecting entails and the benefits as well as the costs of prospecting as a whole.

7.3.4 List of which parties indentified in 7.1 above that were in fact consulted, and which were not consulted.

Landowner, community, trust and the municipality.

Farm name	Farm number	Registration division	Magisterial District	Farm subdivision	Farm subdivision	SG 21-digit code

				name	number	
BOSCHKOP	252	KP	MANKWE		00000	T0KP00000000025200000
HANOVER	253	KP	MANKWE		00002	T0KP00000000025300002
BEDFORD	255	KP	MANKWE		00000	T0KP00000000025500000
GOEDGEDACHT	257	KP	MANKWE		00000	T0KP00000000025700000
RHENOSTERKOP	253	KP	MANKWE		00001	T0KP00000000025300001
HANOVER	254	KP	MANKWE		00000	T0KP00000000025400000
DOORNLAAGTE	258	KP	MANKWE		00000	T0KP00000000025800000
VOGELSTRUISKRAAL	397	KQ	MANKWE		00000	T0KQ00000000039700000
HOLFONTEIN	396	KQ	MANKWE		00000	T0KQ00000000039600000
HANOVER	253	KP	MANKWE		00003	T0KP00000000025300003

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

Safety, privacy, employment generation, social upliftment, environmental rehabilitation, compensation for prospecting, time frames for drilling, partnership, health issues.

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

Safety, privacy, employment for the locals, community development, environmental rehabilitation, compensation for prospecting, time frames for drilling, partnership, health issues.

7.3.7 Other concerns raised by the aforesaid parties.

None

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

See the attachments on consultations proof appendices

7.3.9 Information regarding objections received.

None so far, but we are still waiting for response from other interested and affected parties.

7.4 **The manner in which the issues raised were addressed**.

As of the present moment, there are no unresolved issue, but should any arise after the submission of the EMP, they will be forwarded to the relevant authority and the client and the consultant will try by all means to resolve them.

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

8.2 Employee communication process

An environmental awareness campaign will be done before any prospecting take place with the objective of making all prospecting team aware of what is required and what is not required. It will also outlines all aspects outline in the EMP that the contractor must be aware of.

8.3 Description of solutions to risks

All risks with this kind of prospecting are minimal, though no risk is anticipated; there are funds as well as man power that will be deployed to address any possible and potential risks.

Spillages as risks and mitigation measures will be cleaned immediately if it occurs. All equipments will have to be inspected for any fault before being used to avoid any linkages or oil spills. Incidences in the form of not having Protective Clothing by employees on site, solution will be to provide all employees on site with protective clothing before doing actual work. All visitors must also be supplied with correct PPEs

8.4 Environmental awareness training.

Environmental awareness or induction will be done prior to commencement of prospecting activities or mining activities so that all personnel will be aware of risks, impacts associated with their operations and how those risks and impacts might be minimized.

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

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

The quantum of financial provision will be sufficient to rehabilitate the disturbed area and the rehabilitation process will be done simultaneously with the process of exploration. The quantum amount will be revised on an annual basis

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

It is hereby confirmed that the amount of R41 020 is sufficient for rehabilitation. It is further confirmed that the company will practice concurrent rehabilitation at the same time with the exploration, thus a contingency amount of about R41 020 will be budgeted for. Some on the contingency funds will be used to start with the Environmental impact processes for the mining right should the results be promising. Upon granting of this right, a financial provision of R41 020 will be paid in trust.

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

Herewith I, the person whose name and identity number is stated below, confirm that I am the person authorised to act as representative of the applicant in terms of the resolution submitted with the application, and confirm that the above report comprises EIA and EMP compiled in accordance with the guideline on the Departments official

website and the directive in terms of sections 29 and 39 (5) in that regard, and the applicant undertakes to execute the Environmental management plan as proposed.	
Full Names and Surname	**Tovhowani Madzivhandila**
Identity Number	**830119 0463 087**

-END-