mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

Private Bag X6093, Kimberley, 8300, Tel: (053) 807 1700, Fax: (053) 8325 631
First Floor. Liberty Corner, 29-31 Curry Street, Kimberley 8301

From: Directorate: Mineral Regulation: Northern Cape **Date:** 28 November 2011
Enquiries: Mr. N.V. Muila **E-mail:** vincent.Muila@dmr.gov.za
Ref No.: 5001BP

On Sahris
Caseid: 1049

The Director
South African Heritage Resources Agency
PO Box 4637
CAPE TOWN
8000

Attention: **Mrs Nonofho Ndobochani**

CONSULTATION IN TERMS OF SECTION 40 OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT 2002, (ACT 28 OF 2002) FOR THE APPROVAL OF AN ENVIRONMENTAL MANAGEMENT PLAN FOR MINING PERMIT IN RESPECT OF BORROW PIT ON THE FARM GASESA 272, SITUATED IN THE MAGISTERIAL DISTRICT OF KURUMAN: NORTHERN CAPE REGION.

APPLICANT: DEPARTMENT OF ROADS AND PUBLIC WORKS

Attached herewith, please find a copy of an EMP received from the above-mentioned applicant, for your comments.

It would be appreciated if you could forward any comments or requirements your Department may have to this office and to the applicant **26 January 2012** as required by the Act.

Consultation in this regard has also been initiated with other relevant State Departments. In an attempt to expedite the consultation process please contact **Vincent Muila** of this office to make arrangements for a site inspection or for any other enquiries with regard to this application.

Your co-operation will be appreciated.

pp .....

ACTING REGIONAL MANAGER: MINERAL REGULATION
NORTHERN CAPE REGION

5001 BP

ENVIRONMENTAL MANAGEMENT PLAN FOR BORROW PIT GASESA NO.3 ON FARM GASESA NO. 272 IN THE KURUMAN ADMINISTRATIVE REGION

Submitted in terms of section 106(2) of the Minerals and Petroleum Resources Development Act, Act 28 of 2002

FOR
NORTHERN CAPE PROVINCE,
DEPARTMENT OF ROADS AND PUBLIC WORKS

Report Prepared By Terra Works Environmental Consultants

mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

NAME OF APPLICANT: DEPARTMENT OF ROADS AND PUBLIC WORKS
NORTHERN CAPE PROVINCE

REFERENCE NUMBER:

ENVIRONMENTAL MANAGEMENT PLAN

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

STANDARD DIRECTIVE

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

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

ITEM	COMPANY CONTACT DETAILS
Name	**Northern Cape Province Department of Roads and Public Works**
Tel no	**053 839 2100**
Fax no:	**053 839 2290/1**
Cellular no	-
E-mail address	-
Postal address	**P. O. Box 3132, Square Hill Park, Kimberley, 8301**

ITEM	CONSULTANT CONTACT DETAILS (If applicable)
Name	**Terra Works**
Tel no	**051 412 6350**
Fax no:	**051 412 6351**
Cellular no	**084 700 9700**
E-mail address	**sp@terraworks.co.za**
Postal address	**P.O. Box 28242, Danhof, 9310**
Contact Person	**Samuel Pauw**

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.

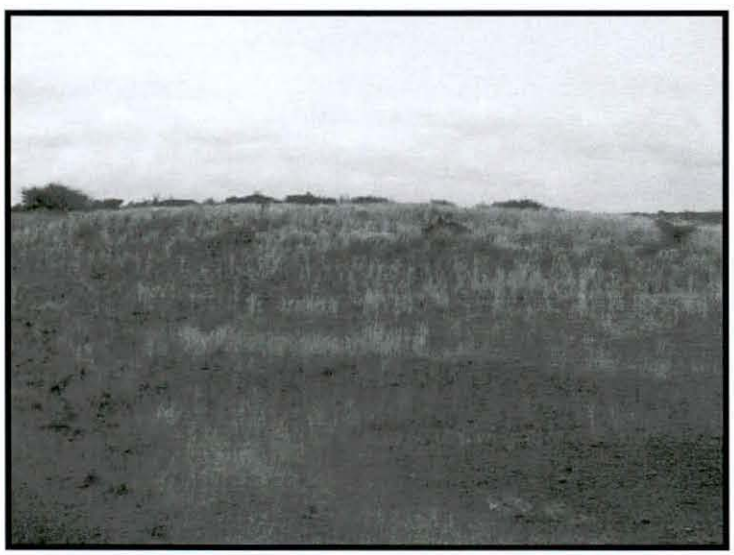
The project area falls in the savanna biome and the vegetation is typified by the Kalahari Thornveld. On the project site, the vegetation is dominated by grasses and very few bushes with some area devoid of vegetation. The area has greatly been impacted on by grazing. Grasses such as kalahari coach *stipagrostis amabilis,* lehmann's lovegrass *eragrostis lehmanniana,* giant stick grass *aristida meridionalis and centropodia glauca* occur.

The vegetation of the project site is much similar to the surroundings which shows clear signs of overgrazing and there are some areas where no natural habitat remains.

During assessment of the site, no animals were noted, however rodents such as the short tailed Gerbil, *Desmodillus auricularis* the

ground-dwelling rodents, the black-tailed tree rat, *Thallomys nigricauda* are known to occur within the vicinity of the project site together with birds such as the sociable weaver and the karro chat.

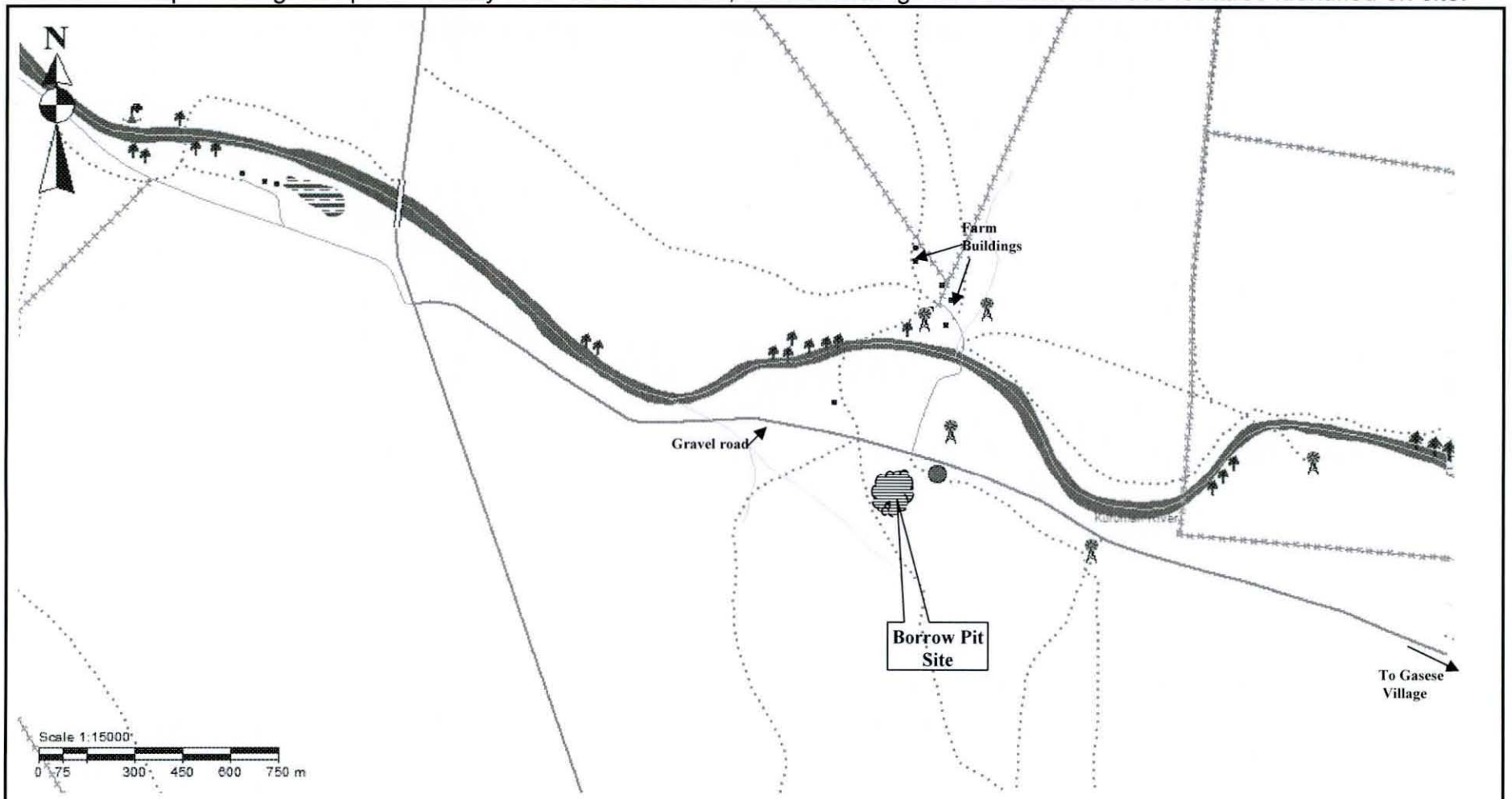
The topography is gently undulating hills. The general altitude of the area ranges between 1000 and 1200m. Some areas have deep reddish brown sandy soils whilst there are patches of areas that have very shallow gravel soil. There are no boreholes or streams on the project site, however, Kuruman River is about 150m from the site. The photographs below shows the project site.



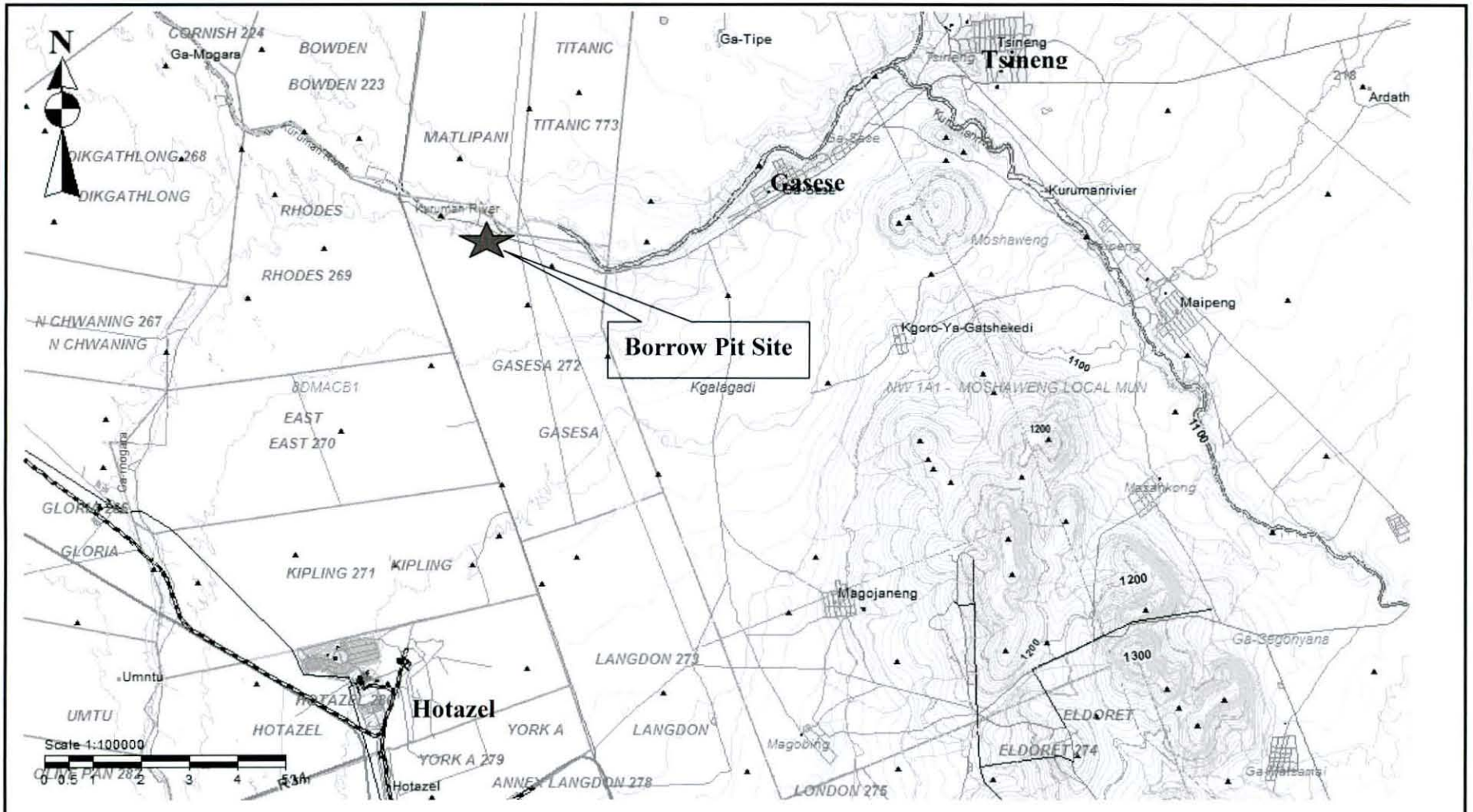
1.2 The specific environmental features on the site applied for which may require protection, remediation, management or avoidance.

There are no specific features on the require avoidance, however, the removal of vegetation to facilitate the excavation of gravel and the movement of machinery will need to be managed.

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



Northern Cape, Department of Roads and Public Works P.O. Box 3132 | Tel: 053 839 2100 Squarehill | Fax: 053 839 2290 Kimberley, 8301	**GASESE NO. 3 BORROW PIT** **GPS Coordinates 22.9831E 27.1239S**	**Terra Works Environmental Consultants** P.O. Box 28242 | Tel: 051-412 6350 DANHOF | Fax: 051-412 6351 9310



Northern Cape, Department of Roads and Public Works P.O. Box 3132 | Tel: 053 839 2100 Squarehill | Fax: 053 839 2290 Kimberley 8301	**LOCALITY MAP** **GASESE NO. 3 BORROW PIT** **GPS Coordinates 22.9831E 27.1239S**	**Terra Works Environmental Consultants** P.O. Box 28242 | Tel: 051-412 6350 DANHOF | Fax: 051-412 6351 9310

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

The borrow pit is required as part of upgrading the gravel road DR3463 between Hotazel and Tsineng. In a meeting held on the progress of upgrading the road in March 8 at the DR4363 construction site offices, it was agreed that there was need to source aggregate from another borrow pit in order to complete the upgrading of the road because the material grade from the current source was becoming poorer. The meeting was attended by representatives from the Northern Cape Department of Roads, John Taolo District Municipality, Terra Works Environmental Consultants, Vela VKE Consulting Engineers and the Community Liaison Officer. The modalities were discussed and it was agreed that different options will be considered to source material with better workability.

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.

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

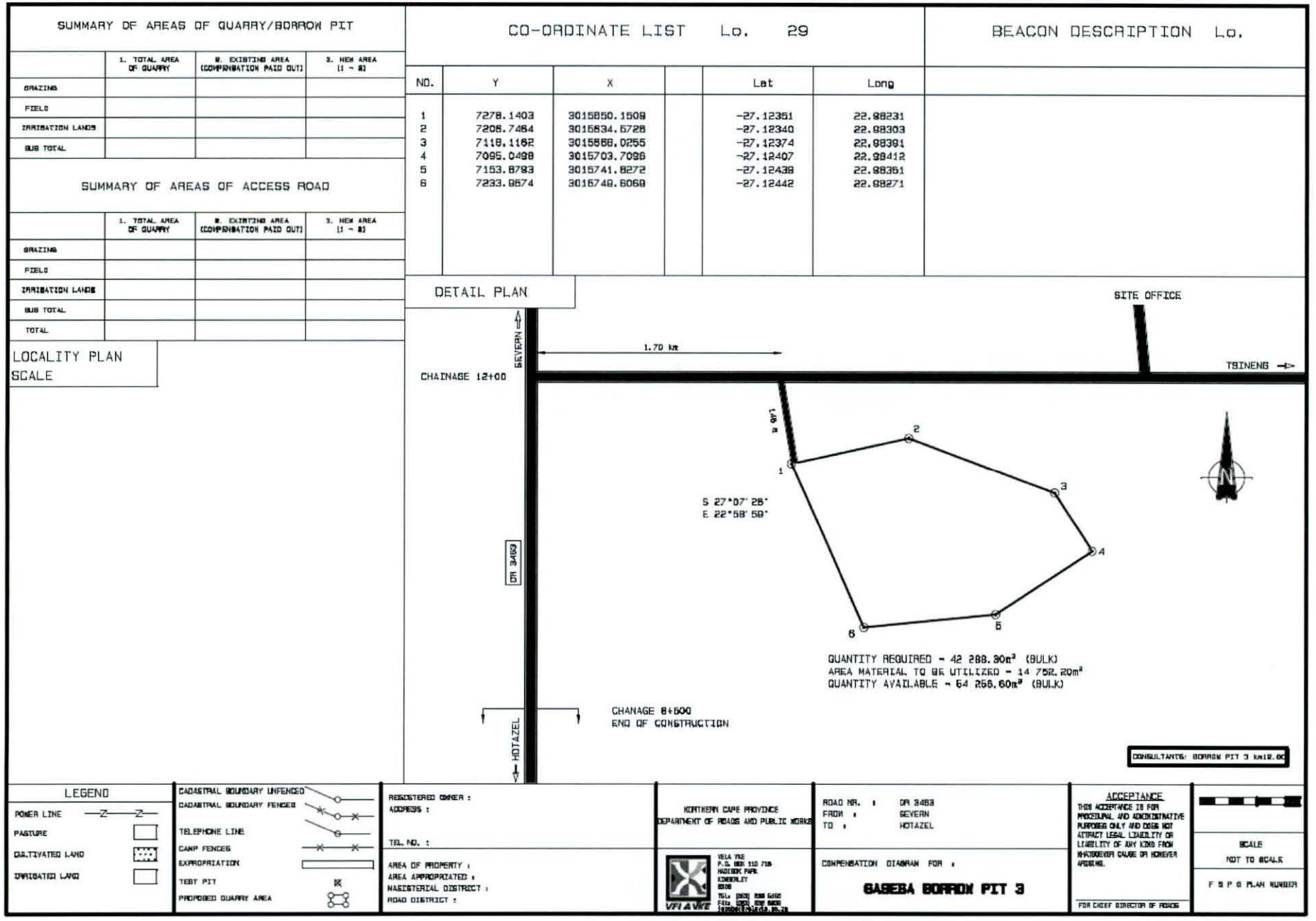
The access road to the borrow area from the gravel road is about 145m. The existing access road to the borrow pit will need to be widened to accommodate heavy machinery.

Areas that will be dedicated for the storage of topsoil will be demarcated prior to the commencement of stripping when mining starts.

2.1.2 Plan of the main activities with dimensions

The borrow pit diagram in Figure 1 shows the expected dimensions of the borrow area.

Figure 1: Borrow Pit Diagram



2.1.3 Description of construction, operational, and decommissioning phases.

No construction of infrastructure apart from the provision of adequate fencing, barriers and beacons is expected at the borrow pit.

The method of mineral extraction will be surface based. The overall mining plan will entail removal of soil and overburden from the borrow pit zone using heavy machinery to push off the soil fraction and overburden. The topsoil will be stripped and stored separately from the other overburden in areas where it will not be disturbed when the borrow pit is in operation. Heavy machinery will be used to extract the gravel. The gravel will be removed with front end loaders and will be loaded onto tipper trucks that will transport it to the areas where it will be used. No mineral processing water will be required for processing, but water will be required to suppress dust on roads and during excavating. Whilst drilling and blasting is not a routine operation at this borrow pit, it should be noted that in the event that hard material is encountered it will be carried out as necessary to facilitate the removal of required material.

The decommissioning phase and rehabilitation phase will consists of removal of unwanted infrastructure such as fences and access road. This will be followed by profiling of the borrow pit to ensure long term stability and that it is in sync with the surrounding landscape. Thereafter, the disturbed areas will be re-topsoiled and re-vegetated.

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

According to Listing Notice 1 Activity No. 20 of GNR 544 of 18 June 2010, a basic assessment is required for an activity requiring the application of a mining permit. However, in terms of the MPRDA Government Notice No. R762 of 25 June 2004, which deals with exemptions of organs of state from certain provisions of the MPRDA, the Northern Cape, Department of Roads and Public Works is exempted to apply for a mining permit in order to remove any mineral for the construction and maintenance of roads but is still required to submit an environmental management plan to the department of mineral resources for approval.

2.2 Identification of potential impacts

(Refer to the guideline)

2.2.1 Potential impacts per activity and listed activities.

	ACTIVITY	POTENTIAL IMPACTS
1	Site Preparation	• Loss of vegetation • Habitat Destruction • Visual scarring • Soil erosion
2	Excavations	• Surface disturbances • Dust emissions • Drainage interruption • Noise • Slope instability • Visual Scarring • Soil erosion
3	Blasting	• Fly rock • Noise and vibrations
4	Stockpiles	• Dust • Surface disturbances • Drainage disruption
5	Loading, Hauling and transportation	• Dust • Increased risk of accidents • Noise • Soil contamination from oil/fuel leaks

2.2.2 Potential cumulative impacts.

Loss of Vegetation: The removal of vegetation to make way for the borrow pit activities at the project site and the past and current over grazing practices in the area will result is a bigger deterioration/loss of vegetation in the areas and habitat destruction.

2.2.3 Potential impact on heritage resources

Assessment of the project site revealed no graves and the project site has no cultural or historical significance. However as excavating forms part of the project activities, there is a possibility that items of heritage significance such as archaeological and paleontological objects, graves and burial grounds, or geological sites of scientific or cultural importance can be uncovered.

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

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

The area is communal land which is used occasionally for grazing. During operation of the borrow pit and closure, before the area has

been fully re-vegetated, this area will therefore not be able to provide for any grazing.

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

A meeting was held with the community on the 15th of March by the Consulting Engineers with members of the community.

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

None Appended.

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

3.1 Assessment of the significance of the potential impacts

3.1.1 Criteria of assigning significance to potential impacts

The significance of potential impacts is derived through a synthesis of ratings of all criteria in the following calculation:

(Duration + Intensity) x Probability = Significance

The significance of a potential impact on decision-making is indicated through significance points in the right hand column of the table below. The significance points indicate the following:

- Low (Significance points (SP) < 50): The impact will not have an influence on the project design;
- Moderate (SP between 50 and 75): It could have an influence on the environment and will require modification of the project design or operational mitigation methods;
- High (SP > 75): It could be a major implication on the project regardless of any mitigation.

Table 1: Assessing Impacts for significance

Impact	Duration	Intensity	Probability	Significance points (SP) and rating
Example. Soil contamination from hazardous substances before mitigation	Permanent - 5	Very high / don't know - 5	Definite / don't know – 10	High SP > 75
	Long term - 4	High – 4	High probable – 8	Moderate SP 50 to 75
	Medium term – 3	Moderate – 3	Medium probability – 6	Low SP < 50
	Short term - 2	Low – 2	Low probability – 4	
	Immediate - 1	Minor - 1	Improbable - 2	

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

	Activity	Impact	Duration	Intensity	Probability	Significance Rating	
1	Site Preparation	Loss of vegetation	3	5	10	80	High
		Habitat Destruction	3	5	10	80	High
		Visual scarring	3	4	8	56	Medium
		Soil erosion	3	4	6	42	Low
2	Excavations	Dust emissions	2	5	8	56	Medium
		Surface disturbances	4	4	10	80	High
		Drainage interruption	4	4	10	80	High
		Slope instability	4	3	6	42	Low
		Noise	2.5	5	10	75	High
		Visual Scarring	3	4	8	56	Medium
		Soil erosion	3	4	6	42	Low
3	Blasting	Fly rock	2.5	5	10	75	High
		Noise and vibrations	2.5	5	10	75	High
		Dust	2.5	5	10	75	High
4	Stockpiles	Dust	2	5	8	56	Medium
		Surface disturbances	3	5	10	80	High
		Drainage disruption	2.5	5	10	75	High
5	Loading, Hauling and transportation	Dust	2	5	10	70	Medium
		Increased risk of accidents	2	4	4	16	Low
		Noise	2.5	5	10	75	High
		Soil contamination from oil/fuel leaks	3	3	6	36	Low

3.1.3 Assessment of potential cumulative impacts.

Impact	Duration	Intensity	Probability	Significance Rating	
Loss of vegetation	3	5	10	80	High
Habitat Destruction	3	5	10	80	High

3.2 Proposed mitigation measures to minimise adverse impacts.

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

- **Clearance of area for mining activities**
- **Excavation of material**
- **Drilling and blasting if it is carried out**
- **Stockpiling**
- **Loading, hauling and transportation of material**
- **Use of vehicle and earth moving machinery**
- **Waste Disposal**

3.2.2 Concomitant list of appropriate technical or management options

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

See appendix 1

3.2.3 Review the significance of the identified impacts

(After bringing the proposed mitigation measures into consideration).

	Activity	Impact	Duration	Intensity	Probability	Significance Rating	
1	Site Preparation	Loss of vegetation	3	3	8	48	Low
		Habitat Destruction	3	3	8	48	Low
		Visual scarring	3	3	6	48	Low

	Activity	Impact	Duration	Intensity	Probability	Significance Rating	
		Soil erosion	3	4	6	42	Low
2	Excavations	Dust emissions	2	3	6	30	Low
		Surface disturbances	3	3	6	48	Low
		Drainage interruption	3	4	6	56	Medium
		Slope instability	3	3	4	24	Low
		Noise	2	4	6	36	Low
		Visual Scarring	3	3	8	48	Low
		Soil erosion	3	3	5	30	Low
3	Blasting	Fly rock	2	3	6	30	Low
		Noise and vibrations	2	3	6	30	Low
		Dust Emissions	2	3	6	30	Low
4	Stockpiles	Dust	2	3	4	20	Low
		Surface disturbances	3	3	6	36	Low
		Drainage disruption	2	3	4	20	Low
5	Loading, Hauling and transportation	Dust Emissions	2	3	6	30	Low
		Increased risk of accidents	2	3	3	15	Low
		Noise	2	3	6	30	Low
		Soil contamination from oil/fuel leaks	3	3	4	24	Low

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

Plans for quantum calculation purposes.

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

The total area covered by the borrow pit operation is 1.36 ha. Of that about 8000m^2 will be disturbed by excavation of gravel and around 1000m2 will be used for storing overburden material and topsoil.

4.1 Alignment of rehabilitation with the closure objectives

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

The rehabilitation plan is described and provided for in Appendix 2

4.2 Quantum calculations.

(Provide a calculation of the quantum of the financial provision required to manage and rehabilitate the environment, in accordance with the guideline prescribed in terms of regulation54 (1) in respect of each of the phases referred to).

The amount for rehabilitation is estimated to be R20000

LIST OF ACTIVITY AREAS ON SITE	Mark with X where applicable		State the area of the activity in m²	State the volume of the activity in m³
	YES	NO		
Excavations	X		8000	
Stockpiles	X		1000	
Discard dumps		X		
Discard dams		X		
Loading areas	X			
Water supply dams		X		
Accommodation areas		X		
Offices or buildings		X		
Workshops		X		
Access roads	X		700	
Other (Specify)				
TOTAL AREA and /or volume to be rehabilitated			9700	

4.3 Undertaking to provide financial provision

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

The applicant commits to provide the amount determined and needed as financial provision by the Department of Mineral Resources.

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

5.1 List of identified impacts requiring monitoring programmes.

- **Removal of Vegetation**
- **Slope instability**
- **Soil erosion**
- **Soil contamination**

5.2 Functional requirements for monitoring programmes.

- **A visual inspection will be done on a daily basis to check that there are no leaking vehicles, evidence of erosion, slope subsidence and presence of any other physical pollution. Any non compliant item will be immediately be rectified and recorded on a weekly basis.**

Monitoring will start at the commencement of the project and will continue until closure.

- **A monthly checklist will be developed to check all issues of compliance and any issues that are non compliance will be rectified immediately. The checklist will include the status of slopes stability, erosion on site, vegetation removal and the status of the machinery on site.**
- **An independent environmental practitioner must audit the place once six months to ensure environmental issues are in compliance and make recommendations for improvement if necessary.**

5.3 Roles and responsibilities for the execution of monitoring programmes.

It is the responsibility of the applicant, the Northern Cape Department of Roads and Public Works to ensure that the monitoring program is fully implemented. The applicant shall appoint an independent environmental control person to inspect and audit the place.

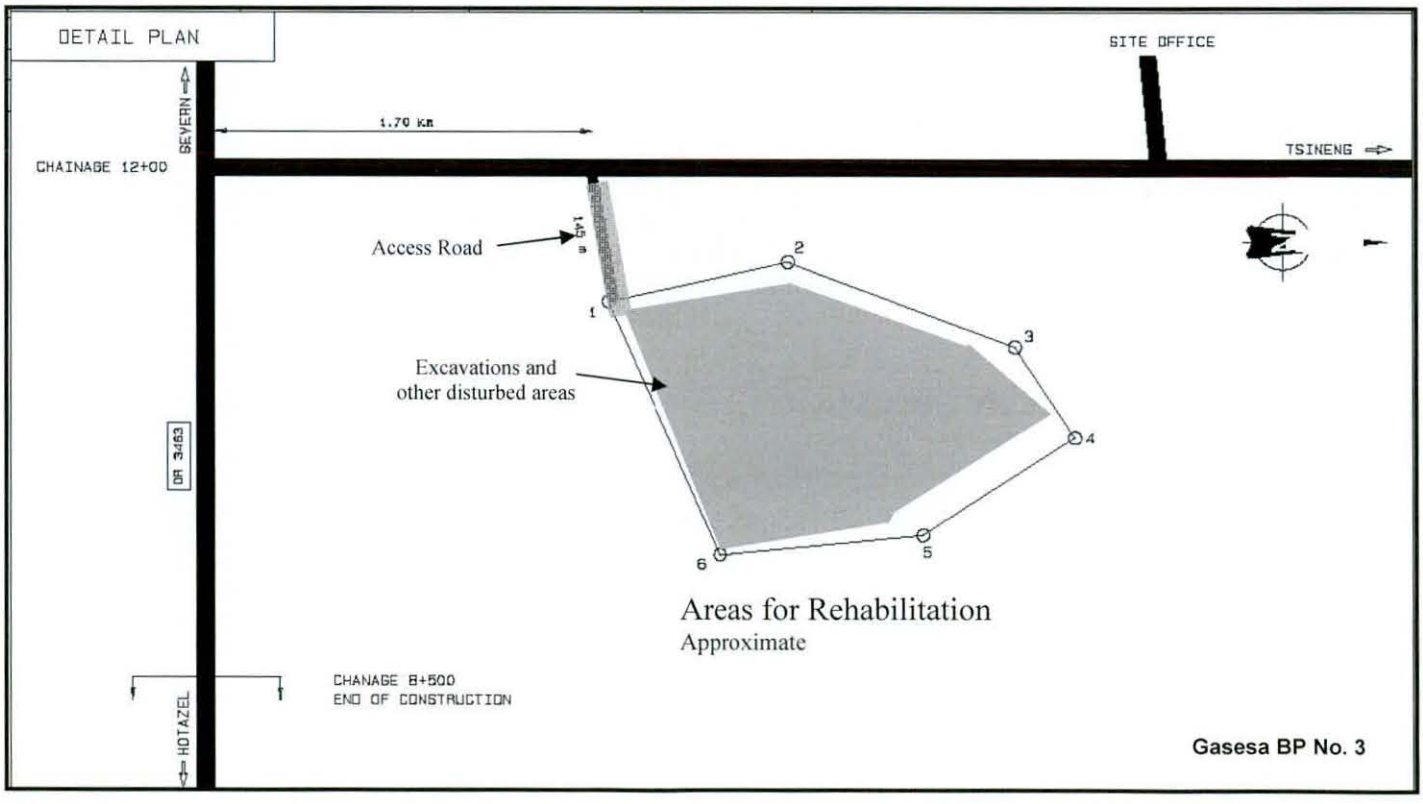
5.4 Committed time frames for monitoring and reporting.

Weekly report showing non conformances observed.
Monthly checklist and report on non conformances observed.

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

6.1 Rehabilitation plan

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



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

- **To create a post mining environment that eliminates unacceptable health hazards and ensures public safety and is in line with applicable legislation**
- **To establish a safe and stable post-mining land surface which has been rehabilitated, that supports vegetation growth, is erosion resistant and has long term sustainability.**
- **To leave the site in a stable, non-polluting and tidy condition with no remaining plant or infrastructure that is not required for post mining operational use.**
- **To minimise or eliminate the downstream environmental impacts on the ecosystem due to interruption of drainage once the borrow pit operations cease.**

6.3 Confirmation of consultation

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

A meeting was held with the community representatives on 16 March 2011.

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

7.1 Identification of interested and affected parties.

(Provide the information referred to in the guideline)
The identified interested and affected parties are:

- **John Taolo District Municipality**
- **Gasese Residents (Tsineng)**
- **Joe Morolong Local Municipality**
- **BHP Hotazel Manganese Mines**
- **Vela VKE Consulting Engineers**
- **Gobul Construction**

7.2 The details of the engagement process.

A meeting was held on March 16 with the members of the Tsineng Community Trust and the Community liaison Officer

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

The community was asked for permission to use a borrow pit for road material in order to finish the surfacing of divisional road DR 3463. The community is the landowner.

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

Joe Morolong Local Municipality was not consulted. John Taolo District Municipality, Hotazel Manganese mines, Vela VKE Consulting Engineers, Globul Construction and Tsineng Community Trust representatives were consulted.

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

The community required two roads in Tsineng to be graded and another to be gravelled as they were in a bad shape.

7.2.3 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.

None

7.2.4 Other concerns raised by the aforesaid parties.

The community representatives said that they wanted a road in Tsineng to be gravelled and two other roads crossing this road to be graded in order for the material from the borrow pit on Farm Gasesa to be utilised to complete the surfacing of DR3463.

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

The minutes are in Appendix 3

7.2.6 Information regarding objections received.

No objections were received

7.3 The manner in which the issues raised were addressed.

An agreement was made that the roads that the community require to be graded will be done and the other road will be gravelled as offered.

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

8.1 Employee communication process

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

All employees will go through an induction of general environmental issues and given specifics on their jobs. The training will include:

- **Making employees aware that everyone has a right to a clean environment and that everyone has a responsibility to protect the environment.**
- **Explanation of the importance of complying with the EMP specifications.**
- **Discussion of the potential environmental impacts of operational activities and mitigation measures that must be implemented when carrying out activities.**
- **Explanation of the management structure of individuals responsible for matters pertaining to the EMP.**
- **Explanation of the specifics of activities pertaining to their work and the mitigation required.**
- **Training can be done either in a written or verbal format but will be in an appropriate format for the receiving audience. People having received training must indicate in writing that they have indeed attended a training session.**

8.2 Description of solutions to risks

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

The applicant will endeavour to improve the competence and skills of personnel. A culture of environmental protection will be promoted. Procedures or systems will be put in place to effectively minimise any identified high risk areas and to proactively control any environmental incidents if they occur. The applicant will also continuously improve and promote a code that goes beyond minimal compliance with environmental legislation.

8.3 Environmental awareness training.

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

- **The borrow pit operator shall identify all situations that can lead to emergency situations and provide response strategies. The situations should include fire and major chemical spill.**

- Contact details of all departments/service providers to be contacted in case of an emergency shall be made available to employees. These include the police, ambulance, local fire fighting unit.
- Equipment for dealing with emergencies such as spill kits, fire fighting equipment, first aid boxes etc shall be made available.
- People will be trained in the appropriate use of emergency equipment such as fire extinguishers etc
- All employees will be made aware who the first aiders on site are.
- Drills/ rehearsals should be conducted periodically to ensure that staff prepared to handle emergencies

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.

(Provide a detailed explanation as to how the amount was derived)

The amount will be provided as part of the overall budget of the upgrading of road DR3463 and the use of the borrow pit.

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

No prospecting work program required and provided.

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	Samuel Pauw
Identity Number	660519 5041 082

-END-

APPENDIX 1:

TECHNICAL AND MANAGEMENT OPTIONS FOR MITIGATION OF IMPACTS

1. INTRODUCTION

These technical and management processes have been developed to enable Northern Cape Department of Roads and Public Works to mitigate negative environmental impacts and to provide a proactive approach to managing identified environmental risk. They provides systematic and explicit mitigation and monitoring measures for the proposed borrow pit so as to ensure that they are implemented during the planning, construction, operational and decommissioning phase of the project. It also mandates the company to internalise the environmental impacts that would otherwise be a social cost.

2. COMPLIANCE WITH LEGISLATION

In addition to the Mineral and Petroleum Resources Development Act, the other relevant legislative provisions of the following should be adhered to are:

- National Monuments Act 1969 (Act 28 of 1969).
- National Parks Act, 1976 (Act 57 of 1976)
- Environmental Conservation Act, 1989 (Act 73 of 1989)
- National Environmental Management Act, 1998 (Act No. 107 of 1998)
- Atmospheric Pollution Prevention Act, 1965 (Act 45 of 1965)
- The National Water Act, 1998 (Act 36 of 1998)
- Explosives Act, Act
- Mine Safety and Health Act, 1996 (Act 29 of 1996)
- The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983).

3. PERMITS AND PERMISSIONS

All pertinent permits, approvals and agreements are to be obtained before activities commence on site and the conditions are to be strictly adhered to.

4. GENERAL SITE ESTABLISHMENT

Access at the borrow pit shall be controlled and adequate precautions taken to prevent unauthorised entry to the borrow pit. A fence or other barrier should be erected to restrict access

- The area must be clearly demarcated along its boundaries.
- Permanent beacons must be firmly erected and maintained in their correct position throughout the life of the operation.
- Resultant operations shall only take place within this demarcated area.
- Borrow pit boundaries shall be signposted and laid out so as to be clearly visible and identifiable.
- Adequate precautions shall be taken to protect persons present at, or in the vicinity of, the borrow pit from risks that may arise from borrow pit operations.

5. MANAGING SOCIAL IMPACT RELATED ISSUES

- Community should be adequately informed in advance of activities being done at the borrow pit that are likely to affect them.
- Labour recruitment should occur in a manner that is objective, transparent, and wherever possible, provide opportunities for people from the local area.
- Priority should be given to the local supplier of goods and services, which meet requirements of project procurement.
- Effective two-way public disclosure and public consultation should be implemented to allay community perceptions. There should be an opportunity provided for the resolution of grievances or complaints received and recorded from individuals in the community.

6. SPECIFIC MITIGATION MEASURES

6.1 MANAGING SOIL IMPACTS

These measures are targeted at managing soil erosion, soil contamination, compaction of soil and removal of topsoil

- The area that is stripped of vegetation should be kept to an absolute minimum
- Contractor shall at all times carefully consider what machinery is appropriate to the task while minimising the extent of environmental damage and unnecessary movements should be prohibited
- The topsoil, including the existing grass cover is to be shallowly ripped (only the depth of the topsoil) before removal. This is to ensure that organic plant material, and the natural seed base is included in the stripping process. The soil is to be stored and the soil stockpiles shall not be higher than 2 m or stored for a period longer than one year. The slopes of soil stockpiles shall not be steeper than 1 vertical to 2.5 horizontal.
- Topsoil shall be stored separately from subsoil and other overburden material.
- No vehicles shall be allowed access onto the stockpiles after they have been placed.
- Stockpiles shall not be allowed to become contaminated with oil, diesel, petrol, garbage or any other material, which may inhibit the later growth of vegetation.
- The contractor shall apply soil conservation measures to the stockpiles to prevent erosion.
- Ensure regular maintenance of equipment to prevent diesel and hydraulic spillages

- Where possible ensure low work surface gradients so that run-off flows at a controlled rate so as to minimize channeling and soil erosion during high rainfall
- At the end of operations, all disturbed areas shall be re-vegetated.

6.2 LOSS OF VEGETATION

- Clearance of vegetation should be restricted to the absolute minimum required to facilitate access and undertake borrow pit activities. Disturbance of topsoil and vegetation rootstock must be minimized as far as possible.
- Any alien species identified should be cleared.
- Burning of any material is not permitted under ANY circumstances.
- Rehabilitation strategies following operational activities must ensure that appropriate indigenous plant species are used and should be done as per rehabilitation plan

6.3 DUST AND VEHICLE FUMES

- Avoid unnecessary excessive vehicle movement.
- Limit vehicle speeds on unsurfaced roads.
- Rehabilitate disturbed areas with vegetation as soon as operation is completed.
- Maintain equipment and vehicles in good working order to avoid excessive .emissions
- Borrow pit working floors should be sprayed with water from time to time to reduce dust emission during operations
- Use rubber curtains/other material to limit dust during screening should be considered.
- Spray roads, material stockpiles and screening areas with water if dust becomes problematic.
- No fires should be allowed on the borrow pit site.

6.4 BLASTING

- All blasting and handling of blasting materials should be done in accordance with the Explosives Act and the Mine Health and Safety Act
- A risk assessment has to be that takes into account the safety of the people, infrastructure and the surrounding environment. A pre and post blasting survey should be done.
- A blasting time schedule shall be distributed to all surrounding villages indicating the time and date for blasting activities. It is recommended that blasting takes place between 1200hrs and 1500hrs.
- At all times blasting shall be carried out that ground vibration, air blast and scatter are kept within such limits as to avoid damage to adjacent structures/machinery etc already placed at the works. Any fly rock should be cleared after blasting.

6.5 WASTE DISPOSAL

- All personnel must be instructed to dispose of waste in a proper manner.
- Suitable receptacles shall be available at all times and conveniently placed for the disposal of waste.
- No waste shall under any circumstance be disposed of in the veld. No burning of waste is permitted on site and the borrow pit area should be protected from illegal dumping of waste.
- All used oils, grease or hydraulic fluids shall be placed in appropriate impervious containers and these receptacles will be removed from the site on a regular basis for disposal at a registered or licensed disposal facility or sent for recycling/reuse with a registered facility.

- Spills should be cleaned up immediately by removing the spillage together with the polluted soil and by disposing of them at a recognised facility. In areas where the spills are some, an absorbent agent can be used and the area treated
- Contaminated materials and residues from machinery maintenance and other sources contaminated with hazardous waste should be stored in proper containers that avoid seepage to ground.
- The reduce, reuse, recycle waste management philosophy will be used where possible.
- Only authorized registered waste disposal contractors should be hired for collection of waste for all waste streams

6.6 SOCIAL IMPACTS

- Effective two-way public disclosure and public consultation should be implemented to allay community perceptions. There should be an opportunity provided for the resolution of grievances or complaints received and recorded from individuals in the community.
- Community should be adequately informed of activities being done at the borrow pit that are likely to affect them.
- Labour recruitment should occur in a manner that is objective, transparent, and wherever possible, provide opportunities for people from the local area.
- The activities of contractors, consultants, and company employees should be routinely reviewed to ensure good community relations are being maintained. The project proponent should use its influence as employer to encourage responsible behaviour among employees.

6.7 STABILITY OF EXCAVATIONS

- Excavations shall take place only within the approved demarcated borrow pit area and appropriate barriers should be put as necessary.
- The borrow pit operator shall ensure that a place of work, whether temporary or permanent in or near the excavation has a structure and solidity appropriate to its use is operated, supervised and maintained, so as to withstand the environmental forces anticipated and be safe.
- The borrow pit operator shall ensure that material is not placed, stacked or used at the borrow pit near the edge of any excavation, where it is likely to endanger people at work and equipment or where it is likely to cause collapse of the side of the excavation.
- Excavations should be routinely inspected. If cracks occur in any structure they need to be investigated to ascertain if there is a risk to safety
- Overburden rocks and coarse material shall be placed concurrently in the excavations or stored adjacent to the excavation, if practicable, to be used as backfill material once the mineral or gravel has been excavated.
- An appropriate drainage provisions must be constructed as necessary to accommodate the surface water movement. If the water table is reached during excavations appropriate pumping facilities should be provided.
- Excavated areas should be kept in a safe and stable manner. No unstable block should be present. Reshaping of the borrow pit may need to be done to ensure that this objective is reached. The profiling should be done to match the surrounding landscape
- The borrow pit should be finished in such a manner that it is self draining
- Top soil should be put back on the surfaces an the areas revegetated.

6.8 VISUAL IMPACTS

- The excavated area must serve as a final depositing area for the placement of overburden. Rocks and coarse material removed from the excavation must be dumped into the excavation.
- Once excavation parts that can be filled have been refilled with overburden, rocks and coarse natural materials, the borrow pit shall be profiled with acceptable contours and erosion control measures, the topsoil previously stored shall be returned to its original depth over the area. The profiling shall be done to match the surrounding landscape as far as is reasonable possible.
- The area shall be fertilised if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the there may be need for the soil to be analysed and any deleterious effects on the soil arising from the borrow pit, be corrected and the area be seeded with a vegetation seed mix to his or her specification.

6.9 EQUIPMENT USED ON SITE

- Only well-maintained vehicles and equipment should be operated onsite and all machinery should be serviced regularly during the borrow pit operation.
- The maintenance of vehicles and some equipment used for any purpose during the borrow pit operation will take place only in the maintenance workshops which are not located on the borrow pit. No vehicle may be extensively repaired in any place other than in the maintenance yard
- A maintenance schedule should be prepared in order to ensure that equipment is in is best form so as to no cause unnecessary pollution such as noise, emissions and makes effective use of energy.
- Equipment used in the borrow pit process must be adequately maintained so that during operations it does not spill oil, diesel, fuel, or hydraulic fluid.
- Machinery or equipment used on the borrow pit area must not constitute a pollution hazard. No equipment leaking oil should be used. Drip tray should be used to prevent pollution

6.10 NOISE

- Construction activities required outside normal working hours must be approved by the Project Manager, and where necessary, advance warning provided to adjacent residents.
- Noise levels exceeding 85dB shall only be permitted where approved and with appropriate advanced warning to adjacent residents (minimum of 2 days) being provided.
- Noise that could cause a major disturbance should only be carried out during daylight hours and with advance warning provided as above.
- Adequate ear protection should be provided to employees in noisy areas
- No amplified music shall be allowed at the site.
- Construction vehicles and plant to be in good working order.

APPENDIX 2: REHABILITATION PLAN

GASESA BORROW PIT REHABILITATION AND CLOSURE

1.0 INTRODUCTION

The key aims of the rehabilitation are to eliminate unacceptable risks by establishing a safe, stable and non polluting post-mining land surface which supports vegetation growth and the vegetation growth should be sustainable over the long term. It is also targeted at minimising the downstream impacts on the ecosystem due to the interruption of drainage system.

The borrow pit operator must perform progressive rehabilitation as material extraction is done. Progressive rehabilitation means rehabilitation done sequentially within a reasonable time after extraction of borrow pit resources is complete. As one area of their pit or borrow pit is being extracted, rehabilitation must be completed in the areas where the borrow pit reserves have been stopped or exhausted. Progressive rehabilitation is beneficial in many ways as it reduces the open areas within a borrow pit, reduces soil erosion potential and reduces double-handling of soil / waste materials.

The final rehabilitation takes into account that the borrow pit is located in a semi arid region. The environment affected by the operations shall be rehabilitated, as far as is practicable, to its natural state or to a predetermined and agreed to standard or land use which conforms with the concept of sustainable development. The affected environment shall be maintained in a stable condition that will not be detrimental to the safety and health of humans and animals and that will not pollute the environment or lead to the degradation thereof. The rehabilitation activities should require the re-planting of vegetation in some areas cleared for the borrow pit activities. This will promote soil stability, improve the visual environment and provide faunal habitat into the operation stage

2.0 REHABILITATION OF ACCESS ROADS

- Whenever borrow pit is suspended, cancelled or abandoned any access road or portions thereof, constructed by the holder and which will no longer be required by the landowner/tenant, shall be removed and/or rehabilitated to the satisfaction of the owner.
- Any gate or fence erected by the borrow pit operator which is not required by the landowner/tenant, shall be removed and the situation restored to the pre-borrow pit situation.

- Roads shall be ripped or ploughed, and if necessary, appropriately fertilised (based on a soil analysis) to ensure the regrowth of vegetation. Imported road construction materials which may hamper regrowth of vegetation must be removed and disposed of in an approved manner prior to rehabilitation.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the soil be analysed and any deleterious effects on the soil arising from the borrow pit, be corrected and the area be seeded with a seed mix which is in similar with the vegetation of the area.

3.0 OFFICES, STORAGES AREA AND PLANT STRUCTURES

- On completion of operations, all buildings, structures or objects on the camp/office site shall be demolished and removed.
- Where office/camp sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10cm above the surrounding ground surface.
- On completion of borrow pit operations, the above areas shall be cleared of any contaminated soil, which must be dumped as per the waste management plan
- All infrastructure, equipment, plant, temporary housing and other items used during the borrow pit period will be removed from the site
- Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the borrow pit area and disposed of at a registered waste disposal facility. It will not be permitted to be buried or burned on the site
- Photographs of the camp and office sites, before and during the borrow pit and after rehabilitation, shall be taken at selected fixed points and kept on record.
- The surface shall then be ripped or ploughed and the topsoil previously stored shall be spread evenly to its original depth over the whole area. The area shall then be fertilised if necessary (based on a soil analysis).
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the might be need that the soil be analysed and any deleterious effects on the soil arising from the borrow pit operation be corrected and the area be seeded with a seed mix to his or her specification.

4.0 REHABILITATION OF EXCAVATION AREAS

- Excavated areas should be kept in a safe and stable manner. No unstable block should be present. Reshaping of the borrow pit may need to be done to ensure that this objective is reached
- Preventative measures may be necessary during closure to construct adequate drainage structures including ditches and other structures to facilitate the movement of surface water and prevent damming. An assessment will need to be done when mining has ceased to determine if there is need for such measures. The

objective of these measures is to avoid water build-up that affects the physical stability of the slopes and also interferes with the drainage of the whole area.

- The excavated area must serve as a final depositing area for the placement of overburden and gangue during processing.
- Rocks and coarse material removed from the excavation must be dumped into the excavation simultaneously with waste, as described in previous paragraph. Waste will not be permitted to be deposited in the excavations.
- Once excavation parts that can be filled have been refilled with overburden, rocks and coarse natural materials and profiled with acceptable contours and erosion control measures, the topsoil previously stored shall be returned to its original depth over the area.
- The area shall be fertilised if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the there may be need for the soil to be analysed and any deleterious effects on the soil arising from the borrow pit, be corrected and the area be seeded with a vegetation seed mix to his or her specification.

APPENDIX 3: MINUTES OF PUBLIC CONSULTATION

VELA VKE
CONSULTING ENGINEERS (PTY) LTD
Registration Number: 1969/007013/07
Incorporating Munyai Maloka Engineers (Pty) Ltd
8 Rush Street, Albertynshof 8301, Kimberley P O Box 110715, Hadison Park 8306, Kimberley, South Africa
Tel +27(0)53 832 5150 Fax +27(0)53 832 9839 e-mail: kimberley@velavke.co.za Website: www.velavke.co.za

Our reference: BK084/1/2

16 March 2011

Attention: Tsineng CPA

Dear Mr and Mrs

BK084: UPGRADING OF DIVISIONAL ROAD 3463 (SEVERN ROAD): Agreement with Tsineng CPA to utilise material from the farm Gasesa

Please refer to our meeting held Yesterday 15 March 2011 with the contractor from Globul, the consultants Vela VKE Engineers, the CLO and Tsineng CPA regarding the above mentioned project.

As per our discussion we are requiring material for the construction of the upgrading of the gravel road DR 3463 and per our agreement we wil gravel a road in Tsineng and grade two roads crossing this road in order to utilise the material from the farm Gasesa.

Two additional streets in Gasese has also been pointed out and agreed on to re-gravel.

We appreciate your assistants in this regard.

Yours faithfully

IAN KEMP
For VELA VKE KIMBERLEY

Date	Initials and Surname	Signature
16/03/2011	W/Cdr S. Molelowa	
16/03/2011	I M Matlhare	
16/03/2011	F.L. Molale	
16/03/2011	M. Skeyana	
16/03/2011	TP AMORIES	
16/03/201	GJ. Molale	
16/03/2011	L.J. Pocco	
16/03/2011	P.S Kolai	
16/03/2011	E J. Gqokoqwana	
16/03/2011	L. MANHE	
16/03/2011	G G Hough	
16/03/2011	K. SECHOGGLA	
16/03/2011	C. WILLIAMSON	
16/03/2011	I KEMP	