



mineral resources

Department:

Mineral Resources

REPUBLIC OF SOUTH AFRICA

Case ID 8264

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From: Directorate: Mineral Regulation: Northern Cape **Date:** 14 December 2012

Enquiries: Mr. C. Tshisevhe **E-Mail:** chris.tshisevhe@dmr.gov.za

Ref: NC 30/5/11/3/2/1/1116 EM

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 AMENDED ENVIRONMENTAL MANAGEMENT PLAN FOR AN EXISTING PROSPECTING RIGHT IN RESPECT OF PORTIONS 19, 24 AND 25 OF SISHEN NO.543, SITUATED IN THE MAGISTERIAL DISTRICT OF KURUMAN, NORTHERN CAPE REGION.


APPLICANT: SISHEN IRON ORE COMPANY (PTY) LTD.

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 before the **12 February 2013** 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 **Mr. Christopher Tshisevhe** 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.


.....
REGIONAL MANAGER: MINERAL REGULATION

NORTHERN CAPE REGION



mineral resources

**Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA**

NAME OF APPLICANT: Sishen Iron Ore Company (Pty) Ltd

REFERENCE NUMBER: Right Registration Number: 1021/2007 PR
DME Reference Number: NC 30/5/1/1/2/1116

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)

DEPARTMENT OF MINERAL RESOURCES
PRIVATE BAG X6093
2012 -17- 17
KIMBERLEY 8300
DEPARTMENT OF MINERAL RESOURCES

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 Department's 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	CONTACT DETAILS
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Introduction

EndemicVision Environmental Services, as independent environmental consultants, have been appointed by Kumba Resources (Pty) Ltd to update the current approved Environmental Management Plan to the new format as required by the Department of Mineral Resources.

Sishen Iron Ore Company (Pty) Ltd has ongoing prospecting programmes in the area around Sishen Mine. This prospecting right for Sishen Suid van Dingleton forms an integral part of the Sishen Iron Ore Company's growth strategy in the area.

The objective of translating the EMP to the new format is to comply with the requirement of the Department of Mineral Resources and to review environmental baseline information, assess environmental aspects and propose appropriate mitigation and closure planning for the project. The process followed is in compliance with the Mineral and Petroleum Resources Development Act (Act 28 of 2002) in accordance with the current standard format provided by the Department in terms of Regulation 52 (2).

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.

Cadastral

The surrounding land-use of the neighbouring properties are agricultural; residential land use in the surrounding small historic mining town of Dingleton and mining by both Komati Mine and Sishen Mine. The farming is extensive cattle grazing and game farming and a limited amount of crop production. The farming practices are primarily commercial. The surrounding land is sparsely to moderately populated with the nearest town, Dingleton is 4.5 km away and Kathu approximately 30km away.

No infrastructure will be impacted upon as drilling will take place in natural veldt not previously developed or open space areas between roads and Dingleton town. Existing roads will be used as far as possible and either rehabilitated; maintained for future (new) land use or up-graded where appropriate.

Important infrastructure in the vicinity of the proposed project includes:

- Existing roads and road reserves
- Power lines
- Farming or municipal infrastructure
- Water supply boreholes and reservoirs from private landowners
- Livestock fences and gates
- Existing radio towers

Socio-Economic

- During 2001 to 2007, the Northern Cape and the area of Gamagara have seen a steady increase in population growth. Gamagara has seen an influx of people in search of employment opportunities, which has put pressure on the area's infrastructure and this trend is foreseen to continue.
- Areas that need close consideration for development as a result of increased migration and urbanisation are housing, infrastructure (especially upgrading and maintenance of roads), education, health services and safety provision.
- There still remains a distinct threat of HIV and TB infection in the Kgalagadi District.
- Gamagara, despite its strong economic opportunities, has low levels of education.
- The crimes reported in Gamagara are not serious, but there still is a need to increase policing in the area.
- The area's water provision is currently sufficient, yet temporary considering the life of The Mine, and needs to be addressed to establish a more permanent solution.

Topographical

The landscape has a relatively flat topography with isolated hills and mountain ranges, plains dominate the landscape intersected by dry riverbed systems. The project site is primarily on the low lying plains areas.

The topography can further be described as gentle undulating to flat with low-lying sporadic outcrops of quartzite, chert breccia and banded iron formation towards the South-South West. Regional drainage is towards the northwest but here follows an east-west course in the Gamagara River.

Biophysical

The prospecting site falls within an arid region with low annual rainfall. Rainfall events are highly unpredictable, generally occurring in late summer and autumn, between the months of December and April.

Rainfall occurs as thunderstorms associated with heavy downpours. The mean annual precipitation of the nearby town of Kathu is approximately 374mm.

The area has a wide temperature range. The mean annual temperature for is 17°C. Summer temperatures may reach 38°C, with winter temperatures reaching as low as -8°C.

The soils of the area comprise of Kalahari sands and calcrete banks with a varying topsoil depth of between 0 (zero) for some calcrete banks and up to 600mm in Kalahari sands.

The natural environment on site is a representation of the surrounding area and described as Savanna biome that is characterized by woody shrubs, scattered trees and a grass-covered ground layer (Mucina & Rutherford 2006).

According to Acocks (1988) the vegetation of the area falls within the Kalahari Thornveld Veldt type or Kalahari Plains Thorn Bushveld veldt type of Low and Rebelo (1996). This includes the Vryburg Shrub Bushveld subdivision, which occurs on rocky soil. Within this variation occur an additional four subdivisions, including:

- a) The Tarchonanthus Veldt of the Ghaap Plateau, with many minor variations;
- b) The mixed Tarchonanthus Veldt of the Asbestos and Kuruman Hills;
- c) The mixed Tarchonanthus - Rhus - Croton Veldt of the Langeberge; and
- d) The mixed Tarchonanthus - Thornveld of the Kimberley plains and koppies.

Each of these variations shows minor variations according to the microclimate of the area, the geological formation and the geological structure. However, in general, this veldt type is a fairly dense bushveld composed of shrubs, and sometimes small trees, in a mixed grassveld.

The predominant vegetation type in the region is the Kathu Bushveld (SVk12) and Olifantshoek Plains Thornveld (SVk 13). The prospecting area falls predominantly in the Kathu Bushveld vegetation type.

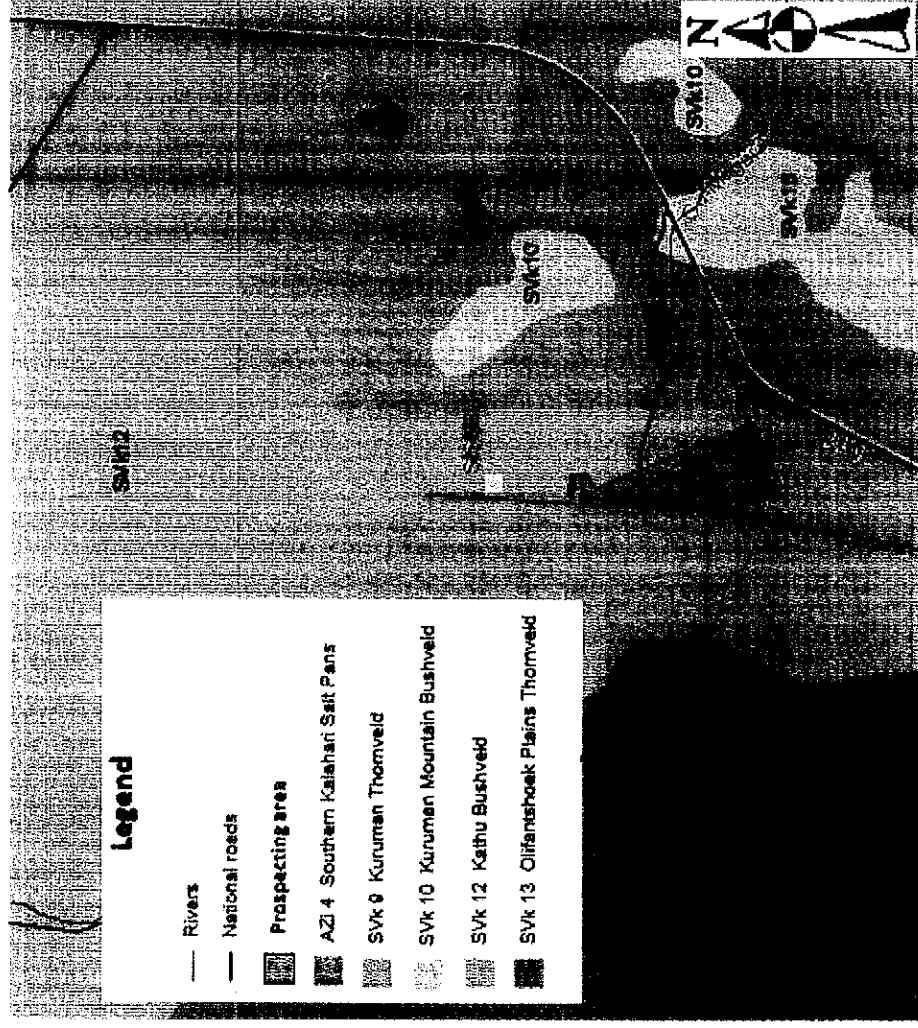


Figure 1: Vegetation types applicable to project area

The veldt use type is sweetveld, characterized by the majority of the landscape being low lying areas within a lower rainfall are that has predominately mild winter period. Sweetveld is prone to overgrazing, but also has a greater capacity for recovery after disturbances (van Oudtshoorn, 2004).

The vegetation structure varies from a dense, short bushveld to an open tree savanna with dense, high riverine areas.

The vegetation cover falls within the 20% to 40% range (map below), but varies from more than a 100% cover in riparian and dense bushveld areas to 20% on mountain slopes.

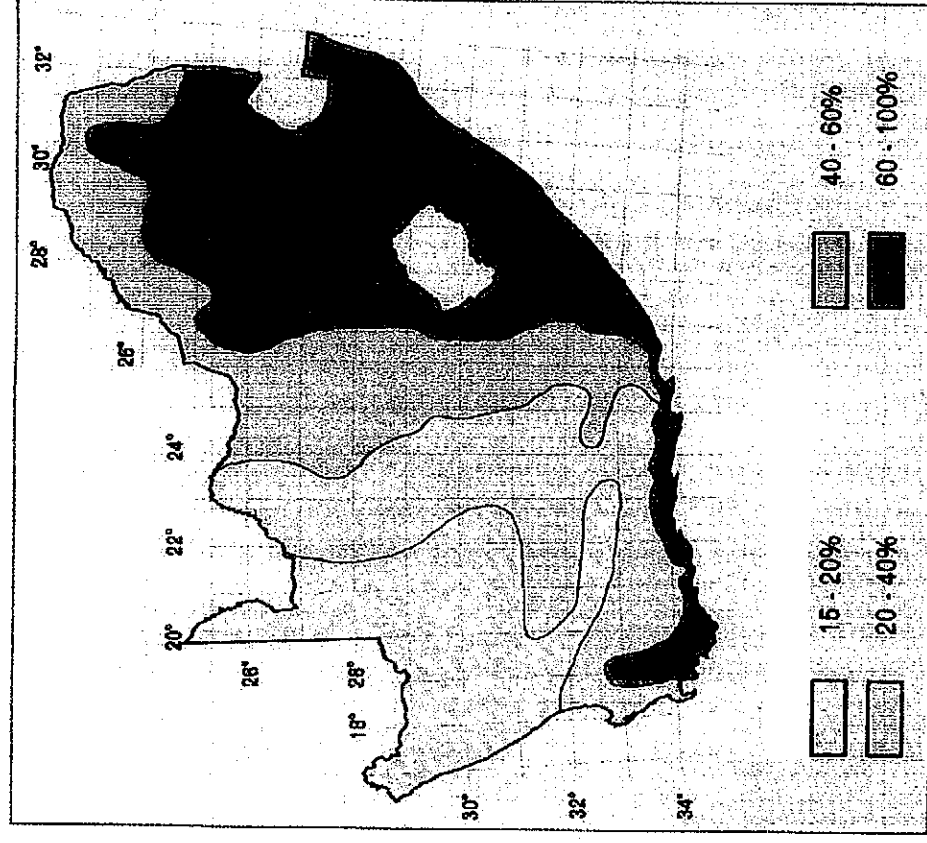


Figure 2: Vegetation Cover Ranges for South Africa (S. Milton, 2006)

Plant species lists are attached as [Appendix 1](#) of this EMP.

The interaction of re-vegetated plants with the physical, chemical and biological components of the soil environment determines whether vegetation will persist on rehabilitated areas.

Fire is an important regulatory factor in the Savannah biome. It is a fire-dependent system. However, most fires today are anthropogenic ally (by humans) induced. Fire is required for healthy grassland systems, but can be detrimental to areas under rehabilitation.

Grazing result in fertilization of the veldt; distribution of seeds; utilization of grasses that stimulate re-growth and promote root development in some species; trampling and turning of

the soil that assist soil formation. Grazing can however be detrimental on recovering, sensitive areas or areas with high erosion potential.

Faunal elements consist of good bird diversity and game as listed in appendix 2 of this EMP.

The identified animal species are known to occur in the area but continuing farming activities has resulted in the reduction of natural habitat.

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

The vegetation around Sishen and Kathu falls into the Griqualand West Centre of Endemism (Van Wyk & Smith 2001). A centre of plant endemism is an area with high concentrations of plant species with very restricted distributions. Centres of endemism are important because it is these areas, which if conserved, would safeguard the greatest number of plant species. They are extremely vulnerable; relatively small disturbances in a centre of endemism may easily pose a serious threat to its many range-restricted species (Van Wyk & Smith 2001). The Griqualand West Centre (GWC) is one of the 84 African centres of endemism and one of 14 centres in southern Africa, and these centres are of global conservation significance. (AGES, Dr.B.J. Henning 2012)

A specific environmental feature that may require protection and post project management is some of the protected tree species, local endemic species and sensitive pans and river streams.

The protected tree species include:

- *Acacia erioloba* (Camel Thorn)
- *Boscia albutranca* (Sheperds Tree)

Endemic and near-endemic plant species include:

- *Searsia tridactyla*,
- *Aloinopsis orpenii*,
- *Euphorbia planiceps*,
- *Euphorbia bergii*,
- *Lebeckia macrantha*,
- *Lithops aucampiae*
- *subsp. aucampiae* and
- *Tarchonanthus obovatus*.

The ecological specialist report conducted for the surrounding area in terms of the Sishen expansion project and referenced in this EMP is attached as appendix 5 of this EMP.

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

The below inserted maps indicate the location of Sishen South of Dingleton in the greater context and the relevant property layout of the surrounding area.

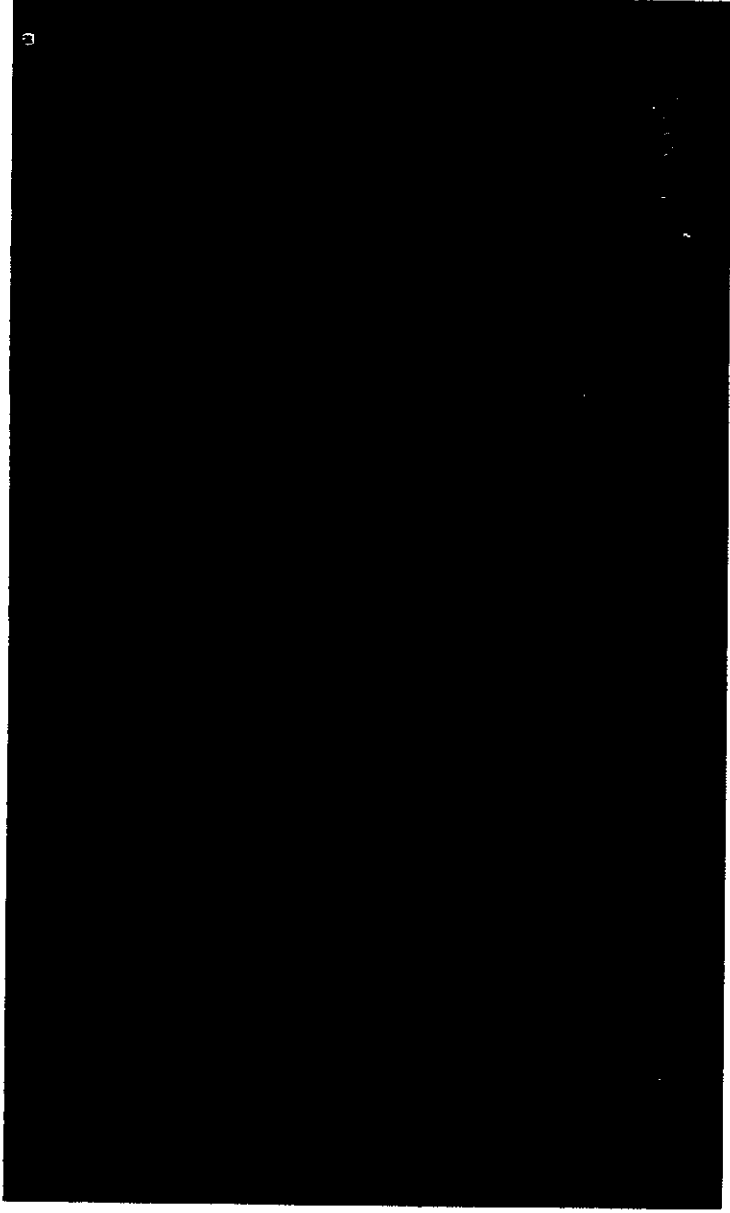


Figure 3: Map Indicating Sishen South of Dingleton in landscape context and properties and surrounding farms

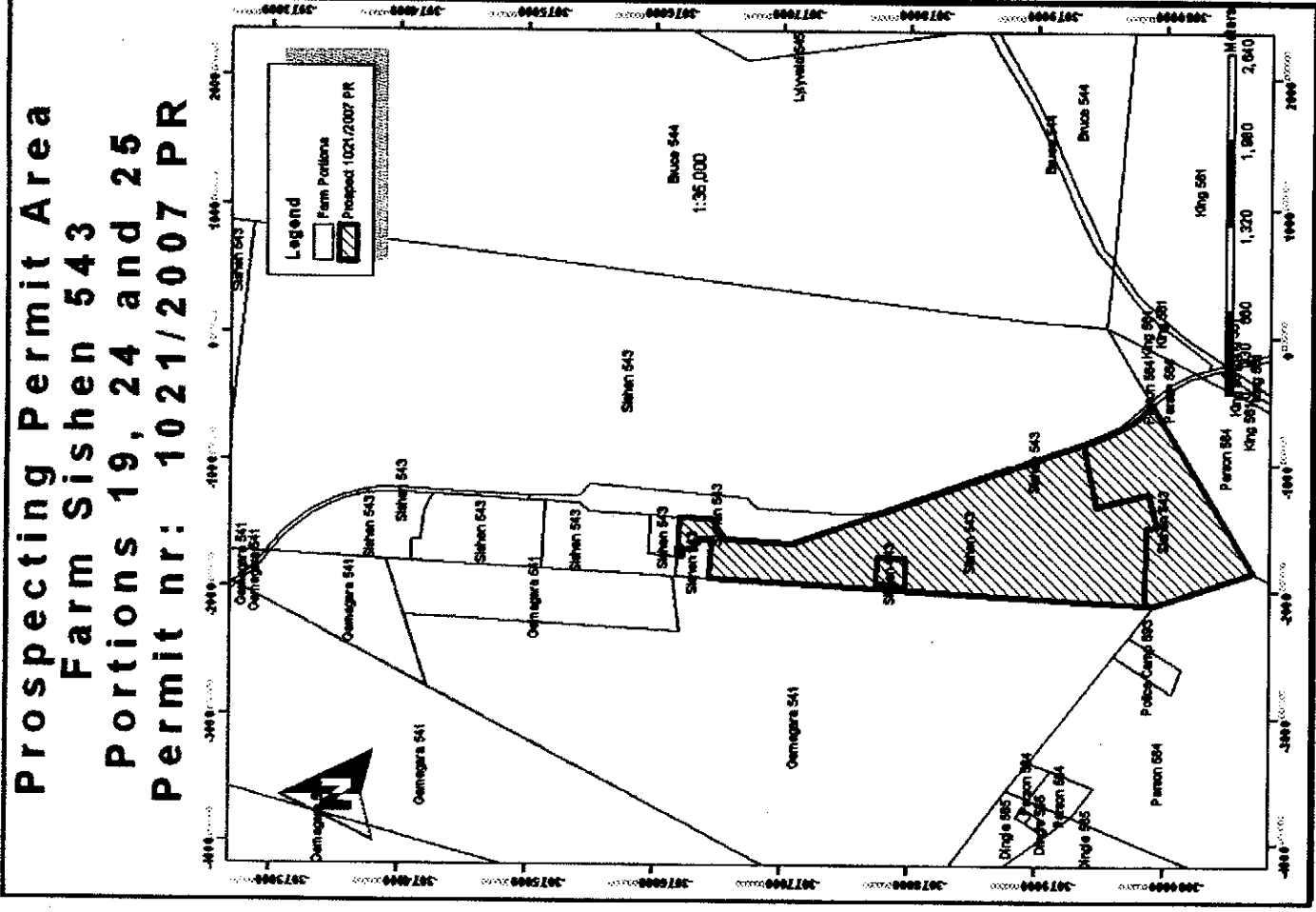


Figure 4: Map indicating adjacent cadastre and number of neighbouring properties

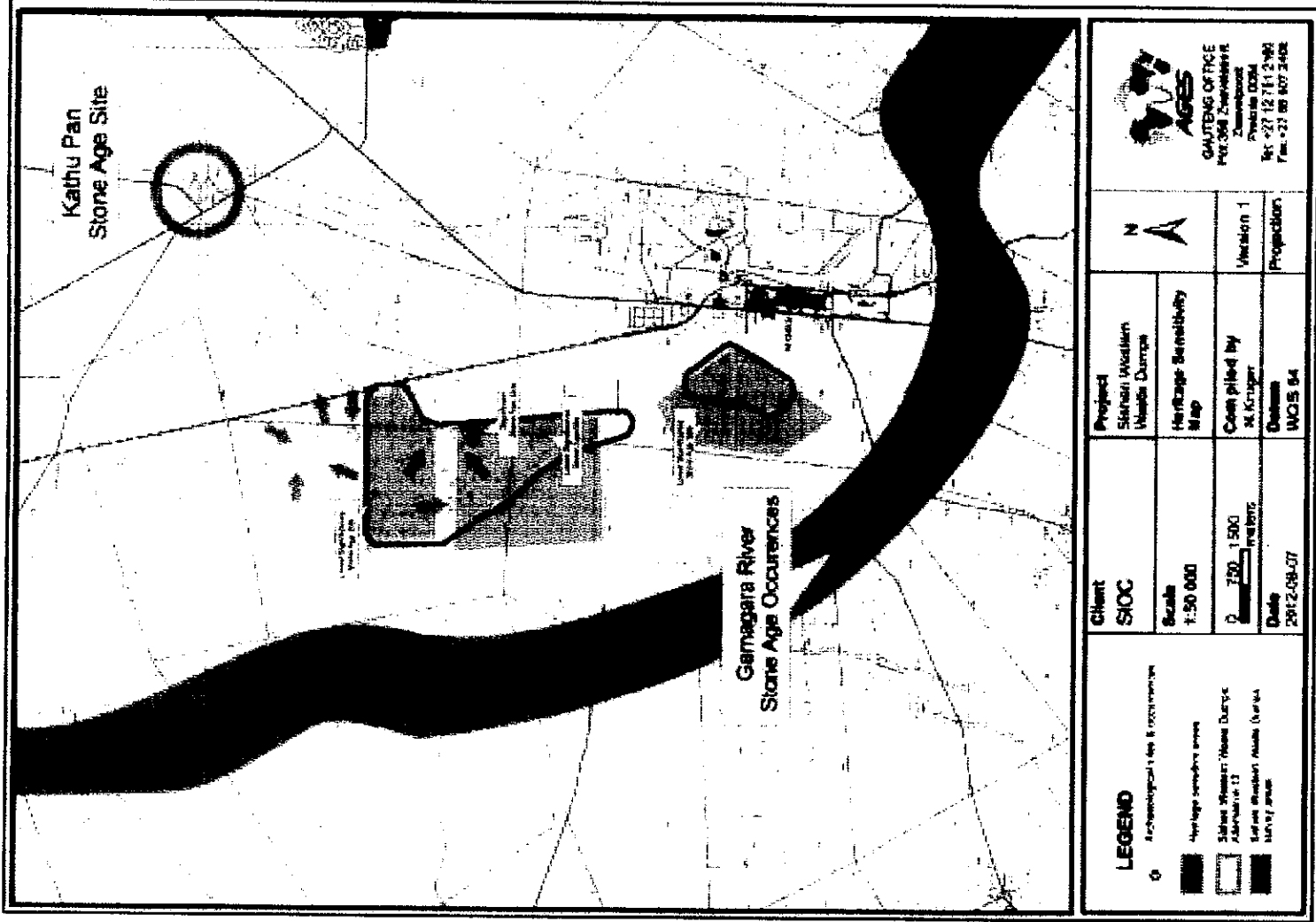


Figure 5: Heritage areas identified in proximity of prospecting site (Map derived from AGES 2012- refer appended specialist study)

1.4 Participation of the community, the landowner and interested and affected parties.

The local community are situated in a remote rural area and communication with stakeholders took place directly with key individuals. This includes the Dingleton community (municipality) and one landowner; Mr. Markram.

Communication with the Dingleton community about exploration activities took place at the various monthly Dingleton community forum meetings which are recorded. Communication with Mr. Markram was undertaken by means of written communication and personal interviews.

A consultation process was initiated with the following actions:

- Identification and confirmation of affected landowners
- Compilation of Interested and Affected Party (I&AP) Register for the project – please see Appendix 3 of this EMP
- Individual verbal communication with I&AP when required
- Meetings with Dingleton community by Sishen representative
- Individual meetings with I&AP to consider issues and concerns

This stakeholder engagement will continue throughout the project.

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

The distribution of the potential iron resource will be tested by drilling approximately 66 boreholes over the life of the project (the amount of boreholes may alter depending on geological results or if the need arise to drill boreholes for special analysis).

The environmental risks and opportunities are identified and inspected by means of physical inspection of the proposed area.

The main activity is prospecting by means of intrusive drilling. The drilling impact is depicted on the map indicated in section 2.1.2.

The infrastructure and impacts associated with the future drilling to be conducted essentially consists of the following:

INFRASTRUCTURE

- Drilling boreholes with casing and capping for each drill site
- Water supplying boreholes with casing and capping
- Existing roads used and/or upgraded where necessary
- No permanent fixtures or infrastructure development will take place.

POSSIBLE IMPACTS

- Two-track roads diverting from the existing roads to the drill sites

- Drilling sites of approximately 25 meters x 20 meters in size where equipment stood
- Drill sumps of approximately 1 meter x 1.5 meter in size for water recycling and drill sludge containment
- Drill sludge from drilling operations
- Drill chips from the drilling operations
- Ground water pollution
- Subsoil on surface
- Drilling on sensitive habitats

2.1.2 Plan of the main activities with dimensions

The below map indicate the specific drill holes with the following dimensions:

- Drilling sites of approximately 25 meters x 20 meters in size
- Drill sumps of approximately 1 meter x 1.5 meter in size for water

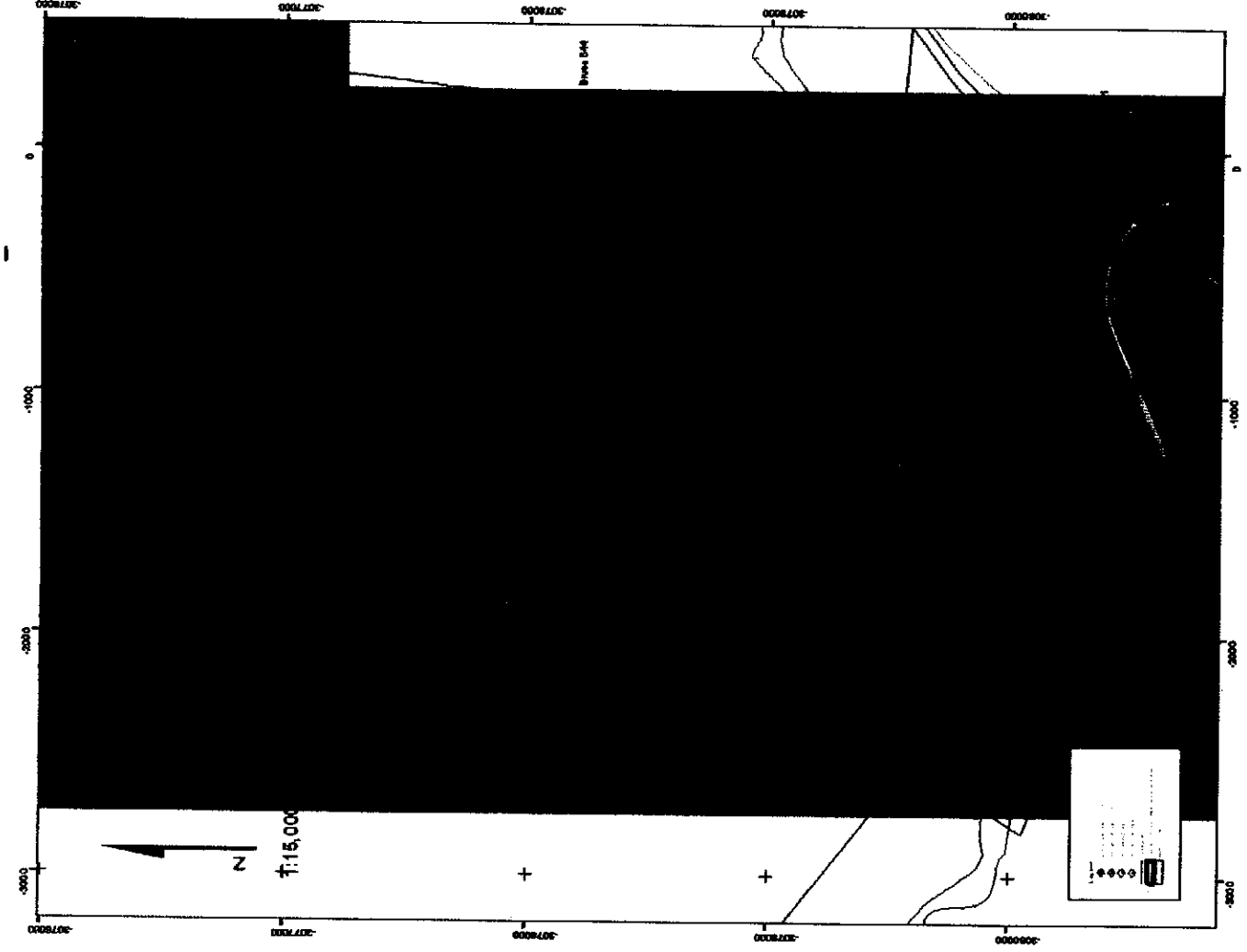


Figure 6: Planned Prospecting Sites

2.1.3 Description of construction, operational, and decommissioning phases.

Activities to be undertaken in the prospecting project and its respective construction and operational and closure phases, give rise to certain impacts. For the purpose of assessing these impacts, the project has been divided into three phases from which impacting activities can be identified, namely:

- **Construction Phase**

Construction phase consist of the access roads and 10 meter x 10 meter cleared surfaces to allow for drilling over short periods of time. Drill sites are cleared of only the necessary vegetation and topsoil is stockpiled for re-use after drilling where appropriate.

- **Operational Phase**

The operational phase consist of drilling boreholes, collecting geological material, operating drilling machinery and storing drilling equipment on a temporary basis at the drill site.

- **Closure Phase**

The closure phase include the cleaning of drill sites, making drill sites safe, replacement of topsoil and de-compaction of the site. Drill site monitoring and concurrent rehabilitation is then conducted depending on the agreed final land use and the requirements to achieve the agreed land use.

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

In terms of screening what applicable environmental legislation that could be applicable to the project, the National Environmental Management Act (Act 107 of 1998) (NEMA) is

used as the main piece of legislation. Listed activities according to listing notice 1 and 3 (GN544 and GN546) were evaluated. The following listed activities were isolated for further review.

The listed activity that may pertain to prospecting according to NEMA includes, but is not limited to:

- Activity 11 of Listing Notice 1 (GNR. 544);
- Activity 18 of Listing Notice 1 (GNR. 544);
- Activity 14 of Listing Notice 3 (GNR. 546);

Upon verifying the specifications of the specific activities for the project it was found that none of the above possible listed activities apply to Sishen South of Dingleton Prospecting project.

It is important to note that in terms of section 3.1 of Regulation 805 (*Publication Of The Companion Guideline on the Implementation of the Environmental Impact Assessment Regulations, 2010*) the Department of Mineral Resources are the competent authority for mining related applications.

Prospecting itself is therefore not listed as the competent authority for the approval of prospecting remains the Department of Mineral Resources.

2.2 Identification of potential impacts

(Refer to the guideline)

2.2.1 Potential impacts per activity and listed activities.

Prospecting is the only listed activity and impacts per activity phase are listed below:

Construction Impacts

- Impact on vegetation quality;
- Soil disturbance;
- Possible displacement or destruction of nearby heritage sites; and
- Usable infrastructure - road (positive impact of improved roads where upgrading takes place)
- Dust as a result of the operations; and
- Flora and Fauna displacements.
- Noise

Operational Impacts

- Impact on quality of surface water where applicable as most river streams are dry riverbeds;
- Ground water contamination where ground water is intersected and affected by drilling hydrocarbons;
- Soil erosion;
- Dust as a result of the operations;
- Flora and Fauna displacements;
- Soil contamination;
- Soil structural changes;
- Sewage Waste;
- Littering;
- Noise;
- Waste accumulation on site;
- Drill sludge and drill chip accumulation on site;
- Windblown littering

Closure Impacts

- Wind and Water erosion

- Rehabilitation (positive impact on impacted areas)

2.2.2 Potential cumulative impacts.

The cumulative impact of future mining because of the proposed prospecting is applicable to this project.

2.2.3 Potential impact on heritage resources

A heritage specialist investigation and report of the area was completed for the future mine expansion of Sishen Iron Ore Mining Company towards the current Sishen South of Dingleton prospecting project area. The observations from the report indicate that areas of heritage significance fall outside the prospecting area.

A lower significance Stone Age site is located approximately 6 km from the prospecting site.

The Gamagara River that makes out part of the southern edge of the prospecting area is however known for intermittent Stone Age occurrences.

It is therefore recognised that cognisance should be taken of the larger natural and archaeological horizon and the representation and position of the Sishen / Kathu area in the landscape's heritage. As such, care should be taken when disturbing any water sources or pans as Stone Age sites generally occur in the proximately these resources in the area (AGES, N. Kruger 2012)

The heritage specialist report is attached as Appendix 4 of this EMP

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 potential impacts on individual properties as part of the community can be described as the complete list of impacts as stated in section 2.2.1 as these impacts will occur on private property.

Impacts on the community of Dingleton is limited and no individually owned erven directly affected by drilling as drilling takes place in the surrounding veldt.

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

Communication with landowners about the project a whole is undertaken throughout the project. And in accordance with the written and meeting communication platforms listed above. An example of such communication is attached as Appendix 6 as part of this EMP.

2.2.6 Confirmation of specialist report appended.

(Refer to guideline)

The following list of appendices is attached to this EMP:

Appendix 1: List of plant species

Appendix 2: List of fauna species

Appendix 3: Affected Parties Register

Appendix 4; Heritage Assessment relevant to this project, undertaken for Sishen Mine expansion

Appendix 5; Ecological Assessment relevant to this project, undertaken for Sishen Mine expansion

Appendix 6: Example of communication of project development with affected parties

Appendix 7: Minutes of Meeting

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

Methodology

Standard evaluation methods are applied as defined below.

An impact can be defined as any change in the physical-chemical, biological, cultural and/or socio-economic environmental system that can be attributed to human activities related to alternatives under study for meeting a project need. Assessment of impacts will be based on DEAT's (1998) Guideline Document: EIA Regulations. The significance of the aspects/impacts of the process will be rated by using a matrix derived from Plomp (2004) and adapted to some extent to fit this process. These matrixes use the consequence and the likelihood of the different aspects and associated impacts to determine the significance of the impacts.

The significance of the impacts will be determined through a synthesis of the criteria below:

3.1.1 Criteria of assigning significance to potential impacts

Probability This describes the likelihood of the impact actually occurring.

Improbable: The possibility of the impact occurring is very low, due to the circumstances, design or experience.

Probable: There is a probability that the impact will occur to the extent that provision must be made therefore.

Highly Probable: It is most likely that the impact will occur at some stage of the development.

Definite: The impact will take place regardless of any prevention plans, and there can only be relied on mediatory actions or contingency plans to contain the effect.

Duration The lifetime of the impact.

Short term: The impact will either disappear with mitigation or will be mitigated through natural processes in a time span shorter than any of the phases.

Medium term: The impact will last up to the end of the phases, where after it will be negated.

Long term: The impact will last for the entire operational phase of the project but will be mitigated by direct human action or by natural processes thereafter.

Permanent: Impact that will be non-transitory. Mitigation either by man or natural processes will not occur in such a way or in such a time span that the impact can be considered transient.

Scale The physical and spatial size of the impact

Site: The impacted area extends only as far as the activity, e.g. footprint

Local: The impact could affect the whole, or a measurable portion of the above mentioned properties and adjacent properties.

Regional: The impact could affect the area including the neighbouring residential areas.

Magnitude/ Severity: Does the impact destroy the environment, or alter its function.

Low: The impact alters the affected environment in such a way that natural processes are not affected.

Medium: The affected environment is altered, but functions and processes continue in a modified way.

High: Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases.

Significance This is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required.

Negligible: The impact is non-existent or unsubstantial and is of no or little importance to any stakeholder and can be ignored.

Low: The impact is limited in extent, has low to medium intensity; whatever its probability of occurrence is, the impact will not have a material effect on the decision and is likely to require management intervention with increased costs.

Moderate: The impact is of importance to one or more stakeholders, and its intensity will be medium or high; therefore, the impact may materially affect the decision, and management intervention will be required.

High: The impact could render development options controversial or the project unacceptable if it cannot be reduced to acceptable levels; and/or the cost of management intervention will be a significant factor in mitigation.

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

CONSTRUCTION PHASE IMPACTS

Aesthetics

Aesthetic impact from the drill sites will be low.

The impact is limited in extent, has low to medium intensity, the impact will not have a material effect on the decision and is likely to require limited management intervention and costs.

The significance of the impact with mitigation measures in place is therefore considered to be LOW.

Heritage

According to the Heritage specialist study the future impact of waste rock dumps on surrounding areas will be permanent. Exploration impacts takes place relatively far (6km) from the nearest recorded site. Drilling aim to take place outside pans and rivers (planned boreholes prioritise to avoid these areas) and already impacted areas are used for drilling as far as possible. Impact on heritage is considered LOW. Where heritage areas of conflict are encountered these will be avoided as far as possible and will be temporary in nature. The impact is considered short term and NEGLIGABLE

Infrastructure

Limited road infrastructure exists on the proposed prospecting area. Limited negative impact will occur. Should the access road serve the community after the prospecting project this will have a medium positive impact. Where roads must be rehabilitated, this will be done to promote the recovery of the area to the original land use.

The impact on infrastructure is therefore MEDIUM (Positive).

Dust

Limited dust is generated from vehicles travelling on gravel roads and site clearance. The impact would be localised, of short-term intervals and very low intensity. The significance of the impact is therefore considered to be negligible. Provided that the suggested mitigation measures are consistently implemented during the operational phase, this impact is assessed to be of NEGLIGIBLE significance.

Fauna and Flora

Impact on the occurrence of fauna and flora on the area is of short-term for fauna and medium term for flora at a low intensity. The significance of the impact is therefore considered to be low. Provided that the suggested mitigation measures are consistently implemented during the operational phase, this impact is assessed to be of LOW significance.

Noise

The potential noise impact would be of low intensity, of short term intervals and is thus considered to have a negligible significance. This impact would be of NEGLIGIBLE significance.

Surface Water

Rain water run-off from the drill site to the surrounding natural veldt could be affected by drill sludge and spillages.

The potential surface water impact would be of low intensity, of short term intervals and is thus considered to have a negligible significance. This impact would be of LOW significance if the mitigation measures are applied consistently.

OPERATIONAL PHASE IMPACTS**Surface Water**

Rain water run-off from the drill site to the surrounding natural veldt could be affected by drill sludge and spillages.

The potential surface water impact would be of low intensity, of short term intervals and is thus considered to have a low significance. This impact would be of LOW significance if the mitigation measures are applied consistently.

Ground Water

Ground water impact from drilling because of hydrocarbon spillage and lubrication of machines would be of low intensity, over a long term and of medium impact. This impact would be of LOW significance if the mitigation measures are applied consistently.

Soil Erosion

Soil erosion from exposed soils for road construction and site clearance would be of low intensity over medium term and of low impact. This impact would be of NEGLIGIBLE significance if the mitigation measures are applied consistently.

Dust

Limited dust is generated from vehicles travelling on gravel roads and site clearance. The impact would be localised, of short-term intervals and very low intensity. The significance of the impact is therefore considered to be negligible. Provided that the suggested mitigation measures are consistently implemented during the operational phase, this impact is assessed to be of NEGLIGIBLE significance.

Fauna and Flora

Impact on the occurrence of fauna and flora on the area is of short-term for fauna and medium term for flora at a low intensity. The significance of the impact is therefore considered to be low. Provided that the suggested mitigation measures are consistently

implemented during the operational phase, this impact is assessed to be of NEGLIGIBLE significance.

Soil Contamination

Soil contamination from drill sludge, drill chips on surface or oil spillage would be of site specific size, short term with medium magnitude resulting in a low impact. Applying the recommended mitigation measures reduce this impact to NEGLIGIBLE significance.

Soil Structure

Soil structural changes such as compaction, erosion, and subsoil on surface from drilling activities would be of site specific size, short term with low magnitude resulting in a low impact. Applying the recommended mitigation measures reduce this impact to NEGLIGIBLE significance.

Sewage

Sewage waste on site from drilling staff on site for long periods would result in local, short term impact with low magnitude resulting in a medium impact. Applying the recommended mitigation measures reduce this impact to NEGLIGIBLE significance.

Windblown littering

All waste brought on site as materials are removed directly from the drill sites and correct waste management is enforced from construction to rehabilitation. The potential impact from windblown littering would be of very low intensity, of short term intervals and is thus considered to have a negligible significance. Provided that the suggested mitigation measures are consistently implemented during the operational phase, this impact is assessed to be of NEGLIGIBLE significance.

Noise

The potential noise impact would be of low intensity, of short term intervals and is thus considered to have a negligible significance. This impact would be of NEGLIGIBLE significance.

Waste Accumulation

All waste brought on site as materials are removed directly from the drill sites and correct waste management is enforced from construction to rehabilitation.

The potential impact from accumulation of waste on site would be of low intensity, of medium term intervals and is thus considered to have a negligible significance. Provided that the suggested mitigation measures are consistently implemented during the operational phase, this impact is assessed to be of NEGLIGIBLE significance.

Drill sludge and chips

The impact from drill sludge, drill chips on surface would be of site specific size, short term with medium magnitude resulting in a low impact. Applying the recommended mitigation measures reduce this impact to NEGLIGIBLE significance.

Community

The impact on the community from drilling operations on their property or adjacent property as well as contractor staff on private land is considered negligible. Applying the recommended mitigation measures reduce this impact to NEGLIGIBLE significance.

Local Economy

The contribution to the local economy through creating employment opportunities at the individual and enterprise level as well as the participation in the local economy by the contractor result in a medium-term benefit of low intensity, and is therefore considered to have a very low (positive) significance. With appropriate mitigation measures the significance of the impact remains at LOW (POSITIVE).

CLOSURE PHASE IMPACTS**Soil Erosion**

Soil erosion from exposed soils for road construction and site clearance would be of low intensity over medium term and of negligible impact. This impact would be of NEGLIGIBLE significance if the mitigation measures are applied consistently.

Rehabilitation

The contribution to the natural ecosystem through concurrent rehabilitation of impacts will result in permanent benefit of low intensity, and is therefore considered to have a moderate (positive) significance. With appropriate mitigation measures the significance of the impact remains at MODERATE (POSITIVE).

3.1.3 Assessment of potential impacts.

Table 1: Impact Assessment

IMPACT Type	CONSEQUENCE OF IMPACT		LIKELIHOOD	SIGNIFICANCE
	Scale	Duration		
Construction	1	1	2	8
	Site	Short term	Low	Probable
Aesthetics	1	1	2	8
	Site	Short term	Low	Probable
Visual	1	1	2	8
	Site	Short term	Low	Probable
Heritage Sites	1	1	2	8
	Site	Short term	Low	Probable
Infrastructure	1	3	2	30
	Local	Medium term	Low	Definite
Emission	1	1	1	6
	Local	Short term	Very low	Probable
Noise and Vibration	2	3	2	28
	Local	Medium term	Low	Highly probable
Transportation	1	1	1	6
	Site	Short term	Very low	Probable
Noise	1	1	1	6
	Site	Short term	Very low	Probable
Surface Water	2	1	2	20
	Local	Short term	Low	Highly probable

IMPACT	CONSEQUENCE OF IMPACT			LIKELIHOOD	SIGNIFICANCE
	Scale	Duration	Magnitude		
Operational					
Surface Water	2	1	2	5	25
	Local	Short term	Low	Definite	Low
Sedimentation	3	4	6	5	65
	Regional	Long term	Medium	Definite	Moderate
Soil Erosion	1	3	2	4	24
	Site	Medium term	Low	Highly probable	Low
Dust	1	1	1	2	6
	Site	Short term	Very Low	Probable	Negligible
Potential Flooding	1	1	4	4	24
	Site	Short term	Low	Highly probable	Low
Noise	1	1	6	4	32
	Site	Short term	Medium	Highly probable	Low
Siltation	2	1	2	4	20
	Local	Short term	Low	Highly probable	Low
Siltation	2	1	6	5	45
	Local	Short term	Medium	Definite	Moderate
Siltation	2	3	2	2	14
	Local	Medium term	Low	Probable	Negligible
Noise	1	1	1	2	6
	Site	Short term	Very Low	Probable	Negligible
Noise	1	3	2	2	12
	Site	Medium term	Low	Probable	Negligible
Dust, Siltation & Noise	1	1	6	4	32
	Site	Short term	Medium	Highly probable	Low
Community	1	2	2	1	5
	Site	Short term	Low	Improbable	Negligible
Local Economy	2	2	3	5	35
	Local	Medium term	Low	Definite	Low

IMPACT Type	CONSEQUENCE OF IMPACT			LIKELIHOOD Probability	SIGNIFICANCE With mitigation
	Scale	Duration	Magnitude		
Closure	1	3	2	3	18
	Site	Medium term	Low	Probable	Negligible
Rehabilitation	2	5	2	5	45
	Local	Permanent	Low	Definite	Moderate

3.1.4 Assessment of potential cumulative impacts.

The cumulative impact of possible future mining will result in possible medium to long term socio economic benefits of undetermined intensity; it will also result in an undetermined suit of environmental impacts. The probability of this even cannot be committed to at this point in time and it is recommended that this be evaluated at the appropriate time.

The cumulative impacts of an extensive road network will result in possible medium term impacts of low intensity of medium magnitude and high probability resulting in a medium significance. This impact can be mitigated and reduced to a Low significance rating.

The cumulative impact of an extensive cleared area because of the number of drill sites will result in medium term impact of low magnitude and a Low significance. This impact can be mitigated and reduced to a Low significance rating.

Table 2: Accumulative Impact Assessment Summary

IMPACT	SCALE OF IMPACT		LIKELIHOOD	SIGNIFICANCE	Mitigation
	Scale	Number of Impacts			
Extensive Road Network	2	2	5	50	Low
	Low	Medium term	Definite	Medium	
Extensive cleared natural vegetation	1	3	4	24	Low
	Site	Medium term	Highly probable	Low	

3.2 Proposed mitigation measures to minimise adverse impacts.

GENERAL CONDITIONS OF MITIGATION

1. Regular monitoring of all the environmental management measures shall be done by the holder of the mining licence in order to ensure that the provisions contained in the EMPR, including amendments, and other relevant legislation are being adhered to.
2. The following activities are strictly prohibited
 - Disturbance of domestic livestock and wildlife
 - Picking of flowers or removal of plants
 - Hunting and setting of snares
 - Removal of any heritage article from the land (e.g. archaeological material)
 - Littering
 - Overnight camping in the prospecting area unless at a site approved by the surface owner

MITIGATION MEASURES PER IMPACT

MITIGATION MEASURES PER IMPACT

Aesthetics

- Ensure immediate and concurrent rehabilitation of drill sites
- Re-vegetate road margins at project decommissioning
- Monitor visual / aesthetic impact post closure

Visual

- Use existing roads as far as possible.
- Initial road construction to limit vertical scarring as far as possible.

- Turning points to be established along road where least cut-and-fill is required.
- Vegetation should be established to provide a minimum of 1.5 meter visual barrier for passing vehicles and invisible from public roads.

Heritage

- Ensure staff training and orientation
- Apply mitigation measures from specialist report
- Where uncertainty remains, additional specialist investigation to determine heritage issues will be employed to guide further planning and/or mitigation requirements.

Infrastructure

- Existing roads and tracks will be used wherever possible.
- The landowner/tenant and relevant stakeholders shall be consulted when planning routes to prospecting sites.
- The generation of new tracks will be avoided unless essential and approved by the landowner and carried out within the guidelines.
- All gates found open or closed will respectively be left open or be closed again.
- Fence wires may not be cut or flattened by driving over them.
- Fence lines are to be followed as far as possible when constructing roads
- Any gate or fence erected for the prospecting shall be removed unless otherwise requested by the landowner
- If a water supply pipeline needs to be laid to the drill site, it shall be done in consultation with the landowner/tenant and in such a manner that the surface and natural vegetation are not unduly disturbed. Proper and frequent maintenance shall be done to minimise unnecessary wastage. The pipeline will be removed once drilling is completed.
- Ensure road is transferred as an asset to the local community

Dust

- Maintain low speed limits on vehicles travelling by gravel roads
- Ensure exposed bare soil on sites are kept bare for as short as reasonably possible
- Where excessive winds prevail, stockpiled topsoil should be covered to prevent dust and soil loss
- Steps will be taken to avoid excessive dust contamination of the surroundings during percussion drilling.

Fauna and Flora

- Ensure drill site is demarcated and fenced off during drilling
- Adjust drill rig placements to avoid the removal of endangered or protected plant specimens
- Where drill rig cannot be moved, obtain required permits and translocation plant specimens to identified safe site
- Prevent human-animal interactions by avoiding drilling and driving through nests, breeding areas or territorial mounds.
- Ensure no illegal collection of plants or hunting of animals takes place
- The natural veldt must not be subjected to unnecessary vehicular or pedestrian movement.
- No excessive vegetation clearing will be allowed. Only the minimum practical surface area must be cleared.
- No exotic garden, vegetable or any other plants may be propagated in the area.
- Personnel must keep within the boundaries of the work area as far as possible
- No firewood collection or the making of fires will be allowed. A fire extinguisher must be available at all times.
- Reasonable speeds will be maintained on all roads and tracks in order to avoid accidents, excessive wear of the road, injury to livestock or the creation of excess noise and dust.

- On completion of drilling and removal of the rig from the site, the drill hole will be covered to avoid small fauna falling into the drill hole.

Noise

- Maintain all machinery and vehicles in good working order so that noise is minimized
- Implement noise minimisation where possible
- Adhere to any regulations and local by-laws regarding the generation of noise and hours of operation
- Apply personal protective clothing to prevent hearing loss

Surface Water

- Ensure surface areas exposed to annual rainfall is clean from any hazardous materials that could affect rainwater quality.
- Water courses and steep gradients shall be avoided as far as is practicable
- Adequate drainage and erosion protection in the form of cut-off berms or trenches shall be constructed where necessary
- In cases where a track needs to cross a watercourse, the crossing must be designed in consultation with the landowner/tenant and other relevant stakeholders
- Newly constructed access tracks on the prospecting site shall be maintained adequately in order to minimize dust, erosion, or undue surface damage.
- Imported road construction material which may hamper re-growth of vegetation will be removed and disposed of at a registered site
- Provision will be made for the acceptable disposal of refuse and waste water in order to avoid pollution of natural water sources or water points.

- Obtain water from the Orange River or as agreed with the landowner for use during drilling. Abstraction point to be confirmed with the landowner.

Ground Water

- Sumps shall be sited so as to minimize damage to sensitive succulent vegetation and will be lined with cement or a PVC sheet to prevent pollution of groundwater and smothering of the surface with fine sediment.
- Boreholes that intersect water during drilling will be cleaned from possible hydrocarbon spillage before drill hole is capped and rehabilitation of the site commence.
- A random number of boreholes will be sampled for water quality analysis indicating possible hydrocarbon impacts.

Contribution to the local economy

- Continue employment of service providers (contractors) as far as possible.
- Ensure appropriate training is provided, where necessary.
- Ensure that contractual requirements regarding local affirmative business enterprises are met.

Soil Erosion

- Wind erosion will be prevented by mulching with rocks and brush packing with damaged vegetation
- On steep slopes where erosion is a risk, berms will be constructed to prevent water erosion and facilitate re-growth of vegetation
- If required by the landowner, such berms will be removed once sufficient re-growth is observed

Soil Contamination

- In order to contain oil and fuel spills, drip pans or PVC lining shall be provided for machinery, vehicles and storage facilities where hydrocarbon leakage is possible.
- If any spillage of hydrocarbons is detected, drilling will cease immediately and the spill will be cleaned up and repairs effected. The rig will only start up again when authorised by the client.
- Polluted soil and the contents of any drip pans will be collected in bags or drums and disposed of at the designated disposal site.

Soil Structure

- Drill sludge and drill chips will be backfilled into the drill sump and covered with topsoil isolated during site clearance for this purpose. Where excessive drill sludge or drill chips are produced this will be disposed of appropriately with the consent of the landowner.
- Drill sludge or drill chips will not be used for road building or construction purposed unless tested and proven suitable for this purpose.

Sewage

- A chemical toilet will be provided for the drilling crew. It will be emptied into the sewerage system or registered facility.

Waste accumulation on site reducing land capability

- Waste reduction measures should be put in place to reduce waste generation where possible.
- Waste sorting, re-use and recycling should take place for all appropriate waste streams.
- Regular removal of waste to registered waste sites.
- Monitoring and documenting of waste.
- Imported road construction material which may hamper re-growth of vegetation will be removed and disposed of at a registered site

Community

- The landowner/tenant and relevant stakeholders shall be consulted when planning routes to prospecting sites.
- No interference with landowner/tenant activities will be allowed.
- Private land operational rules will be respected at all times.

Contribution to the local economy

- Employment of service providers (contractors) as far as possible.
- Ensure appropriate training is provided, where necessary.
- Ensure that contractual requirements regarding local affirmative business enterprises are met.

Rehabilitation

All rehabilitation shall be carried out to the satisfaction of the Regional Director

The drill hole will be rehabilitated as soon as possible after completion of the drilling:

- All foreign matter shall be removed from the site
- The sump contents and lining will be removed disposed of at the appropriate site
- Excavations shall be backfilled with subsoil, compacted and levelled with previously stored topsoil
- No foreign matter such as concrete or other rubble shall be introduced into such backfilling
- All temporary structures and storage facilities shall be removed from the drill site
- Drill holes shall be capped and marked
- Soil will be loosened at drill sites that have been denuded of vegetation or where soils have been compacted or crusts formed
- Rehabilitated tracks may not be disturbed by additional vehicular movement and the monitoring thereof shall be carried out on foot
- Photographs will be taken before, during and after drilling to monitor environmental impacts.

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

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)

Currently no additional technical or management options will be considered besides standard practice and application of activities and processes as applicable to prospecting in South Africa.

3.2.3 Review the significance of the identified impacts

(After bringing the proposed mitigation measures into consideration).

IMPACT Type	CONSEQUENCE OF IMPACT			LIKELIHOOD	SIGNIFICANCE	With Mitigation
	Scale	Duration	Magnitude			
Construction	1	1	2	2	8	4
	Site	Short term	Low	Probable	Low	Negligible
Visual	1	1	2	2	8	4
	Site	Short term	Low	Probable	Low	Negligible
Dust	1	1	2	2	8	4
	Site	Short term	Low	Probable	Low	Negligible
Noise	1	3	2	5	30	24
	Local	Medium term	Low	Probable	Negligible	Negligible
Vibration	1	1	1	2	6	3
	Local	Short term	Very Low	Probable	Negligible	Negligible
Air Quality	2	3	2	4	28	21
	Local	Medium term	Low	Highly probable	Low	Low
Water Quality	1	1	1	2	6	3
	Site	Short term	Very Low	Probable	Negligible	Negligible
Soil	1	1	1	2	6	3
	Site	Short term	Very Low	Probable	Negligible	Negligible
Surface Water	2	1	2	4	20	15
	Local	Short term	Low	Highly probable	Low	Low

IMPACT	CONSEQUENCE OF IMPACT			LIKELIHOOD	SIGNIFICANCE	With Mitigation
	Scale	Duration	Magnitude			
Operational						
Surface Water	2	1	2	5	25	20
	Local	Short term	Low	Definite	Low	Low
Groundwater	3	4	6	5	65	26
	Regional	Long term	Medium	Definite	Moderate	Low
Soil Erosion	1	3	2	4	24	6
	Site	Medium term	Low	Highly probable	Low	Negligible
Dust	1	1	1	2	6	3
	Site	Short term	Very Low	Probable	Negligible	Negligible
Flora and Fauna	1	1	4	4	24	18
	Site	Short term	Low	Highly probable	Low	Negligible
Sedimentation	1	1	6	4	32	16
	Site	Short term	Medium	Highly probable	Low	Negligible
Noise	2	1	2	4	20	5
	Local	Short term	Low	Highly probable	Low	Negligible
Vibration	2	1	6	5	45	9
	Local	Short term	Medium	Definite	Moderate	Negligible
Air Quality	2	3	2	2	14	7
	Local	Medium term	Low	Probable	Negligible	Negligible
Water Quality	1	1	1	2	6	3
	Site	Short term	Very low	Probable	Negligible	Negligible
Visual Amenity	1	3	2	2	12	6
	Site	Medium term	Low	Probable	Negligible	Negligible
Land Use & Socio-Economics	1	1	6	4	32	16
	Site	Short term	Medium	Highly probable	Low	Negligible
Community	1	2	2	1	5	5
	Site	Short term	Low	Improbable	Negligible	Negligible
Local Economy	2	2	3	5	35	35
	Local	Medium term	Low	Definite	Low	Low

IMPACT Type	CONSEQUENCE OF IMPACT			LIKELIHOOD Probability	SIGNIFICANCE Without Mitigation	Mitigation Significance
	Scale	Duration	Magnitude			
Closure	1	3	2	3	18	6
	Site	Medium term	Low	Probable	Negligible	Negligible
Soil Erosion	2	5	2	5	45	45
	Local	Permanent	Low	Definite	Moderate	Moderate

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

4.1 Plans for quantum calculation purposes.

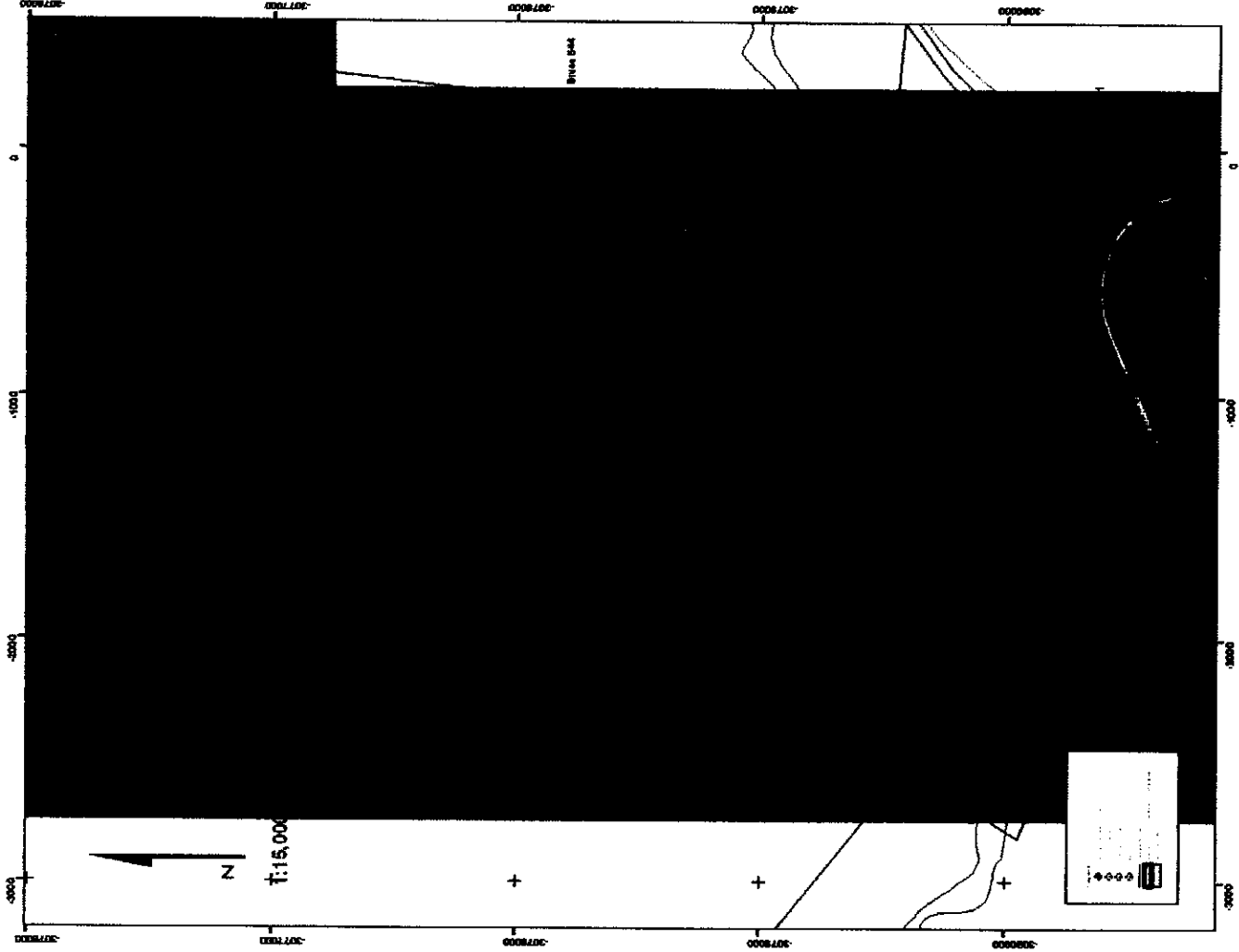


Figure 7: Drilling plan used as scope and plan for quantum assessment

4.2 Alignment of rehabilitation with the closure objectives

The closure objectives for prospecting by Kumba Iron Ore geosciences division as applicable to Sishen South of Dingleton are:

1. To secure the effective and sustainable transfer of re-usable infrastructure to the relevant landowners after prospecting.
2. To ensure that the biodiversity and environment on the prospected sites are protected.
3. To ensure sites are made safe for both humans and animals.
4. To rehabilitate sites to promote agreed upon land-use.
5. To manage residual impacts to acceptable levels.
6. To provide sufficient funds to properly implement the closure plan.

The current land use for the area on which prospecting will take place is extensive livestock and municipal. The land use of the area will remain unchanged by prospecting.

4.3 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 regulation 54 (1) in respect of each of the phases referred to).

Outlined below is the detailed assessment of the quantum of financial provision for rehabilitation, closure and post-closure management of all the rehabilitation components identified and outlined in the infrastructure and impacts statement of this document.

Ref	Description	Area	Haul	Resale or Salvage	Measure	Units	Price per Units	Notes
31	Landscaping							
31.1	Dozing (single handling)	n/a	n/a	n/a	n/a	n/a	R 0.00	
31.2	Dozing (double handling)	n/a	n/a	n/a	n/a	n/a	R 0.00	
31.3	Perimeter shaping	2300	n/a	n/a	manday	n/a	R 0.00	
31.4	Contour Ripping	n/a	n/a	n/a	n/a	n/a	R 0.00	
31.5	De-compaction / ripping	2300	n/a	n/a	manday	30	R 182.72	
31.6	Cut and Fill	n/a	n/a	n/a	n/a	n/a	R 0.00	Two manday required per site.
32	Roads levelling							
32.1	Two-track	2000	n/a	n/a	manday	200	R 120.00	One manday per 20m²
32.2	Storm water works	n/a	n/a	n/a	n/a	n/a	R 0.00	One manday per 20m²
32.3	Gravel access roads (8m width)	5000				500	R 120.00	
32.4	Gravel haul roads (30m width)	n/a	n/a	n/a	n/a	n/a	R 0.00	One manday per 20m²
32.5	Tarred roads (8m width)	n/a	n/a	n/a	n/a	n/a	R 0.00	
33	Topsoil							
33.1	Haul Local Topsoil Stockpile	n/a	n/a	n/a	n/a	n/a	R 0.00	Topsoil stockpiled before drilling
33.2	Place Topsoil / Discard	35	n/a	n/a	manday	30	R 182.72	15m² per site for drill sump
33.3	Purchase topsoil	n/a	n/a	n/a	n/a	n/a	R 0.00	Topsoil stockpiled before drilling
34	Organic Material							
34.1	Local Compost	n/a	R 5.00	n/a	m²	30	R 300.00	Future requirement of one third of sites depending on rehabilitation monitoring results
34.2	Artificial Compost	n/a	R 5.00	n/a	m²	0	R 0.00	
35	Re-vegetation							
35.1	Brush packing & natural recovery	n/a	n/a	none	per borehole	30	R 182.72	
35.2	Seed Harvesting	n/a	n/a	n/a	n/a	n/a	R 0.00	
35.3	Seed Purchase	n/a	n/a	n/a	n/a	n/a	R 0.00	
35.4	Seed sowing	n/a	n/a	n/a	n/a	n/a	R 0.00	
35.5	Sapling Purchase	n/a	n/a	n/a	n/a	n/a	R 0.00	
35.6	Transplantation	n/a	n/a	n/a	n/a	n/a	R 0.00	
35.7	Hydro-seeding	n/a	n/a	n/a	n/a	n/a	R 0.00	
40	TOTAL						R 14 481.60	

Ref	Description	Area	Haul	Resale or Salvage	Measure	Units	Price per Unit	Notes
Monitoring and Maintenance								
41	Monitoring							
41 1	Initial inspection	8775	R 4,50	n/a	manday	3	R 977,27	
41 2	Post Drilling inspection	8775	R 4,50	n/a	manday	3	R 977,27	
41 3	Annual monitoring	8775	R 4,50	n/a	manday	3	R 977,27	
41 4	Final inspection	8775	R 4,50	n/a	manday	3	R 3 040,00	Two follow-up monitoring runs after initial run
42	Maintenance							
42 1	Re-work areas	8775	n/a	n/a	manday	5	R 182,72	
42 2	Re-fertilise areas	8775	n/a	n/a	manday	5	R 182,72	
42 3	Re-seed areas	n/a	n/a	n/a	n/a	n/a	n/a	
45 TOTAL R 24 422,63								
Management and Contingencies								
Ref	Description	Area	Haul	Resale or Salvage	Measure	Units	Price per Unit	Notes
46	Closure Planning							
1	Rehab plans	n/a	n/a	n/a	per document	1	R 9 000,00	
2	Third party costing	n/a	n/a	n/a	per document	1	R 6 000,00	
3	External Reviews	n/a	n/a	n/a	per document	0	R 5 000,00	
46 TOTAL R 9 000,00								
48	Contingencies							
							R 8 500,00	Contingency at 10% of total costs
49 TOTAL R 23 500,00								

Table 4: Total Closure Costs

50	TOTAL ACTUAL COSTS		R 125 704,23		
	Weighting factor 1	1.00	terrain		R 0.00
	Weighting factor 2	1.00	remoteness		R 0.00
	Weighting factor 3	actual	specialist reports		R 0.00
Total Closure cost		R 125 704,23			

4.4 Undertaking to provide financial provision

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

The financial provision provided in terms of section 41 and regulation 53 of the Act must be periodically reviewed and adjusted to conform to the relevant prospecting activities.
 Concurrent rehabilitation costs occur annually as drilling progressed.
 Rehabilitation costs are incorporated both into the drilling program and the drilling operator contract.

This amount has been upgraded accordingly for the next period.

Table 5: Summary of closure Provision

Amended Quantum Assessment 2012		Original Cost Estimate:	R 20 000.00
		First Cost Review: (updating rehab to date and status)	R 166 058.63
		Second Cost Review: (subtracting work complete, adding new PWP)	R 125 704.23
FARM:		Dated:	2012/09/14
Sishen South of Dingleton (extent of portions 19, 24 and 25 of the farm Sishen 543)			
Life of Project Boreholes	66	Specific outstanding issues from rehab monitoring	0
Drilled Boreholes	36	Monitoring and Maintenance	66
Clean Boreholes	36	Add Roads	5
CLOSURE COST SUMMARY			
Pollution Mitigation and Remediation			R 63 300.00
Rehabilitation			R 14 481.60
Monitoring and Maintenance			R 24 422.63
Management and Contingencies			R 23 500.00
TOTAL COSTS TO REHABILITATE Sishen South of Dingleton			R 125 704.23

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

EMP Performance Monitoring

Internal and external inspections will be conducted on a regular basis to confirm the compliance to this EMP. EMP performance results from these inspections will be reported to the relevant regulator according to the prescribed manner biennially.

Environmental Management Monitoring requirements and procedures

- The project manager will identify the drill sites that require pre-drilling inspections. This will be based on the sensitivity of the site, the final land use and closure requirements of the sites to be drilled.
- Pre-drilling inspections according to the pre-drilling inspection and recovery sheet will be conducted on pre-determined drill sites and drill camp areas before site clearance commence. Photographs of the area will be taken to provide a record of the pre-drilling status.
- Monitoring of the drill sites will take place on an annual basis applying the same format used for the pre-drilling inspection where applicable.
- Photographs of rehabilitated sites will be taken to provide a record of the post drilling status.
- Until the lapse or discontinuation of the prospecting permit environmental management plan inspections and performance assessment reports will be conducted and recommendations from these reports implemented.
- Once all the above steps have been implemented a final closure inspection will be conducted taking the monitoring indicators listed below into consideration for sign off.

Monitoring Indicators

The following monitoring indicators are applicable to pre-drilling and annual monitoring inspections:

- Pollution impacts
- Fixed photographic monitoring indicating visual recovery of site
- Ground cover depicted as Soil: Vegetation ratio of the site
- Species diversity
- Vegetation Structure
- Ground water quality

Final Inspection

The project manager in conjunction with the landowner will sign-off the relevant boreholes. Where the landowner requires additional closure inspections the relevant person responsible for the drilling and rehabilitation of the borehole will be invited to attend.

4.5 List of identified impacts requiring monitoring programmes.

The impacts that require monitoring include the vegetation recovery (fauna and flora impacts), ground water impacts, soil contamination and soil structure and rehabilitation. The success of the mitigation measures that are detailed below will be monitored.

Fauna and Flora

- Ensure drill site is demarcated and fenced off during drilling
- Adjust drill rig placements to avoid the removal of endangered or protected plant specimens
- Where drill rig cannot be moved, obtain required permits and translocation plant specimens to identified safe site
- Prevent human-animal interactions by avoiding drilling and driving through nests, breeding areas or territorial mounds.
- Ensure no illegal collection of plants or hunting of animals takes place
- The natural veldt must not be subjected to unnecessary vehicular or pedestrian movement.
- No excessive vegetation clearing will be allowed. Only the minimum practical surface area must be cleared.
- No exotic garden, vegetable or any other plants may be propagated in the area.
- Personnel must keep within the boundaries of the work area as far as possible
- No firewood collection or the making of fires will be allowed. A fire extinguisher must be available at all times.
- Reasonable speeds will be maintained on all roads and tracks in order to avoid accidents, excessive wear of the road, injury to livestock or the creation of excess noise and dust.
- On completion of drilling and removal of the rig from the site, the drill hole will be covered to avoid small fauna falling into the drill hole.

Ground Water

- Sumps shall be sited so as to minimize damage to sensitive succulent vegetation and will be lined with cement or a PVC sheet to prevent pollution of groundwater and smothering of the surface with fine sediment.
- Boreholes that intersect water during drilling will be cleaned from possible hydrocarbon spillage before drill hole is capped and rehabilitation of the site commence.

Soil Contamination

- In order to contain oil and fuel spills, drip pans or PVC lining shall be provided for machinery, vehicles and storage facilities where hydrocarbon leakage is possible.
- If any spillage of hydrocarbons is detected, drilling will cease immediately and the spill will be cleaned up and repairs effected. The rig will only start up again when authorised by the client.
- Polluted soil and the contents of any drip pans will be collected in bags or drums and disposed of at the designated disposal site.

Soil Structure

- Drill sludge and drill chips will be backfilled into the drill sump and covered with topsoil isolated during site clearance for this purpose. Where excessive drill sludge or drill chips are produced this will be disposed of appropriately with the consent of the landowner.
- Drill sludge or drill chips will not be used for road building or construction purposed unless tested and proven suitable for this purpose.

Rehabilitation

All rehabilitation shall be carried out to the satisfaction of the Regional Director

The drill hole will be rehabilitated as soon as possible after completion of the drilling:

- All foreign matter shall be removed from the site
 - The sump contents and lining will be removed and disposed of at designated site
 - Excavations shall be backfilled with subsoil, compacted and levelled with previously stored topsoil
 - No foreign matter such as concrete or other rubble shall be introduced into such backfilling
 - All temporary structures and storage facilities shall be removed from the drill site
 - Drill holes shall be capped
 - Soil will be loosened at drill sites that have been denuded of vegetation or where soils have been compacted or crusts formed
 - Rehabilitated tracks may not be disturbed by additional vehicular movement and the monitoring thereof shall be carried out on foot
- Photographs will be taken before, during and after drilling to monitor environmental impacts.

4.6 Roles and responsibilities for the execution of monitoring programmes.

The management and execution on monitoring programs are assigned to the relevant person in position, in this case, the Senior Geologist Exploration and Geodata.

This includes external and internal monitoring of legal, material and management issues.

In addition to this environmental monitoring is assigned to the formally appointed safety appointment hierarchy assigned for the project. This is ensured to sub contractor level.

Monitoring plan execution is performed by the following categories of staff – internal and external. Internal teams include drilling sub contractors.

Responsible positions according to declining order of responsibility are outlined below.

- Internal monitoring – Kumba Head Office
- Internal monitoring – Senior Geologist
- Internal monitoring - Geological technician
- Internal monitoring – subcontractor Manager
- Internal monitoring – subcontractor Safety-Health-Environmental Officer
- External monitoring – legal consultant,
- External monitoring - environmental consultant,
- External monitoring - ground water consultant.

4.7 Committed time frames for monitoring and reporting.

The below detailed table indicate committed time frames for monitoring and reporting

Table 5: Monitoring and management of environmental impacts

Impacts	Functional requirements	Roles and responsibilities	Monitoring frequency	Reporting frequency
Land will be disturbed by prospecting.	Measure concurrent rehabilitation in terms of : - Number of holes drilled - Number of holes rehabilitated - Roads constructed - Roads rehabilitated or handed over to landowner	External and Internal monitoring team	Annually	Annually
	Remove all foreign matter from site and disposed at designated site	Internal subcontractor	Every drill site, daily	Weekly
	Cap and mark all boreholes	Internal subcontractor	Every drill site, Daily	Weekly
	Take photographs prior and after drilling as records	External and Internal monitoring team	On new sites	AAWR
Soil will be lost and may also deteriorate in	Topsoil placement at sump areas	Internal subcontractor	Every drill site, daily	Weekly

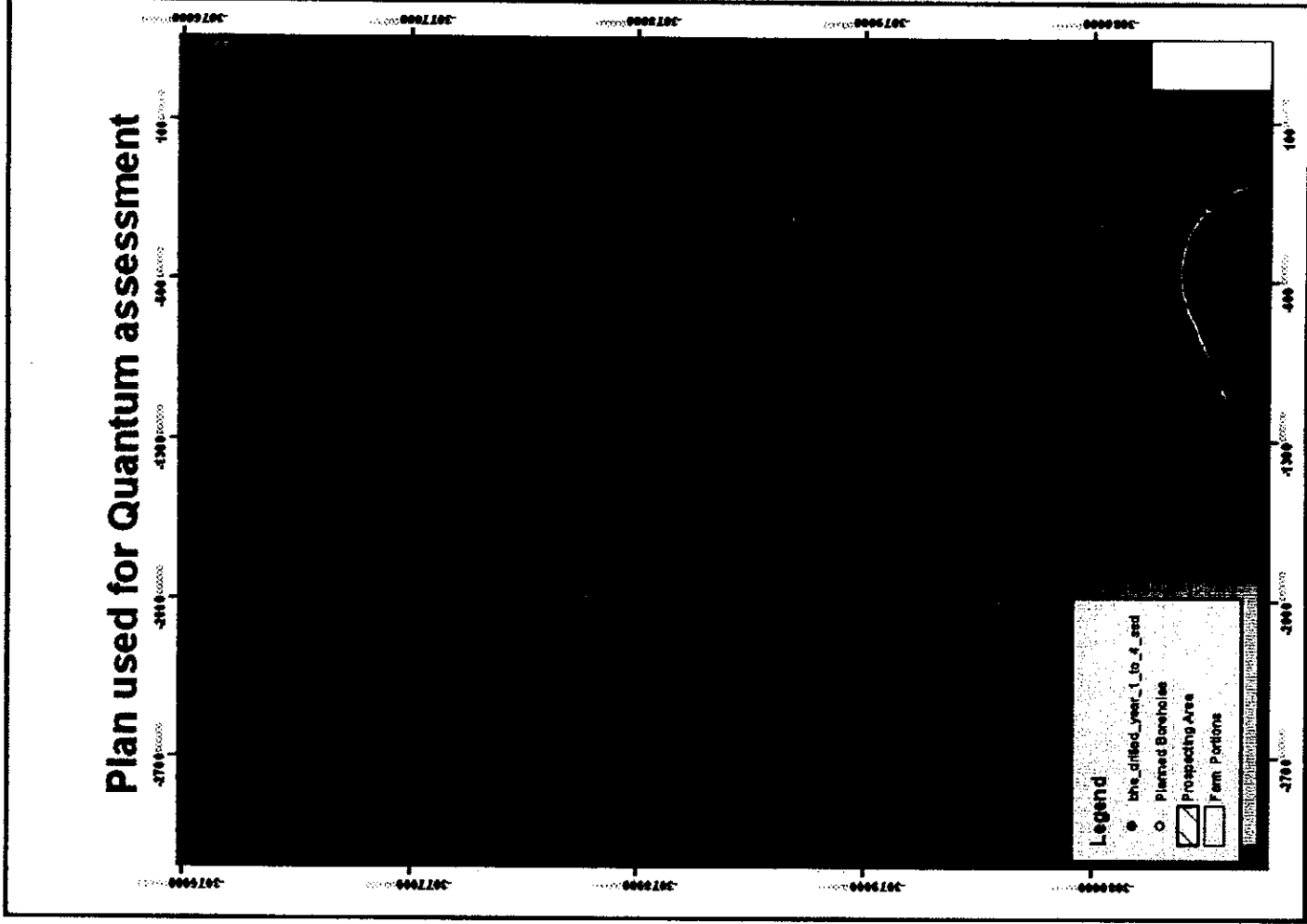
quality.	Prevent hydro carbons spills by using drip pans or PVC linings. Remove	Internal subcontractor	Every drill site, daily	Weekly
Impacts	Functional requirements	Roles and responsibilities	Monitoring frequency	Reporting frequency
	Content of drip pan and disposed at a designated disposal site.			
	If spill occur, stop drilling and clean spill, remove contaminated soil off site to a designated disposal facility.	Internal subcontractor	Every drill site, daily	Weekly
Fauna and flora will be affected by prospecting	Fence off drill site to ensure demarcation	Internal subcontractor	Every drill site, daily	Weekly
	Avoid damaging endangered or protected plants	Internal subcontractor	Every drill site, daily	Weekly
	Translocation plants, obtain permits, where necessary	External consultant	Prior to prospecting	Annually with performance assessment
	Monitor prevention of damage to fauna and flora as indicated in section 4.6	External consultant	Prior to prospecting	Annually with performance assessment

Groundwater quality may be affected by Prospecting.	Line sump with PVC sheet to prevent groundwater pollution	External consultant	AAWR, at least annually	Annually with
	Clean hydro carbons spills	External consultant	AAWR, at least annually	performance
Waste will be Generated.	Keep records for ton of hazardous waste removed from site.	Internal subcontractor	Every drill site, daily	Weekly

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

5.1 Rehabilitation plan

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



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

The closure objectives for prospecting by Kumba Iron Ore geosciences division as applicable to this project are:

1. To secure the effective and sustainable transfer of re-usable infrastructure to the relevant landowners after prospecting.
2. To ensure that the biodiversity and environment on the prospected sites are protected.
3. To ensure sites are made safe for both humans and animals.
4. To rehabilitate sites to promote agreed upon land-use.
5. To manage residual impacts to acceptable levels.
6. To provide sufficient funds to properly implement the closure plan.

The current land use for the area on which prospecting will take place is extensive livestock and municipal. The land use of the area will remain unchanged by prospecting. The alternative future land use of mining is also considered for this area.

5.3 Confirmation of consultation

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

Communication with landowners about the project a whole is undertaken throughout the project. And in accordance with the written and meeting communication platforms listed above. An example of such communication is attached as Appendix 6 as part of this EMP.

Specific closure agreements have not yet been reached, but will be undertaken in similar manner and be recorded for reference.

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

6.1 Identification of interested and affected parties.

(Provide the information referred to in the guideline)

All relevant parties have been identified as stipulated in the Affected Party register, appendix 4 of this EMP.

6.2 The details of the engagement process.

A consultation process was initiated and continues with the following actions:

- Identification and confirmation of affected landowners
- Compilation of Interested and Affected Party (I&AP) Register for the project
- Verbal communication with I&AP
- Agreement with key stakeholders to assist in the project process from community perspective.
- Site visits with I&AP to consider issues and concerns
- Follow-up site visit by independent environmentalist to address issues and concerns independently.

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

The description of the information provided to the community included, but is not limited to:

- Date of correspondence
- Reason for correspondence
- Company and individual with whom correspondence can continue
- Scope of item relevant to the project
- Contact details and period for opportunity to comment

Numerous correspondences have been taking place to date, examples of this is appended as Appendix 6 of this EMP.

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

All of the landowners were consulted of both the Dingleton community forum and Moira boerdery.

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

No real issues of existing cultural, socio-economic or biophysical environmental issues were raised by consulted parties.

Their interest is however to be informed when water is intersected during drilling operations.

6.2.4 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.

The main views raised by consulted parties involved the affect the drilling may have on their current land use (grazing / living) of the area where prospecting will take place.

Land security (access times) was also raised as a concern.

6.2.5 Other concerns raised by the aforesaid parties.

Compensation for grazing capacity damage was raised as a concern from one of the landowners.

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

An example of minutes of meeting is appended as appendix 7 of this EMP.

6.2.7 Information regarding objections received.

No objectives were received.

6.3 The manner in which the issues raised were addressed.

Drilling access to private land does not take place before 06:00 or after 18:00.

The landowners are notified when water is intersected.

Compensation (replacement of damaged goods) issues were discussed and resolved with the relevant landowner.

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

7.1 Employee communication process

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

Employee communication process is outlined as part of section 7.3 – Environmental awareness training.

7.2 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).

Kumba applies a risk management system where risks are identified and rated. Site inspections in terms of EMP compliance take place and serves as a training opportunity.

Emergency procedures of risks are practiced at least annually and improvements made to ensure emergency preparedness and response is adequate to address environmental incidents.

Recommendations and Incident reporting of events takes place during site inspections and are addressed to ensure continual improvement of the environmental management on site.

7.3 Environmental awareness training.

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

- All employees and subcontractor staff involved with the project undergo compulsory Safety-Health-Environmental Induction that is updated on a regular basis to adhere to changes in compliance requirements.

- A Safety-Health-Environmental (SHE) representative is appointed for the working teams to assist in highlighting operational SHE issues while drilling takes place.
- The reporting hierarchy for operational performance is also used to ensure environmental communication and awareness. Competent contractors are appointed with supervisors that can translate SHE risks to foremen and operating staff. This takes place through morning meetings before drilling commence (toolbox meetings) and SHE meetings held specifically for this purpose.
- The approved environmental management plan (EMP) is provided to and discussed with the contracted company. Adherence to the EMP is outlined as part of the contract conditions and non-compliance to the project.
- Site inspections in terms of EMP compliance take place and serves as a training opportunity. Emergency procedures of risks are practiced at least annually and improvements made to ensure emergency preparedness and response is adequate to address environmental incidents. Recommendations and Incident reporting of events takes place during site inspections and are addressed to ensure continual improvement of the environmental management on site
- Specific environmental orientation and training of key environmental aspects are provided to the contracted company as deemed necessary. This training includes theory, practical application and testing of competence of the working teams on the drill sites.

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

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

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

Future drilling will include the drilling of additional 30 boreholes.

Future boreholes will as a minimum be rehabilitated by means of:

Clean-up of contaminated areas – including the removal of all temporary infrastructure and equipment, removal of all littering and temporary sanitary units, clean-up of all areas contaminated with hydrocarbons.

- Closure of drill sumps – all drill sumps are filled in and covered to original landscape levels.
- De-compaction of selected impacted areas – loosening of soil to promote vegetation recovery.
- Safeguarding the drill site – each borehole is adequately covered and marked to prevent unwanted animal or human access.

In addition to this ground water monitoring, topsoil management and hydrocarbon management measures are applied to ensure quick natural recovery of the sites. Natural recovery is monitored annually and additional measures required from this monitoring implemented ensuring sustainable closure of the sites.

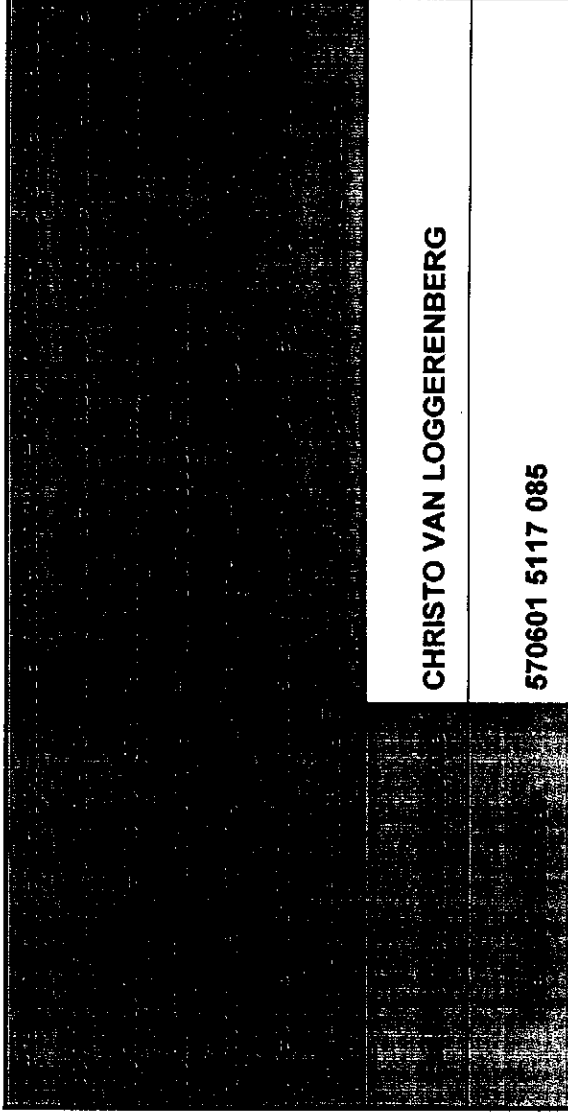
The annual rehabilitation costs are depended on the number of boreholes drilled at that given year. Funds are secured from operational budgets with a portion of the work allocated as part of the drilling contract. Concurrent rehabilitation result in limited costs post drilling as the below rehabilitation status table of drill sites evaluated during 2011 reflect.

Ref	Farm Name	Total number of boreholes evaluated	Good Condition Boreholes	Boreholes that require additional rehabilitation
2	Sishen Suid van Dingleton	36	21	0

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

As outlined in section 8.1 above, the number of planned drill holes as per the works program.

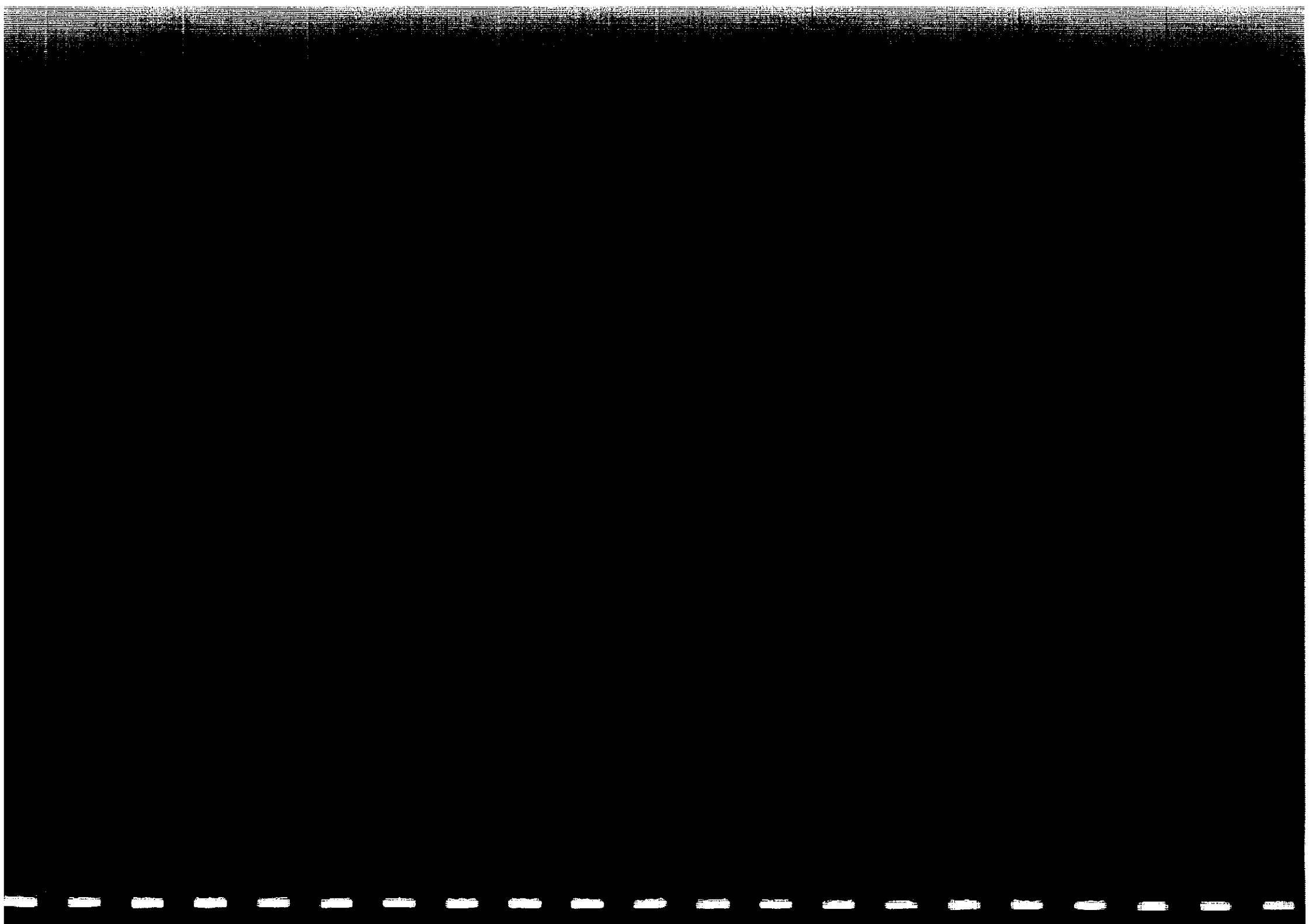
9 REGULATION 52 (2) (h): Undertaking to execute the environmental management plan.



CHRISTO VAN LOGGERENBERG

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-END-





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APPENDIX 1

LIST OF PLANT SPECIES

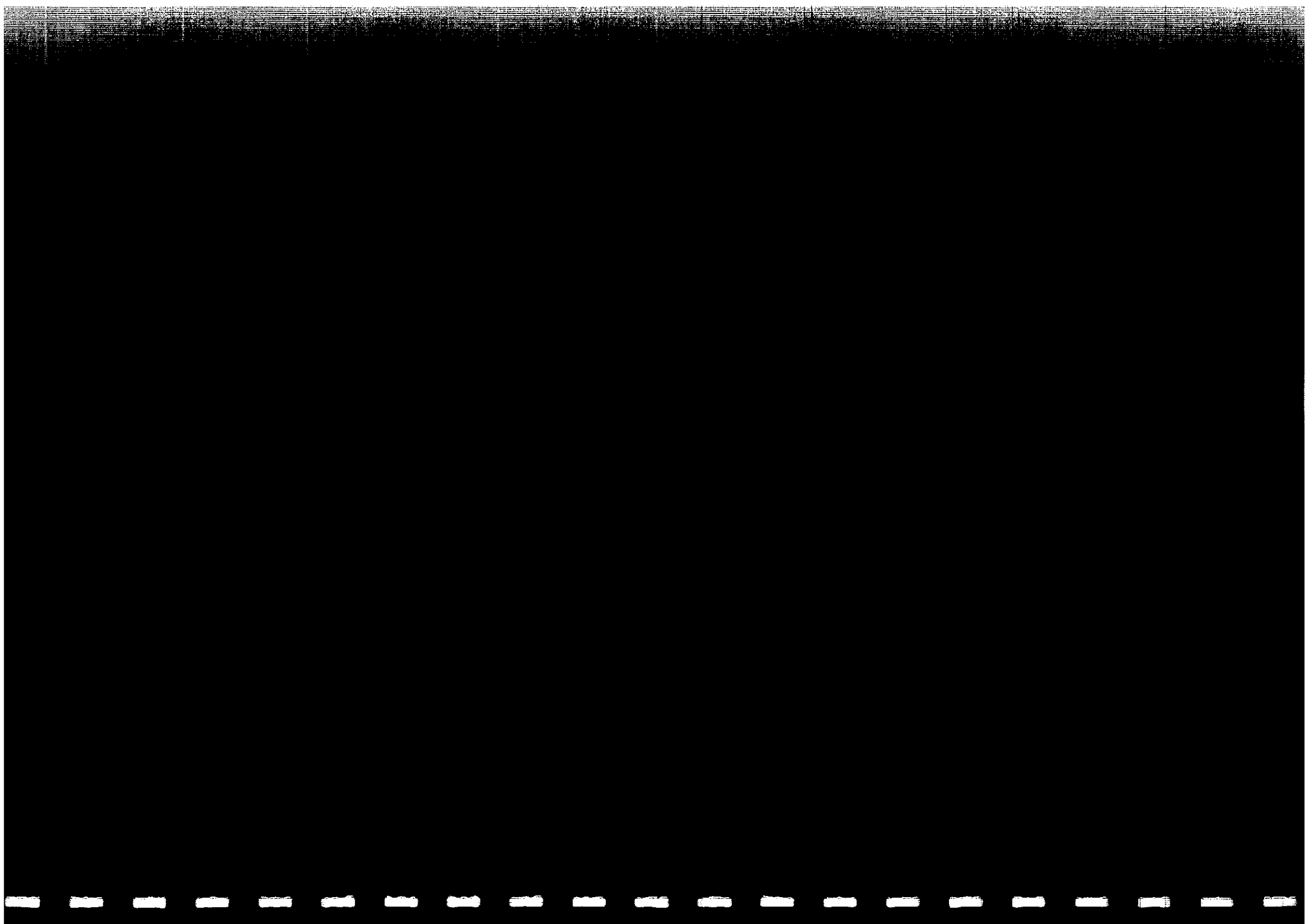
NC 30/5/1/14/1116 PR

Appendix 1

Plant Species Lists

Trees	Shrubs	Grasses
Camel Thorn (<i>Acacia erioloba</i>)	Camphor bush (<i>Tarchonanthus camphorathus</i>)	Kalahari Couch grass (<i>Schmidtia pappophoroides</i>)
False Camel Thorn (<i>Acacia haematoxylon</i>)	Cross-berry (<i>Grewia flava</i>)	Blue Buffalo Grass (<i>Cenchrus ciliaris</i>)
Buffalo Thorn (<i>Ziziphus mucronata</i>)	Blue bush (<i>Diospyros lycioides</i>)	Finger grass (<i>Digitaria eriantha</i>)
Wild olive <i>Olea europaea</i> subsp. <i>africana</i>	Black Thorn (<i>Acacia mellifera</i>)	Lehmann's lovegrass (<i>Eragrostis lehmanniana</i>)
Karee <i>Rhus ciliata</i>	Three Thorn (<i>Rhigozum trichotomum</i>)	Sickle grass (<i>Pogonarthria squarrosa</i>)
Common taaibos <i>Rhus pyroides</i>	Karoo Rhigozum <i>Rhigozum obovatum</i>	<i>Eragrostis pallens</i>
Karee <i>Rhus lancea</i>	Common spike-thorn <i>Maytenus heterophylla</i>	Silky bushman grass <i>Stipagrostis uniplumis</i>
<i>Rhus burchelli</i>	Brandy bush <i>Grewia flava</i>	Golden beard grass <i>Chrysopogon serrulatus</i>
<i>Rhus dregeana</i>	<i>Protasparagus</i> spp.	Spear grass <i>Heteropogon contortus</i>
Wild tamarisk <i>Tamarix usneoides</i>	<i>Salvia verbenaca</i>	Brown Rhodes grass <i>Eustachys paspaloides</i>
Blue guarrie <i>Euclea crispa</i> subsp. <i>ovata</i>	<i>Senecia burchellii</i>	Lehmann's lovegrass <i>Eragrostis lehmanniana</i>
<i>Diospyros pallens</i>	<i>Helichrysum zeyheri</i>	Spreading three awn grass <i>A. congesta</i> subsp. <i>barbicollis</i>
Shepards tree <i>Boscia albitrunca</i>	<i>Althernanthera pungens</i>	Tassel three awn grass <i>A. congesta</i> subsp. <i>congesta</i>
Western Rhigozum <i>Rhigozum trichotomum</i>	<i>Ocimum canum</i>	Iron grass <i>Aristida diffusa</i>
Common guarrie <i>Euclea undulata</i>	<i>Diclitera clinopodia</i>	Narrow-leaved turpentine grass <i>Cymbopogon plurinodis</i>
Large honey-thorn <i>Lycium hirsutum</i>	Poprosie <i>Helichrysum argyrosphaerum</i>	Rooi gras <i>Themeda triandra</i>
Sweet thorn <i>Acacia karroo</i>	<i>Pentzia viridis</i>	
Grey camel thorn <i>Acacia haematoxylon</i>	<i>Indigofera daleioides</i>	
Candle acacia	Pienksalie	

<i>Acacia hebeclada</i>	<i>Stachys hyssopoides</i>	
Silver pea	<i>Geigeria ornativa</i>	
<i>Lebeckia macrantha</i>		
Witolienhout	<i>Vernonia spp.</i>	
<i>Buddleja saligna</i>		
Buffalo thorn	<i>Zygophyllum giffilliani</i>	
<i>Ziziphus mucronata</i>		
Lavender croton	Moederkappie	
<i>Croton gratissimus</i>	<i>Hermannia coccocarpa</i>	
	Puzzle bush	
	<i>Ehretia rigida</i>	





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APPENDIX 2

LIST OF FAUNA SPECIES

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Appendix 2

Fauna Species Lists

ORDER INSECTIVORA Common Name*Crocidura cyanea* Reddish-grey musk Shrew*Aterlerix frontalis* Hedgehog*Macroscelides proboscideus* Round-eared elephant Shrew*Elephantulus rupestris* Smiths rock elephant Shrew*E. intufi* Bushveld elephant Shrew*E. myurus* Rock elephant ShrewORDER CHIROPTERA Common Name*Sauromys petrophilus* Flat-headed free tailed Bat*Tadarida aegyptiaca* Egyptian free-tailed Bat*Miniopterus schreibersii* Schreibers long fingered Bat*Eptesicus capensis* Cape serotine Bat*Nycteris thebaica* Common slit-faced Bat*Rhinolophus clivus* Geoffroys horseshoe Bat*R. darlingi* Darlings horseshoe BatORDER PRIMATES Common Name*Papio ursinus* Chacma baboonORDER LAGOMORPHA Common Name*Lepus capensis* Cape hare*L. saxatilis* Scrub hareORDER RODENTIA Common Name*Cryptomys hottentotus* Common Molerat*Hystrix africaeaustralis* Cape Porcupine*Pedetes capensis* Springhare

Graphiurus murinus Woodland Dormouse

Xerus inaurus Cape ground Squirrel

Petromus typicus Dassie Rat

Parotomys brantsii Brond's Whistling Rat

P. littledalei Littledales Whistling Rat

*Otomys irroatus*Vlei Rat

O. angoniensis Angoni vlei Rat

Rhabdomys pumilio Striped Mouse

*Mus minutoides*Pygmy Mouse

Mastomys coucha Multimammate Mouse

Aethomys namaquensis Namaqua rock Mouse

A. cryophilus Red veldt Rat

Desmodillus curicularis Short tailed Gerbil

Gerbilurus paeba Hairy footed Gerbil

G. vallinus Brush tailed hairy footed Gerbil

Tatera leucogaster Bushveld Gerbil

T. brantsii Highveld Gerbil

*Saccostomys campestris*Pouched Mouse

Malacothrix typica Large eared Mouse

Steatomys krebsii Krebs's fat Mouse

Petromyscus collinus Pygmy rock Mouse

ORDER CARNIVORA Common Name

Proteles cristatus Aardwolf

Felis caracal Caracal

F. lybica African wild cat

Otocyon megalotis Bat-eared fox

Poecilogale albinucha Striped weasel

Genetta genetta Small-spotted genet

Suricata suricata Suricate

Cynictis penicillata Yellow mongoose

Galerella sanguinea Slender mongoose

G. pulverulenta Small grey mongoose

Birds

No	English Name	No	English Name	No	English Name
118	Secretary Bird	367	Rosy-faced Lovebird	595	Anteater Chat
124	Lappet faced Vulture	369	Black-Cheeked Lovebird	615	Kalahari Scrub robin
127	Blackshouldered Kite	406	Rufous-cheeked Nightjar	637	Yellow-bellied Warbler
132	Tawny Eagle	413	Bradfields Swift	665	Desert Cisticola
136	Booted Eagle	425	White backed Mousebird	669	Grey backed Cisticola
140	Martial Eagle	438	European Bee-eater	685	Black-Chested Prinia
143	Black-Breasted Snake Eagle	445	Swallow-tailed Bee-eater	688	Rufous-eared Warbler
156	Ovambo Sparrowhawk	447	Lilac breasted Roller	695	Marico Flycatcher
159	Littlebanded Goshawk	449	Purple Roller	697	Chat Flycatcher
161	Gabar Goshawk	457	Grey Hornbill	703	Pirit Batis
162	Pale Chanting Goshawk	459	Yellow-billed Hornbill	706	Fairy Flycatcher
169	Gymnogene	465	Pied Barbet	719	Buffy Pipit
178	Red-necked Falcon	486	Cardinal Woodpecker	731	Lesser grey Shrike
182	Greater Kestrel	495	Clapper Lark	732	Fiscal Shrike
186	Pygmy Falcon	497	Fawn coloured Lark	734	Sousa's Shrike
194	Red-billed Francolin	498	Sabota Lark	739	Crimson Boubou
203	Helmeted guinea fowl	503	Dune Lark	752	White tailed Shrike
205	Kurrichane Button quail	504	Red Lark	760	Wattled Starling
230	Kori Bustard	506	Spike healed Lark	764	Glossy Starling
232	Ludwigs Bustard	510	Sclaters Lark	769	Red-wing Starling
233	White bellied Korhaan	511	Stark's Lark	788	Dusky Sunbird

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236	Ruppells Korhaan	514	Gray's Lark	799	White-browed Sparrow Weaver
237	Redcrested Korhaan	515	Chestnut backed Finch Lark	800	Social Weaver
239	Black Korhaan	516	Grey backed Finch Lark	802	Greater Sparrow
299	Burchells Courser	517	Black-eared Finch Lark	806	Scaly-feathered Finch
300	Temmincks Courser	551	Southern Grey Tit	814	Masked Weaver
301	Double banded Courser	557	Cape Penduline Tit	845	Violet eared Waxbill
344	Namaqua Sandgrouse	563	Pied Babbler	847	Black-Cheeked Waxbill
346	Yellow throated Sandgrouse	564	Bare-Cheeked Babbler	856	Red-headed Finch
347	Double banded Sandgrouse	567	Red-eyed Bulbil	861	Shaft tailed Whydah
349	Rock pigeon	587	Capped Wheatear	870	Black throated Canary
354	Turtle Dove	589	Familiar Chat	878	Yellow Canary
355	Laughing Dove	590	Trac Trac Chat	882	Black-Headed Canary
356	Namaqua Dove	591	Sickle winged Chat	887	Larklike Bunting
		592	Karoo Chat		